An Examination of Stock Split and Special Dividend Announcements in Relation to Market-Timing Opportunities, Business Cycles, and Monthly Patterns

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ABSTRACT

This dissertation investigates the explanations for the aggregate corporate activities of stock split and special dividend announcements in the United States (US) listed firms between 1926 and 2008. The study is motivated by the limitation of understanding of these two types of events, which have previously only been focused at the firm-specific level. Further, by studying stock splits and special dividends, this research seeks to find an answer to the debate regarding explanations of corporate event waves between neoclassical efficiency reasons and modern market-timing hypothesis. The study is also motivated by the lack of a link between the extensively documented January Effect and Halloween Effect in stock markets and corporate practice. In addition to the contribution of the extended dataset provided in this research, the study has examined corporate decisions to announce stock splits and special dividends from a macro-perspective, especially in relation to market-timing opportunities, economic efficiency reasons, and calendar monthly effects.

Chapter 1 is the introduction of this dissertation. Chapter 2 provides a comprehensive critical literature review on this topic. Chapter 3 is the research framework, hypothesis development, data and methodology used in this research. Chapter 4 is the initial results of the patterns and frequencies for stock split and special dividend announcements. Chapter 5 first investigates whether market conditions and investor sentiment affect the aggregate activities of stock splits and special dividends. These findings indicate that firms time the market to split shares during bull markets with positive and increasing sentiment to achieve higher abnormal returns. On the other hand, special dividend distributions are more likely to happen in bear markets when sentiment decreases. Firms paying special dividends in bear markets are better performers than their counterparts in bull markets. Chapter 6 then examines whether stock split and special dividend activities are driven by the business cycle. Stock splits are more likely to happen in the economic growth stage rather than in the mature stage. On the contrary, firms tend to distribute extra cash dividends to alleviate agency problems in economic declines when profitable investment opportunities are low. Chapter 7 explores the relationship between the patterns of stock splits and special dividend announcements and the calendar anomalies of the January Effect and the Halloween Effect. Firms are more likely to split shares in January and Halloween period than in other months of a year. However, firms have a commonality to pay special dividends to their shareholders in November and December. Lastly, Chapter 8 assesses which macro-determinant has the strongest explanatory power on stock splits and special dividend activities, and the results show that the business

cycle effect is the quantitatively strongest along with all the additional and robustness checks. Chapter 9 is the conclusion and remarks of this dissertation, including future research ideas in the related areas.

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CHAPTER ONE – INTRODUCTION

This chapter provides an overview of the whole dissertation. It starts with the rationale for examining the aggregated patterns of stock split and special dividend announcements. This is followed by a description of the research questions and main findings of the study in relation to market conditions, business cycles, and monthly patterns. The significance and contributions are also highlighted in this chapter.

1.1 Motivation of the Study

The occurrence and timing of corporate events are important to finance academics as they help in the understanding of corporate decisions and the modelling of asset price movements. They are also valuable for fund managers in their efforts to establish effective investment strategies to achieve risk adjusted returns in excess of benchmark. In 1996, Brealey and Myers questioned why corporate events happened in waves and acknowledged it as one of the unsolved puzzles in corporate finance (Brealey & Myers, 2000; Myers, 2001; Myers, 2003). Many studies have investigated this issue since then and attempted to come up with plausible explanations[1]. In particular, Baker and Wurgler (2000) examine seasoned equity offering (SEO) waves and conclude that managers time the market in the issuance of equities to take advantage of overvalued prices. Lowry (2003) finds a similar result in examining the determinants of initial public offering (IPO) waves. In more recent papers, Rhodes-Kropf, Robinson, and Viswanathan (2005) and Dong et al. (2006) suggest that market overvaluation also drives merger waves and waves of acquisitions in both stock and cash purchases. Each of these papers has partially explained the aggregate patterns in corporate events, which is related to market-timing opportunities and known as the Market Driven Theory or Misvaluation Hypothesis (Baker & Wurgler, 2002; DeAngelo, DeAngelo, & Stulz, 2010).

Traditional academic literature (see Gort, 1969), however, suggests that corporate transactions are undertaken for economic efficiency purposes. For instance, firms should issue equities when they require external capital for their growth opportunities or engage in takeovers if the targets are recognized as positive net present value (NPV) projects. Dittmar and Dittmar (2008) support this Neoclassical Efficiency Hypothesis in the examination of aggregate share repurchases and SEO activities. They argue that the patterns of these two types of events are driven by business cycle variations, such as excess funds capacity, rather

[1] Baker and Wurgler (2000, 2002), Lowry (2003), Rhodes-Kropf, Robinson, and Viswanathan (2004, 2005), Dong et al. (2006) and DeAngelo, DeAngelo, and Skinner (2010).

than market price mis-valuation. DeAngelo, DeAngelo, and Stulz (2010) also examine the probability that firms conduct SEOs and find weaker evidence to support market-timing opportunities. They document that the primary motive for SEOs is corporate lifecycle stage changes, especially when there is a need for additional funds.

Given this debate in the explanation for the timing patterns of corporate events, this study focuses on stock splits and special dividend announcements. It does so to examine whether market conditions and business cycles affect firms' decisions to split shares or pay special dividends, and to investigate which one of the hypotheses has stronger explanatory power for the likelihood and excess returns of these two types of announcements. Further, this research attempts to explore whether there are monthly patterns in stock splits and special dividend announcements, and if so, whether these may help to explain the monthly patterns of the January Effect and Halloween Effect in relation to corporate events. The unique characteristics and existing issues of stock splits and special dividends make them interesting and significant aspects to study.

Stock splits are theoretically non-capitalizing events, where a firm's nominal, issued, and paid-up capital is the same before and after the splits. Although the underlying value of firms does not change, share prices usually increase subsequent to such announcements. This makes the investigation of the rationale behind stock splits of particular interest. Ikenberry, Rankine, and Stice (1996) claim that stock splits send positive signals to the market, indicating firms are confident in their future earnings growth. On the other hand, Fernando, Krishnamurthy, and Spindt (1999) argue that firms split their shares because they want to achieve an optimal trading range in price to augment marketability. Moreover, Powell and Baker (1993) reports that firms announce stock splits to attract attention from Wall Street, especially for small size firms. Most of these existing studies have tried to explain the reason for stock splits from the firm-specific level, but few have attempted to investigate the motivation of the announcements at the aggregate level. This limits the understanding of stock splits to the micro or firm level effects. Given the trends in the aggregate stock split activities and their clustered patterns in the period 1980 to 2000 (Crawford, Franz, & Lobo, 2009), it is important to examine these announcements from a macro-perspective in order to explain how trends in aggregate splitting shares relate to the whole market or the overall economy.

Special dividends are one-time cash distributions that firms pay out to their shareholders when they have surplus funds. By announcing special dividends, firms can reduce agency costs, especially when there are no potential or less favourable investment opportunities (Jensen, 1986; Lang & Litzenberger, 1989; Lie, 2000). The distinction between special dividends and share repurchases is price valuation. If managers believe the current share price is not undervalued, they would distribute excess funds to shareholders through special dividends rather than buyback their shares (Howe, He, & Kao, 1992). Compared with regular cash dividends, these one-off announcements are usually viewed as a temporary performance shock; otherwise, firms would increase the level of normal dividend payout (Baker, Mukherjee, & Powell, 2005; Brickley, 1983). Since special dividends are viewed as relatively 'non-recurring" events (Lie, 2000) and less related to price valuation, it is interesting to investigate if the announcements happen in waves, and if so, why.

1.2 Research Objective and Questions

The principal aim of this research is to examine the macro-determinants that can explain why firms announce stock splits and special dividends. This is achieved through the consideration of market conditions, business cycles, and monthly patterns. The resulting research questions to address this objective are constructed as follows:

1. Can market conditions affect stock splits and special dividend announcements and their associated returns?

According to Baker and Wurgler (2006, 2007), stock prices are overvalued in good market conditions when investor sentiment is high, but undervalued when sentiment is low. Mian and Sankaraguruswamy (2012) report that market conditions and investor sentiment influence market response to corporate news events. Positive sentiment increases the rise of stock prices from good news, whereas negative sentiment further decreases the stock price in reaction to bad news. If these findings are true, do firms announce stock splits or special dividends with respect to changes in market conditions?

In addition, stock splits are manipulation tools for mergers and acquisitions (Guo, Liu, & Song, 2008). Acquiring firms tend to announce stock splits before their acquisition activities as they believe that split announcements can increase share prices (Conroy & Harris, 1999; Grinblatt, Masulis, & Titman, 1984; Ikenberry & Ramnath, 2002; Ikenberry, Rankine, & Stice, 1996; Kadiyala & Vetsuypens, 2002). Therefore, acquirers would benefit from the overvalued equity and reduce the costs of acquisitions, especially when the deals are large and the means of exchange is stock-for-stock. Firms with lower earnings quality are more likely to use stock splits to manipulate their share price before acquisition than firms with higher earnings quality. This pattern also happens in seasonal equity offerings. D'Mello, Tawatnuntachai, and Yaman (2003) report that companies split stocks prior to issuing shares with the intention of selling equities at a higher price to raise more funds. The marketability of new offerings also increases following stock split announcements. These results indicate that there is a close relationship between the activities of share issuance, mergers and acquisitions, and stock splits. Hence, if merger and acquisition waves, seasonal equity offerings, and initial public offering waves happen in an overvalued market, do firms announce stock splits in a bullish phase?

Similarly, special dividends can be used by corporations to defend takeover threats. Share prices usually increase after special dividend announcements (Jensen, 1986; Howe, He, & Kao, 1992; Lang & Litzenberger, 1989; Lie, 2000). A higher stock price increases a firm's value and the cost of the bid, so it makes the target less attractive and harder to acquire (Denis, 1990; Handa & Radhakrishnan, 1991). Although the other commonly used takeover defence of share repurchases can enhance board ownership and managerial control, special dividend distributions contain less risk in terms of bankruptcy and have a positive effect on the wealth of target firm shareholders (Denis, 1990; Sinha, 1991). As acquisitions or hostile takeovers are more likely to occur when the market is overvalued, do firms distribute special dividends during that time? Alternatively, Jensen (1986), Lang and Litzenberger (1989) and Lie (2000) report that special dividends are paid in the period when investment opportunities are low. This situation usually occurs at a time of market decline. Not only has the relationship between market conditions and propensity of special dividend announcements not yet been explored, but the pattern of these announcements being either pro-cyclical or counter-cyclical remains unclear.

2. Does the business cycle drive stock splits and special dividend announcements and their associated returns?

The business cycle affects firms' earnings and cash flow levels. In the beginning of the business cycle, cash is scarce and earnings are usually negative; firms need money to establish and develop their businesses. However, during economic expansions or the growth stage, profitable investment opportunities are plentiful. Firms start to realise increasing positive earnings and accumulate cash surpluses from favourable net present value (NPV) projects. On the other hand, favourable investments become limited when the economy declines and both earnings and cash inflows decrease accordingly. If firms announce stock splits and special dividends with respect to their earnings and cash flow levels, can the business cycle drive the likelihood of these announcements?

According to the literature, stock splits are usually announced after firms have experienced a significant increase in earnings (Asquith, Healy, & Palepu, 1989; Ikenberry & Ramnath, 2002; Ikenberry, Rankine, & Stice, 1996). Companies tend to use these announcements to send a favourable signal to the market about their earnings performance and future prospects. In other words, managers are confident that their current earnings increases are permanent. This theory is known as the Signalling Hypothesis for stock split announcements. Since firms have more chance to achieve and carry on positive earnings surprises in economic expansions, do they split their shares in these periods accordingly?

Likewise, special dividends are paid when companies have excess funds (Howe, He, & Kao, 1992; Jensen, 1986; Lang & Litzenberger, 1989). If cash inflows are easier to be generated and accumulated during economic growth, firms should have more ability to pay special dividends in expansionary times. However, according to Jensen (1986) and Lie (2000), special dividends are usually announced when companies face no profitable investment opportunities to mitigate agency problems, which usually happens during economic contractions. This theoretical conflict creates an interesting puzzle to investigate. Are investors are more likely to receive special dividend payments in economic expansions or contractions. The literature also contains no empirical evidence of the significance of economic conditions on the decisions to initiate special dividends; hence, one of the purposes of this research is to fill this gap.

3. Are the aggregate patterns and abnormal returns of stock split and special dividend announcements related to the monthly patterns of the January Effect and Halloween Effect?

The January Effect and the Halloween Effect have been extensively observed in stock returns in the US and around the world (Bouman & Jacobsen, 2002; Dyl & Maberly, 1992; Gultekin & Gultekin, 1983; Jacobsen & Zhang, 2012; Rozeff & Kinney, 1976). However, there is an open question whether these effects are related to corporate practices. If investors buy stocks to re-establish their portfolios in January, but "Sell in May and go away till St. Leger's Day", do companies tend to announce more numbers of stock splits or special dividends in the beginning of a year or in the Halloween period? Can firms benefit from the increasing demand in stocks during these periods to raise abnormal returns by these two types of announcements?

4. What is the dominant macro-determinant to explain why firms split shares or pay special dividends?

The Neoclassical Efficiency Hypothesis argues that the occurrence of corporate events is due to economic reasons[2]. For example, Harford (2005) reports that merger waves are caused by the variations in capital liquidity during industry shocks, such as economic, technological, or regulatory changes. Dittmar and Dittmar (2008) find that the clustered pattern of share repurchases is more likely attributable to an increase in cash inflows in economic expansions. They also indicate that the expanding business cycle lowers the cost of issuing shares relative to borrowing debts, leading to equity offering waves in expansions. However, the modern Behavioural Hypothesis argues that the overvalued market condition and positive investor sentiment are the keys to drive corporate event waves. This is also acknowledged as the Market Driven or Misvaluation Hypothesis. Given these two possible explanations for aggregate corporate event activities, this research finally examines which hypothesis plays a predominant part in stock splits and special dividend announcements.

1.3 Significance and Importance

This study is important and relevant for many reasons. First, it can help portfolio managers and individual equity investors to predict stock returns and create valuable investment opportunities by following the patterns and excess returns of stock splits and special dividend announcements. For example, if firms have greater positive price reactions to these announcements in market upturns, expansions, or in January, investors should buy their stocks straight after the events in good times or in the beginning of a year, and sell them when the share prices start to decrease.

Second, this research could provide empirical evidence to corporation managers of a better time to split shares or pay special dividends. If high investor sentiment can increase abnormal returns from these announcements at a higher level in the short run, firms would be better to undertake splits or special dividend distributions in bull markets. For company directors, gaining a clear picture of how different conditions or time periods affect event returns can

[2] Gort (1969); Choe, Masulis, and Nanda (1993); Rau and Stouraitis (2011)

assist them to achieve better controls over price fluctuations. Stein (1996) suggests that firms should be able to reduce stock volatility and maximize the existing shareholders' wealth if they can time the market appropriately and effectively when issuing equities.

Third, this study can provide an empirical result to the owners of companies as to whether distributing special dividends is a good way to reduce agency costs, especially during market and economic downturns. If the abnormal returns generated from these announcements are higher in market declines and recessions than in market upturns and expansions, shareholders should consider special dividends as a useful tool to alleviate agency problems and increase their wealth in contractions or market downturns. Such findings would be in line with Jensen (1986), Lang and Litzenberger (1989), and Lie (2000).

Fourth, industry competitors can benefit from this research by knowing how much profit firms normally make from stock splits and special dividend announcements in each month, and in different market and economic conditions. They could follow their rivals to split shares or distribute special dividends themselves if event firms can generate larger, positive abnormal returns in bull markets or in January. Massa, Rehman, and Vermaelen (2007) report that non-announcing firms tend to mimic announcing firms to undertake corporate events in the same industry, such as initiating share repurchases or issuing equities. This mimicking behaviour is particularly strong in highly concentrated industries.

Fifth, this research can provide a simple trading strategy if there is a Halloween Effect in stock splits or special dividend announcements. Investors can buy the stocks following either of these two announcements in the months of May to October and sell the stocks in the months of November to April. This strategy is of particular interest to practitioners as it only involves two trades a year and, therefore, profits are unlikely to be wiped out given the low transaction costs (Bouman & Jacobsen, 2002).

Finally, the implication of the findings could be of considerable significance to policy makers as they show the effectiveness of information disclosure by listed companies when firms announce stock splits and special dividends. If stock splits or special dividends are mainly executed by riding on the waves of market optimism, rather than for a genuine reason, such as having excess funds or earnings, investors may suffer a loss in the long run if they hold the stocks for more than a year (Massa, Rehman, & Vermaelen, 2007). Firms' credibility in similar future announcements may also be eroded (Doran, 1995). Therefore, policy makers may be well advised to consider the requirement of additional information disclosure when firms announce stock splits and special dividends.

1.4 Main Findings of the Research

This research uses data from a broad sample of US-listed firms for the period 1926 to 2008. Stock split and special dividend announcements over this period are obtained from the Centre for Research in Security Prices (CRSP). To investigate whether market conditions, business cycles, or monthly patterns can explain firms' decisions to split shares or pay special dividends, this study first examines their frequency and likelihood. If firms are more likely to undertake these two types of announcements with regard to market timing, economic environment, or set times of the year, there should be a statistically significant relationship between the likelihood and the overvalued market, economic expansions, or the particular months. The frequency of stock splits and special dividends should be significantly different in bull and bear markets, in expansions and contractions, or in particular months and in other months of a year.

Next, this research employs event study methodology to investigate whether market conditions, business cycle variations, or calendar months can affect the abnormal returns of stock splits and special dividend announcements. If the price reactions to these announcements are statistically different and higher in the periods that firms prefer to carry out these announcements, this would explain why there are greater numbers of splits or special dividend distributions in some periods than in others. This thesis tests if the abnormal returns generated from stock split and special dividend announcements are statistically correlated to investor sentiment and business cycle variables. The results can provide additional evidence on the relationship between these aggregate factors and firms' decisions to split shares or pay special dividends. Finally, this study determines which factors have a dominant effect and larger economic impact on probabilities and excess returns of stock splits and special dividend announcements.

By following these procedures, this study finds that stock split announcements are more likely to happen in bull markets. On average, the number of stock splits per month in bull markets is larger than in bear markets, and the likelihood of the occurrence of stock split announcements is positively correlated to the *Bull* market dummy in logit models. The research also employs investor sentiment variables following Baker and Wurgler (2000, 2006, and 2007) and Mian and Sankaraguruswamy (2012) to investigate if high investor sentiment in market upturns increases the probability that firms announce share splits. The results are consistent with the Market Driven Theory or Behavioural Hypothesis. There are more stock splits when investor sentiment increases, especially when the sentiment variables of the number of equity offerings (IPOs and SEOs) and the returns of IPOs increase. In addition, the abnormal returns of stock split announcements are higher in bull markets than in bear markets, and they are positively correlated to the *Bull* market dummy, the returns of IPOs, NYSE share turnovers, and closed-end fund discounts. These findings indicate that the overvalued market can drive firms' decisions to split shares and their associated returns.

However, special dividend distributions are more likely to be driven by negative sentiment variables in bear markets. Although there is no significant difference in the frequency of special dividend announcements between bull and bear markets, the likelihood and abnormal returns of these announcements are statistically negative and correlated to the *Bull* market dummy and many investor sentiment variables. In particular, an increase in the first-day returns of IPOs, NYSE share turnovers, or ratio of equity over debt issuances decreases the probability of firms to pay special dividends. The abnormal returns also decrease with these variables and those of the number of IPOs and close-end fund discounts. These results indicate that firms tend to announce special dividends in market downturns rather than in upturns, which is consistent with the Free Cash Flow Hypothesis.

With respect to the question of whether the business cycle can explain stock splits or special dividend activities, this study finds that the propensity for firms to split shares is larger in expansionary periods. The likelihood of stock split announcements is positively correlated to the *Expansion* dummy and most of the business cycle variables, such as GDP changes, inflation rate, three-month T-bill rate, and term spread. These findings suggest that the higher likelihood for firms to have increasing earnings in economic up-trends increases their ability and tendency to split shares. Nevertheless, the abnormal returns of stock splits are larger in expansions with event windows being less than a week, but smaller afterwards. The excess returns generally increase with the business cycle variables of the consumer price index, inflation rate, default spread, and short-term T-bill yield, but decrease with the unemployment rate and market dividend yield. This empirical evidence shows that the market can react more strongly to stock split announcements in economic downturns; firms that still have enough confidence and aptitude to split shares in recessions are better performers in comparison to their counterparts in expansions.

On the other hand, firms tend to pay special dividends when the economy declines. The likelihood of special dividend announcements is negatively correlated to the *Expansion* dummy and business cycle variables of GDP changes, unemployment rate, consumer price index, market dividend yield, and term spread. The abnormal returns generated from special dividend announcements are consistently larger in economic contractions than expansions with different event windows. These results indicate that firms have a tendency to pay special dividends to alleviate agency problems during recessions, although they may have more chance to create cash surpluses during economic growth. The market reacts more positively to these announcements as cash remunerations can increase investors' protection in recessions and enhance their loyalties to the firms. Corporations having sufficient funds or being willing to disburse extra cash to shareholders in market or economic downturns are usually more successful than other event firms in upturns. Additionally, an increase in the three-month T-bill yield, term spread, consumer price index, or inflation rate can increase the excess returns of special dividends, whereas an increase in the market dividend yield can decrease the returns of special dividend announcements. To this point, my empirical evidence has shown that both market-timing opportunities and business cycle variations have a statistically and economically significant impact on firms' decisions to engage in stock split and special dividend activities.

Furthermore, this research also finds that the monthly patterns of the January Effect and Halloween Effect can explain the aggregate patterns of stock splits and special dividend announcements in some way. In particular, abnormal returns of stock splits are larger in January than in other months of a year using the value-weighted market index models, although there is no clear January Effect in the frequency and propensity of firms to split shares. The Halloween Effect is known that stock returns are higher in the Halloween period, November to April than in the other half of a year, May to October (Bouman & Jacobsen, 2002). The results show that the Halloween Effect has some influence on the likelihood of stock split announcements as the number of splits is relatively higher in the Halloween period and the *Halloween* dummy is relatively significant in logistic models. However, the excess returns from stock split announcements in November-April are not significantly different from May-October, except for the 30-day event window. These results suggest that firms tend to announce stock splits in the Halloween period, but not in January, even though January has considerably larger abnormal returns.

On the other hand, the Halloween Effect is economically strong in the frequency and likelihood of special dividend announcements. In particular, the number of special dividends paid in November to April is nearly double that of May to October. The abnormal returns of special dividend announcements are also larger in the Halloween period using the value-weighted market index models. Nevertheless, there are no high frequency and abnormal returns in January. In contrast, firms pay fewer special dividends at this time and their equal-weighted abnormal returns are statistically smaller in January compared to the rest of the year. These findings indicate that special dividends are more likely to be announced at the end of a year, especially in November and December.

Finally, the examination of the dominant macro-determinants for firms' decisions on stock splits and special dividend announcements shows that the business cycle effect has the strongest explanatory power on the probability and abnormal returns of corporations undertaking stock splits. The propensity for firms to split shares and their associated abnormal returns are most significant and correlated to macroeconomic variables, such as GDP changes, unemployment rate, term spread, market dividend yield, and three-month T-bill yield. Although the *Bull* market dummy and high sentiment variables of increases in numbers of equity offerings and share turnovers can increase abnormal returns of stock split announcements, the economic significance is smaller than business cycle variables. These findings are more consistent with and supportive of the Neoclassical Efficiency Hypothesis compared to the Market Driven Theory or Behavioural Hypothesis. The monthly effects are also evident in stock split announcements, but they are not as strong as the business cycle effect.

Similarly, both market-timing opportunities and the business cycle stage are significant explanatory variables for the aggregate special dividend activities. However, the relative importance of the business cycle in explaining the propensity and abnormal returns of firms paying special dividends is substantially larger than market-timing. Further, the monthly pattern of the Halloween Effect has the most economically significant coefficients in explaining the probability that firms initiate special dividends. Hence, the dominant macro-determinant for the abnormal returns of special dividend announcements is the business cycle variable, whereas the dominant macro-determinant for the decisions to pay special dividends is the months of November and December.

1.5 Contribution of the Dissertation

This thesis makes several contributions to the literature. First, it aids in the understanding of patterns in and determinants of stock splits and special dividend announcements. Most of the existing studies of these two events focus on using cross-sectional variations in firms' characteristics to explain their decisions on stock splits and special dividends. However, little research has investigated the aggregate patterns of these announcements to understand why many firms choose to split shares or pay special dividends many times in some periods, but only a few times in others. The findings of this study shed light on different theories of why share splits are clustered in the period 1980 to 2000 and why special dividend distributions occur in waves. They directly tie cycles of these activities to the condition of the market, the stage of the economy, and the pattern of the January Effect and Halloween Effect.

Second, this research is related to much previous research. Apart from the literature on the market overvaluation and investor sentiment driving corporate events of mergers and acquisitions, IPOs, and SEOs (see Baker & Wurgler, 2000, 2006, 2007; Dong et al., 2006; Lowry, 2003; Rhodes-Kropf, Robinson, & Viswanathan, 2005), this study is related to the research that uses the business cycle to explain the aggregate patterns and returns of share repurchase and equity offering announcements (see Dittmar & Dittmar, 2008). However, it nests both market sentiment as well as business cycle variables into the examination of two new events, stock splits and special dividend distributions. The results assist in resolving the puzzle of how market-timing and economic cycle factors play a part in the propensity and excess returns of corporate announcements. The findings of this research also complement the findings of Harford (2005) and Massa, Rehman, and Vermaelen (2007), suggesting that industry factors, such as technology shocks and concentration ratio, cause the waves of mergers and acquisitions or share repurchases. The nature of this thesis fits in with, and adds to the literature examining the trends in corporate events.

Third, this study builds an initial bridge between corporate announcements and monthly patterns of the January Effect and Halloween Effect. It provides first evidence of the circumstances in which firms choose to split shares or pay special dividends as there is a high trading demand in stocks in January and in the Halloween period. Since monthly patterns play an important role in corporate decisions and returns of stock splits or special dividends, future research may need to pay attention to the results of event studies regarding calendar months on various corporate events either in the US or in other international markets.

Finally, this research fills a gap in the literature by using an 83-year time series of US data to investigate the macro-explanations for the decisions to announce stock splits and special dividends. As far as it can be ascertained, this is the longest and most updated sample period to examine these two types of corporate events. With the availability of the data, this study also makes an important methodological contribution as it employs almost all the short-run event study models to examine abnormal returns. As the results show, using the equal-weighted market index and value-weighted market index or using the Market Adjusted Model and Market Model can sometimes lead to significantly different inferences. Additionally, the long-term excess returns of stock splits and special dividend announcements are economically small in Calendar Time Abnormal Returns (CTARs), indicating that the Efficient Market Hypothesis is valid, which is in line with Boehme and Sorescu (2002), Byun and Rozeff (2003), and Fama (1998).

1.6 Structure of the Dissertation

The remainder of this dissertation is organized as follows: Chapter 2 provides a review of the related literature on stock splits, special dividends, market conditions, business cycles, and monthly patterns, while Chapter 3 describes the data and methodology used in this research. Chapter 4 gives an introduction to results, which include patterns of stock splits and special dividends and descriptive statistics for regression analysis. Chapter 5 presents the results of market conditions affecting stock splits and special dividend announcements, and Chapter 6 discusses how the business cycle drives the occurrence of these two events and their excess returns. Chapter 7 examines the January Effect and the Halloween Effect in the propensity and returns of firms splitting shares and initiating special dividends. Chapter 8 highlights the dominant effect of macro-determinants on the decisions and abnormal returns of these two types of announcements, and Chapter 9 states concluding remarks in this thesis and offers potential topics for future studies.

CHAPTER TWO – LITERATURE REVIEW

This chapter reviews the relevant literature for this thesis. First, it provides background information for market efficiency, Behavioural Finance, and corporate announcements in Section 2.1. Next, two types of self-selected corporate events, stock splits and special dividend distributions are discussed in Sections 2.2 and 2.3. The literature on the patterns and waves of other events is given in Section 2.4. Finally, the monthly patterns of the January Effect and Halloween Effect in stock markets are reviewed in Section 2.5.

2.1 Background to the Literature

2.1.1 The Efficient Market Hypothesis (EMH)

Market efficiency is the central theory of finance and is the foundation for the study of market reaction to corporate news events. Under the Efficient Market Hypothesis (EMH), security prices fully incorporate all existing information in an unbiased fashion, and the values of assets only change when new public information is released (Fama, 1965, 1970). According to Fama (1970), the market reacts instantaneously to public news, and share prices will be in or return to equilibrium quickly. Therefore, no one can consistently achieve risk-adjusted excess returns in the market. The EMH assumes that all investors behave rationally and market friction is negligible or insignificant (Barberis & Thaler, 2003; Fama, 1970). In 1991, Fama further develops the EMH into three forms: weak form, semi-strong form, and strong form.

In the weak form of EMH, the current market prices are fully reflected in the sequence of historical data. Future share prices cannot be predicted by examining past information, and no one can earn excess returns by using technical analysis. Share prices follow a random walk; that is, there are no serial dependencies or patterns to asset prices. This suggests that future price movements are not determined by any indication seen in the historical information available to the market, but by new information not contained in the price series.

In the semi-strong form of EMH, security prices fully reflect both current and historical information. Share prices only change with publicly available new information and any derivation from equilibrium prices are usually eliminated very quickly. Therefore, investors cannot earn excess returns by using technical analysis or fundamental analysis, especially in the long run. Downe et al. (2004) argue that the semi-strong form gives comfort to investors, in that the market price is the best estimate of a stock’s fair value once information is available. Corrado (2001) supports Fama's idea that financial information cannot be utilised to discover under or overpriced shares, since share prices fully reveal all available information instantaneously. Jensen and Ruback (1983) report that the semi-strong form of the EMH proposes that the occurrence of specific events send signals to the market, which then adjust security prices. This is the form that the event study is based on.

In the strong-form of EMH, share prices fully reflect all information, historical, current, and insider information that is not available to the public. No one can earn excess returns, even thru insider trading. The strong-form efficiency may not be possible to achieve if there are some legal barriers to private information being made public.

2.1.2 Anomalies

The Efficient Market Hypothesis gained early support and dominated the academic field of finance since the end of the 1960s, but there are growing numbers of empirical studies which have identified anomalies in market behaviours after the 1970s. These anomalies appear to show patterns in stock returns that are not based on market information, which seems to contradict the EMH.

There are three main types of anomalies: fundamental-related, technical-related, and calendar-related anomalies. The famous Size Effect and Value Effect are fundamental-related anomalies. Ball (1978) and Banz (1981) find that smaller firms have higher risk adjusted returns than larger firms. Basu (1983) reports that companies with a lower Price/Earning (P/E) ratio tend to outperform those with higher P/E ratios. There are higher returns compared to the fundamental value after adjusting for risk. Lakonishok, Shleifer, and Robert (1994) state that value stocks or companies with higher Book/Market (B/M) ratios perform better than growth or glamorous stocks with lower B/M ratios. Technical anomalies include momentum effect and long-term return reversal. For instance, De Bondt and Thaler (1985), Jegadeesh and Titman (1993), and Yau, Yaqiong (2012) show that past losers tend to be future winners, and *vice versa*. They argue that long-term return reversal occurs mainly due to investors over emphasising past performance of companies. De Bondt (2002) also finds intermediate-term price momentum and long-run underperformance of Initial Public Offerings (IPOs). Calendar-related anomalies are like the Monday Effect and January Effect, describing patterns in stock returns from year to year or month to month. The Monday Effect assumes that firms have higher returns on Mondays and the January Effect suggests larger returns in January in comparison to the rest of the year. This is due to the greater demand at the beginning of a week or year. This empirical evidence has challenged the EMH and resulted in more theory debates within the field.

2.1.3 Theories Supporting EMH

Fama is considered to be the leader in the efficiency market academic field. He argues that anomalies presented are not significant evidence against the EMH, and that the concept of market efficiency should not be abandoned. He reports that anomalies are 'chance results', which can be eliminated when methodology, sample data, or measurement of market returns change (Fama, 1998). The perceptible underreaction of stock prices to information is about as common as overreaction, and the evidence of post event continuation of pre-event abnormal returns is of similar frequency to post-event reversal. If anomalies happen randomly between overreaction and underreaction, they are actually consistent with the EMH (Fama, 1998).

Similarly, Langdon (1989) is of the opinion that the debate around EMH is unnecessary. He suggests that the market mechanism is efficient, but sometimes prices deviate from the equilibrium since the market is a dynamic system and unstable. Dynamic systems could result in noise, oscillations, and vibration. However, the divergent share prices will return back to equilibrium very quickly. Langdon develops a model for the security price behaviour and acknowledges it as "Almost Efficient Market Hypothesis" (AEMH). He finds that the greater the derivation from fundamental prices, the greater demand and supply movements would be to move share prices back to equilibrium. This is why sometimes price-reversals happen. He argues that although there are anomalies from time to time, they will gradually and eventually disappear and the market will become more efficient.

2.1.4 Behavioural Finance

On the other hand, Behavioural Finance (BF) emerged as a new field of study challenging the EMH. It incorporates human factors into financial models to enhance understanding of the reaction to price changes (Barber & Odean, 1999). Behavioural Finance argues that investors are not fully rational, and they can be affected by psychological emotions and cognitive biases when they make decisions. Behavioural Finance appears to explain the phenomenon that surrounds deviation from fundamental values within the market (Barberis & Thaler, 2003). Thaler (1993) refers to BF as "open-minded finance" and Rzepczynski (2000) refers to it as "modern and psychological finance". The two main components of BF are limited arbitrage and psychological behaviour, both of which describe why the capital market is not always efficient.

Limited arbitrage is one of the theories that behaviourists use to debate the EMH. It argues that if share prices are divergent from the fundamental value, they may not be able to return to equilibrium as the arbitrage opportunities are limited (Barberis & Thaler, 2003). Limited arbitrage occurs when there are constraints on opportunities due to fundamental risk, noise traders, and implementation costs. Fundamental risk states that it is difficult to find perfect substitutes for securities in the market when there is a mispriced situation. Substitutes are often highly imperfect. Therefore, it is impossible to eliminate the fundamental risk in order to move the prices back to equilibrium (Barberis & Thaler, 2003). With noise trader risk, share prices are pushed to extremes, which make it even more difficult for the share price to return to fundamental values (Barberis & Thaler, 2003). De Long et al. (1990) show that noise trader risk is powerful, and even with this single form of risk, arbitrage could be limited from time to time. In addition, higher implementation costs, such as transaction costs associated with commissions and bid-ask spreads, can make arbitrage less attractive. Arbitrageurs may not be able to gain positive profits after costs are considered (Barberis & Thaler, 2003).

More importantly, BF considers human psychology and sentiment factors in the market, to explain the discrepancy of share prices. For example, books like *Beyond Greed and Fear: Understanding Behavioural Finance and the Psychology of Investing* (Shefrin, 2000), and *Inefficient Market* (Shleifer, 2000) are famous in the behavioural finance field. Investors like to feel good about themselves; they try to avoid regret and seek pride when they make decisions (Shefrin & Statman, 1985). They have a tendency to sell winners too soon and hold losers too long. Some investors become overly optimistic about recent gains and conversely overly pessimistic about recent losses (De Bondt & Thaler, 1985). This is known as the *disposition effect*. *Attachment bias* make investors emotionally attached to security. As a result, they tend to ignore bad news and end up holding the stock for too long (Baker & Nofsinger, 2002). Investors can be *overconfident*, especially in knowledge and control; this is referred to as the “illusion of control” in psychology finance. Daniel, Hirshleifer, and Subrahmanyam (1998) report most of the common factors that underlay investor behaviour for market under- and over-reactions to occur, are overconfidence and biased self-attribution. Even moods can temporarily influence a decision, such as investors making more optimistic judgements when they are in a good mood; *Mood and Optimism* (Baker & Nofsinger, 2002). Although BF relaxes the EMH assumption that investors have consistent beliefs and adds human factors into asset pricing model, it is reliant on the EMH theory. Without EMH, behavioural finance theories could not be advanced.

2.1.5 Incomplete Revelation Hypothesis (IRH)

Another alternative theory between EMH and BF is the Incomplete Revelation Hypothesis (IRH). It makes the point that statistical information data is costly and takes time to extract from the public. Less information is revealed to certain market participants because of the cost of such data. Therefore, the generating process for the true data cannot be gained by the existing data, so anomalies can occur (Bloomfield, 2002). IRH uses insights about rational expectations to illustrate the relationship between the demand for costly information and the degree of market inefficiency. It argues that investors trade rationally and interpret the market well, but the problem is that they do not have enough data and agents react differently with different information (Sandroni, 2005). The high cost of information could be attributable to either regulation or the managers' attempts to display good data and hide bad news in footnotes. There is a balance between the costs of acquiring such information and the benefits this can give to the informed participant. These increased costs are only acceptable to some traders in the market (Bloomfield, 2002).

IRH accommodates both perspectives of EMH and BF. It makes an important distinction that the lack of apparent inefficiency does not indicate irrational decisions by investors. Rather, it describes that participants make decisions that are rational, based on the information that they feel justified in gathering. Not all participants have access to this information so they make different decisions. Under Behavioural Finance, anomalies are explained as investors have similar and sufficient information, but they react irrationally, sometimes to the information that is available, sometimes despite available information. Conversely, IRH states that anomalies occur either due to investors reacting rationally, but without adequate information (Hansen, Sargent, & Wang, 2004; Lewellen & Shanken, 2002; Zeira, 1999) or investors suffering from cognitive bias, forming beliefs when they do not have adequate information (Barberis, Shleifer, & Vishny, 1998; Daniel, Hirshleifer, & Subrahmanyam, 1998, 2001; Hong & Stein, 1999; Odean, 2002). Brav and Heaton (2002) and Brandt, Zeng, and Zhang (2004) report that there are similar predictive powers arising from theories based on cognitive bias and ones based on incomplete information. In addition, EMH and IRH both make positive correlations between investor interpretations of publicly available data and market price. The IRH actually extends EMH with recognising the cost of data, but it renovates many phenomena of "anomalies" into the perspective of IRH predictions. Without EMH predicting what normal returns would be, it would be impossible to assess whether or not a market is inefficient.

2.1.6 Event Studies

With the debate over the levels of market efficiency, event studies have been used as important tools to test and analyse anomalies. It was introduced by Fama et al. (1969) to examine returns on stock prices in response to information about an economic event or news. Since 1980, event studies have become more popular and frequently applied in finance studies (Wells, 2004). In 1991, Fama classifies event studies as a test for the semi-strong form of EMH. The purpose of the test is to identify whether or not financial markets react positively or negatively to the information discovered. If actual stock returns are different from predicted results, the event studied did affect security prices and did influence investor reaction to the event. If these anomalies drift in the long run, the market can be identified as inefficient (Wells, 2004). Lo and Mckinley (2004) claim that event studies are the most successful applications in the area of corporate finance.

Event studies can be grouped according to non-self-selected events and self-selected events. Non-self-selected events are exogenous events that occur outside the control of companies, such as regulation or law changes, financial crisis, terrorism or natural disasters. The event day would be the same for all firms and generally affect all the firms at the same time (Lo & Mckinley, 2004). Self-selected events are where companies manage an event for a certain purpose. The event day usually varies depending on each firm. Once the event day is identified, the effects on the asset prices can be tested compared with the 'normal' change in stock prices. Examples of self-selected corporate events are mergers and acquisitions, earning announcements, new debt or equity offerings, share repurchases, stock splits, and dividend announcements.

In the existing literature, stock price under and overreaction have been observed in these self-selected events. Ikenberry, Lakonishok, and Vermaelen (1995) find that shareholders earn significantly positive abnormal returns after a share buyback announcement. Masulis (1980), Dann (1985), and Vermaelen (1981, 1984) argue that share repurchases signal favourable information about the future performance of firms. Similar to earning announcements, Ball and Brown (1968) report evidence that stock prices respond positively to good earning news. Bernard and Thomas (1990) support the idea and show a positive price drift for about a year after the earning announcements. Ramnath (2002) also argue that both investors and analysts seem to underreact to earning announcements from other companies in the same industry. In addition, Stehle, Ehrhardt, and Przyborowsky (2000) reinforce the earlier studies of Ritter (1991) and Loughran and Ritter (1995) on the examinations of initial public offerings (IPOs), and observe positive long-run abnormal returns for three years following IPOs. He reports that IPOs occur more frequently in small or medium size firms, whereas seasonal equity offerings are typically in large and medium size companies. Desai and Jain (1997) and Ikenberry, Rankine, and Stice (1996) find that firms splitting shares experience positive abnormal returns before and after the announcements. They suggest that stock splits are positive information signals, which attribute the post-splits returns to market underreaction.

On the other hand, Loughran and Ritter (1995) perceive negative abnormal returns for sample firms after seasonal equity offerings, and average returns from these firms, are below the average returns of non-issuing firms matched on size over the five-year horizon. Likewise, Asquith (1983) and Agrawal, Jaffe, and Mandelker (1992) find negative long-term abnormal returns for acquiring firms following mergers and acquisitions. This may be due to market overreaction to typically strong performance of acquiring firms in advance of mergers and acquisitions (Mitchell & Stafford, 2000). Furthermore, Michaely, Thaler, and Womack (1995) report that there is an underreaction to the positive information in dividend initiation announcements, but an overreaction to the negative information in dividend omission announcements. The appearance of overreactions and underreactions may seem to challenge the basis of EMH. However, Boehme and Sorescu (2002), Byun and Rozeff (2003), and Fama (1998) argue that long-run abnormal returns are subject to the long-term event study methodologies applied. The long-run drifts disappear when the conventional model of Buy and Hold Abnormal Returns is replaced by an unbiased model of Calendar Time Portfolio Abnormal Returns.

2.2 Stock Splits

Stock splits are one type of self-selected events that have a long history. In 1682, the East India Company declared a 100% stock dividend that is now called a stock split. Through the 19th century, large stock dividends or partial stock splits have been paid by numerous firms (Ikenberry & Ramnath, 2002; Ikenberry, Rankine, & Stice, 1996). During the “Roaring 20s”, splits become more prevalent. According to Angel (1997), there are more than 1,000 split announcements on the NYSE alone in the mid-1970s to the mid-1980s. Dolley (1933) is the first person to investigate stock splits and reports the price response to these announcements. He observes 95 splits between 1921 and 1931. His results show that 26 splits generate negative price reactions, 57 firms have positive returns after stock splits, and 12 split announcements made no significant effect on share prices. Since then, share splits have been popular events that are of particular interest to academics.

2.2.1 Definition of Stock Splits and Classification of Stock Distributions

A common definition of stock splits is that a share split exchanges multiple shares with each share held, which implies that existing shareholders receive more shares in proportion to their existing holding (Brealey, Myer, & Allen, 2011). For example, if a company has one million shares outstanding, each is worth three dollars. With a two-for-one split announcement, the number of shares will double to two million, and the share price will be 1.50 dollars. However, the total value of the firm remains the same because the increased quantity of shares is offset by the decline in share prices. Theoretically, existing shareholders would neither be hurt nor should they benefit as a result of stock splits. A reverse stock split conversely reduces the number of shares and increases the price of shares; shareholders therefore surrender multiple shares in exchange for one share. Although a reverse stock split may have its own interesting aspects, this research focuses on normal or forward stock splits as they are much more common in corporate practice.

Stock splits are different from stock dividends in terms of distributions. Stock splits are the distributions of 100% or more of outstanding shares that companies manage to provide, and there is no adjustment to the capital account or any accounting transactions. Stock dividends can be separated into small stock dividends and large stock dividends that are sometimes called partial stock splits. Small stock dividends represent distributions of less than 20% or 25% of outstanding shares. The additional shares issued to shareholders are recorded at the market value in the companies' capital accounts. On the other hand, large stock dividends have stock distributions between 20% or 25% and 100% of the outstanding shares. Retained earnings are capitalized at the par/state value of the additional shares issued if there is no change in the par/state value (McGough, 1993). In the literature, stock splits and large stock dividends are usually examined together as stock splits (Byun & Rozeff, 2003; Fama, 1998; Ikenberry & Ramnath, 2002; Ikenberry, Rankine, & Stice, 1996), and stock dividends are mainly small stock dividends.

Apart from distributions, the market reaction to stock splits and (small) stock dividends are different. Rankine and Stice (1997) report that stock split announcements generate 0.93% average returns five days within the ex-date. However, the returns of stock dividend announcements are 2.70% in the five-day event window. Similarly, Grinblatt, Masulis, and Titman (1984) show a 0.69% average return on the split ex-date and a 0.52% average return for the day following the ex-date. The excess returns for splitting firms are 1.96% on the announcement date and 1.33% for the day subsequent to the announcement date. Using the 20-year period 1963 to 1982 in the US, Lakonishok and Lev (1987) also find that the returns of stock splits appear to be lower than the returns of stock dividends. The relationship between future earnings and returns of stock dividends is statistically significant and positive, but it is insignificant for stock splits. These results suggest that the choice of accounting method for stock distributions has different impact on firm valuations, which may reveal managers' private information on companies' future earnings. Lakonishok and Lev (1987) further report the evidence of small stock dividends occurring in low-price firms and stock splits occurring in high-price firms. They attribute this to the fact that managers announce splits when share prices are high, and distribute stock dividends when firms experience a low level of cash.

2.2.2 The Market Reaction to Stock Split Announcements

2.2.2.1 Short-Term Reactions

In the literature, the price response to stock split announcements is usually positive in the short run. Lamourex and Poon (1987) use the US listed firms in the CRSP to identify stock splits for the period between July 1962 and December 1985. They apply the Market Model with the equally weighted index to proxy for market returns and calculate abnormal returns two months within the announcements. Their results show that there are statistically positive excess returns of 0.4% six days after split announcements and 0.67% on the split ex-date. Lakonishok and Vermaelen (1986) also find 0.74% ex-date excess returns in the event window of five days before to two days after the announcements (-5, +2) using the Market Model. In more recent years, Ikenberry, Rankine, and Stice (1996) investigate stock split announcements in the period 1975 to 1990. They apply a different event-study methodology, the Market Adjusted Model, to calculate abnormal returns of stock splits around the announcement date. Their results show a 3.38% positive market-adjusted-return after split announcements in the overall sample, 4.26% in the sub-period 1975 to 1980, and 2.02% in 1985 to 1990. They further regress five-day (-2, +2) abnormal returns for the 2-for-1 split on firm size, post-split price, and book-to-market ratio (B/M). Their results show that the coefficients of these independent variables are all negative. Smaller firms and glamour stocks (low B/M) experience superior abnormal returns from split announcements than larger firms and value stocks (high B/M). These studies confirm that firms have positive excess returns immediately after stock splits.

Additionally, split announcements not only generate significant and positive abnormal returns for splitting firms, but also for non-splitting firms in the same industry. Tawatnuntachai and D'Mello (2002) use 4,497 splits on AMEX, Nasdaq or NYSE to examine short-term market reaction to split announcements in both announcing firms and non-announcing firms in the period from 1986 to 1995. They find a 3.82% significantly positive return for event firms five days (-2, +2) within stock splits and 0.34% for non-event firms in the same industry. This is known as the intra-industry 'contagion' effect. In their study, the matching criteria between splitting firms and non-splitting firms is the standardised size-industry matching. They also employ multivariate regressions to show a negative relationship between abnormal returns of non-event firms and industry concentration ratios. This means that the positive intra-industry excess returns decrease when the industry becomes more concentrated, which is consistent with Lang and Stulz's (1992) and Massa, Rehman and Vermaelen's (2007) findings. However, the result of positive returns for industry rivals may be biased since the sample period they investigate is during market upturns. The increased share price may be driven by some other factors, such as high market sentiment or investor over-optimism (Baker & Wurgler, 2000, 2006, 2007). Therefore, a study to examine the intra-industry effect of stock splits in different market conditions would shed light on whether this was indeed a genuine effect.

2.2.2.2 Long-Term Reactions

The debate on market efficiency has emerged from the researchers' discussions on how long the market can disseminate and assimilate the news. Fama et al. (1969) use the Market Model to investigate long-run performance for stock split announcements from 1927 to 1959. They find no statistically or economically long-term abnormal returns following stock splits. Lakonishok and Lev (1987) who examine long-term stock returns for splitting firms and non-splitting firms matched with industry-size criteria for the period 1963 to 1982 similarly reported no long-run excess returns.

In contrast, Ikenberry, Rankine, and Stice (1996) show a significantly positive long-run price drift one year and three years after stock split announcements. They focus on 2-for-1 splits on the NYSE and AMEX between 1975 and 1990 and use the equal-weighted buy-and-hold portfolio method to calculate post-split abnormal returns. The portfolios are rebalanced at the end of each year, and the matching portfolios are formed based on the size/book-to-market/momentum criteria. They find a 19.11% average return for splitting firms and 11.18% average return for non-splitting firms one year after split announcements. The excess returns of 7.93% are statistically significant at any significance level. Likewise, they find a 12.15% excess return three years subsequent to stock splits, and the abnormal returns are higher in smaller size firms than larger size firms. Using a similar sample period 1976 to 1991, Desai and Jain (1997) report a nearly identical result that splitting firms experience a 7.05% excess return in one year and 11.87% in three years. In fact, they apply the same long-term event study methodology, the Buy and Hold Abnormal Return (BHAR) with a similar matching technique and the same matching criteria. Ikenberry and Ramnath (2002) claim that the market underreacts to stock split announcements as they also find an upward price drift by 9% in the long run.

Fama (1998), on the other hand, argues that the reason why stock splits have an effect on equity price in the long term is due to the errors in selection of methodology and market index. He suggests that the value-weighted market index is more appropriate and accurate to use than the equal-weighted market index. The method of Cumulative Abnormal Return (CAR) is less biased than BHAR to examine the long-run performance for stock split announcements. Following this idea, Byun and Rozeff (2003) reassess the findings of Ikenberry, Rankine, and Stice (1996) and Desai and Jain (1997) using 12,747 splits from 1927 to 1996 in the US market. Instead of measuring excess returns from the split announcement date, Byun and Rozeff (2003) calculate abnormal returns starting from the split ex-date. For 2-for-1 splits, they find a 3.74% excess return for the equal-weighted portfolios one year after the announcements in the whole sample. Using the value-weighted market index, 3.63% positive abnormal returns are generated by BHAR and 3.06% are generated by CAR in their sub-period 1975 to 1990. These figures are substantially smaller than 7% or 8% in the previous studies. Additionally, the authors employ the monthly rebalanced Calendar Time Abnormal Return (CTAR) method, which is recommended by Mitchell and Stafford (2000) when they examine dividend announcements. Byun and Rozeff (2003) show that the one-year long-term abnormal returns of stock splits are reduced to 1.68% for 2-for-1 splits and 1.21% for all splits with the equal-weighted three-factor Fama-French (1993) CTAR model. Using the equal-weighted four-factor Carhart (1997) CTAR model, abnormal returns are only 0.6% for all ratios of splits. With the value-weighted four-factor CTAR model (Carhart, 1997), the 2-for-1 splits have 0.84% excess returns and all splits have

0.48% excess returns one year following the announcements. These results suggest that the significant long-run price drift of stock split announcements is not robust across models. Thus, the evidence against market efficiency is not persuasive.

2.2.3 Volatility Changes Subsequent to Stock Split Announcements

The change in volatility around stock split announcements is another issue that has been debated in the literature. A number of studies find a significant increase in return volatility subsequent to stock splits. Ohlson and Penman (1985) use both daily and weekly data for 910 firms in the US market, and report that the standard deviation of returns increases by almost 30% after split announcements during the period between July 2, 1962 and December 31, 1981. They show that the increase is not temporary as the stock-return volatility is substantially high one year following the ex-dates of stock splits. Dubofsky (1991), Koski (1998), and Reboredo (2003) also apply the non-parametric test proposed by Ohlson and Penman (1985) to examine return variances. They all find that the percentage change in volatility increases by more than 20% subsequent to stock split announcements and the increase in daily return variances is slightly higher than the increase in weekly return variances.

However, some researchers argue that the huge increase in volatility may be due to measurement error. For instance, Amihud and Mendelson (1987), Blume and Stambaugh (1983), Gottlieb and Kalay (1985) show that there is an upward bias if bid-ask spreads and price discreteness are used to explain and estimate volatility of observed stock returns. These measurement biases are particularly high at lower price levels, such as when firms engage in stock splits. Koski (1998) examines 361 stock splits and stock dividends over the period 1987 to 1989 in the US market. Interestingly, she finds that increased variance after split announcements cannot be explained by spreads and price discreteness. The bid-ask errors in the estimated volatility are smaller for splitting stocks compared to non-splitting stocks.

On the other hand, Julio and Deng (2006) show clear evidence that the increase in volatility after firms split stocks is real and it is not caused by error in the measurement procedure. Apart from using squared stock returns to measure realized volatility, the authors employ intra-daily estimation to observe price changes for every five minutes for splitting stocks from 1996 to 2003. They calculate intra-day return volatilities for 20 days before and 20 days after the split ex-date for each split event. Their results show a considerable increase of 32.83% in realized volatility around the announcements. Anderson and Bollerslev (1998) report that high-frequency data can reduce ex-post errors in the measurement of volatility. Poteshman (2000) agrees with this point as he finds that nearly 50% of forecasting bias is eliminated in the S&P 500 index options market when intraday observations are used to estimate realized volatility instead of using daily closing price values.

Additionally, Sheikh (1989) and Klein and Peterson (1989) examine implied volatility changes surrounding ex-dates and announcement-dates of stock splits. Sheikh (1989) studies 83 options and splits on the Chicago Board Options Exchange (CBOE) over the period December 1976 to December 1983. He fails to find an increase in implied standard deviations for splitting stocks on the announcement date. Klein and Peterson (1989) find a similar result by analysing 96 stock splits and options between January 1978 and December 1984. Julio and Deng (2006) explain that the reason for volatility increases not being incorporated in the option market is due to the October 1987 crash. The option market is less efficient prior to the crash and the results for implied volatility are more likely to be biased if the sample period of a study is before 1987. As different measurement techniques can produce different results with respect to volatility changes after stock split announcements, it would be useful to examine this further.

2.2.4 Reasons for Stock Splits

Another interesting area for academics to investigate stock splits is the motivation behind the announcements. Stock splits are costly events as they generate expenses not only for firms, but also for investors. Angel (2005) reports that new shares created by splits incur listing fees and extra costs for preparing proxy materials. There are also costs for printing and distributing new share certificates, and additional servicing fees for a larger group of shareholders after the split. For investors, an increase in the quantity of shares may result in an increase in commission fees for brokerage firms. Moreover, share splits are only cosmetic transactions in which the total values of event firms do not change before and after the announcements. Thus, the reasons for firms splitting their stocks and for markets reacting positively to the news are of particular interest to researchers and practitioners.

2.2.4.1 The Signalling Hypothesis

A number of studies attempt to explain stock splits as a signal of firms' earnings performance and management's view of their future prospects. This is known as the Signalling Hypothesis. Asquith, Healy, and Palepu (1989) report that stock splits convey positive information about firms' earnings increases. Using 121 splits from the CRSP Daily Master file between 1970 and 1980, the authors find a significant increase in earnings in the four years prior to stock split announcements. They argue that managers tend to use stock splits to indicate that their pre-split earnings growth is permanent. Nichols and Brown (1981) also report an unexpected increase in earnings followed by stock splits. The market reaction to split announcements is significantly correlated to the magnitude of the unexpected earnings. McNichols and Dravid (1990) provide evidence that firms undertake share splits to signal firms' performance through the choice of split ratios. They claim that split factors can reflect managers' expectation levels on the potential for firms to increase future earnings; the higher the expectation, the greater the split ratio.

Two studies develop models to examine this hypothesis by using brokerage commission as an exogenous variable. Brennan and Copeland (1988) agree that stock splits are the firms' signalling device, and they find an increase in announcement returns with a higher split ratio or lower post-split share price. However, the authors show that splits are costly signals to management as the cost of trading increases after firms split shares. Brennan and Hughes (1991) extend Brennan and Copeland's model to include rational justifications on how brokerage commission fees increase with share price changes following stock splits. They claim that firms have incentives to announce splits if managers are confident about their future earnings performance. Therefore, the announcements attract attention from brokers to promote splitting stocks to their clients. In addition, a lower share price increases the number of shareholders and widens bid-ask spreads; thus, it raises brokerage commission fees. These findings also imply that stock splits decrease information asymmetry if managers hold superior information before the split.

In more recent years, Kadiyala and Vetsuypens (2002) re-examine the question of whether splitting shares is a credible signal using short-interest data. Short-interest positions can represent negative market sentiment. If there is positive inside information delivered after stock split announcements, short interest should decrease. Using the sample period 1990 to 1994 for the firms in the NYSE, Kadiyala and Vetsuypens (2002) find that short interest does not decline significantly after split announcements. However, operating performance such as earnings for firms experiencing reduction in short interest is considerably higher than other firms before the split. These results are similar to the outcomes of a study by Asquith, Healy, and Palepu (1989), suggesting that stock splits are more likely to reveal managers' confidence that their firms' exceptional pre-split performance is permanent, rather than the firms' future performance being exceptional.

Crawford, Franz, and Lobo (2005) report that stock distributions are more credible signals of managerial optimism if firms' retained earnings are reduced. This is also known as the Retained Earnings Hypothesis. They demonstrate that the market reaction to small stock distributions is greater than the market reaction to large stock distributions due to the reduction in retained earnings for small stock dividends. The result of false signalling can increase restrictions for companies to pay cash dividends or stock dividends, such as debt covenants and statutes of the event firms' state of incorporation.

Moreover, Conroy and Harris (1999) and Pilotte and Manuel (1996) report that the signalling effect of stock splits can be affected by past splits. If managers choose to split shares to achieve a lower price level with a larger split ratio than in the last split, investors would interpret this as a stronger signal in which companies are more confident in their earnings performance compared to the last time. The abnormal returns of split announcements and post-split earnings can increase with earnings realizations observed from previous splits. Further, anticipated splits from firms having recurring split experience produce one-and-a-half times more abnormal returns than unanticipated splits (Hwang, Keswani, & Shackleton, 2008). These results suggest that a prior split experience can enhance the credibility of the signalling effect of stock split announcements.

Further strengthening the Signalling Hypothesis, Desai and Jain (1997) find that the excess returns generated by stock split announcements are larger when there is a concurrent dividend increase or initiation announcement. Chern, et al. (2008) report that market response to stock splits for non-optioned stocks is greater than optioned stocks from 1976 to 2004. They claim that the price of optioned stocks contains more information in comparison to non-optioned stocks, which reduces the positive market reaction to stock split announcements. In a recent working paper, Kalay and Kronlund (2010) examine 2,097 stock splits using the matching portfolio method over the period 1988 to 2007 in the US market. Their results show that splitting firms experience larger past earnings growth than matched firms prior to stock splits. The earnings growth for both firms is lower in the year of the split compared to their own past performance. However, the post-split earnings growth for firms with split announcements is significantly higher than non-splitting matched firms. This evidence helps to explain why stock splits are generally associated with positive abnormal returns. Although share splits reveal firms' information on earnings performance and reduce the asymmetric information between managers and investors, the extent to which these announcements can achieve this and how different they are from earnings announcements have not been addressed in these studies.

2.2.4.2 The Optimal Trading Range Hypothesis

Another possible explanation for firms announcing share splits is to achieve an optimal trading range. Anecdotal evidence comes from Dewing (1953) who points out that the purpose of stock splits is to confine share prices into a desirable range, which is $15 to $40 per share in the 1940s to 1950s. Baker and Gallagher (1980) conduct a survey for financial executives to explain the reasons for stock split announcements. The majority of managers agree that firms split shares to bring price down to an optimal level to attract investors to trade and to broaden firms' ownership base. Baker, Phillips, and Powell (1995) review articles on stock splits and report findings that support the previous survey. The main motive for managers to announce splits is to move stock prices into a range between $20 and $35. This is compatible with Angel's (1997) observation in which the average share price on the NYSE stay around $30 from 1943 to 1994, although consumer price index increases 500% in the same period.

Rozeff (1998) also finds a similar result in mutual fund splits. He employs annual issues of *CDA/Wiesenberger* to get event dates, months and sizes of stock splits for each mutual fund in the period between 1966 and 1992. He shows that share prices of mutual funds after the split are nearly equal to the average fund price. Funds' pre-split prices are substantially higher than other funds' prices, whereas post-split prices are significantly lower. He argues that mutual fund splits not only bring the above-average price down to the conventional level, but also increase per account shareholdings up to the normal range found in other funds. Moreover, Ikenberry, Rankine and Stice (1996) provide evidence on the fact that stock splits lower share price to an optimal trading range to enhance liquidity. Using 1,275 two-for-one splits on the NYSE and ASE in 1975 to 1990, they suggest that share splits are self-selected events, conditioning the decision to split on firms' price level and earnings performance. These studies mainly examine the relationship between split activities and the trading range before and after the split. The question of whether split announcements augment marketability is separately examined in the Liquidity Hypothesis in the literature.

2.2.4.3 The Marketability or Liquidity Hypothesis

The Liquidity Hypothesis assumes that firms split their shares to a lower price level to attain greater marketability. Unlike the Optimal Trading Range Hypothesis, companies can announce splits anytime to increase trading volume even when stock prices are already at an optimal level. The study by Copeland (1979) is the first to investigate liquidity in relation to stock split announcements. He uses a Finite Time Series Model and shows that trading volume increases less than proportionately subsequent to stock splits. However, his sample size is very small, which only contains 25 observations. Lamoureux and Poon (1987) examine a much larger sample of 215 volume related stock splits and find that around 60% experience an increase in volume.

In addition, Lakonishok and Lev (1987) use monthly turnover as another proxy for liquidity to examine the Marketability Hypothesis. The turnover is calculated by the number of traded shares over the total number of outstanding shares in a month. By comparing the average monthly turnovers between splitting stocks and non-splitting stocks, the authors find an increase in liquidity for both groups at the time of the split, but the increase for splitting stocks is significantly larger than non-splitting stocks. In fact, monthly turnover starts to rise eight months before the announcement date; it reaches a peak in the month of the split and reverts back to the normal level observed in non-splitting stocks two months after the split. These findings suggest that the positive effect of stock splits on liquidity is not permanent.

Fernando, Krishnamurthy, and Spindt (1999) also investigate the Liquidity Hypothesis but with mutual fund share splits. They agree that stock splits restore share price to a preferred range, which attracts potential investors to trade. From the *CDA Weisenberger Investment Companies Yearbook*, the authors sample 194 mutual funds that have a stock split announcement over the period 1978 to 1993. For each splitting fund, they conduct two sets of matching funds: one is matched on investment objective, fund size, and prior returns; and the other is matched on investment objective and prior growth in net assets. They find that splitting funds experience significantly larger increases in the number of shareholders and net asset inflows than non-splitting matched funds after stock splits using different benchmarks. Their results show clear evidence that split announcements create (new) money inflows and enhance marketability for mutual fund shares. Similarly, Desai, Nimalendran, and Venkataraman (1998) report an increase in liquidity measured by trading volume following stock splits, even after the adjustments for split factors and general trends of trading volume in the market. Nevertheless, there is a fundamental problem of how to measure liquidity. As these studies only use a few basic measurements, future research may need to apply more and different proxies to examine the change in liquidity with respect to stock split announcements.

2.2.4.4 The Bid-Ask Spread or Broker Promotion Hypothesis

The Bid-Ask Spread or Broker Promotion Hypothesis argues that stock splits increase brokers' incentives to promote splitting stocks as bid-ask spreads increase following the announcements. Schultz (2000) examines 146 splits on the Nasdaq and 89 splits on NYSE and AMEX from 1993 to 1994. He finds that effective spreads and revenues for market makers increase after firms split shares. The number of small buy orders raises sharply, leading to a significant expansion in the shareholder base. He supports the argument that splits widen minimum bid-ask spreads and induce brokers to promote shares. However, he fails to provide a complete explanation for the sharp increase in the quantity of small buyers. Kadapakkam, Krishnamurthy, and Tse (2005) also agree with this hypothesis by investigating 1,248 stock splits in the period between 1995 and 2002. They document a decrease in the average buy order size, but an increase in the frequency of small trades. The relative spread broadens after the announcements and positive abnormal returns of stock splits enlarge around the ex-date.

On the other hand, some studies argue that liquidity for splitting stocks should decrease as the costs of transaction and bid-ask spreads increase when firms announce splits. Copeland (1979) attempts to use bid-ask spreads to measure liquidity for a sample of 162 OTC firms from 1968 to 1976. He finds that the average percentage bid-ask spreads rises from 4.73% to 6.54% in the event window of 20 days surrounding stock split announcements. In addition, he runs simulations to show that brokerage revenues increase by 7.1% as a minimum and post-split liquidity is relatively low in comparison to pre-split liquidity. Conroy, Harris, and Benet (1990) report a direct relationship between the increase in percentage of spreads and the decrease in share price after splits for NYSE listed companies. In the period between January 1, 1981 and April 30, 1983, they indicate that shareholder marketability is worse than before firms split shares. The increase in spreads can partially explain the rise in the perceived return variability following the announcements. Moreover, Gray, Smith, and Whaley (2003) document a 29.7% increase in the average relative quoted spread on the NYSE after stock splits. They conduct a model for effective bid-ask spreads, including the variables of inventory holding costs, order processing costs, and the degree of competitions. They show that both effective spreads and relative effective spreads increase when order processing costs or inventory holding costs increase. They propose that there is a decrease in liquidity as transaction costs for market makers increase subsequent to splits news. In 2003, these authors provide empirical evidence of their conjecture that share splits are good devices for market makers to generate excess profits, but the announcements decrease the liquidity for splitting stocks. This questions the motivation of splits from firms' perspective.

Furthermore, Kryzanowski and Zhang (1996) find a mixed result in bid-ask spreads for splitting stocks in Canada. There is a 37.5% decrease in the mean bid-ask spreads, but a 45.7% increase in the mean relative bid-ask spreads on the split ex-date. The mean raw trading volume rises by 106%, whereas the mean dollar trading value drops by 14.6%. Conrad and Conroy (1994) argue that the increase in specialists' spreads after splits may be due to the order flow bias. With numerous post-split small buyers and fewer large sellers following the announcements, the closing price more often occurs at the ask price and the average specialist's inventory may rise, which leads to an increase in the spread. These varied results and inconsistent conclusions imply that there is more work needed to be done regarding the hypothesis using bid-ask spreads to explain stock splits.

2.2.4.5 The Optimal Relative Tick Size Hypothesis

The Optimal Relative Tick Size Hypothesis is similar to the Broker Promotion and Liquidity Hypotheses. It proposes that firms split stocks to keep the institutionally mandated minimum tick size within an optimal range in relation to share price. A large relative tick size reduces processing costs and increases incentives for market makers to promote stocks and for investors to place limit orders; thus, liquidity increases after the split (Angel, 1997). Using 1,160 split announcements over the 1984 to 1993 period, Angel (1997) reports that the optimal relative tick size can be affected by firm size, idiosyncratic risk, and the portion of investors who know about the firm. These findings are in line with the findings of Schultz (2000), suggesting that brokers are not only motivated by bid-ask spreads related commission shares, but also per-share based commissions to enhance marketability for splitting stocks.

However, Lipson and Mortal (2006) disagree that relative tick size is an important factor in influencing firms' decisions on stock splits. They examine 342 split announcements in the US market from 1993 to 2003 and find no effects of tick size on the propensity to split, post-split price and trading activities. They show that there is no decline in share price when tick size drops from 12.50 pennies to 6.25 pennies or from 6.25 pennies to a single penny after the announcements. This evidence challenges the Optimal Relative Tick Size Hypothesis as one of the explanations for firms to split shares.

2.2.4.6 The Dispersion of Control Theory or Enlarged Clientele Hypothesis

Theoretically, corporations undertaking stock splits may want to achieve a diffused ownership since a lower share price can attract more small investors who do not have enough control over the company. This is called the Dispersion of Control Theory or Enlarge Clientele Hypothesis. Schultz (2000) finds that the number of small buyers increase and Lipson and Mortal (2006) find that the total institutional ownership does not rise subsequent to stock splits. However, many empirical studies provide the results that are the opposite of this hypothesis. Maloney and Mulherin (1992) and Baker and Powell (1993) report that both the percentage institutional ownership for splitting firms and the number of institutional holders increase following the announcements. Mukherji, Kim, and Walker (1997) show that there are more individual and institutional shareholders after companies split their shares. Easley, O'Hara, and Saar (2001) document that informed trading increases with splits rather than uninformed trading although splitting stocks are more attractive to uninformed investors. They argue that share splits enhance the execution quality of trades, but also increase the costs of executing market orders. The rise in bid-ask spreads outweighs the positive effect of the increase in the number of executed limit orders after the announcements. The evidence of stock splits reducing information asymmetry is weak in their studies. These mixed existing results indicate that companies may not end up with a more diffused shareholder base by splitting stocks, even though their clienteles are expanded and diversified following the split.

2.2.4.7 The Tax-Option Hypothesis

Lammoureux and Poon (1987) propose a tax-option theory, whereby high stock return volatility generated by share split announcements enables investors to realize capital losses in the short run and capture capital gains in the long run. Managers undertake splits to increase the tax-option value of their shares. Thus, the market reacts positively to these announcements. They suggest that there is a clientele shift from institutional shareholders with low-tax brackets to individual shareholders with high-tax brackets after the split. The temporary buying pressure around the announcements creates the ex-date excess returns. Regarding this theory, Dhatt, Kim, and Mukherji (1997) investigate 819 stock splits on the NYSE and AMEX over the period 1984 to 1989. The purpose of their study is to examine the market reaction to split announcements surrounding the 1986 Tax Reform Act that eliminates the difference in capital gains tax rates between the long term and the short term. If the Tax-Option Hypothesis explains stock splits, the abnormal returns of these announcements would be different before and after the Act. However, the authors find no evidence that the excess returns are substantially larger before 1986 than after. The market response to stock splits is also highly significant subsequent to the Tax Reform. These findings suggest that the 1986 Tax Reform Act has no significant impact on stock split announcements, which is inconsistent with the Tax-Option Hypothesis.

2.2.4.8 The Manipulation Hypothesis

In recent years, stock splits have been found as a useful device to manipulate share price before other events. D'Mello, Tawatnuntachai and Yaman (2003) examine 2,190 equity issues from 1980 to 1995 and find that 14.38% of the issues are announced following at least one stock split in a year. There are only 7.49% of the equity offerings followed by a split, which indicates that firms are more likely to issue equities after rather than before splitting shares. In the subsample that contains equity issues preceded by splits, 153 out of 315 equities (48.57%) are offered in the quarter after the split and 243 (77%) are offered in the six-month period. The authors show that stock split announcements are not executed to reduce information asymmetry and adverse selection costs, but to increase share price to a higher level before companies sell new shares to raise more funds. They also find that seasonal equity offerings become more marketable due to share splits, especially for individual investors.

In line with this study, Guo, Liu and Song (2008) investigate 4,782 merges and acquisitions, along with stock split announcements for firms listed on the NYSE, AMEX, and NASDAQ between 1980 and 2003. They find that 4.68% of acquirers announce acquisitions three months after they split their stocks, 9.13% announce in six months, and 17.61% announce in one year. These fractions are significantly higher than the percentage of acquirers that announce splits after acquisitions for the same period. In addition, they report that acquiring firms are more likely to use stock splits to manipulate share price before mergers and acquisitions than target firms. In particular, acquirers with lower earnings quality have a greater tendency to manipulate than acquirers with high earnings quality. Thus, low-quality acquiring firms experience poorer long-run stock performance in comparison to their benchmarks. This manipulation effect is also more pronounced for stock-swap acquisitions than cash-only ones, especially when the deals are large. Their results provide evidence that firms use stock splits to raise share price and reduce the costs of stock-swap acquisitions before acquisition announcements. Target firms should therefore beware of whether acquirers have recently split their shares and how good acquirers' real earnings abilities are, when assessing proposed merger offers.

The findings from two working papers by Baghai-Wadji and Gabarro (2009) and Devos, Elliott, and Warr (2011) reach a similar conclusion: companies announce stock splits to manipulate or increase the value of CEO option-based compensation. Devos, Elliott, and Warr (2011) investigate 2,704 firms in 1992 to 2005 and find that CEOs have incentives to split shares if they receive or want to exercise their stock and option compensations; the larger the remuneration package, the higher the propensity to split. CEO option grants are commonly made two days following a split announcement, which gives rise to a $7 million gain in the total of CEO wealth (Devos, Elliott, & Warr, 2011). These results are consistent with the Manipulation Hypothesis.

Most of the existing studies for stock splits are mainly focused on using firm-specific characteristics to explain why corporations split shares, but few have attempted to investigate the rationale behind the announcements from the aggregate point of view. This limits the understanding of split announcements only at the firm-specific level. Ding (2009) briefly mentions that companies tend to announce splits in bull markets, but he has not provided any examination. Crawford, Franz, and Lobo (2009) re-examine the results by Grinblatt, Masulis, and Titman (1984) using a prolonged bull market between 1982 and 2000. They find that split factors and the market reaction to split announcements are positively correlated to market conditions. However, they have not shown whether the propensity of firms to announce splits is driven by bull markets. Additionally, the question of other macroeconomic factors that can affect corporate decisions on stock split announcements needs to be addressed. Addressing these questions would help to provide an understanding about share splits at the aggregate level and help to illuminate the reasons why corporate events cluster together or happen in waves (Brealey & Myers, 1996; Brealey, Myers & Allen, 2011).

2.3 Special Dividends

Special dividends are another type of self-selected corporate events and they are different from regular dividend increases. Special dividends are firms' assets distributions, normally in the form of cash, to their shareholders after an exceptionally strong earnings increase. They are also referred to as one-time cash distributions or extra dividends. Brickley (1983) reports that the market reaction to regular dividend increases is greater than special dividend announcements. He shows that firms with either one of the events experience an increase in earnings in the year of the announcements, but only the firms that raise the level of normal dividends experience earnings increases in the following years. Howe, He, and Kao (1992) suggest that managers may not increase their regular dividend payment levels unless they are fairly certain that the current free cash flows or earnings increases will continue. In this way, firms can avoid the pressure if earnings are reversed in the future. Therefore, special dividends are more recognized as temporary cash shocks or "nonrecurring" excess funds, compared to "recurring" excess funds for normal dividend increases (Lie, 2000).

2.3.1 The Market Reaction to Special Dividend Announcements

Special dividend announcements usually generate positive abnormal returns in the short run, but not in the long run. Gombola and Liu (1999) examine 350 special dividends for US firms during the period 1977 to 1989 and find that the average excess returns from the announcements are 2.663% for a three-day event window of (-1, +1). This result is similar to the abnormal returns of 3.44% shown by Howe, He and Kao (1992) for the same event window in the period between 1979 and 1989. Brickley (1983) also find positive excess returns of 2.116% one day surrounding special dividend announcements from 1969 to 1979. These results indicate that extra cash distributions contain positive information about firms' current excess performance and future potentials. However, Chou, Liu, and Zantout (2009) find no significant post-declaration long-term abnormal returns for special dividend payments between 1926 and 2001, which is consistent with market efficiency. Using the three-factor model with both equal-weighted and value-weighted indexes for 15,133 special dividends, Fama and French (1993) report that only the smallest size-quintile firms have small positive excess returns one year following the announcements. However, the results are not robust in different sub-sample periods, size quintiles, and other long-run event windows. They claim that investors do not overreact or underreact to the news of firms paying extra cash dividends.

Special dividends vary across industries and timing of the announcements. Balachandran, Faff, and Nguyen (2004) investigate the intra-industry effect of special dividend announcements for Australian firms in the sample period July 1989 to June 2002. They find a positive market reaction to special dividends for non-announcers in the resource industry, contrasting with a negative market reaction in the financial industry. Announcers in the manufacturing industry react considerably stronger to the news than those in financial and resource industries. Therefore, they suggest that there is a contagious intra-industry effect for resource firms and a competitive intra-industry effect for financial firms. Moreover, Mitra (1997) finds that the first announcement of a continuous series of special dividend distributions contains more information, thus, has greater market reactions than the last announcement. Shih (1992) reports that the positive effect of special dividend declarations on stock price is larger in bear markets than in bull markets from 1975 to 1984. His conclusion is in line with the findings of Fuller and Goldstein (2011), whereby dividend increases and initiations matter more in market downturns. Nevertheless, his research lacks a robustness check and explanations for why the price response to special dividends is greater in declining markets. The methods to calculate abnormal returns and bull and bear markets are also biased or not completely accurate.

2.3.2 Reasons for Special Dividends

2.3.2.1 The Signalling Hypothesis

There are several reasons that special dividend announcements can lead to an increase in share price, hence, a firm's desire to distribute extra cash to their shareholders. First, the Signalling Hypothesis asserts that special dividend distributions send a positive signal to the market about firms' unexpected cash and earnings increases (Brickley, 1983). Crutchley et al. (2003) examine 1,459 special dividends from 1975 to 1996 and report that firms paying extra cash dividends experience surprisingly high earnings before the announcements. However, these unexpected increases in earnings are only temporary as they decrease significantly after the special dividends are declared. Howe, He, and Kao (1992) agree that the information signalling hypothesis is the leading explanation for specially designated dividend announcements. Using 55 tender offer repurchases and 60 special dividends during the period 1979 to 1989, they find that both high-Q (Tobin's Q) and low-Q firms have almost the same price reaction to these announcements, which is consistent with the Signalling Hypothesis.

2.3.2.2 The Free Cash Flow or Excess Funds Hypothesis

Second, the Free Cash Flow or Excess Funds Hypothesis suggests that firms announce special dividends when they have excess funds. By paying extra cash back to their shareholders, corporations can alleviate agency problems and enhance ownership loyalty (Jensen, 1986). Lang and Litzenberger (1989) extend this theory by comparing the average returns of dividend announcements between low-Q firms and high-Q firms. They use Tobin's Q ratios less than one to represent overinvestors. Their results show a larger average return from dividend increases for overinvestors than other firms. Lie (2000) re-examines the Excess Funds Hypothesis using sample of special dividends, regular dividend increases, and self-tender offers from 1978 to 1993. He confirms that firms have excess level of cash flows before all these events, but not after the events of special dividends and self-tender offers. He supports the theory that cash disbursements can prevent managers from investing in negative net present value (NPV) projects or wasting on daily unnecessary things, especially when profitable investment opportunities are low. His findings suggest that paying large special dividends is the most effective way to mitigate agency problems between shareholders and managers. The larger the special dividends paid, the greater is the reduction in agency costs. Balasingham, Dempsey, and Mahamuni (2009) also report that firms with high growth opportunities use extra cash dividends to signal their earnings performance, whereas firms with low growth opportunities pay special dividends to reduce the principal-agent conflict of interests in UK.

2.3.2.3 The Wealthy Transfer Hypothesis

The third explanation for special dividend announcements is the Wealthy Transfer Hypothesis, whereby extra cash distributions increase shareholders' wealth, but decrease bondholders' prosperities. As a result, market price reacts positively to the announcements for stocks, but negatively for bonds (Handjinicolaou & Kalay, 1984). Jayaraman and Shastri (1988) test this hypothesis using 2,023 special dividends in 660 firms through the period 1962 to 1982. By analysing the price behaviour surrounding special dividend announcements, they find a positive and significant market reaction for stocks, but a negative and insignificant one for bonds. Although the positive reaction is substantially larger than the negative one, their results do not fully support the Wealthy Transfer Hypothesis. Gombola and Liu (1999) conduct a research to examine these three hypotheses together with 350 special dividends between 1977 and 1989. They show that only firms with Tobin's Q of less than one have significantly large price reaction and upward revision of earnings forecasts. This result provides a stronger support for the Free Cash Flow Hypothesis than the Wealthy Transfer Hypothesis.

Baker, Mukherjee, and Powell (2005) create surveys for managers to explain why firms pay special dividends. The authors report that 40% of the respondents announce special dividends because companies have excess cash or strong earnings, 33.3% is to increase the yield of shareholders, 7.6% is due to the lack of investment opportunities, and the remaining is attributable to other reasons, such as distinguish from an increase in regular dividends, meet dividend competition from peers or serve as a part of a standard dividend policy. These results imply that the Signalling Hypothesis and the Free Cash Flow Hypothesis are more applicable and important than other reasons for special dividend declarations. Nevertheless, the optimal level of special dividend payments is still a puzzle in the literature. Baker and Wurgler (2004) propose a Catering Theory of dividends, whereby non dividend-paying firms initiate dividends when investor demand is high and some dividend-paying firms omit dividends when investor demand is low. They suggest that investor attitudes towards dividends can be affected by market timing and sentiment variables. Hence, there may be a significant relationship between the aggregate condition and the propensity to pay special dividends or the frequency of special dividends paid, which has not been explored.

2.3.2.4 The Takeover Deterrence Hypothesis

Fourth, special dividend distributions can help corporations to defend takeover threats. In particular, share price increases after special dividend announcements so that firm's value and cost of the bid are enlarged; target companies become less attractive and harder to overthrow (Denis, 1990). During the period 1980 to 1987, Denis (1990) finds that shareholders' wealth in target firms increases following special dividend payments, which is different from using share repurchases as a takeover defence. Collier (1965) also reports that special dividends can at least delay some hostile mergers and acquisitions. However, Handa and Radhakrishnan (1991) show a long-run negative impact on share price in target firms if cash payout is leveraged. Compared to share repurchases, the defensive strategy of using cash dividends renounces the enhancement of board ownership or managerial control. Nevertheless, repurchases normally require a large amount of debt-financing, which creates higher negative long-run abnormal returns in target companies and increases the chance of bankruptcy after the bidding war (Denis, 1990; Sinha, 1991). Hence, the trade-off between using special dividends and share repurchases to defend takeovers remains unclear.

2.3.3 Special Dividends and Share Repurchases

In general, the main criteria for companies to choose share repurchases over special dividends is to take advantage of price undervaluation. If managers believe that their share prices are undervalued relative to the intrinsic value, they would carry out open market repurchases at the point where repurchase price is equal to current market price (Barclay and Smith, 1988). After the share price returns to its intrinsic value, firms can re-issue stocks at the correct and higher price level. Share repurchases reduce the number of shares outstanding in the market and increase earnings per share without a change in net profits. Baker, Mukherjee, and Powell (2005) use a survey method to ask US firms listed on the NASDAQ, NYSE, and AMEX from 1994 to 2001. 34.6% of the respondents agree that market undervaluation is the primary motive for share buybacks. The degree of market reaction to repurchases depends on the magnitude of stock undervaluation (Ikenberry, Lakonishok, & Vermaelen, 1995). Chhachhi and Davidson (1997) and Ofer and Thakor (1987) state that the price response to share repurchases is usually greater than special dividends.

As a substitute mechanism for firms to disburse excess cash, special dividends are more likely to be paid under certain situations. Specifically, Gelb (1999) investigates 519 repurchases and 169 special dividends over the period 1981 to 1993. He reports that companies with less open-information prefer extra cash dividend distributions since share repurchases require more accounting disclosure and costs. However, for investors, repurchases have a tax advantage as cash dividends are taxable income when received, while capital gains are taxed only when realized (Gelb, 1999). In the same year, Lie and Lie (1999) examine a sample including 213 self-tender offers, 433 special dividends, 987 open market repurchases, and 5,590 regular dividend increases between 1980 and 1994. They show that managers tend to pay special dividends when firms have a larger dividend yield and repurchase shares when companies experience losses or small recent capital gains. They also show that repurchases decrease after the Tax Reform Act of 1986. Grullon and Michaely (2002) support the argument that share buybacks and dividends are substitutes. They find that firms generate negative abnormal returns from dividend cut announcements if they do not undertake repurchases at the same time. In addition, Jagannathan, Stephens, and Weisbach (2000) demonstrate that firms with higher operating earnings have a tendency to pay dividends, whereas firms with higher non-operating earnings prefer stock repurchases.

2.3.4 The Effect of Tax Cuts on Dividends

Since (extra) cash dividends are taxable income, a number of studies have investigated the effect of tax cuts on corporate decisions to pay dividends. Chetty and Saez (2005) examine all companies listed on the NYSE, AMEX, and NASDAQ from the first quarter of 1980 to the second quarter of 2004. They find that regular dividend payments increase after the 2003 Dividend Tax Cut and firms with large taxable institutional owners experience the highest increase. There are no significant changes in dividend policies for firms with non-taxable institutional ownership. They also find an increase in dividend payments after the tax cuts if firms' independent directors hold a large amount of shares, suggesting that the agency problem may play an important part in corporate response to taxation changes. Brown, Liang, and Weisbenner (2007) study 1,700 publicly traded firms between 1993 and 2003. They report that the propensity of dividend increases or initiations following the dividend tax cut can be affected by stock and option holdings in executive compensation. They claim that some firms would still choose share repurchases over dividends after 2003 as repurchases have a tax advantage compared to dividends.

In line with these studies, Brav et al. (2008) survey almost 7,000 financial decision-making executives through the Internet on August 23, 2005. Their results show a rise in dividend increases and initiations subsequent to the tax cut for some companies. Many top managers think that the tax rate deduction is not as important as the current cash holdings and potential future cash flows for dividend distributions. They also report that the aggregate dividends do not increase in relation to share repurchases. These results are compatible with Chetty and Saez (2005) and Julio and Ikenberry (2004), suggesting that the increase in dividend payments cannot be fully explained by the decrease in tax rate. They point out that additional work needs to be done in order to understand the determinants of the aggregate payout policies.

2.3.5 The Evolution of Dividends and Patterns of Special Dividends

In recent years, cash dividends appear to have decreased in small firms, but increased in large firms (Dedman, Kungwal, & Stark, 2010; Skinner, 2008). Fama and French (2001) report a reduction in the percentage of firms paying cash dividends from 66.5% to 20.8% in the period 1978 to 1999. They show that small young firms with low profitability and high growth opportunities tend to omit dividends. Skinner (2008) agrees that dividend-paying firms are mainly large, mature, and profitable corporations. Some companies only repurchase shares to disburse excess cash and never pay dividends. DeAngelo, DeAngelo, and Skinner (2004) also show that small payers reduce dividend payments over the 1978 to 2000 period. However, top payers increase their cash distributions or the amount of dividends paid, which enhances the concentration in the supply of dividends. They find that the majority of the aggregate dividends in the manufacturing industry come from 25 firms and these firms dominate the dividend supply in 2000. Hence, there is a tendency for large corporations to pay larger size dividends and small corporations to deduct or ignore cash dividend distributions.

On the other hand, Julio and Ikenberry (2004) argue that dividend payments start to increase in 2004 although there is a decrease in the 1990s. They show that 79% of the 1,000 largest industrial firms pay cash dividends in 1984, and the percentage decreases to 36% in 2000, but returns to 46% in 2004. In particular, the average dividend disbursement increases by 13.4% for companies in the lowest payout quintile in comparison to 1.9% for firms in the highest quintile in the first quarter of 2004. They report that the primary reason for the dividend reappearance is not due to the 2003 Bush tax cut, but the reduction in investment opportunities. They find that the period of decline of dividends is consistent with the time when cash acquisitions and asset growth increase. As long as asset growth and takeovers decrease, the propensity to pay dividends is rebounded. They also support the Catering Theory (Baker & Wurgler, 2004) which states that companies may distribute cash dividends according to timing-varying investor demand or other psychological motivations. Given positive response to the announcements of dividend increases and initiations, the authors believe that there is no guarantee that dividends will disappear.

DeAngelo, DeAngelo, and Skinner (2000) examine the evolution of dividend signalling and special dividends between 1926 and 1995. They report that special dividends are common cash distributions for US firms listed on the NYSE. Although the number of payments reduces in the mid to late 1990s, special dividends are not replaced by share repurchases. Many corporations declare extra cash dividends as frequently as they declare regular dividends. Hence, the market reaction to normal dividends and small sized special dividends is relatively minor; companies are most likely to pay large special dividends in recent years. The authors also show that there is a tendency for extra cash payments to be clustered. For example, special dividends are announced by Eastman Kodak (Kodak) every year in the periods 1926 to 1932, 1935 to 1937, 1942 to 1945, and 1954 to 1986 and by General Motor (GM) every year in 1926 to 1936, 1949 to 1955, and 1961 to 1980. Over half (56.8%) the firms distribute extra cash dividends back to their shareholders in multiple years and the announcements are concentrated more in 1930 to 1959 and 1980 to 1995. These figures indicate that special dividends are popular additional cash bonuses and companies prefer to pay them at certain times. However, the factors that drive the aggregate corporate decision to initiate special dividends, the reasons why there are greater numbers of announcements in some periods, but only few in others and the patterns of the announcements have not been fully explained. These concerns have been overlooked in the existing studies yet are worthwhile exploring.

2.4 Corporate Event Waves

2.4.1 The Behavioural Hypothesis

2.4.1.1 Investor Sentiment

Some studies have attempted to investigate the patterns of corporate events from a behavioural finance perspective and suggest that corporate announcement waves are driven by investor sentiment and market returns. Baker and Wurgler (2000) examine the aggregate equity and debt issues in the US market between 1928 and 1997. They report that firms tend to offer equities before periods of low market returns, compared to raising debts. They disagree with the Efficient Market Hypothesis as they find a significantly negative long-run price drift after share offering activities. Subsequently, Baker and Wurgler (2002) show that firms' current capital structures are highly correlated to historical market value. They argue that corporations are inclined to time the market to issue equities when share prices are overvalued and repurchase stocks when share prices are undervalued. The authors provide more explanations in Baker and Wurgler (2006, 2007), suggesting that stock returns are affected by investor sentiment, especially for small and young firms, unprofitable and high volatile stocks, and growth and non-dividend paying companies. They indicate that stock prices are overvalued in bull markets with positive sentiment and undervalued in bear markets with negative sentiment. These results are consistent with Rosen's (2006) findings which show that merger momentum is driven by investor (over) optimism and there is a long-run return reversal for corporations announcing mergers in overvalued markets.

Mian and Sankaraguruswamy (2012) use Baker and Wurgler's Sentiment Index to examine earnings, dividend and stock split announcements from 1985 to 2005. They find an increase in the positive price response to good earnings news when investor sentiment is high. The negative price response to bad earnings news decreases when investor sentiment is positive. They also find that the change in stock price due to dividend increases/decreases is significantly correlated to previous earnings announcements and the proxies of sentiment. The returns of stock split announcements increase with investor optimism and decrease with investor pessimism. The authors further indicate that the impact of sentiment on stock returns is more pronounced for small, young, volatile, and non-dividend paying stocks. The market reacts more strongly and positively to dividend increases or initiations with high sentiment, especially for low dividend payers. These results are similar to Baker and Wurgler's (2006, 2007) findings. Yet, Mian and Sankaraguruswamy (2012) mainly examine the effect of investor sentiment on returns of earnings, dividends and stock split announcements. The questions of whether and how sentiment affects firms' decisions to split shares or change dividend policy have not been studied.

Moreover, investor sentiment can explain IPO waves. In 2003, Lowry seeks the answers as to why IPO volume fluctuates so considerably over time. Using 12,821 public companies in the period 1960 to 1996, he finds that market sentiment is an important contributor to the fluctuations in the number of new share offerings. Post-announcement returns and IPO volume are positively correlated to firms' capital demands and the level of investor optimism. The coefficients of proxies for sentiment are substantially larger than the coefficients of variables for capital demands and adverse selection costs. The author points out that IPO waves are more likely to occur in temporary overvalued markets. Helwege and Liang (2004) employ 6,640 new equity issues to study IPO cycles in hot and cold markets from 1975 to 2000. They find an almost identical result to Lowry (2003); hot markets representing clusters of IPOs are driven by positive investor sentiment rather than adverse selection costs and managerial opportunism. Most of the new offerings are from the same narrow set of industries, and the characteristics of firms announcing IPOs are similar in terms of profitability, age, and growth potential. Lamont (2002) reports that market returns decrease subsequent to new listings and equity offerings if firms time the market to announce IPOs. Pastor and Veronesi (2005) develop a model of optimal timing for new share issues, and their model's empirical predictions support the argument that market returns are considerably high before IPO waves, but low afterwards. These existing results indicate that investor sentiment and aggregate market returns have a significant impact on the patterns of new equity announcements.

2.4.1.2 The Market Driven Theory

Merger and acquisition waves are often explained by the Market Driven Theory, which asserts that market valuation drives the timing of self-selected corporate events. Shleifer and Vishny (2003) develop a model of stock-market-driven acquisitions. They show that market overvaluation is one of the most important motives for firms to make acquisitions, especially when the medium of exchange is stock-to-stock. They indicate that firms are more likely to be acquirers when they have overvalued equities, whereas companies tend to become takeover targets when their share prices are undervalued. Corporations may have an incentive to engage in earnings or other price manipulations before merger and acquisition activities. Rhodes-Kropf and Viswanathan (2004) investigate merger waves and report that the propensity for firms to announce mergers increases with market overvaluation. There are more stock-merged offers in overvalued markets and more cash-merged offers in undervalued markets. Subsequently, Rhodes-Kropf, Robinson and Viswanathan (2005) provide empirical evidence to support the Market Driven Theory using market to book ratios to track firms' misvaluation levels and long-run growth opportunities. They find that stock acquirers are more overvalued than cash acquirers, and target firms are less overvalued than acquiring firms. The deviations in valuations between short-run and long-run trends affect the intensity of merger activities, especially for stock mergers. They recommend that market misvaluations can be either explained by the Behavioural Hypothesis or information asymmetry between market investors and managers.

In addition, Dong, et al (2006) report that bidder and target valuations not only drive the likelihood of occurrence of mergers and acquisitions, the medium of exchange, and target hostility, but also determine the chance of offer success and targets' post-announcement returns. They show that acquisitions are more likely to be successful when firms have overvalued stocks. Acquiring firms and successful acquirers are more overvalued than non-acquiring firms and unsuccessful acquirers. These results are consistent with the findings of Ang and Cheng (2006), which state that overvaluation increases the probability of firms announcing mergers and acquisitions, using their own stocks as the means of payment, and the acceptance of the bid. However, the long-term post-announcement returns of bidders and targets are usually negative if mergers or takeovers happen in overvalued markets.

Furthermore, Loughran, Ritter and Ryndqvist (1994) and Jindra (2000) report that companies take advantage of market overvaluation as a "window of opportunity" to issue equities in order to raise more funds. Benninga, Helmantel, and Sarig (2005) show that clustering of IPOs happen in hot issue markets when stock prices are relatively high. These results indicate that market conditions and price valuations are important factors in influencing firms' decisions on mergers and acquisitions, equity offerings and share repurchases. Yet, whether other corporate events can be driven by these factors remain unclear.

2.4.2 The Neoclassical Efficiency Hypothesis

On the other hand, corporate event waves can be explained by the Neoclassical Efficiency Hypothesis, proposing that business cycle fluctuations and economic conditions drive firms' decisions on financing transactions. For example, firms issue equities when they face profitable investment opportunities in economic expansions and repurchase shares when they have excess funds, but no investment opportunities in contractions (Rau & Stouraitis, 2011). Choe, Masulis, and Nanda (1993) investigate the relationship between common stock offerings and business cycles for firms listed on the NYSE, NASDAQ, and AMEX for the period 1971 to 1991. They find that the price reaction to share offering announcements is strongly correlated to business cycle variables, except for interest rate changes. The returns of offerings are significantly larger in contractionary periods than in expansionary periods. Dittmar and Dittmar (2002) examine repurchase waves from 1971 to 2000 and report that aggregate transitory earnings have considerable explanatory power on aggregate repurchase activities, while permanent earnings explain the distributions of dividends. A later working paper by Dittmar and Dittmar (2007) includes an examination of equity issuance and merger waves. They argue that price misvaluation is not the reason for the waves of stock repurchases, mergers, and share offerings, but business cycle variations. Firms issue equities to finance their investments at the peak of the business cycle, repurchase shares with surplus cash in recessions, and merge and acquire targets in stages of economic growth. In the next year, Dittmar and Dittmar (2008) report that the cost of equity is relatively cheaper in economic expansions than in contractions, hence, firms prefer to raise capital from equity issuance. They also find that the aggregate pattern of share repurchases tend to be the opposite of the patterns of share offerings and mergers. However, corporations may announce repurchases in expansions when there is a large amount of uncertainty. Their results show a strong relationship between GDP growth and firms' financing activities, implying that investment opportunities and business cycles drive corporate event waves.

A couple of recent studies have reached a similar conclusion. Rau and Stouraitis (2011) scrutinize more than 151,000 corporate transactions including initial public offerings, seasonal equity offerings, stock repurchases, and stock and cash-financed acquisitions in the US market for the period 1980 to 2004. They find that SEO waves usually come first, followed by IPOs; then merger waves financed by stocks and finally share repurchase waves. The authors tend to agree that both the Neoclassical Hypothesis and the Behavioural Hypothesis explain corporate event patterns, but they fail to determine which one is a more appropriate and important explanation on the whole. Additionally, they have not clarified the reasons for the timing of stock-related corporate announcements such as stock-financed mergers and acquisitions; stock repurchases and issues being correlated with each other in some, but not all industries. DeAngelo, DeAngelo, and Stulz (2010) investigate the reasons for firms conducting seasoned equity offerings between 1973 and 2001. They find that the primary motive for corporations selling stocks is to meet their cash need, not to time the market to raise more funds. The authors provide evidence that both market-timing opportunities and corporate lifecycle stage have significant explanatory power on the propensity of firms to issue shares, with the lifecycle effect substantially stronger. These two studies are the few that have attempted to analyse the rational theory and Behavioural Hypothesis concurrently in relation to corporate event waves. However, the results are only limited to equity offerings, repurchases, and mergers and acquisitions.

Furthermore, the business cycle can explain momentum profits. Using a set of standard macroeconomic variables, Chordia and Shivakumar (2002) find that momentum strategies and the associated returns are highly correlated to business cycle variations. A comparison is made on the profitability of momentum strategies between economic expansions and contractions. The results show that momentum payoffs are positive and substantially larger in expansions than in contractions in the US market. The authors also report that the lagged value of business cycle variables and firms-specific information are the sources to predict profits to momentum strategies. The research not only suggests that individual stock momentum is related to macroeconomic factors, but also industry momentum. In later years, Chordia and Shivakumar (2006) investigate earnings momentum in relation to business cycle fluctuations. They find that returns to earnings momentum can be explained by macroeconomic activities, such as growth in GDP, inflation, industrial production and consumption, T-bill returns, labour income and unemployment rate. Although Griffin, Ji, and Martin (2003) have not found a compatible result internationally, the evidence implies that the business cycle plays an important role in corporate strategies and the associate returns. Antoniou, Lam, and Paudyal (2007) additionally report that momentum profits are mostly attributable to the business cycle rather than behavioural variables in European stock markets for the period 1977 to 2002.

Alternatively, some studies report that corporate event waves are caused by industry shocks and spillover effects. Mitchell and Mulherin (1996) investigate the patterns of takeover and restructuring activities in 51 industries from 1982 to 1989. They find that takeovers and restructurings tend to cluster in a narrow period. There is a significant relationship between the frequency of takeover activities and the level of economic shocks in particular industries during the 1980s. The size of takeovers and restructurings are also directly correlated with the specific shocks of deregulation and financing innovations. These results imply that takeover activities are industry-wide-phenomena rather than firm-specific events. Harford (2005) agrees that industry shocks drive corporate announcements to cluster in time. Using the SDC database, Thomson Financial's Securities Data Company between 1981 and 2001, he finds that shocks of economic, technological and regulatory changes lead to a wave of mergers. He refers to this analysis as a neoclassical model and emphasizes that sufficient capital liquidity is the key for merger activities to achieve the maximization of shareholder wealth in the long run. Alti (2005) and Hoffmann-Burchardi (2001) study IPO waves and explain that the reason for IPOs being clustered together is due to the information spillover effect in the same industry. Companies find it easier to issue shares, set offering price, and attract investors when they follow their industry leaders or peers to announce equities. They show that pioneer IPOs contain more investor private information than subsequent IPOs, and pioneer IPOs usually send positive signals to the market for the whole industry. This industry spillover effect is more pronounced in hot and overvalued markets. Nevertheless, Massa, Rehman and Vermaelen (2007) argue that firms have to follow their rivals to repurchase shares because repurchases produce negative effects for non-repurchasing firms in the same industry. The negative effects are greater for mature firms, in highly concentrated industries or in economic contractions. This mimicking behaviour is a new concept and it would be interesting to see whether it applies to other corporate events.

2.5 Monthly Patterns

2.5.1 The January Effect

2.5.1.1 The Existence of the January Effect

The patterns of corporate announcements may be due to monthly patterns in stocks, such as the January Effect and Halloween Effect. The January Effect has been extensively documented and widely accepted in equity markets. It is also known as the "turn-of-the-year effect", which indicates that risk-adjusted security returns are significantly larger and more positive in January than in other months of the year. Wachtel (1942) is the first to report this market anomaly in stock returns. He is followed by Rozeff and Kinney (1976), who use the equal-weighted index of the New York Stock Exchange (NYSE) for the period between 1904 and 1974, to show a positive return of 3.5% for common stocks in January, which is greater than the average returns of 0.5% in other months. Berges, McConnell, and Schlarbaum (1984) find a similar result in the Canadian stock market over the period 1951 to 1980. They investigate the January Effect with respect to the introduction of a capital gains tax in Canada in 1972. The evidence shows that the effect is significantly strong before and after the tax regime, especially for firms with smaller values. These findings are almost identical to the study of Tinic, Barone-Adesi, and West (1987) in which the January Effect exists in Canadian stock returns between 1950 and 1980. There is no significant relationship between the introduction of a capital gains tax and the January Effect, which is more pronounced in thinly capitalized companies. Kato and Schallheim (1985) also find the existence of the January Effect in Japanese stock returns on the Tokyo Stock Exchange (TSE) over a similar period, 1952 to 1980. Gultekin and Gultekin (1983) claim that the January seasonality is a world-wide effect after they analyse 17 stock markets between 1959 and 1979 in major industrialized countries. Although these researchers present strong evidence that the January Effect exists in both the US and international stock markets, they fail to provide a clear explanation of why this turn-of-the-year effect occurs.

Apart from stock markets, the January Effect has been discovered in bond and other financial markets. Using US monthly return data for noninvestment-grade bonds and the lowest investment-grade bond between January 1986 and April 1997, Maxwell (1998) finds that the January Effect is statistically significant for noninvestment-grade bonds. Further, the degree of the effect increases when bond rating declines. This result is similar to Barnhill, Joutz, and Maxwell (2000), Chang and Huang (1990), Fama and French (1993), and Smirlock (1985), whereby the lower credit-rating bonds and quality index have statistically and economically larger returns in January than higher credit-rating ones. Fama and French (1993) also report the existence of the January Effect for the portfolio of A, Baa, and noninvestment-grade bonds, and Chang and Huang (1990) find significant excess returns in January for Baa-rated bonds. Chang and Pinegar (1986) investigate the monthly holding period returns for Aaa, Aa, A, Baa, Ba, and B-rated treasuries and bonds. They document that abnormal returns are higher in January for the noninvestment-grade bonds, B-rated bonds at the 99% confidence level, and Ba-rated bonds at the 92% confidence level. Moreover, the January Effect is evident in the returns of municipal bonds (Schneeweis & Woolridge, 1979), municipal bond closed-end funds (Starks, Yong & Zheng, 2006), commercial papers (Wilson & Jones, 1990), and real estate investment trusts (REIT) common stocks and the associated underlying assets (Friday & Peterson, 1997). These findings certainly have shown the January seasonality in many areas, but whether it can be translated into corporate practice is still uncertain.

2.5.1.2 The January Effect and Size Anomaly

The January Effect usually occurs with another financial anomaly, the Size Effect. Banz (1981) and Reinganum (1981) report that January anomalies are more pronounced and generally larger for smaller size firms than larger size ones. Keim (1983) examines monthly stock returns in the NYSE and AMEX over the period 1963 to 1979 and finds a consistent negative relationship between size and abnormal returns in January. In particular, almost 50% of the Size Effect can be explained by the January abnormal returns, and above 50% of the January Effect is due to the first-week abnormal returns in the beginning of a trading year. After a correction on the return measurement errors, Blume and Stambaugh (1983) show a strong Size Effect in January using reported closing prices. This result is also confirmed by Dyl and Maberly (1992), Friday and Peterson (1997), Jones, Pearce, and Wilson (1987), and

Roll (1983) in which the January seasonal pattern naturally corresponds to market capitalizations. In addition, Lamoureux and Sanger (1989) investigate the size and turn-of-the-year effects for the US stocks traded via the NASDAQ and 'over the counter' (OTC) markets in the period 1973 to 1985. Similar to the outcomes of the studies examining solely listed publicly traded stocks on major organized exchanges, they report that small firms outperform large firms in January for non-listed publicly traded stocks in the OTC market.

Kramer (1994) and Bhardwaj and Brooks (1992) also claim that the January Effect is a low-price effect. Using a multifactor model with macroeconomic risk factors, Kramer (1994) finds that the January seasonality occurs in low-priced companies' returns; price and expected returns are inversely related in a 20-year horizon between 1970 and 1989. However, Bhardwaj and Brooks (1992) argue that excess returns on higher-price stocks can be significantly larger than lower-price stocks in January if transaction costs are adjusted. They propose that the higher excess returns on lower-price stocks are primarily due to greater transaction costs and a bid-ask bias. These studies provide a simple and initial explanation for the January Effect.

2.5.1.3 Reasons for the January Effect

2.5.1.3.1 The Tax-Loss Selling Hypothesis

The Tax-Loss Selling Hypothesis is the most well-known and frequently cited explanation for the January Effect in the literature. It assumes that individual investors desire to sell their common stock 'loser' to realize capital losses in order to reduce tax liability at the end of the year. Investors then buy stocks to re-establish their portfolios at the beginning of the year. The selling activities generate a downward pressure on stock prices in December and an upward pressure in January. Reinganum (1983) constructs stock portfolios with different market capitalization and finds the January excess returns are significantly large for small firms. He agrees that the Tax-Loss Selling Hypothesis explains the January seasonality, at least partially. Branch (1977) argues that usable tax losses are more likely to occur in small-firm stocks as returns in smaller firms are more volatile than those in larger firms. Hence, smaller firms have a higher tendency to be candidates for tax-loss selling.

Brauer and Chang (1990) find a similar result in examining the returns of closed-end funds for the period between 1967 and 1983 in the US. The rate of return for portfolios of large-fund shares is 3.41% higher in January than for the rest of the year. In contrast, small-fund portfolios earn 6.67% more rate of returns in the first month than in other months of the year.

In addition to the agreement on the Tax-Loss Selling Hypothesis explaining the January seasonal, they suggest that there may be other reasons causing the anomaly. Givoly and Ovadia (1983) also report a larger amount of sales in stocks with the tax-loss deduction purpose in December and higher abnormal returns in January from 1945 to 1979 in the US. The tax loss sales happen in firms of all sizes, but the effect of tax sales is more pronounced for those of smaller size. They claim that there may be more than one possible explanation for the January Effect, but the tax-loss motivated consideration is the major one.

Using a sample period from 1900 to 1929, Schultz (1985) examines the turn-of-the-year effect in returns of small stocks and Dow Jones Industrials Average (DJIA) with respect to the War Revenue Act of 1917. He shows that, before 1917, there are no differences in returns between small firm portfolios and industry portfolios, and no difference in small firms' returns in January and in non-January periods. However, after 1917, the January excess returns are higher for small firms than DJIA. Hence, the Tax-Loss Sell Hypothesis is valid in his study. Jones, Pearce, and Wilson (1987) re-assess the findings of Schultz (1985) using the value-weighted average of monthly high and low prices in the Cowles Commission Industrial Index. Interestingly, they find the January excess returns exist in both pre-tax and post-tax periods in two sample sets: the Cowles Index series from 1871 to 1938 and Schultz's sample period from 1900 to 1929. However, when Jones, Lee, and Apenbrink (1991) use stock returns in the Cowles Industrial Index, the results are the same as those of Schultz (1985). The excess returns in January are not significantly different from the returns in other months before the introduction of personal income taxes in 1917, but they are statistically larger after 1917. These results show the existence of the January Effect and some evidence of the Tax-Loss Selling Hypothesis. Further, Ritter (1988) and Dyl (1977) report that the buy- and sell-volume patterns for individual investors and abnormal high volume at the turn-of-the-year can be explained by the tax-loss selling purpose.

However, there are some studies that provide evidence contradictory to this hypothesis. For instance, Brown, Keim, Kleidon, and Marsh (1983) examine Australian stock returns and find the returns are significantly higher in December, January, July, and August than in other months. Since June is when the tax year ends in Australia, the results are not consistent with the Tax-Loss Selling Hypothesis. The authors also report that the small firm premium occurs in all months rather than only in January, which is different from US data. Additionally, Constantinides (1984) indicates that, based on the optimal tax trading strategy, investors should not delay their tax loss realization until December. Reinganum (1983) finds high January abnormal returns in non-declining small firm stocks, and Van Den Bergh and Wessel (1985) and Jones, Pearce, and Wilson (1987) show the January seasonality in the market without capital gains taxes or before personal income taxes were introduced in the US. These results cannot fully disprove the Tax-Loss Selling Hypothesis, but are an incentive to seek more plausible answers to explain the January Effect.

2.5.1.3.2 The Window-Dressing or Portfolio-Rebalancing Hypothesis

The Window-Dressing Hypothesis is another leading explanation for the excess returns in January. It is a strategy engaged by institutional investors with the purpose of making their portfolios look impressive and better than their peers. According to Haugen and Lakonishok (1988), institutional investors tend to sell the stocks where prices have declined during the year to avoid holding poorly performing stocks at year-end, and then reallocate funds in the beginning of a new year. In practice, bond portfolio managers, pension fund managers, and insurance companies often follow this strategy to sell their lower-quality issues in December to increase the average value and quality of their portfolios (Maxwell, 1998).

Ng and Wang (2004) use a sample period from the first quarter of 1986 to the first quarter of 1999 to examine the turn-of-the-year effect for small stocks in relation to institutional trading strategy. They find that the year-end selling behaviour is driven by window-dressing and risk-shifting activities. Institutional investors sell more poorly performing small stocks in the last quarter of the year, but buy more losing and winning small stocks in the next quarter, which explains the observed January Effect in the excess returns for winning stocks. Ritter and Chopra (1989) use valued-weighted rather than equal-weighted portfolios to examine market returns in the period 1935 to 1986. They find that market returns are only positive in January for small firms, but negative for other firms. The positive effect is greater when the beta is higher. Ritter and Chopra argue that the results are consistent with the Window-Dressing or Portfolio-Rebalancing Hypothesis as institutional investors sell loser stocks in December and reinvest in risky small stocks in January. Hence, small firms with high beta outperform small firms with low beta in the first month of the new trading year. He, Ng, and Wang (2004) and Meier and Schaumburg (2004) also agree with this hypothesis to explain the January Effect and document that institution investors’ incentives to window dress their portfolios are high at the turn of the year. Furthermore, Keim and Stambaugh (1986) find the portfolio rebalance effect in bond market returns; Musto (1997) reports it in money market returns, and Maxwell (1998) shows it in noninvestment bond returns.

As the Tax-Loss Selling Hypothesis and Window-Dressing Hypothesis both predict large changes in stock returns around the year-end, researchers have attempted to compare these two hypotheses to determine the principal explanation for the January Effect. For instance, Sias and Starks (1997) conduct a test by employing both individual and institutional ownership of stocks to separately evaluate these two hypotheses in the US equity markets between 1978 and 1992. By controlling for market capitalization, they find the turn-of-the-year effect is more pronounced for the stocks owned by individual investors in comparison to institutional investors. The January excess returns are significantly larger for securities dominated by individual investors. These results indicate that the Tax-Loss Selling Hypothesis has stronger explanatory power for the January seasonality than the Window-Dressing Hypothesis. Poterba and Weisbenner (2001) and Grinblatt and Moskowitz (2004) also find that individual investors' tax-loss selling activities are more effective than institutional investors' window-dressing strategies to achieve higher stock returns in January. Although these studies may disentangle the two hypotheses in stock markets, the examination of other financial markets is still incomplete.

2.5.1.3.3 The Parking-the-Proceeds Hypothesis

Apart from the two main explanations above, Ritter (1988) offers the Parking-the-Proceeds Hypothesis and suggests that individual investors' buying and selling behaviour is the key to explaining the cause of the turn-of-the-year effect. In particular, individual investors tend to sell securities to realize tax losses in December, but "park the proceeds" from the sales to buy until the next January. These buying activities push share prices up in the first month of the new trading year. Using a fifteen-year period from December 17, 1970 to December 16, 1985, Ritter finds that the ratio of stock purchases to sales (buy/sell) by individual investors is below the normal level in late December and above the normal level in early January. The buy/sell ratio can be used to explain the January Effect by 46% during the sample period.

Ritter (1988) documents three requirements for the Parking-the-Proceeds Hypothesis. First, different from institutional investors, individual investors are more likely to own low-priced or low-capitalization stocks and have greater incentive to sell stocks when the prices have declined in order to realize capital loss for tax deduction purposes. Second, stock prices are affected by buying and selling pressure, especially for small stock prices. This is consistent with the studies of Asquith and Mullins (1986), Lakonishok and Smidt (1988), and Mikkelson and Partch (1985). Third, individual investors do not immediately reinvest the proceeds from December's sales; instead, they wait till the next January. Ritter also provides empirical evidence to support the Parking-the-Proceeds Hypothesis through a dramatic change in the customers' buying and selling behaviour in Merrill Lynch's cash account at the turn of the year.

This trading pattern can well explain the systematic tendency for closing prices being recorded at the bid in December and at the ask in January, which is reported by Keim (1989). Without any change in bid and ask prices, the shift cross the bid-ask spread can generate excess returns in January. Dyl and Maberly (1992) also support this hypothesis to explain the January Effect, as they find a significant change in the proportion of odd-lot sales to odd-lot purchases around the turn of the year. They use odd-lot trading as a proxy for individual investors' buying-selling behaviour and find a clear cross-sectional relationship between the January excess returns and the odd-lot trading during December and the next January. Nevertheless, the Tax-Loss Selling Hypothesis and Parking-the-Proceeds Hypothesis have some similar predictions, such as a large amount of sales by individual investors for the tax-loss consideration at the end of a year. Hence, more studies may need to be developed in order to distinguish between these two hypotheses in the future.

2.5.1.3.4 The Risk-Return Hypothesis

Simply, the January Effect could possibly be due to the higher risk at the beginning of a year. West (1984) uses US-listed firms and investigates the relationship between expected returns and risk over the period 1935 to 1982. He finds that stock returns are positively correlated to risk only in January, as risk premiums in the other 11 months are not statistically significant. This result is even stronger than the findings of Fama and MacBeth's (1973) in which high-beta portfolios experience larger returns, especially for small capitalization stocks. Rogalski and Tinic (1986) also state that total, systematic, and residual risks are significantly higher for small firms in January. To compensate for the higher risk, greater returns are required by investors for these stocks in the first month of a year.

Corhay, Hawawini, and Michel (1987) examine the monthly CAPM-based risk premia estimated by Fama and MacBeth's (1973) methodology in four stock exchanges from 1969 to 1983. The exchanges include the world's largest and most active exchange, the New York Stock Exchange (NYSE); one of the world's smallest and least active exchanges, the Brussels Stock Exchange; the London Stock Exchange; and the Paris Stock Exchange. They find that there is a consistent existence of seasonality in stock returns and risk premia in these four countries. The average portfolio returns are positively correlated to their corresponding risk, but only in January in the US and Belgium. In the UK, risk premium is positive in April instead of January, whereas in France, January has a positive and greater risk premium than other months of a year. These excess risk premia in January are significantly larger in the US compared to the other European countries. In addition, the monthly risk-premium seasonal in the US appears to be a reflection of the monthly return seasonal, as the seasonality in stock returns happen together with the seasonality in risk premium. In contrast, this is not the case in the UK, France, and Belgium. For instance, the UK has significant and positive excess returns in January and April, but the risk-premium seasonality occurs only in April.

However, the risk-related explanation can be subject to the model selection. Sun and Tong (2010) re-examine the studies of Rozeff and Kinney (1976) and Rogalski and Tinic (1986) using conditional volatility to proxy the market risk in a GARCH model with time-series returns between 1926 and 2005 in the US market. They find that both conditional and unconditional volatility in January are not particularly high over the years; hence, the January Effect should not be caused by risk per se. The authors suggest that higher returns in January may be due to higher risk compensation within the month. Nonetheless, this leads to a question of why investors need higher compensation for risk if the risk is not high in January.

2.5.1.3.5 The Information-Release or Insider-Trading Hypothesis

Alternatively, the excess returns in January can be explained by the seasonal Information-Release Hypothesis. Rozeff and Kinney (1976) report that January is the month when firms release a large amount of accounting information, such as earnings performance, for the previous fiscal year. It encourages investors to react or overreact (De Bondt & Thaler, 1985) to the information to trade in January, especially for small firms as they are usually considered as information-poor. Additionally, if there is any non-public or private information that managers can use to trade, investors on the other side of the transaction would lose. In order to prevent this, a higher return is required by investors in the first month of a year (Seyhun, 1988).

Seyhun (1988) investigates insider trading activities in January and in the rest of the year for 790 firms on the NYSE and AMEX from January 1975 to October 1981. He hypothesizes that smaller firms are more likely to engage in insider trading activities to purchase stocks in December and sell in January. Hence, there are more positive returns for insiders in small firms in January. However, he fails to find out statistical evidence to support this proposition; insider trading activities do not increase significantly for small firms at the beginning of a year, leading to the Size Effect in January being unexplained by the Information-Release or Insider-Trading Hypothesis.

There are still further, Chan (1986) argues that the January Effect is caused by long-term and short-term capital losses. He reports that high January excess returns occur in the small stocks that have experienced price declines in the previous year, using US data for the period 1962 to 1982. De Bondt and Thaler (1987) examine seasonal-return patterns and the winner-loser effect for the stocks listed on the NYSE and AMEX between 1965 and 1984. They find a negative relationship between excess returns for past losers and both long-term and short-term period performance. The relationship between January excess returns for past winners and the excess returns in the prior December is also negative. This means that January returns are larger when a stock experiences December declines. De Bondt and Thaler's results indicate that the January Effect in stock returns is statistically correlated to past year market returns or past short-term and long-term performance. Furthermore, Kramer (1994) and Ligon (1997) report that the January Effect is also correlated to the business cycle and real interest rate.

In more recent years, Cooper, McConnell and Ovtchinnikov (2006) report that January returns can predict market returns in the next 11 months of the year based on the US data in the period between 1940 and 2003; this is known as the Other January Effect. This result is robust in different firm sizes and in both value and growth stocks after they control macroeconomic/business cycle factors, investor sentiment variables, and the Presidential Cycle in returns. However, Marshall and Visaltanachoti (2010) fail to find that the Other January Effect strategy outperforms a simple buy-and-hold strategy before and after risk-adjustment. They show that the excess returns generated by the Other January Effect strategy are not statistically or economically significant, which is in agreement with market efficiency. Given that the January Effect has been extensively documented and widely applied in many areas, if stock returns are higher in January than in the rest of the year, will firms undertake corporate events in January to achieve higher returns? This is an interesting question, which has not been explored in the literature.

2.5.2 The Halloween Effect

2.5.2.1 The Existence of the Halloween Effect

The Halloween Effect is another market-wide phenomenon, which refers to the adage "Sell in May and go away", with two different endings, "but remember to come back in September" or “but buy back on St. Leger’s Day[3]”. This means that stock returns are higher during the months of November through to April and lower in May to October. Bouman and Jacobsen (2002) is one of the leading research papers to examine this well-known market wisdom. They analyze 37 stock markets and find that the Halloween Effect statistically and economically exists in 36 out of 37 countries between 1970 and 1998. They show risk-adjusted returns in October 31 through April 30 are 5% higher than in May 1 to September 30. They also claim that the Halloween Indicator provides significant advantages to the trading rules of the buy-and-hold strategy.

Siriopoulos and Giannopoulos (2006) follow the Halloween strategy and investigate share returns in the Athens Stock Exchange (ASE). They find 18.7% positive returns with a standard deviation of 29.73% and conclude that this calendar effect influences portfolio managers’ and individual investors’ trading decisions in Greece. Further, Jacobsen and Zhang (2012) examine monthly seasonality using over 300 years of stock returns in the United Kingdom. They indicate that the winter returns in November to April consistently outperform the summer returns in May to October, and this Halloween Effect is robust in all subsample periods. Based on a Halloween trading strategy, investors can beat the market more than 80% of the time in five years and 90% in ten years.

Jacobsen and Visaltanachoti (2009) additionally explore the Halloween Effect in the US stock market sectors and industries. In the period from 1926 to 2005, they find higher stock returns in winter compared to summer in all US stock market sectors. In addition, the difference in returns is statistically significant and economically large in two thirds of all sectors. The Halloween Effect is particularly strong in production sectors related to raw materials, but weak in sectors related to consumer products with short life spans. Different from the January Effect, the Halloween Effect has no link with the Size Effect and the book to market (B/M) anomaly. It is only found to be more pronounced in the low dividend yield portfolios in the United States (Jacobsen, Mamun & Visaltanachoti, 2005).

However, not all research totally agrees with the existence of the Halloween Effect. Lucey and Zhao (2008) re-examine stock returns in US markets over the period 1926 to 2002, and find a greater change in share prices arise in the months of November to April, with little change in the months of May to October. This finding only partially approves the Halloween Effect that stock returns increase in the Halloween period and decrease in the summer months.

[3] The last race of the British horse racing season

Maberly and Pierce (2003) report that the Halloween Effect exists in Japan before the Nikkei 225 index futures are introduced in September 1986, but disappears after Japanese financial markets are internationalized. In 2004, they document the disappearance of the Halloween Effect after an adjustment of outliers using US stocks and futures data between April 1982 and April 2003. Although these few studies have shown different results related to the Halloween Effect, this calendar-related anomaly is widely discussed in the literature. Nevertheless, it is mainly examined in stock and future markets; little research has investigated the effect in relation to corporate practice.

2.5.2.2 Reasons for the Halloween Effect

2.5.2.2.1 The Summer Holiday Hypothesis

Bouman and Jacobsen (2002) scrutinize several potential explanations for the Halloween Effect. They show that the effect is unlikely to be caused by data mining, risk, the January Effect, and the changes in interest rates or trading volume. However, they argue that the degree of the Halloween Effect is significantly correlated to the length and timing of summer holidays. The longer the time for summer vacations, the greater the effect. They find that the Halloween Effect primarily exists in European markets, and in the countries that have longer summer holidays or stronger summer vacation traditions. They propose that the Halloween Effect is more country specific, rather than sector specific.

2.5.2.2.2 The Seasonal Affective Disorder (SAD)

Kamstra, Kramer and Levi (2003) argue that the Halloween Effect is due to the seasonal affective disorder (SAD), whereby investors become depressed and reduce their trading activities when the hours of daylight decrease during the fall. The stock returns should be low in the fall and start to increase in the winter when days become longer. They conduct experimental psychological research and use daily stock data in nine indices cross countries; the longest series is 70 years in the US S&P500, and the shortest is 10 years in New Zealand. They find that the SAD effect is statistically significant in all countries except for Australia, and the effect appears to be stronger for the countries being far away from the equator. This result is robust after controlling several other weather variables, the Monday Effect, tax effect, and short-term autocorrelation.

2.5.2.2.3 The Temperature Effect

Apart from the two previous explanations for the Halloween Effect, Cao and Wei (2005) claim that temperature affects investors' trading behaviour. They suggest that lower temperatures lead to higher stock returns due to investors' aggression in risk-taking. Using daily stock returns in eight countries with the longest time-series being in the US from 1962 to 1999, and the shortest series in Sweden, between 1989 and 2001, they find that temperature is negatively correlated to stock returns. Lower temperatures result in larger stock returns in winter, whereas higher temperatures cause stock returns to decrease in summer. These findings remain unchanged using 21 international stock markets as a robustness check with the control variables of a Monday dummy, a tax-loss dummy, a SAD variable, and a cloud variable. However, the economic significance of the temperature variable reduces when the SAD variable is added in the regressions.

Furthermore, Parker and Tavassoli (2000) argue that mood and emotion change investors' risk aversion. More importantly, they find that the lack of sunlight makes investors become more risk averse; hence, stock market returns decrease in winter. This result is opposite to that of Kamstra, Kramer and Levi (2003), but in line with Hirshleifer and Shumway (2003) and Saunders (1993), suggesting that good weather and sunshine increase stock returns significantly. Given these debates on the explanations for the Halloween Effect in psychological studies, Jacobsen and Marquering (2008, 2009) further restate that this seasonality can best be explained by the winter/summer effect. They indicate that there is a spurious relationship between weather-related variables and stock returns, and the lack of proper control variables in the study of Kamstra, Kramer and Levi (2003). Thus, the conclusion of weather and mood affecting stock returns through investors' trading behaviour is premature. As this market wisdom or seasonal phenomenon has been highly documented and shown to exist widely, it will be interesting to explore whether it can influence corporate decisions and their timing strategies.

2.6 Summary

In conclusion, this chapter first reviews the classical debate between the Efficient Market Hypothesis and the Behavioural Hypothesis. The result shows that the argument is still an interesting and unsolved issue in the finance field. Then, the chapter reviews two popular corporate events: stock splits and special dividends. Although the literature provides many explanations for why firms split their stocks and pay special dividends, they are all at the firm-specific level. Little research has drawn the attention to the patterns of these announcements and as to why corporations announce share splits and special dividends at the aggregate level. With the increasing literature on the examinations of wave patterns of corporate events, the aggregate activities of mergers and acquisitions, equity offerings, and stock repurchases have been investigated and explained by either the rational theory or the Behavioural Hypothesis. This enhances the motivation to examine stock split and special dividend activities from the macro-economic perspective, and to seek the answer of which hypothesis has stronger explanatory power on the patterns of corporate announcements. In addition, this chapter reviews two common calendar anomalies of the January Effect and the Halloween Effect in stock returns. Since these two effects have not been explored in relation to corporate practice, it will be interesting to see whether there is a relationship between the aggregate activities of stock splits and special dividends and the monthly patterns of the January Effect and Halloween Effect. The research design and empirical results of this thesis are shown in the following chapters.

CHAPTER THREE – RESEARCH FRAMEWORK, DATA AND METHODOLOGY

This chapter presents the research framework for this study. It begins with a discussion of the hypotheses on market conditions, business cycles, and monthly patterns for stock splits and special dividend announcements in Section 3.1. Then, it describes the data source and event selection procedures in Sections 3.2 and 3.3. The methodologies used in this research are illustrated in the Sections 3.4, 3.5, and 3.6. First, the logistic models to be used are listed in Section 3.4 to examine the likelihood of the occurrence of stock splits and special dividend announcements. Second, both short-run and long-run event study methodologies are shown in Section 3.5 to calculate the abnormal returns of stock splits and special dividend announcements. Third, multivariate regression models are presented in Section 3.6 to investigate the relationship between the excess returns surrounding stock splits and special dividends and the variations of market conditions, business cycles, and monthly patterns.

3.1 Hypotheses

3.1.1 Stock Market Conditions

This study first examines the conjecture that stock market conditions can drive share split and special dividend announcements. Mian and Sankaraguruswamy (2012) study earnings announcements and the announcements of changes in dividends, stock repurchases, and stock splits and they find that market conditions affect price reactions to corporate news. In particular, during bull markets when investor sentiment is positive and increasing, the rise of stock prices from positive announcements is substantially larger than price increases in bear markets (Mian & Sankaraguruswamy, 2012). We can take from this, that if firms want to achieve higher returns, they should announce stock splits and special dividends to ride on the waves of market optimism in bullish times. Additionally, special dividends are acknowledged as defensive tactics for hostile takeovers, as the announcements increase stock price and shareholder wealth during the contest, which makes the target harder to acquire (Denis, 1990). Also, stock splits are found to be manipulation tools for equity offerings (D'Mello, Tawatnuntachai, & Yaman, 2003) and mergers and acquisitions (Guo, Liu & Song, 2008). Since IPOs (Benninga, Helmantel & Sarig, 2005; Schultz, 2003), SEOs (Graham & Harvey, 2001), and mergers and acquisitions (Rhodes-Kropf, Robinson & Viswanathan, 2005; Shleifer & Vishny, 2003) usually cluster in bull markets when the market is overvalued, the tendency for firms to split shares and declare special dividends should be high in bull markets.

Overvalued prices are also one of the reasons for companies to undertake stock splits with the intention of reducing share prices to an optimal trading range (Conroy & Harris, 1999; Rozeff, 1998). Furthermore, Povel, Singh and Winton (2007) report that firms are less monitored in good times, thus making announcements of stock splits and special dividend distributions easier to execute with favourable results. With these considerations in mind, this study tests the Behavioural Hypothesis (Market Driven Theory) with the hypotheses below:

Hypothesis 1 (Univariate, frequency):

There are more stock splits and special dividends in bull markets than in bear markets.

Hypothesis 2 (Multivariate, likelihood with Bull market dummy):

The likelihood of stock split and special dividend activities is positively correlated to a *Bull* market dummy.

Hypothesis 3 (Multivariate, abnormal returns with Bull market dummy):

Abnormal returns generated from stock splits and special dividend announcements are higher in bull markets than in bear markets.

Abnormal returns of stock splits and special dividends are positively correlated to a *Bull* market dummy.

By following the leading researchers, Baker and Wurgler (2000, 2006, and 2007) and Mian and Sankaraguruswamy (2012), to examine how market conditions and sentiment affect corporate events, this research also employs investor sentiment variables in the analysis. Since investor sentiment is positive and high in good market conditions, two additional hypotheses are conducted:

Hypothesis 4 (Multivariate, likelihood with investor sentiment variables):

The likelihood of stock split and special dividend activities is positively correlated to investor sentiment variables.

Hypothesis 5 (Multivariate, abnormal returns with investor sentiment variables):

Abnormal returns of stock splits and special dividends are positively correlated to investor sentiment variables.

However, special dividend distributions have also been reported as a useful device to alleviate agency problems in market and economic declines. When firms face limited or no investment opportunities in downturns, giving extra cash back to shareholders can reduce managers' waste on daily unnecessary things or investing in negative NPV projects. This is known as the Free Cash Flow Hypothesis (Jensen, 1986; Lang & Litzenberger, 1989; Lie, 2000). Therefore, the alternative hypotheses for special dividends are as follows:

Alternative Hypothesis 1 (Univariate, frequency):

There are more special dividends in bear markets than in bull markets.

Alternative Hypothesis 2 (Multivariate, likelihood with Bull market dummy):

The likelihood of special dividend activities is negatively correlated to a *Bull* market dummy.

Alternative Hypothesis 3 (Multivariate, abnormal returns with Bull market dummy):

Abnormal returns generated from special dividend announcements are higher in bear markets than in bull markets.

Abnormal returns of special dividends are negatively correlated to a *Bull* market dummy.

Alternative Hypothesis 4 (Multivariate, likelihood with investor sentiment variables):

The likelihood of special dividend activities is negatively correlated to investor sentiment variables.

Alternative Hypothesis 5 (Multivariate, abnormal returns with investor sentiment variables):

Abnormal returns of special dividends are negatively correlated to investor sentiment variables.

3.1.2 Business Cycles

Secondly, this research proposes that stock splits and special dividend announcements can be explained by the business cycle, as defined by variations in economic activity measured by the NBER series. One of the theories to explain stock splits is the Signalling Hypothesis, where firms split shares to signal the information about their current excess earnings being permanent. Similarly, firms distribute special dividends to send a signal to the market that they have gained extra cash either from the rapid earnings growth or the lack of investment opportunities. Since companies are more likely to experience earnings increases and generate cash surpluses from a large number of profitable investments in expansionary business cycles, the propensity and capability of firms to announce stock splits and special dividends should be higher during expansions. This consideration is consistent with the Neoclassical Efficiency Hypothesis; suggesting firms undertake corporate events for economic efficiency reasons (DeAngelo, DeAngelo, & Stulz, 2010; Dittmar & Dittmar, 2008; Rau & Stouraitis, 2011). Thus, the hypotheses to examine the business cycles affecting stock splits and special dividends according to this theory are listed below:

Hypothesis 1 (Univariate, frequency):

There are more stock splits and special dividends in economic expansions than in contractions.

Hypothesis 2 (Multivariate, likelihood with Expansion dummy):

The likelihood of stock split and special dividend activities is positively correlated to an *Expansion* dummy.

Hypothesis 3 (Multivariate, abnormal returns with Expansion dummy):

Abnormal returns generated from stock split and special dividend announcements are higher in expansions than in contractions.

Abnormal returns of stock splits and special dividends are positively correlated to an *Expansion* dummy.

Antoniou, Lam, and Paudyal (2007), Chordia and Shivakumar (2002), and Griffin, Ji, and Martin (2003) use macroeconomic variables of the market dividend yield, default spread, term spread, and short-term T-bill rate, representing business cycle variations, to examine momentum profits. Fama and French (1993) refer to these variables as common economic risk factors. In addition, Chordia and Shivakumar (2006) use more business cycle variables of growth in Gross Domestic Product (GDP), inflation, consumer consumption level, and unemployment rate to examine earning announcements and price momentum. Following these foremost studies, if the tendency for and excess returns of stock splits and special dividend announcements are higher in expansions, the two events should be positively correlated to these macroeconomic or business cycle variables:

Hypothesis 4 (Multivariate, likelihood with business cycle variables):

The likelihood of stock split and special dividend activities is positively correlated to business cycle variables.

Hypothesis 5 (Multivariate, abnormal returns with business cycle variables):

Abnormal returns of stock splits and special dividends are positively correlated to business cycle variables.

However, as described in the last section, special dividends can also be distributed in economic contractions when firms have excess cash but limited investment opportunities. These cash disbursements can mitigate agency problems and enhance shareholders' loyalty to the company. Hence, the alternative hypotheses for special dividends in relation to the business cycle are listed below:

Alternative Hypothesis 1 (Univariate, frequency):

There are more special dividends in economic contractions than in expansions.

Alternative Hypothesis 2 (Multivariate, likelihood with Expansion dummy):

The likelihood of special dividend activities is negatively correlated to an *Expansion* dummy.

Alternative Hypothesis 3 (Multivariate, abnormal returns with Expansion dummy):

Abnormal returns generated from special dividend announcements are higher in contractions than in expansions.

Abnormal returns of special dividends are negatively correlated to an *Expansion* dummy.

Alternative Hypothesis 4 (Multivariate, likelihood with business cycle variables):

The likelihood of special dividend activities is negatively correlated to business cycle variables.

Alternative Hypothesis 5 (Multivariate, abnormal returns with business cycle variables):

Abnormal returns of special dividends are negatively correlated to business cycle variables.

3.1.3 Monthly Patterns

Thirdly, the January Effect and Halloween Effect are extensively discussed in the literature, but there is an open question as to whether these effects are related to corporate decision making. If prices are higher in January and during the Halloween period, November to April, firms could potentially announce stock splits and special dividends in these months to achieve higher abnormal returns, or, the other way around; it may be that stock splits and special dividend payments partly explain the phenomena. Therefore, this study explores whether there is any monthly pattern of stock splits and special dividend announcements and if their returns are correlated to January and the months of the Halloween Indicator. The hypotheses are formulated as follows:

Hypotheses for the January Effect:

Hypothesis 1 (Univariate, frequency):

There are more stock splits and special dividends in January than other months of the year.

Hypothesis 2 (Multivariate, likelihood with January dummy):

The likelihood of stock split and special dividend activities is positively correlated to the *January* dummy.

Hypothesis 3 (Multivariate, abnormal returns with January dummy):

Abnormal returns generated from stock splits and special dividend announcements are higher in January than other months of the year.

Abnormal returns of stock splits and special dividends are positively correlated to the *January* dummy.

Hypotheses for the Halloween Effect:

Hypothesis 4 (Univariate, frequency):

There are more stock splits and special dividends in the months November-April than May-October.

Hypothesis 5 (Multivariate, likelihood with Halloween dummy):

The likelihood of stock split and special dividend activities is positively correlated to the dummy variable of the Halloween Indicator.

Hypothesis 6 (Multivariate, abnormal returns with Halloween dummy):

Abnormal returns generated from stock splits and special dividend announcements are higher in November-April than in May-October.

Abnormal returns of stock splits and special dividends are positively correlated to the Halloween Indicator.

3.2 Data Source

The sample consists of companies that have stock split and special dividend announcements between January 1926 and December 2008. The event data of stock splits and special dividends are obtained from the Centre for Research in Security Prices (CRSP). Since this research is extensively focused on the US-listed common stocks that are subject to the US market and economic conditions, American Depositary Receipts (ADRs), Real Estate Investment Trusts (REITs), closed-end funds, and shares of companies incorporated outside the US are not in the sample. Additionally, this study uses the Global Financial Database to collect the business cycle variables of the changes in GDP, unemployment rate, consumer price index, and inflation rate. The macroeconomic risk factors of the default spread, term spread, market dividend yield, and three-month T-bill yield are extracted from Amit Goyal's website, and investor sentiment variables are extracted from Jeffrey Wurgler's website[4]. Table 3.1 shows the detail of each variable corresponding to its database, abbreviation, and sample period used in this research.

3.3 Event Selection

The event of a stock split is identified from the CRSP files using distribution codes 5523, 5543, and 5552 with split factors greater than zero, and the distribution code 5533 with distributions that are greater than or equal to 25 percent. (This research excludes reverse stock splits with split factors less than zero and small stock dividends with stock distributions

[4] These websites contain the standard and recent updated data that are widely applied and cited in many highly regarded finance and economics journals.

Table 3.1 A Detailed Description of All Variables

This table provides the detail description of all variables that used in this research. The first column is variable abbreviations; the second column is variable descriptions; the third column is the data source, and the last column is the sample period of each variable in this study.

Variable Abbreviations	Variable Descriptions	Database	Sample Period
Control Variables			
Size	Market capitalization 1 day before announcements	CRSP	1926-2008
Price	Closing stock price 1 day before announcements	CRSP	1926-2008
SplFac	Split factor/ratio, defined as the number of additional shares per existing share	CRSP	1926-2008
Divamt	The amount of special dividends paid per share	CRSP	1926-2008
Tax	Dummy variable for Tax Regime changes in 1986 and 2003	CRSP	1926-2008
Macroeconomic or Business Cycle Variables			
GDP	Gross Domestic Product (GDP) growth rate	Global Financial Data	1926-2008
UNEMP	Unemployment rate	Global Financial Data	1926-2008
cpi	Consumer price index	Global Financial Data	1926-2008
Inf	Inflation rate	Global Financial Data	1926-2008
DIV	Total dividend payments on the market over the current level of the index	Global Financial Data & Amit Goyal's website	1926-2008
DEF	Difference between the average yield of BAA- and AAA-rated bonds by Moodys	Global Financial Data & Amit Goyal's website	1926-2008
YLD	Three-month T-bill yield	Global Financial Data & Amit Goyal's website	1926-2008
TERM	Difference between long-term government bond yield and three-month T-bill yield	Global Financial Data & Amit Goyal's website	1926-2008
Market or Investor Sentiment Variables			
pdnd	Difference in returns on dividend- and non-dividend-paying stocks	Jeffrey Wurgler's website	1960-2008
nipo	Number of IPOs	Jeffrey Wurgler's website	1960-2008
ripo	First-day returns on IPOs	Jeffrey Wurgler's website	1960-2008
turn	New York Stock Exchange (NYSE) share turnovers	Jeffrey Wurgler's website	1960-2008
cefd	Close-end fund discount	Jeffrey Wurgler's website	1960-2008
es	Share of equity in new issues	Jeffrey Wurgler's website	1960-2008

less than 25 percent). It includes large stock dividends that have the range of distributions between 25 and 100 percent. This classification is consistent with most studies for stock split announcements, such as Byun and Rozeff (2003) and Fama (1998). Special dividends are classified when the distribution code is 1262, labelled as extra year-end or final cash distributions, and 1272 as extra or special cash distributions. The research follows previous studies by Baker, Mukherjee and Powell (2005) and DeAngelo, DeAngelo and Skinner (2000) to include all special dividends, such as frequently paid special dividends every year and multiple special dividends in a year, to examine the pattern of special dividend distributions.

Matching portfolios are constructed with industry-size criteria to explore whether there is any strong industry effect in the announcements. If returns of matching firms increase after these announcements, there is a contagious effect in the same industry. However, if stock splits and special dividend declarations produce a decrease in the returns of matching firms, there is a competitive intra-industry effect among peers. Matching firms for stock splits are selected from the firms that have not had splits within three years before or after a split announcement month within the same industry. The matching firm for each event firm is chosen when the absolute difference in size (capitalization) between a non-event firm and given event firm is minimized. This matching method is the same for special dividend announcements. Industries are grouped according to a two-digit Standard Industrial Classification (SIC) code in CRSP, and description of each SIC code is published on the United States Department of Labour website[5].

3.4 Logistic Model for the Likelihood of Corporate Event Occurrence

In order to examine the probability of occurrence of stock splits and special dividend announcements in relation to macro-determinants, this study employs monthly logistic regressions. For a given firm in a given month, the dependent variable is a binary variable that takes a value of one if the firm announces a stock split or special dividend in that month, otherwise zero. Control variables include *Ln(Price)*, the natural logarithm of stock price one day before an announcement, and *Ln(Size)*, the natural logarithm of market capitalization of the stock as of one day prior to an announcement of stock split or special dividend to control the firm size effect.

The expected sign of the coefficient of *Ln(Size)* for stock split announcements is negative, as small size firms are more likely to split their shares to facilitate market attention (Information Asymmetry Hypothesis). For special dividends, the coefficient of *Ln(Size)* can be positive, suggesting larger firms have greater ability to distribute extra dividends to their shareholders. The sign of *Ln(Price)* should be positive for both stock splits and special dividends, as higher share prices reflect the information of increased earnings. Therefore, the probability of these announcements should be higher (Signalling Hypothesis or Retained Earning Hypothesis). The sign also represents firms' tendency to split shares when prices are too high to trade (Optimal Trading Range Hypothesis). The detail of each model applied for the sections of market conditions, business cycle, and monthly pattern is illustrated as follows:

3.4.1 Market Condition and Corporate Decision to Split or Initiate Special Dividends

In order to investigate the relationship between the likelihood of occurrence of corporate events and the overvalued market conditions, this research first creates a dummy variable of *Bull*. The coefficient of *Bull* should be statistically positive, representing the probability of firms announcing stock splits or special dividends increase during market upturns. Then, following the preceding studies of Baker and Wurgler (2000, 2006, 2007), Dittmar and Dittmar (2008), and Mian and Sankaraguruswamy (2012), additional regressions are conducted to include investor sentiment variables. The coefficients of these sentiment

[5] www.osha.gov/pls/imis/sic_manual.html

variables should be statistically correlated to the dependent variable of whether firms announce stock splits and special dividends. The logistic (logit) regressions for each event are illustrated as follows:

Stock splits with the Bull market dummy:

$$Split_{i,t} = \alpha_i + \beta_{i,1}Bull_{i,t} + \beta_{i,2}Ln(Size)_{i,t} + \beta_{i,3}Ln(Price)_{i,t} + e_{i,t}$$

Stock splits with investor sentiment variables:

$$\begin{aligned} Split_{i,t} = {} & \alpha_i + \beta_{i,1}pdnd_{i,t} + \beta_{i,2}nipo_{i,t} + \beta_{i,3}ripo_{i,t} + \beta_{i,4}turn_{i,t} + \beta_{i,5}cefd_{i,t} + \beta_{i,6}es_{i,t} \\ & + \beta_{i,7}Ln(Size)_{i,t} + \beta_{i,8}Ln(Price)_{i,t} + e_{i,t} \end{aligned}$$

Stock splits with investor sentiment variables one period ahead (forecasting model):

$$\begin{aligned} Split_{i,t} = {} & \alpha_i + \beta_{i,1}pdnd_{i,t-1} + \beta_{i,2}nipo_{i,t-1} + \beta_{i,3}ripo_{i,t-1} + \beta_{i,4}turn_{i,t-1} + \beta_{i,5}cefd_{i,t-1} \\ & + \beta_{i,6}es_{i,t-1} + \beta_{i,7}Ln(Size)_{i,t} + \beta_{i,8}Ln(Price)_{i,t} + e_{i,t} \end{aligned}$$

Special dividends with the Bull market dummy:

$$SpecialDiv_{i,t} = \alpha_i + \beta_{i,1}Bull_{i,t} + \beta_{i,2}Ln(Size)_{i,t} + \beta_{i,3}Ln(Price)_{i,t} + e_{i,t}$$

Special dividends with investor sentiment variables:

$$\begin{aligned} SpecialDiv_{i,t} = {} & \alpha_i + \beta_{i,1}pdnd_{i,t} + \beta_{i,2}nipo_{i,t} + \beta_{i,3}ripo_{i,t} + \beta_{i,4}turn_{i,t} + \beta_{i,5}cefd_{i,t} + \beta_{i,6}es_{i,t} \\ & + \beta_{i,7}Ln(Size)_{i,t} + \beta_{i,8}Ln(Price)_{i,t} + e_{i,t} \end{aligned}$$

Special dividends with investor sentiment variables one period ahead (forecasting model):

$$\begin{aligned} SpecialDiv_{i,t} = {} & \alpha_i + \beta_{i,1}pdnd_{i,t-1} + \beta_{i,2}nipo_{i,t-1} + \beta_{i,3}ripo_{i,t-1} + \beta_{i,4}turn_{i,t-1} + \beta_{i,5}cefd_{i,t-1} \\ & + \beta_{i,6}es_{i,t-1} + \beta_{i,7}Ln(Size)_{i,t} + \beta_{i,8}Ln(Price)_{i,t} + e_{i,t} \end{aligned}$$

Bull is a dummy variable that takes a value of one for a stock split or special dividend announced in bullish markets, and a value of zero if an announcement is in bearish markets. Bull and bear markets are classified by Ohn, Taylor and Pagan's (2004) turning points[6]. The variables *pdnd* is the difference in returns on dividend- and non-dividend-paying stocks; *nipo* is the number of initial public offerings (IPOs); *ripo* is the first-day returns on IPOs; *turn* is the NYSE share turnovers; *cefd* is the close-end fund discount; and *es* is the level of equity over the level of debt issuance (Baker & Wurgler, 2000; 2002; 2006).

[6]The periods of bull and bear markets are published on National Bureau of Economic Research (NBER) website. I have also used the Markov Regime-Switching model (Hamilton, 1989) with returns of both equal- and value-weighted market indexes in CRSP to test and classify the bull and bear periods.

3.4.2 Business Cycle and Corporate Decision to Split or Initiate Special Dividends

To examine how the business cycle affects corporate decisions on stock splits and special dividend distributions, a dummy variable of *Expansion* is firstly created. This research then follows the studies of Antoniou, Lam, and Paudyal (2007), Chordia and Shivakumar (2002, 2006), Fama and French (1993), and Griffin, Ji, and Martin (2003) to formulate the relationship between business cycle variables and decisions to split shares or pay special dividends. The coefficients of the dummy variable, *Expansion*, should be statistically positive, and business cycle variables should be statistically significant. This study begins to run the macroeconomic risk factors separately from the general business cycle variables in this section, as they are two types of methods to examine the business cycle effect in the literature. However, in Sections 3.4.4 and 3.6.4 determining the dominant macro-effect on the decisions and returns of stock splits and special dividend announcements, these variables are then included and run together with the investor sentiment variables. The logit models for each event are shown below:

Stock splits with the Expansion dummy:

$$Split_{i,t} = \alpha_i + \beta_{i,1}Expansion_{i,t} + \beta_{i,2}Ln(Size)_{i,t} + \beta_{i,3}Ln(Price)_{i,t} + e_{i,t}$$

Stock splits with macroeconomic risk factors:

$$\begin{aligned} Split_{i,t} = \alpha_i &+ \beta_{i,1}DIV_{i,t} + \beta_{i,2}DEF_{i,t} + \beta_{i,3}YLD_{i,t} + \beta_{i,4}TERM_{i,t} + \beta_{i,5}Ln(Size)_{i,t} \\ &+ \beta_{i,6}Ln(Price)_{i,t} + e_{i,t} \end{aligned}$$

Stock splits with general business cycle variables:

$$\begin{aligned} Split_{i,t} = \alpha_i &+ \beta_{i,1}GDP_{i,t} + \beta_{i,2}UNEMP_{i,t} + \beta_{i,3}cpi_{i,t} + \beta_{i,4}inf_{i,t} + \beta_{i,5}Ln(Size)_{i,t} \\ &+ \beta_{i,6}Ln(Price)_{i,t} + e_{i,t} \end{aligned}$$

Stock splits with macroeconomic risk factors one period ahead (forecasting model):

$$\begin{aligned} Split_{i,t} = \alpha_i &+ \beta_{i,1}DIV_{i,t-1} + \beta_{i,2}DEF_{i,t-1} + \beta_{i,3}YLD_{i,t-1} + \beta_{i,4}TERM_{i,t-1} + \beta_{i,5}Ln(Size)_{i,t} \\ &+ \beta_{i,6}Ln(Price)_{i,t} + e_{i,t} \end{aligned}$$

Stock splits with general business cycle variables one period ahead (forecasting model):

$$\begin{aligned} Split_{i,t} = \alpha_i &+ \beta_{i,1}GDP_{i,t-1} + \beta_{i,2}UNEMP_{i,t-1} + \beta_{i,3}cpi_{i,t-1} + \beta_{i,4}inf_{i,t-1} + \beta_{i,5}Ln(Size)_{i,t} \\ &+ \beta_{i,6}Ln(Price)_{i,t} + e_{i,t} \end{aligned}$$

Special dividends with the Expansion dummy:

$$SpecialDiv_{i,t} = \alpha_i + \beta_{i,1}Expansion_{i,t} + \beta_{i,2}Ln(Size)_{i,t} + \beta_{i,3}Ln(Price)_{i,t} + e_{i,t}$$

Special dividends with macroeconomic risk factors:

$$SpecialDiv_{i,t} = \alpha_i + \beta_{i,1}DIV_{i,t} + \beta_{i,2}DEF_{i,t} + \beta_{i,3}YLD_{i,t} + \beta_{i,4}TERM_{i,t} + \beta_{i,5}Ln(Size)_{i,t} + \beta_{i,6}Ln(Price)_{i,t} + e_{i,t}$$

Special dividends with general business cycle variables:

$$SpecialDiv_{i,t} = \alpha_i + \beta_{i,1}GDP_{i,t} + \beta_{i,2}UNEMP_{i,t} + \beta_{i,3}cpi_{i,t} + \beta_{i,4}inf_{i,t} + \beta_{i,5}Ln(Size)_{i,t} + \beta_{i,6}Ln(Price)_{i,t} + e_{i,t}$$

Special dividends with macroeconomic risk factors one period ahead (forecasting model):

$$SpecialDiv_{i,t} = \alpha_i + \beta_{i,1}DIV_{i,t-1} + \beta_{i,2}DEF_{i,t-1} + \beta_{i,3}YLD_{i,t-1} + \beta_{i,4}TERM_{i,t-1} + \beta_{i,5}Ln(Size)_{i,t} + \beta_{i,6}Ln(Price)_{i,t} + e_{i,t}$$

Special dividends with general business cycle variables one period ahead (forecasting model):

$$SpecialDiv_{i,t} = \alpha_i + \beta_{i,1}GDP_{i,t-1} + \beta_{i,2}UNEMP_{i,t-1} + \beta_{i,3}cpi_{i,t-1} + \beta_{i,4}inf_{i,t-1} + \beta_{i,5}Ln(Size)_{i,t} + \beta_{i,6}Ln(Price)_{i,t} + e_{i,t}$$

Expansion is a dummy variable that takes a value of one if an announcement of stock split or special dividend occurs in economic expansion periods, and a value of zero if an announcement is in contraction periods. Expansionary and contractionary periods are determined by the National Bureau of Economic Research (NBER)[7]. *DIV* is the market dividend yield, defined as the total dividend payments in the last 12 months over the current level of the index. *DEF* is the default spread, defined as the difference between the average yield of bonds rated BAA by Moodys and the average yield of bonds with a Moodys rating of AAA. *TERM* is the term spread, measured as the difference between the average yield of long term Treasury bonds (more than 10 years) and the average yield of T-bills that mature in three months. *YLD* is the three-month T-bills yield. *GDP* is the change in nominal GDP in the US; *UNEMP* is the unemployment rate; *cpi* is the consumer price index; and *inf* is the inflation rate in the US (Chordia & Shivakumar, 2002; Griffin, Ji, & Martin, 2003).

[7] www.nber.org/cycles/cyclesmain.html

3.4.3 Monthly Pattern of Corporate Event Occurrence

In order to examine if there is any monthly pattern in the likelihood of occurrence of stock splits and special dividend announcements, two dummy variables of *January* and *Halloween* are created. To check that the Halloween Effect is not veiled by the January Effect, an additional dummy variable of *HalnoJan* and a separate regression are generated for each event. The expected signs of the coefficients for these dummy variables should be statistically positive. The logit regressions for each event with each effect are listed below:

Stock splits with the January dummy:

$$Split_{i,t} = \alpha_i + \beta_{i,1}January_{i,t} + \beta_{i,2}Ln(Size)_{i,t} + \beta_{i,3}Ln(Price)_{i,t} + e_{i,t}$$

Stock splits with the Halloween dummy:

$$Split_{i,t} = \alpha_i + \beta_{i,1}Halloween_{i,t} + \beta_{i,2}Ln(Size)_{i,t} + \beta_{i,3}Ln(Price)_{i,t} + e_{i,t}$$

Distinguishing the January Effect and the Halloween Effect:

$$Split_{i,t} = \alpha_i + \beta_{i,1}January_{i,t}+\beta_{i,2}HalnoJan_{i,t} + \beta_{i,3}Ln(Size)_{i,t} + \beta_{i,4}Ln(Price)_{i,t} + e_{i,t}$$

Special dividends with the January dummy:

$$SpecialDiv_{i,t} = \alpha_i + \beta_{i,1}January_{i,t} + \beta_{i,2}Ln(Size)_{i,t} + \beta_{i,3}Ln(Price)_{i,t} + e_{i,t}$$

Special dividends with the Halloween dummy:

$$SpecialDiv_{i,t} = \alpha_i + \beta_{i,1}Halloween_{i,t} + \beta_{i,2}Ln(Size)_{i,t} + \beta_{i,3}Ln(Price)_{i,t} + e_{i,t}$$

Distinguishing the January Effect and the Halloween Effect:

$$SpecialDiv_{i,t} = \alpha_i + \beta_{i,1}January_{i,t}+\beta_{i,2}HalnoJan_{i,t} + \beta_{i,3}Ln(Size)_{i,t} + \beta_{i,4}Ln(Price)_{i,t} + e_{i,t}$$

January is a dummy variable that has a value of one for stock splits or special dividends announced in January, and zero otherwise. *Halloween* is another dummy variable, taking a value of one for stock splits or special dividends announced in the months of November to April, and zero otherwise. *HalnoJan* is the dummy variable that distinguishes the January Effect from the Halloween Effect, and is equal to one if stock splits or special dividends are announced in November to April, but exclude January, and zero otherwise.

3.4.4 The Dominant Macro-Determinants for the Occurrence of Corporate Events

To investigate the dominant macro-determinant of the propensity for firms splitting shares or paying special dividends, all the variables are included and run in one regression for each event. The higher the coefficient of a variable, the stronger its dominant effect on corporate decisions among others. For special dividends, a dummy variable of *Tax1986* is added, which takes a value of one if a special dividend is announced after the 1986 Tax Reform. The purpose of it is to examine the effect of Tax Regime changes on cash dividend distributions[8].

The dominant macro-determinant for the likelihood of stock splits:

$$Split_{i,t} = \alpha_i + \beta_{i,1}Bull_{i,t} + \beta_{i,2}Expansion + \beta_{i,3}January_{i,t} + \beta_{i,4}Halloween_{i,t} + \beta_{i,5}Ln(Size)_{i,t} + \beta_{i,6}Ln(Price)_{i,t} + e_{i,t}$$

$$\begin{aligned} Split_{i,t} = \alpha_i &+ \beta_{i,1}pdnd_{i,t} + \beta_{i,2}nipo_{i,t} + \beta_{i,3}ripo_{i,t} + \beta_{i,4}turn_{i,t} + \beta_{i,5}cefd_{i,t} + \beta_{i,6}es_{i,t} \\ &+ \beta_{i,7}DIV_{i,t} + \beta_{i,8}DEF_{i,t} + \beta_{i,9}YLD_{i,t} + \beta_{i,10}TERM_{i,t} + \beta_{i,11}GDP_{i,t} \\ &+ \beta_{i,12}UNEMP_{i,t} + \beta_{i,13}cpi_{i,t} + \beta_{i,14}inf_{i,t} + \beta_{i,15}Ln(Size)_{i,t} \\ &+ \beta_{i,16}Ln(Price)_{i,t} + \beta_{i,17}January_{i,t} + \beta_{i,18}Halloween_{i,t} + e_{i,t} \end{aligned}$$

$$\begin{aligned} Split_{i,t} = \alpha_i &+ \beta_{i,1}pdnd_{i,t-1} + \beta_{i,2}nipo_{i,t-1} + \beta_{i,3}ripo_{i,t-1} + \beta_{i,4}turn_{i,t-1} + \beta_{i,5}cefd_{i,t-1} \\ &+ \beta_{i,6}es_{i,t-1} + \beta_{i,7}DIV_{i,t-1} + \beta_{i,8}DEF_{i,t-1} + \beta_{i,9}YLD_{i,t-1} + \beta_{i,10}TERM_{i,t-1} \\ &+ \beta_{i,11}GDP_{i,t-1} + \beta_{i,12}UNEMP_{i,t-1} + \beta_{i,13}cpi_{i,t-1} + \beta_{i,14}inf_{i,t-1} + \beta_{i,15}Ln(Size)_{i,t} \\ &+ \beta_{i,16}Ln(Price)_{i,t} + \beta_{i,17}January_{i,t} + \beta_{i,18}Halloween_{i,t} + e_{i,t} \end{aligned}$$

The dominant macro-determinant for the likelihood of special dividends:

$$\begin{aligned} SpecialDiv_{i,t} = \alpha_i &+ \beta_{i,1}Bull_{i,t} + \beta_{i,2}Expansion + \beta_{i,3}January_{i,t} + \beta_{i,4}Halloween_{i,t} \\ &+ \beta_{i,5}Ln(Size)_{i,t} + \beta_{i,6}Ln(Price)_{i,t} + \beta_{i,7}Tax1986_{i,t} + e_{i,t} \end{aligned}$$

$$\begin{aligned} SpecialDiv_{i,t} = \alpha_i & \\ &+ \beta_{i,1}pdnd_{i,t} + \beta_{i,2}nipo_{i,t} + \beta_{i,3}ripo_{i,t} + \beta_{i,4}turn_{i,t} + \beta_{i,5}cefd_{i,t} + \beta_{i,6}es_{i,t} \\ &+ \beta_{i,7}DIV_{i,t} + \beta_{i,8}DEF_{i,t} + \beta_{i,9}YLD_{i,t} + \beta_{i,10}TERM_{i,t} + \beta_{i,11}GDP_{i,t} \\ &+ \beta_{i,12}UNEMP_{i,t} + \beta_{i,13}cpi_{i,t} + \beta_{i,14}inf_{i,t} + \beta_{i,15}Ln(Size)_{i,t} \\ &+ \beta_{i,16}Ln(Price)_{i,t} + \beta_{i,17}Tax1986_{i,t} + \beta_{i,18}January_{i,t} + \beta_{i,19}Halloween_{i,t} + e_{i,t} \end{aligned}$$

[8] The tax dummy variable is particularly added to control the tax effect in the overall model to test the dominant effect in Chapter 8 as an additional robustness check.

$$
\begin{aligned}
SpecialDiv_{i,t} = \alpha_i & \\
& + \beta_{i,1}pdnd_{i,t-1} + \beta_{i,2}nipo_{i,t-1} + \beta_{i,3}ripo_{i,t-1} + \beta_{i,4}turn_{i,t-1} + \beta_{i,5}cefd_{i,t-1} \\
& + \beta_{i,6}es_{i,t-1} + \beta_{i,7}DIV_{i,t-1} + \beta_{i,8}DEF_{i,t-1} + \beta_{i,9}YLD_{i,t-1} + \beta_{i,10}TERM_{i,t-1} \\
& + \beta_{i,11}GDP_{i,t-1} + \beta_{i,12}UNEMP_{i,t-1} + \beta_{i,13}cpi_{i,t-1} + \beta_{i,14}inf_{i,t-1} + \beta_{i,15}Ln(Size)_{i,t} \\
& + \beta_{i,16}Ln(Price)_{i,t} + \beta_{i,17}Tax1986_{i,t} + \beta_{i,18}January_{i,t} + \beta_{i,19}Halloween_{i,t} + e_{i,t}
\end{aligned}
$$

3.5 Event Study Methodology

To examine the market reaction to stock split and special dividend announcements, this research employs several event study methodologies. For short-term abnormal returns, the three commonly used models are applied: the Mean Adjusted Model, Market Adjusted Model, and Market Model Adjusted Model. For long-term abnormal returns, Fama-French three-factor and Carhart four-factor Calendar Time Portfolio methods are selected, as they are less biased in the measurement of long-run event performance (Boehme & Sorescu, 2002; Byun & Rozeff, 2003). This section discusses both of these short-term and long-term event study models in detail.

3.5.1 Short Run Abnormal Returns

3.5.1.1 The Mean Adjusted Model

First, the Mean Adjusted model uses the mean daily return of an individual stock as a benchmark to calculate excess returns. The estimation period is the 255 trading days immediately preceding the event date. The key assumption for the Mean Adjusted model is the mean return of the given security being constant over time. Hence, this model is also called the Constant-Mean-Return model. Brown and Warner (1980, 1985) report that the Mean Adjusted model appears to be simple, but it often yields similar results to more sophisticated models.

$$AR_{i,t} = R_{i,t} - E[R_{i,t}/X_{i,t}]$$

where $AR_{i,t}$ is the period-*t* abnormal returns on security i, $R_{i,t}$ is the period-*t* actual returns on security i, $ER_{i,t}$ is the average return on security *i* with an estimation window of 255 trading days, and $X_{i,t}$ is the conditioning information for the normal performance.

3.5.1.2 The Market Adjusted Model

Second, the Market Adjusted Model is similar to the Mean Adjusted model, except that the market return is used as the benchmark to compute abnormal returns. For robustness check, this study uses both equal-weighted and value-weighted market index returns in CRSP as proxies of market returns.

$$AR_{i,t} = R_{i,t} - R_{m,t}$$

where $AR_{i,t}$ is the period-t abnormal returns on security i, $R_{i,t}$ is the period-t actual returns on security i, and $R_{m,t}$ is the equal-weighted and value-weighted market returns in CRSP for period-t.

3.5.1.3 The Market Model Adjusted Model

Third, the Market Model is one of the most commonly used statistical models in event studies. It incorporates risks into the calculation of excess returns. Both equal-weighted and value-weighted market returns are also applied in the Market Model.

$$AR_{i,t} = R_{i,t} - \hat{\alpha}_i - \hat{\beta}_i R_{m,t}$$

where $AR_{i,t}$ is the period-t abnormal returns on security i, $R_{i,t}$ is the period-t actual returns on security i, $R_{m,t}$ is the equal-weighted and value-weighted market returns in CRSP for period-t. $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimators estimated from $R_{it} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{it}$ with the estimation window of 255 trading days, $E[\varepsilon_{it}] = 0$, and $Var[\varepsilon_{it}] = \sigma^2_{\varepsilon i}$. The main assumption of the Market Model is beta, the individual stock risk in relation to the market risk, being constant.

Short-term event windows include one day surrounding an announcement date, one week after an announcement date, 10 days, 15 days, and 21 days after an announcement date, as well as one month, two months, three months, and six months after an announcement date. If 0 represents an announcement day, these event windows are displayed as (-1, +1), (-1, 0), (0, +1), (1, 7), (1, 10), (1, 15), (1, 21), (1, 30), (1, 61), (1, 91), and (1, 183). They are short-run event windows generally appeared in the literature. Abnormal returns of one month before announcement date, (-30, -2) are also calculated to show the effect of any information leakage before stock split and special dividend announcements.

3.5.2 Long Run Abnormal Returns

As some historical long-term event study methodologies have tended to produce biased results, this study carefully chooses models to calculate and examine abnormal returns. Mitchell and Stafford (2000) report the conventional long-run model of Buy and Hold Abnormal Returns (BHARs) can create a false impression on price adjustment to corporate events. For instance, they find that BHARs increase with the return horizon, even when no abnormal returns are generated after the first period. In addition, BHARs have the problem of cross-sectional correlations among firms, and thus *t*-statistics are overstated. These issues produce a misspecified model problem and lead to a deceptive inference for market efficiency in the long run. Furthermore, Boehme and Sorescu (2002) agree that BHARs contain severe skewness in their distributions. This problem cannot be easily solved by the normal solution of the bootstrapping method because of the cross-sectional correlations. In addition, Byun and Rozeff (2003) show that Cumulative Abnormal Returns (CARs) offer no more significant difference in results than BHARs. CARs are also susceptible to the problem of cross-sectional dependence like BHARs (Mitchell & Stafford, 2000).

Boehme and Sorescu (2002) suggest that the Calendar Time Portfolio method is a better way to examine long-term returns after they scrutinized and compared long-run models of BHARs, CARs, and Calendar Time Abnormal Returns (CTARs) with dividend initiation and resumption announcements. In particular, they point out that CTARs can not only overcome the problems of cross-sectional correlations and reduce the misspecified model problem, but they can also minimize and eliminate the heteroskedasticity problem in the model. Supporting the evidence, Byun and Rozeff (2003) re-examine the long-run market reaction to stock split announcements, and find the long-term abnormal returns disappearing with the calendar-time method applied in comparison to BHARs and CARs. According to Fama (1998), the bad-model selection is not a serious problem in calculating short-run returns. However, it is substantially important for long-run event windows, particularly as when the number of months increases, the standard errors of the BHARs and CARs increase like $n^{1/2}$. Therefore, in order to reduce biases and draw better market efficiency inferences, this study employs CTARs to compute long-term abnormal returns for stock split and special dividend announcements.

For the purpose of robustness check, both equal-weighted and value-weighted portfolios are applied as in the Fama-French (1993) three-factor and Carhart (1997) four-factor Calendar Time Portfolio methods. Ordinary Least Square (OLS) and Weighted Least Square (WLS), and Generalized Method of Moment (GMM) regressions are estimated. Monthly returns in the WLS model are weighted by the square root of the number of firms contained in the month (White, 1980). Long-term event windows of abnormal returns for this research include one year, two years, three years, and five years after the announcements of stock splits and special dividend distributions.

3.5.2.1 The Fama-French (1993) Three-Factor Calendar Time Portfolio

$$CTAR_{p,t} = R_{p,t} - [\hat{\alpha}_p + \hat{\beta}_p(R_{m,t} - R_{f,t}) + \hat{s}_p SMB_t + \hat{h}_p HML_t]$$

where $CTAR_{p,t}$ is the monthly abnormal returns for all sample firms, $R_{p,t}$ is the monthly actual returns on the portfolio of event firms at time t, $R_{f,t}$ is the one-month Treasury bill returns, and $R_{m,t}$ is the monthly market returns in both CRSP equal-weighted and value-weighted indexes. SMB_t is the monthly difference in returns between portfolios of small (size) firms and large (size) firms, and HML_t is the monthly difference in returns between portfolios of firms with high BE/ME (book-to-market) ratios and with low BE/ME (book-to-market) ratios. Estimators of $\hat{\alpha}_p,\ \hat{\beta}_p,\ \hat{s}_p\ and\ \hat{h}_p$ are estimated from

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_p(R_{m,t} - R_{f,t}) + s_p SMB_t + h_p HML_t + \varepsilon_{i,t}$$

within 12 months prior to event windows. All the portfolios are rebalanced every month.

3.5.2.2 The Carhart (1997) Four-Factor Calendar Time Portfolio

$$CTAR_{p,t} = R_{p,t} - [\hat{\alpha}_p + \hat{\beta}_p(R_{m,t} - R_{f,t}) + \hat{s}_p SMB_t + \hat{h}_p HML_t + \hat{m}_p PR1YR_t]$$

where $PR1YR_t$ is the monthly difference in returns between portfolios of firms with highest returns and with lowest returns in months *t*-12 to *t*-2. All the rest of the variables are the same as in the Fama-French three-factor model. Estimators of $\hat{\alpha}_p,\ \hat{\beta}_p,\ \hat{s}_p,\ \hat{h}_p\ and\ \hat{m}_p$ are estimated from

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_p(R_{m,t} - R_{f,t}) + s_p SMB_t + h_p HML_t + m_p PR1YR_t + \varepsilon_{i,t}$$

within the prior 12 months, and all the portfolios are rebalanced each month. The Fama-French three risk factors and the Carhart four factors are directly obtained from Kenneth French's website[9].

3.6 Multivariate Regression on Abnormal Returns

To scrutinize how market conditions, business cycles, and monthly patterns affect the short run abnormal returns of stock splits and special dividend announcements, this study uses daily cross-sectional multivariate regression analysis. The dependent variables of regressions are abnormal returns calculated by the Market Model and Market Adjusted Model for the purposes of parsimony. Event windows include the commonly used windows of five days (-2,

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[9] http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

+2), 10 days (-1, +9), and 30 days (+1, 30) surrounding stock splits and special dividend announcements. Control variables consist of *Ln(Size)* and *Ln(Price)* as well as the split factor of *SplFac* for stock splits and *Divamt* for the amount of special dividend paid per share for special dividends. The purpose is to control the effect of the size of an announcement. The investor sentiment and business cycle variables are the same as described in Section 3.4 above. With the aim of avoiding autocorrelation and heteroskedasticity problems in cross-sectional regressions, all estimators are calculated using Newey-West (1987) standard errors[10].

The coefficient of *Ln(Size)* should be negative as risk-adjusted returns are higher for smaller size firms than larger size firms (Banz, 1981). Thus, abnormal returns generated from stock splits and special dividend announcements should be greater for smaller companies compared to larger ones. The sign of *Ln(Price)* is also expected to be negative due to the fact that the extent of prices going up from these announcements decreases when share prices increase (Ikenberry & Ramnath, 2002; Ikenberry, Rankine, & Stice, 1996). Split factors (*SplFac)* and an amount of special dividend paid (*Divamt)* should be statistically positive and correlated to abnormal returns of stock splits and special dividends as they are the size of an announcement (Crawford, Franz, & Lobo, 2009; Howe, He, & Kao, 1992; Ikenberry, Rankine, & Stice, 1996; Lie, 2000). The detail of each model applied for the sections of market conditions, business cycle, and monthly pattern is illustrated as follows:

3.6.1 Market Condition Affects Abnormal Returns

With the purpose of examining the impact of market conditions on the abnormal returns of stock splits and special dividend announcements, this study uses the dummy variable of *Bull* and investor sentiment variables. The coefficient of *Bull* should be statistically positive, indicating that the market responses to stock split and special dividend announcements are stronger in bull markets than in bear markets (Baker & Wurgler, 2000; Dittmar & Dittmar, 2008). The coefficients of investor sentiment variables should also be statistically significant and positive, as highly positive investor sentiment can increase market reaction to corporate events (Baker & Wurgler, 2002, 2006; Mian & Sankaraguruswamy, 2012). The regression models of abnormal returns on market conditions for each event are constructed below:

Stock splits with the Bull market dummy:

[10] Each regression is run by the Newey-West test to correct standard errors in Eviews. The results are also run and checked with Stata.

$$AR_{i,t} = \alpha_i + \beta_{i,1}Bull_{i,t} + \beta_{i,2}SplFac_{i,t} + \beta_{i,3}Ln(Size)_{i,t} + \beta_{i,4}Ln(Price)_{i,t} + e_{i,t}$$

Stock splits with investor sentiment variables:

$$AR_{i,t} = \alpha_i + \beta_{i,1}pdnd_{i,t} + \beta_{i,2}nipo_{i,t} + \beta_{i,3}ripo_{i,t} + \beta_{i,4}turn_{i,t} + \beta_{i,5}cefd_{i,t} + \beta_{i,6}es_{i,t} + \beta_{i,7}SplFac_{i,t} + \beta_{i,8}Ln(Size)_{i,t} + \beta_{i,9}Ln(Price)_{i,t} + e_{i,t}$$

Stock splits with investor sentiment variables one period ahead (forecasting model):

$$AR_{i,t} = \alpha_i + \beta_{i,1}pdnd_{i,t-1} + \beta_{i,2}nipo_{i,t-1} + \beta_{i,3}ripo_{i,t-1} + \beta_{i,4}turn_{i,t-1} + \beta_{i,5}cefd_{i,t-1} + \beta_{i,6}es_{i,t-1} + \beta_{i,7}SplFac_{i,t} + \beta_{i,8}Ln(Size)_{i,t} + \beta_{i,9}Ln(Price)_{i,t} + e_{i,t}$$

Special dividends with the Bull market dummy:

$$AR_{i,t} = \alpha_i + \beta_{i,1}Bull_{i,t} + \beta_{i,2}Divamt_{i,t} + \beta_{i,3}Ln(Size)_{i,t} + \beta_{i,4}Ln(Price)_{i,t} + e_{i,t}$$

Special dividends with investor sentiment variables:

$$AR_{i,t} = \alpha_i + \beta_{i,1}pdnd_{i,t} + \beta_{i,2}nipo_{i,t} + \beta_{i,3}ripo_{i,t} + \beta_{i,4}turn_{i,t} + \beta_{i,5}cefd_{i,t} + \beta_{i,6}es_{i,t} + \beta_{i,7}Divamt_{i,t} + \beta_{i,8}Ln(Size)_{i,t} + \beta_{i,9}Ln(Price)_{i,t} + e_{i,t}$$

Special dividends with investor sentiment variables one period ahead (forecasting model):

$$AR_{i,t} = \alpha_i + \beta_{i,1}pdnd_{i,t-1} + \beta_{i,2}nipo_{i,t-1} + \beta_{i,3}ripo_{i,t-1} + \beta_{i,4}turn_{i,t-1} + \beta_{i,5}cefd_{i,t-1} + \beta_{i,6}es_{i,t-1} + \beta_{i,7}Divamt_{i,t} + \beta_{i,8}Ln(Size)_{i,t} + \beta_{i,9}Ln(Price)_{i,t} + e_{i,t}$$

3.6.2 Business Cycle Affects Abnormal Returns

To examine the relationship between the business cycle and the abnormal returns of stock splits and special dividend announcements, this research uses the dummy variable of *Expansion* and the business cycle variables and macroeconomic risk factors, following the studies of Antoniou, Lam, and Paudyal (2007), Chordia and Shivakumar (2002, 2006), Fama and French (1993), and Griffin, Ji, and Martin (2003), which are based on the NBER series. The coefficients of these variables should be statistically significant and positively correlated to the abnormal returns, especially for stock split events. The multivariate regressions for each event are listed as follows:

Stock splits with the Expansion dummy:

$$AR_{i,t} = \alpha_i + \beta_{i,1}Expansion_{i,t} + \beta_{i,2}SplFac_{i,t} + \beta_{i,3}Ln(Size)_{i,t} + \beta_{i,4}Ln(Price)_{i,t} + e_{i,t}$$

Stock splits with macroeconomic risk factors:

$$AR_{i,t} = \alpha_i + \beta_{i,1}DIV_{i,t} + \beta_{i,2}DEF_{i,t} + \beta_{i,3}YLD_{i,t} + \beta_{i,4}TERM_{i,t} + \beta_{i,5}SplFac_{i,t} + \beta_{i,6}Ln(Size)_{i,t} + \beta_{i,7}Ln(Price)_{i,t} + e_{i,t}$$

Stock splits with general business cycle variables:

$$AR_{i,t} = \alpha_i + \beta_{i,1}GDP_{i,t} + \beta_{i,2}UNEMP_{i,t} + \beta_{i,3}cpi_{i,t} + \beta_{i,4}inf_{i,t} + \beta_{i,5}SplFac_{i,t} + \beta_{i,6}Ln(Size)_{i,t} + \beta_{i,7}Ln(Price)_{i,t} + e_{i,t}$$

Stock splits with macroeconomic risk factors one period ahead (forecasting model):

$$AR_{i,t} = \alpha_i + \beta_{i,1}DIV_{i,t-1} + \beta_{i,2}DEF_{i,t-1} + \beta_{i,3}YLD_{i,t-1} + \beta_{i,4}TERM_{i,t-1} + \beta_{i,5}SplFac_{i,t} + \beta_{i,6}Ln(Size)_{i,t} + \beta_{i,7}Ln(Price)_{i,t} + e_{i,t}$$

Stock splits with general business cycle variables one period ahead (forecasting model):

$$AR_{i,t} = \alpha_i + \beta_{i,1}GDP_{i,t-1} + \beta_{i,2}UNEMP_{i,t-1} + \beta_{i,3}cpi_{i,t-1} + \beta_{i,4}inf_{i,t-1} + \beta_{i,5}SplFac_{i,t} + \beta_{i,6}Ln(Size)_{i,t} + \beta_{i,7}Ln(Price)_{i,t} + e_{i,t}$$

Special dividends with the Expansion dummy:

$$AR_{i,t} = \alpha_i + \beta_{i,1}Expansion_{i,t} + \beta_{i,2}Divamt_{i,t} + \beta_{i,3}Ln(Size)_{i,t} + \beta_{i,4}Ln(Price)_{i,t} + e_{i,t}$$

Special dividends with macroeconomic risk factors:

$$AR_{i,t} = \alpha_i + \beta_{i,1}DIV_{i,t} + \beta_{i,2}DEF_{i,t} + \beta_{i,3}YLD_{i,t} + \beta_{i,4}TERM_{i,t} + \beta_{i,5}Divamt + \beta_{i,6}Ln(Size)_{i,t} + \beta_{i,7}Ln(Price)_{i,t} + e_{i,t}$$

Special dividends with general business cycle variables:

$$AR_{i,t} = \alpha_i + \beta_{i,1}GDP_{i,t} + \beta_{i,2}UNEMP_{i,t} + \beta_{i,3}cpi_{i,t} + \beta_{i,4}inf_{i,t} + \beta_{i,5}Divamt + \beta_{i,6}Ln(Size)_{i,t} + \beta_{i,7}Ln(Price)_{i,t} + e_{i,t}$$

Special dividends with macroeconomic risk factors one period ahead (forecasting model):

$$AR_{i,t} = \alpha_i + \beta_{i,1}DIV_{i,t-1} + \beta_{i,2}DEF_{i,t-1} + \beta_{i,3}YLD_{i,t-1} + \beta_{i,4}TERM_{i,t-1} + \beta_{i,5}Divamt_{i,t} + \beta_{i,6}Ln(Size)_{i,t} + \beta_{i,7}Ln(Price)_{i,t} + e_{i,t}$$

Special dividends with general business cycle variables one period ahead (forecasting model):

$$AR_{i,t} = \alpha_i + \beta_{i,1}GDP_{i,t-1} + \beta_{i,2}UNEMP_{i,t-1} + \beta_{i,3}cpi_{i,t-1} + \beta_{i,4}inf_{i,t-1} + \beta_{i,5}Divamt_{i,t} + \beta_{i,6}Ln(Size)_{i,t} + \beta_{i,7}Ln(Price)_{i,t} + e_{i,t}$$

3.6.3 Monthly Pattern of Abnormal Returns

In order to investigate whether there is a monthly pattern in the abnormal returns of stock splits and special dividends, two dummy variables of *January* and *Halloween* are used. To ensure that the Halloween Effect is not disguised by the January Effect, the additional dummy variable of *HalnoJan* and a separate regression are employed for each event. This method follows the study of Bouman and Jacobsen (2002). The expected signs of the coefficients for these dummy variables should be statistically positive and the regression models for each event with each effect are shown below:

Stock splits with the January dummy:

$$AR_{i,t} = \alpha_i + \beta_{i,1}January_{i,t} + \beta_{i,2}SplFac_{i,t} + \beta_{i,3}Ln(Size)_{i,t} + \beta_{i,4}Ln(Price)_{i,t} + e_{i,t}$$

Stock splits with the Halloween dummy:

$$AR_{i,t} = \alpha_i + \beta_{i,1}Halloween_{i,t} + \beta_{i,2}SplFac_{i,t} + \beta_{i,3}Ln(Size)_{i,t} + \beta_{i,4}Ln(Price)_{i,t} + e_{i,t}$$

Distinguishing the January Effect and the Halloween Effect:

$$AR_{i,t} = \alpha_i + \beta_{i,1}January_{i,t} + \beta_{i,2}HalnoJan_{i,t} + \beta_{i,3}SplFac_{i,t} + \beta_{i,4}Ln(Size)_{i,t} + \beta_{i,5}Ln(Price)_{i,t} + e_{i,t}$$

Special dividends with the January dummy:

$$AR_{i,t} = \alpha_i + \beta_{i,1}January_{i,t} + \beta_{i,2}Divamt_{i,t} + \beta_{i,3}Ln(Size)_{i,t} + \beta_{i,4}Ln(Price)_{i,t} + e_{i,t}$$

Special dividends with the Halloween dummy:

$$AR_{i,t} = \alpha_i + \beta_{i,1}Halloween_{i,t} + \beta_{i,2}Divamt_{i,t} + \beta_{i,3}Ln(Size)_{i,t} + \beta_{i,4}Ln(Price)_{i,t} + e_{i,t}$$

Distinguishing the January Effect and the Halloween Effect:

$$AR_{i,t} = \alpha_i + \beta_{i,1}January_{i,t} + \beta_{i,2}HalnoJan_{i,t} + \beta_{i,3}Divamt_{i,t} + \beta_{i,4}Ln(Size)_{i,t} + \beta_{i,5}Ln(Price)_{i,t} + e_{i,t}$$

3.6.4 The Dominant Macro-Effect on the Abnormal Returns of Stock Splits and Special Dividend Announcements

The dominant effect of macro-determinants on abnormal returns of stock splits and special dividend announcements is calculated using the models with all the variables included. The variable with the highest coefficient is the dominant factor that affects these corporate event returns. The dummy variable of *Tax1986* is also included to examine the effect of change in the Tax Regime on the market reaction to special dividend distributions.

The dominant macro-determinant for abnormal returns of stock splits:

$$
\begin{aligned}
AR_{i,t} = \alpha_i + \beta_{i,1}Bull_{i,t} + \beta_{i,2}Expansion + \beta_{i,3}January_{i,t} + \beta_{i,4}Halloween_{i,t} \\
+ \beta_{i,5}SplFac_{i,t} + \beta_{i,6}Ln(Size)_{i,t} + \beta_{i,7}Ln(Price)_{i,t} + e_{i,t}
\end{aligned}
$$

$$
\begin{aligned}
AR_{i,t} = \alpha_i &+ \beta_{i,1}pdnd_{i,t} + \beta_{i,2}nipo_{i,t} + \beta_{i,3}ripo_{i,t} + \beta_{i,4}turn_{i,t} + \beta_{i,5}cefd_{i,t} + \beta_{i,6}es_{i,t} \\
&+ \beta_{i,7}DIV_{i,t} + \beta_{i,8}DEF_{i,t} + \beta_{i,9}YLD_{i,t} + \beta_{i,10}TERM_{i,t} + \beta_{i,11}GDP_{i,t} \\
&+ \beta_{i,12}UNEMP_{i,t} + \beta_{i,13}cpi_{i,t} + \beta_{i,14}inf_{i,t} + \beta_{i,15}SplFac_{i,t} \\
&+ \beta_{i,16}Ln(Size)_{i,t} + \beta_{i,17}Ln(Price)_{i,t} + \beta_{i,18}January_{i,t} + \beta_{i,19}Halloween_{i,t} + e_{i,t}
\end{aligned}
$$

$$
\begin{aligned}
AR_{i,t} = \alpha_i &+ \beta_{i,1}pdnd_{i,t-1} + \beta_{i,2}nipo_{i,t-1} + \beta_{i,3}ripo_{i,t-1} + \beta_{i,4}turn_{i,t-1} + \beta_{i,5}cefd_{i,t-1} \\
&+ \beta_{i,6}es_{i,t-1} + \beta_{i,7}DIV_{i,t-1} + \beta_{i,8}DEF_{i,t-1} + \beta_{i,9}YLD_{i,t-1} + \beta_{i,10}TERM_{i,t-1} \\
&+ \beta_{i,11}GDP_{i,t-1} + \beta_{i,12}UNEMP_{i,t-1} + \beta_{i,13}cpi_{i,t-1} + \beta_{i,14}inf_{i,t-1} + \beta_{i,15}SplFac_{i,t} \\
&+ \beta_{i,16}Ln(Size)_{i,t} + \beta_{i,17}Ln(Price)_{i,t} + \beta_{i,18}January_{i,t} + \beta_{i,19}Halloween_{i,t} + e_{i,t}
\end{aligned}
$$

The dominant macro-determinant for abnormal returns of special dividends:

$$
\begin{aligned}
AR_{i,t} = \alpha_i + \beta_{i,1}Bull_{i,t} + \beta_{i,2}Expansion + \beta_{i,3}January_{i,t} + \beta_{i,4}Halloween_{i,t} \\
+ \beta_{i,5}Divamt_{i,t} + \beta_{i,6}Ln(Size)_{i,t} + \beta_{i,7}Ln(Price)_{i,t} + \beta_{i,8}Tax1986_{i,t} + e_{i,t}
\end{aligned}
$$

$$
\begin{aligned}
AR_{i,t} = \alpha_i &+ \beta_{i,1}pdnd_{i,t} + \beta_{i,2}nipo_{i,t} + \beta_{i,3}ripo_{i,t} + \beta_{i,4}turn_{i,t} + \beta_{i,5}cefd_{i,t} + \beta_{i,6}es_{i,t} \\
&+ \beta_{i,7}DIV_{i,t} + \beta_{i,8}DEF_{i,t} + \beta_{i,9}YLD_{i,t} + \beta_{i,10}TERM_{i,t} + \beta_{i,11}GDP_{i,t} \\
&+ \beta_{i,12}UNEMP_{i,t} + \beta_{i,13}cpi_{i,t} + \beta_{i,14}inf_{i,t} + \beta_{i,15}Divamt \\
&+ \beta_{i,16}Ln(Size)_{i,t} + \beta_{i,17}Ln(Price)_{i,t} + \beta_{i,18}Tax1986_{i,t} + \beta_{i,19}January_{i,t} \\
&+ \beta_{i,20}Halloween_{i,t} + e_{i,t}
\end{aligned}
$$

$$
\begin{aligned}
AR_{i,t} = \alpha_i &+ \beta_{i,1}pdnd_{i,t-1} + \beta_{i,2}nipo_{i,t-1} + \beta_{i,3}ripo_{i,t-1} + \beta_{i,4}turn_{i,t-1} + \beta_{i,5}cefd_{i,t-1} \\
&+ \beta_{i,6}es_{i,t-1} + \beta_{i,7}DIV_{i,t-1} + \beta_{i,8}DEF_{i,t-1} + \beta_{i,9}YLD_{i,t-1} + \beta_{i,10}TERM_{i,t-1} \\
&+ \beta_{i,11}GDP_{i,t-1} + \beta_{i,12}UNEMP_{i,t-1} + \beta_{i,13}cpi_{i,t-1} + \beta_{i,14}inf_{i,t-1} + \beta_{i,15}Divamt_{i,t} \\
&+ \beta_{i,16}Ln(Size)_{i,t} \\
&+ \beta_{i,17}Ln(Price)_{i,t} + \beta_{i,18}Tax1986_{i,t} + \beta_{i,19}January_{i,t} + \beta_{i,20}Halloween_{i,t}\ e_{i,t}
\end{aligned}
$$

3.7 Summary

To summarise, this chapter illustrates the research design of this thesis. It formulates the hypotheses and explains why market conditions, business cycles, and monthly patterns are proposed as important factors to drive the aggregate level of activity in stock splits and special dividend announcements. It also provides the details of the source of the variables, how the events are selected, and how matching portfolios are constructed. Most importantly, this chapter lists all the models used in this research. The logistic models and multivariate regressions firstly demonstrate whether market conditions, business cycles, and monthly patterns can affect the likelihood and abnormal returns of stock splits and special dividend distributions. Then, they are constructed to show which macro-determinant has the dominant effect to explain these two types of announcements. The event study methodologies are employed to calculate short-term and long-term abnormal returns for different event windows in bull and bear markets, in economic expansions and contractions, and in different months. The empirical results are presented in detail in Chapters 5, 6, 7, and 8, following the introduction to results in Chapter 4.

CHAPTER FOUR – INTRODUCTION TO RESULTS

This chapter presents the preliminary results of the thesis. It first provides an insight into the aggregate patterns of stock split and special dividend announcements. It then presents the data for the number of stock splits for each split ratio in different market conditions, economic periods, and in each month from 1926 to 2008. It also shows how frequent special dividends are paid and the sizes of special dividend announcements. The intra-industry effects are further calculated to explore whether stock splits and special dividend announcements produce positive or negative effects to non-event firms in the same industry. Descriptive statistics and correlation matrices for each variable being used in the subsequent chapters are shown and discussed in the final section of this chapter.

4.1 Patterns of Stock Splits and Special Dividend Announcements

This research starts its analysis by exploring the patterns of stock split and special dividend announcements to investigate whether splits are clustered in specific periods or windows, like the period 1980 to 2000 (Crawford, Franz, & Lobo, 2009) and if special dividends happen in waves like other corporate events, such as mergers and acquisitions, IPOs, and SEOs. Figure 4.1 shows that stock splits have become popular since 1960, peaking during the 1970s to the middle of 1990s. After that, the propensity of the announcements appears to decrease, which is similar to the findings of Crawford, Franz, and Lobo. As the time between the early 1980s to the late 1990s was a prolonged bull market in the US, this suggests some relationship between bull markets and firms' intentions to split. Based on this pattern of stock split announcements, four sub-periods are observed. They are the dormant period for stock splits, 1926 to 1960; the growth period 1961 to 1975; the peak period 1976 to 1995; and the decline period 1996 to 2008. The number of stock splits in each year is counted in Panel A of Appendix 1A, and the percentage of splits in the number of firms in every year is shown in Panel B.

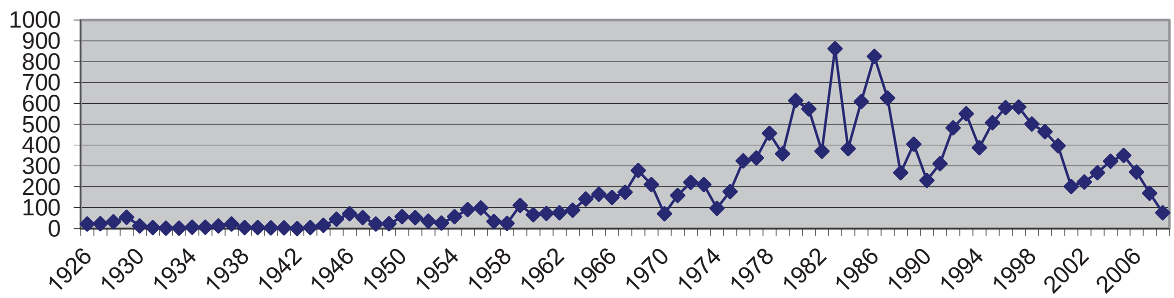

Figure 4.1 Numbers of Stock Split Announcements in the period 1926 to 2008

Figure 4.2 plots the pattern of special dividend announcements between 1926 and 2008. The graph shows the first peak of special dividends occurs in 1936 after the Great Depression, followed by an upward trend during the 1940s. In 1950, the number of special dividends reaches its highest point, indicating a long history of these events being popular. During the period of the Korean War in the 1950s and the Vietnam War in the 1960s, the tendency for special dividends reduces dramatically. Following these periods, the propensity for firms to pay extra cash dividends increases and, surprisingly, attains another peak throughout the Oil Crisis in the 1970s. Although the Tax Regime Act of 1986 and the 2003 Dividend Tax Cut regulation somewhat increases the quantity of special dividends announced, the overall trend of these announcements has become relatively stable and flat since 1980. These results provide general evidence that the patterns of special dividend announcements occur in waves. Four sub-periods are assigned according to this aggregate pattern, which represent four waves in the period 1926 to 2008. They are 1926 to 1940, before the US joined World War II; 1941 to 1960, before the Organization of the Petroleum Exporting Countries (OPEC) was formed; 1961 to 1985, before the US Tax Reform of 1986; and 1986 to 2008, after the Tax Reform of 1986 (Julio & Ikenberry, 2004). The number of special dividends in every year is additionally counted in Panel A of Appendix 1B, and the percentage of special dividends paid on the total number of firms in each year is listed in Panel B.

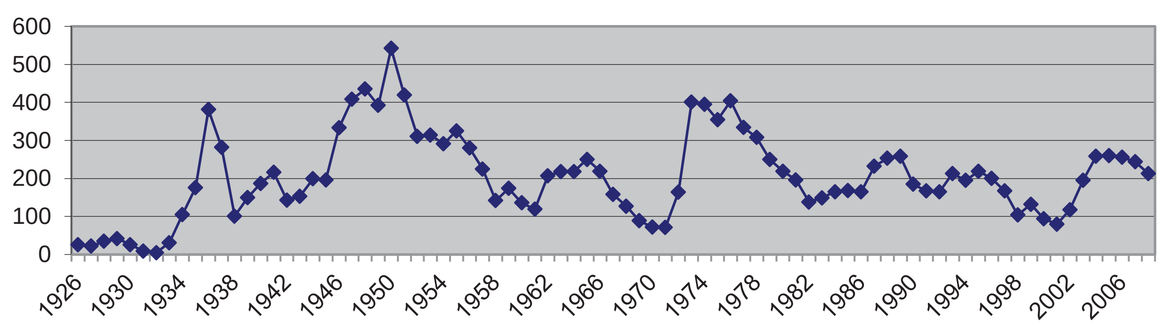

Figure 4.2 Numbers of Special Dividend Announcements from 1926 to 2008

4.2 Ratios of Stock Splits

This research counts the number of stock splits in each split ratio to show which ratio is the most common one for firms to split shares. A split ratio is the number of new shares outstanding after a split over the original number of shares. For example, a two-for-one (2-for-1) split doubles the amount of outstanding shares, but theoretically decreases the price to half of its pre-split price. In Appendix 1C, the results show that the 2-for-1 split is the most popular type of stock split announcement, followed by the 3-for-2 split, the 5-for-4 split, and the 3-for-1 split, respectively. This is similar to the preceding studies of Ikenberry, Rankine and Stice (1996) and Ikenberry and Ramnath (2002). In addition, this study uses split ratios as one of the control variables for stock split announcements, which follows most studies in the literature, as stock prices may react differently to different split ratios. Typically, the higher a split ratio is, the larger the change in abnormal returns. Moreover, the results in Appendix 1C compute the total number of stock splits for each split ratio in different time periods. In particular, there are twice as many stock splits in each ratio in bull markets as in bear markets, and about ten times more splits in economic expansionary periods than in contractionary periods. This is at least partly due to longer periods in bull market and economic upturn conditions than in bear market and economic downturn conditions. In contrast, the number of stock splits for each ratio in each month is much similar to each other, which is attributable to the equal length of time every month.

4.3 Frequency and Size of Special Dividends

The frequency of special dividend announcements is counted to explore how frequent special dividends are paid by corporations. According to Table 4.1, 87% of all firms paid special dividends once in any given year, 16% of the total firms paid special dividends continuously for two years or more, 9% paid special dividends twice a year, and 4.3% paid three times or more in a year over the period from 1926 to 2008. These figures indicate that special dividends are common and popular corporate events initiated by firms. In addition, the number of companies distributing special dividends doubles in the period 1961 to 2008 compared to the period 1926 to 1960. More firms prefer to pay special dividends at least three times a year after 1986, although the peak period of firms paying special dividends is in 1941 to 1960. These results imply the occurrence of special dividend announcements can be predicted, especially for the firms that have previously announced them. These findings are in line with the preceding study of DeAngelo, DeAngelo and Skinner (2000). They report that special dividends are regularly paid and the positive signalling effect of the announcements is relatively small for the frequently paid and smaller sized special dividends. Therefore, there is an increasing trend for firms to pay larger sized special dividends in recent years.

In the last three columns of Table 4.1, the number of special dividends (specials) being paid in different sizes of equity values are counted. Consistent with DeAngelo, DeAngelo and Skinner (2000), firms normally pay small size special dividends that are less than 5% of total equity values; large specials are considered when the amount of extra cash distributions is greater than 10% of these values. From 1941 to 1985, firms announce more than 10,000 small size special dividends, and this number decreases to 3,623 in the period 1986 to 2008. However, large special dividends and specials with sizes between 5% and 10% of equity values increase substantially within the last two decades. Specifically, the propensity of firms to pay large specials rises considerably from 32 firms between 1961 and 1985 to 439 between 1986 and 2008. These figures suggest that firms may more recently realized the potential of large cash distributions to show better signals of their current excess earnings. This result could also reflect a high takeover activity happening in the 1980s to 2000s, since special dividends can be used as defensive tools for hostile acquisitions, which is compatible with the restructuring papers by Denis (1990), Denis and Denis (1995), and Wruck (1994).

Table 4.1 Frequency and Size of Special Dividends between 1926 and 2008

This table shows the frequency and size of special dividends paid in the years of 1926 to 2008. The number of specials is counted within the whole sample, as well as in four sub-periods: 1926-1940, before the US joined World War II; 1941-1960, before OPEC formed; 1961-1985, before the US Tax Reform of 1986; and 1986-2008, after the US Tax Reform of 1986. Special dividends (SDD) are classified from the Centre for Research in Security Prices (CRSP) files by the criteria that the distribution code is 1272 for special and extra dividends, and 1262 for year-end irregular extra dividends combined. Equity values are firms' market capitalization values one day before special dividend announcements.

Years	No. of SDD	Total No. of firms paid SDD	No. of firms paid SDD in multiple years	No. of firms paid SDD					No. of SDD in different size		
				Once a year	Twice a year	3 times a year	4 times a year	> 4 times a year	<5% of equity value	5%<=SDD<10% of equity value	>= 10% of equity value
26-40	1578	1081	373	806	163	45	49	18	1508	40	14
41-60	5634	4383	413	3596	497	130	148	12	5496	118	11
61-85	5393	4918	819	4460	371	37	46	4	5345	76	32
86-08	4373	3844	631	3525	197	61	50	11	3623	304	439
Total	16978	14226	2236	12387	1228	273	293	45	15972	538	496
In %	100%	100%	16%	87%	9%	2%	2%	0.3%	94%	3%	3%

4.4 Intra-Industry Effects of Stock Splits and Special Dividends

Stock splits and special dividend payments generally produce positive abnormal returns for announcing firms. This section examines whether there is a positive or negative spillover effect for non-event firms in the same industry. In Appendix 2, the research first groups the US industries into six categories according to their two-digit SIC code. They are the industries of Agriculture, Forestry, Fishing, Mining, and Construction (AFFMC) (SIC 0100-1700); Manufacturing (SIC 2000-3900); Transportation, Communication, and Electric (TCE) (SIC 4000-4900); Wholesale and Retail Trade (SIC 5000-5900); Finance, Insurance, and Real Estate (FIRE) (SIC 6000-6700); and Services and Public Administration (SPA) (SIC 7000-9900). Then, for each event firm in a sector, a matched non-event firm is found by size matching. If these announcements cause price increases in both announcing and non-announcing firms, it is called a contagion effect. However, if price movements are in different directions in non-event and event firms, this is the competitive industry effect (Tawatnuntachai & D'Mello, 2002), meaning stock splits or special dividends convey negative or unfavourable information about rival firms.

As the results in Appendix 2A show, stock split announcements generally lead to price reactions in the same directions within industries. For example, raw returns in matched non-splitting firms are positive even though they are significantly lower than the positive raw returns for splitting firms. With the mean adjusted model, abnormal returns become negative three weeks after the splits are announced. The negative effects in event firms are also larger than in non-event firms. It is worth noting that the contagion effect of stock splits is strong in the value-weighted market adjusted returns, but the intra-industry effect turns competitive when abnormal returns are calculated by the equal-weighted market index, especially in the FIRE group of industries. For instance, firms splitting shares experience positive returns of 2.36% to 4.08% after event windows of one week to six months, whereas firms without splits have significant negative returns of -0.41% to -3.69% in the same period. The opposite price movement also happens in other industries, such as the Manufacturing, TCE, and Wholesale and Retail Trade industries in the windows of two months, three months, and six months subsequent to stock splits. These results show that the model selection of using either the equal-weighted market index or value-weighted market index strongly influences the conclusions for the intra-industry results. The findings are in line with a recent study by Asparouhova, Bessembinder, and Kalcheva (2011) in which the equal-weighted or uncorrected ordinary least square estimates can create more biased results than the value-weighted and annual value-weighted estimates. In addition, the intra-industry effect is not statistically significant for the market model adjusted returns. On average, the findings are in line with Tawatnuntachai and D'Mello (2002); suggesting that stock splits can result in a similar effect in announcing firms and in their industry counterparts. Furthermore, this research shows that the Manufacturing industry has the highest number of splits, followed by the FIRE, Wholesale and Retail, SPA, and TCE industries.

Similarly, special dividend announcements also produce a contagion effect in the same industry. Particularly, special dividends create positive raw returns in both event firms and non-event firms as the results show in Appendix 2B. Although mean adjusted and market model adjusted abnormal returns are not statistically significant in firms without initiating special dividends, the contagion effect is evident in market adjusted returns, especially for the value-weighted market index model. For instance, event firms have positive abnormal returns of approximately 1.04% to 3.72% with the windows of three weeks to three months after special dividend distributions in the Manufacturing industry. This is similar to the returns of 0.83% to 4.14% in matched non-event firms with the same event windows in the same industry after the announcements. Additionally, special dividends yield around 2% to 9% returns in firms with and without initiating special dividends in the industry group of Wholesale and Retail Trade, 2% to 6% in the FIRE industry group, and 2% to 10% in the SPA industry group. Interestingly, the abnormal returns are negative in matched firms in the FIRE industry using the equal-weighted Market Adjusted Model, but they are still similar to the negative returns in event firms with the windows of two months to six months within the same industry. These figures indicate that special dividend declarations send homogeneous signals throughout the whole industry. The result is different from Massa, Rehman and Vermaelen (2007). They argue that cash disbursements create a competitive effect in the same industry, as events firms mitigate agency problems by distributing the extra cash back to their shareholders, but non-event firms still face the negative effect of the lack of investment opportunities at present. However, the authors believe that cash distributions mainly occur in mature firms or in economic contractions when there are no profitable investments. Moreover, this research finds the Manufacturing and FIRE industry groups contain the most special dividend announcements.

4.5 Descriptive Statistics and Correlation Matrix between Regression Variables

Descriptive statistics for all the variables used in Chapter Five to Eight for stock splits and special dividend announcements are illustrated in Table 4.2. Correlation matrices between variables in multiple regression models applied in this research are tested and demonstrated in Appendix 3. According to these results, most of the variables are not highly correlated to each other (the correlations are less than 50%), indicating there are no multicollinearity problems in the regressions. Therefore, Ordinary Least Square (OLS) estimates are likely to provide more efficient and unbiased results for the independent variables in the regressions. The monthly business cycle and sentiment variables are merged with the event data for each stock split or special dividend announcement happened in that month.

Table 4.2 Descriptive Statistics of Variables

This table shows summary statistics of variables from 1926 to 2008, except sentiment variables are from 1960-2008 due to limited data availability. The first column is the number of observations; the second column is variable means; the third column is standard deviations; the fourth column is medians of variables; the firth column is the minimum values and the last column is the maximum values of each variable in the research. Panel A is the result for stock split announcements, and Panel B is the result for special dividend announcements.

Panel A: Stock Split Announcements	N	Mean	Std Dev	Median	Minimum	Maximum
Control Variables						
LogPrc	17190	3.57602	0.72878	3.62100	-2.07944	7.30988
Prc1	17190	45.86692	40.03900	37.37500	0.12500	1495
Logsize	17166	12.16545	1.93608	11.99915	5.76362	19.91115
Tcap1	17166	1784066	10662374	162617.25	318.50	443916993
SplitFac	17266	1.83268	0.68734	2.00000	1.00833	40.00000
Business Cycle Variables						
DIV	17266	3.26269	1.28174	3.13199	1.07710	9.17647
DEF	17266	1.03654	0.45034	0.90000	0.32000	3.31000
YLD	17266	5.84132	3.04735	5.28000	0.02000	16.30000
TERM	17266	1.75450	1.51679	1.79000	-3.65000	4.55000
GDP	17266	0.63593	1.09759	0.00000	-12.50560	8.51167
UNEMP	17266	6.10820	1.74495	5.90000	0.40000	25.02000
cpi	17266	110.28162	52.18737	109.3000	13.20000	219.96400
Inf	17266	0.35597	0.37778	0.31373	-1.91577	5.73572
Sentiment Variables						
pdnd	15453	-12.31488	13.41963	-13.13630	-60.12700	31.39979
nipo	15453	36.78962	26.36077	35.00000	1.00000	122.00000
ripo	15453	21.57713	22.07178	14.90000	-28.80000	119.10000
turn	15453	0.56523	0.30642	0.544979	0.11676	2.53960
cefd	15453	9.40089	6.55263	9.61439	-10.91002	25.27583
es	15453	0.27727	0.23924	0.188848	0.02131	1.73867

Panel B: Special Dividend Announcements						
Control Variables						
LogPrc	16880	3.16383	0.86844	3.198673	-2.20909	6.52649
Prc1	16880	34.05505	36.57151	24.500000	0.10980	683.00000
Logsize	16877	10.92060	1.70689	10.74527	5.64721	19.57857
Tcap1	16877	445406	4156915	46410	283.50000	318320163
Divamt	16978	0.54399	1.71929	0.25000	0.000148	75.00000
Business Cycle Variables						
DIV	16978	4.11572	1.56381	3.869969	1.07710	12.23499
DEF	16978	0.99999	0.53206	0.80000	0.32000	5.29000
YLD	16978	3.75871	3.09590	3.21000	0.01000	16.30000
TERM	16978	1.48402	1.23784	1.42000	-3.65000	4.55000
GDP	16978	0.47673	1.55325	0.00000	-12.50560	13.89747
UNEMP	16978	6.13926	3.28169	5.40000	0.40000	25.49000
cpi	16978	68.64369	60.10112	33.50000	12.60000	219.96400
Inf	16978	0.29287	0.52889	0.23966	-1.91577	5.73572
Sentiment Variables						
pdnd	8313	-5.50990	15.40377	-9.08286	-60.12699	31.39979
nipo	8313	26.25526	24.03377	20.00000	1.00000	122.00000
ripo	8313	15.19247	19.60746	11.24000	-28.80000	119.10000
turn	8313	0.53392	0.40622	0.455557	0.11676	2.53960
cefd	8313	10.90992	7.04190	10.46428	-10.91002	25.27583
es	8313	0.24712	0.20183	0.191049	0.02131	1.73867

CHAPTER FIVE – RESULTS AND DISCUSSIONS OF MARKET CONDITIONS

This chapter provides empirical results on whether market conditions can affect corporate decisions and excess returns for stock splits and special dividend announcements. It first counts the number of stock splits and special dividends in bull and bear markets to see if the frequency of these announcements is higher in bull markets. It then employs logistic models to examine if the likelihood of the occurrence of stock splits and special dividends is positively correlated to the *Bull* market dummy and investor sentiment variables. This is followed by the event study results as to whether abnormal returns generated from stock split and special dividend announcements are larger in bull markets compared to bear markets. Multivariate regression models further scrutinize whether the returns of these announcements increase with investor sentiment or during bull markets. The whole investigation is executed according to each event, and ends with a robustness check of the results in different sub-periods, industry groups, and size quintiles.

5.1 Stock Split Announcements

5.1.1 Frequency of Stock Splits in Bull and Bear Markets

Many corporations time the market to undertake corporate events. For example, they tend to announce mergers and acquisitions, IPOs, and SEOs during bull markets to take advantage of overvalued market prices. Mian and Sankaraguruswamy (2012) also document that in overvalued markets, the optimistic investor sentiment can increase the market reaction to corporate announcements, such as earnings announcements and dividend payments. In order to investigate whether firms take the market-timing opportunities to split shares and pay special dividends, this chapter examines the frequency, likelihood and abnormal returns of these announcements in bull and bear markets. The empirical results start with stock split announcements in Section 5.1.

As shown in the Table 5.1, the number of split announcements is larger in bull markets than in bear markets in the period 1926 to 2008. The periods of each bull and bear markets are classified by Ohn, Taylor and Pagan's (2004) turning points, which are also published on the National Bureau of Economic Research (NBER) website. In total, 12,712 stock split announcements are in bull markets in comparison to 4,465 in bear markets. The difference is particularly large after 1974 when the peak period of split announcements starts. Since bull markets are usually longer in duration than bear markets, this study also counts the number of splits in each month. On average, 20 splits are announced per month in bull markets and 14 splits are announced in bear markets. Noticeably, during the period from 1980 to 2000, the occurrence of stock split announcements almost doubles in bull markets compared to bear markets. These figures support Hypothesis 1 in Section 3.1.1, showing that the frequency of stock splits is higher in bull markets than in bear markets.

However, this result appears to be statistically insignificant when the t-test and non-parameter, Wilcoxon z test are applied. As Table 5.2 shows, the mean of the number of stock splits per month in bull markets is 18, whereas the mean of the number of splits in bear markets is 15. The difference of 3 is not large enough to create significant *p_value* for these two tests at 1%, 5%, or 10% significance levels. The univariate frequency analysis may be too crude to draw the inference; leading to more statistical analysis in the following sections.

Table 5.1 Number of Stock Splits in Bull and Bear Markets from 1926 to 2008

This table shows the number of stock split announcements in total and each period of bull and bear markets from 1926 to 2008. Stock splits are identified from the Centre of Research in Security Prices (CRSP) files, using distribution codes 5523, 5543 and 5552 when the factor to adjust price is greater than 0, and code 5533 when distribution is greater than or equal to 25 percent. Bull and bear markets are classified by Ohn, Taylor and Pagan (2004)'s turning points.

Number of stock splits between bull and bear markets							
Bull Markets				Bear Markets			
	No. of splits	No. of month	No. of splits a month		No. of splits	No. of month	No. of splits a month
01/26-09/29	124	45	3	10/29-06/32	24	33	1
07/32-02/34	2	20	0	03/34-03/35	7	13	1
04/35-02/37	19	23	1	03/37-04/38	23	14	2
05/38-10/39	4	18	0	11/39-05/42	9	31	0
06/42-05/46	89	48	2	06/46-02/48	101	21	5
03/48-06/48	10	4	3	07/48-06/49	23	12	2
07/49-12/52	154	42	4	01/53-08/53	17	8	2
09/53-07/56	219	35	6	08/56-12/57	69	17	4
01/58-07/59	85	19	4	08/59-10/60	107	15	7
11/60-12/61	82	14	6	01/62-06/62	50	6	8
07/62-01/66	448	43	10	02/66-09/66	99	8	12
10/66-11/68	450	26	17	12/68-06/70	274	19	14
07/70-04/71	83	10	8	05/71-11/71	94	7	13
12/71-12/72	231	13	18	01/73-09/74	287	21	14
10/74-12/76	521	27	19	01/77-02/78	389	14	28
03/78-11/80	1311	33	40	12/80-07/82	798	20	40
08/82-06/83	737	11	67	07/83-05/84	528	11	48
06/84-08/87	2158	39	55	09/87-11/87	82	3	27
12/87-05/90	821	30	27	06/90-10/90	74	5	15
11/90-01/94	1403	39	36	02/94-12/94	350	11	32
01/95-08/00	2960	68	44	09/00-02/03	519	30	17
03/03-12/04	567	22	26	01/05-06/06	541	18	30
07/06-10/07	234	16	15				
Total	12712	645	20	Total	4465	337	14

Table 5.2 The Frequency of Stock Split Announcements per month between Bull and Bear Markets – The t-test and non-parameter, Wilcoxon z test

This table presents the results of the t-test and non-parameter, Wilcoxon z test. *Bull* represents on average the number of stock splits per month in bull markets and *Bear* is the number of stock splits per month in bear markets from 1926 to 2008.

Mean			The t-test	non-parameter Test
Bull	Bear	Difference	P_Value	P_Value
17.8696	14.6364	3.2332	0.5156	0.3716

5.1.2 Likelihood of Occurrence of Stock Splits in Bull Markets

Table 5.3 employs logistic models to examine whether the likelihood of firms announcing stock splits is larger in bull markets than in bear markets. According to the results in Panel A, the *Bull* market dummy is statistically positive between 1926 and 2008, indicating a 25.08%[11] increase in probability that firms split shares in bull markets compared to bear markets. This positive relationship is confirmed in the peak period of stock splits, 1976 to 1995, and the most recent period of 1996 to 2008, although it appears to be insignificant in the dormant period of splits, 1926 to 1960, and negative in the growth period, 1961 to 1975. Therefore, these findings are only generally consistent with Hypothesis 2 in Section 3.1.1, suggesting that good market conditions provide timing opportunities for firms to announce stock splits.

The coefficient of control variables, *Ln(Size)*, is statistically negative in the whole period and most sub-periods, meaning the likelihood of firms splitting shares increases when firm sizes decrease. This result is consistent with the Information Asymmetry Hypothesis in which smaller size firms are more likely to announce share splits to attract public attention to signal their private information. *Ln(Price)* is statistically positive in the overall sample and the four sub-samples, indicating higher share prices increase the chance of stock split announcements.

Following Baker and Wurgler (2000, 2006, 2007) and Mian and Sankaraguruswamy (2012), this research also investigates the relationship between the occurrence of stock splits and investor sentiment variables. If good market conditions drive firms' activities to split shares, the sentiment variables should be positively correlated to the likelihood of stock split announcements. In Panel B, the results are in agreement with this hypothesis. The probability of firms announcing stock splits can be predicted and affected by the number of IPOs (*nipo)*, first-day returns on IPOs (*ripo*), the NYSE share turnover (*turn*), close-end fund discounts (*cefd*), the difference in returns on dividend- and non-dividend-paying stocks (*pdnd*), and the share of equity in new issues (*es*). The coefficients of IPO variables, *nipo* and *ripo* (correlation is 0.06), and issuing new shares (*es*) are consistently positive in the entire sample from 1960 to 2008 and in the four sub-samples of 1960 to 1975, 1976 to 1985, 1986 to 1995, and 1996 to 2008, indicating a hot market in which the increase in numbers and returns of new shares drives the propensity of firms to split shares. This result is compatible with the Manipulation Hypothesis that stock splits are used before equity offerings to increase share prices (D'Mello, Tawatnuntachai & Yaman, 2003), shown by the lagged sentiment variables.

[11] $e^{\beta} - 1 = e^{0.2238} - 1 = 0.2508$

Table 5.3 Logistic Regressions for the Likelihood of Stock Splits from 1926 to 2008

This table shows the likelihood of stock split announcements related to the *Bull* market dummy in Panel A from 1926 to 2008, and associated with investor sentiment variables in Panel B. The dependent variable is a binary variable that contains a value of one if a firm announces a stock split in the month; otherwise, zero. *Ln(Size)* is the natural logarithm of monthly market capitalization. *Ln(Price)* is the natural logarithm of monthly stock price. *Bull* is a dummy variable that takes a value of one for a split announced in bull markets and a value of zero for an announcement in bear markets. Bull and bear markets are defined from Ohn, Taylor and Pagan (2004)'s turning points. *pdnd* is the difference in returns on dividend- and non-dividend- paying stocks in a month; *nipo* is the number of initial public offerings (IPOs); *ripo* is the first-day returns on IPOs; *turn* is the NYSE share turnovers; *cefd* is the close-end fund discount; and *es* is the level of equity over the level of debt issuance in a month. The logistic regressions run on the full sample period and on four sub-periods for a robustness check to avoid noise. *p-values* are in parentheses under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: The likelihood of stock split announcements with Bull Dummy

	Full Sample	Sub-periods			
Variables	1926-2008	1926-1960	1961-1975	1976-1995	1996-2008
Bull	0.2238	0.0149	-0.1413	0.0995	0.3136
	(<.0001)***	(0.8164)	(0.0018)***	(<.0001)***	(<.0001)***
Ln(Size)	-0.0579	0.0990	-0.4559	-0.2441	-0.0311
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(0.0007)***
Ln(Price)	1.0828	1.0697	2.0784	1.4757	1.0947
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Intercept	-8.0076	-10.6568	-6.9536	-6.4470	-8.6838
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***

Panel B: The likelihood of stock split announcements with sentiment variables

	Full Sample		Sub-periods							
Variables	1960-2008		1960-1975		1976-1985		1986-1995		1996-2008	
Intercept	-7.4115***	-7.2909***	-8.2117***	-7.9860***	-6.5501***	-6.6647***	-8.5728***	-8.6190***	-8.3848***	-8.2653***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Ln(Size)	-0.1769***	-0.1771***	-0.6071***	-0.6096***	-0.3713***	-0.3713***	-0.1440***	-0.1462***	-0.0194**	-0.0186**
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.0397)	(0.0492)
Ln(Price)	1.3475***	1.3508***	2.5098***	2.5335***	1.7197***	1.7233***	1.3108***	1.3162***	1.1231***	1.1272***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
pdnd	-0.0074***		0.0069**		0.0017		-0.0087**		0.0045**	
	(<.0001)		(0.0171)		(0.3439)		(0.0217)		(0.0142)	
nipo	0.0071***		0.0063***		0.0040***		0.0034***		0.0020*	
	(<.0001)		(<.0001)		(<.0001)		(<.0001)		(0.0625)	
ripo	0.0017***		0.0014		0.0066***		0.0034		0.0021***	
	(0.0001)		(0.3698)		(<.0001)		(0.2103)		(0.0081)	
turn	-0.4577***		5.0359***		1.1287***		1.6852***		-0.7554***	
	(<.0001)		(<.0001)		(<.0001)		(<.0001)		(<.0001)	
cefd	0.0169***		0.0071		0.0154***		-0.0184***		0.0315***	
	(<.0001)		(0.1273)		(<.0001)		(<.0001)		(<.0001)	
es	0.3510***		0.5331***		0.2192***		1.7666***		0.6137**	
	(<.0001)		(<.0001)		(0.0006)		(<.0001)		(0.0154)	
$pdnd_{t-1}$		-0.0093***		0.0097***		-0.0009		-0.0113***		0.0035*
		(<.0001)		(0.0008)		(0.6462)		(0.0024)		(0.0668)
$nipo_{t-1}$		0.0057***		0.0088***		0.0013		0.0022***		-0.0011
		(<.0001)		(<.0001)		(0.1650)		(0.0081)		(0.3164)
$ripo_{t-1}$		0.0010**		0.0049***		0.0046***		0.0120***		0.0015*
		(0.0276)		(0.0019)		(<.0001)		(<.0001)		(0.0642)
$turn_{t-1}$		-0.5249***		3.5327***		1.6875***		1.9087***		-0.8492***
		(<.0001)		(0.0005)		(<.0001)		(<.0001)		(<.0001)
$cefd_{t-1}$		0.0152***		0.0060		0.0195***		-0.0299***		0.0245***
		(<.0001)		(0.2050)		(<.0001)		(<.0001)		(0.0021)
es_{t-1}		0.2439***		0.2159		0.0829		1.2431***		1.3146***
		(<.0001)		(0.1345)		(0.2078)		(<.0001)		(<.0001)

The coefficient of *cefd* is also statistically positive in the whole sample and in two sub-periods of 1976 to 1985 and 1996 to 2008. In general, this shows that the less negative the discount in the close-end fund, the higher the investor sentiment and the greater the chance that firms announce share splits. The coefficient of *turn* appears to be negative from 1960 to 2008 and between 1996 and 2008, but it is statistically positive and economically large during the three sub-periods from 1960 to 1995. This suggests that it is a rise in investor sentiment, such as a faster speed of share turnover in the NYSE, that accelerates firms' decisions to split between 1960 and 1995. The reason for this may be due to the lowering of share prices to enhance marketability with the high trading demand, known as the Liquidity Hypothesis. Finally, *pdnd* is positively correlated to the dependent variable in the period 1960 to 1975 and in the latest period 1996 to 2008, although the coefficient of *pdnd* is negative in the periods 1986 to 1995 and 1960 to 2008. The findings demonstrate that the difference in returns on dividend- and non-dividend-paying stocks can also positively affect the occurrence of stock split announcements during the periods 1960 to 1975 and 1996 to 2008. Overall, the evidence presented strongly supports Hypothesis 4 in Section 3.1.1: positive and increasing investor sentiment in good market conditions increase the chance of firms splitting shares.

5.1.3 Abnormal Returns of Stock Splits in Bull and Bear Markets

This section examines abnormal returns of stock splits between bull and bear markets using event study methodologies. If the overvalued market and high investor sentiment can increase the price reactions to corporate announcements, abnormal returns for stock splits should be larger in bull markets than in bear markets. In Table 5.4, the results are consistent with this conjecture; firms' decisions to split shares produce up to 18.92% positive raw returns within six months in bull markets, but 8.65% in bear markets. With the value-weighted market adjusted returns, stock splits generate significant abnormal returns of 4.89% in one-month-, 6.6% in two-month-, and 7.4% in three-month-event windows in bull markets, but 3.54%, 4.81%, and 5.58% in market downturns, respectively. The equal-weighted market adjusted returns are also slightly higher in good times than in bad times in most of the event windows in Table 5.4. Although returns calculated by the Market Model and Mean Adjusted Model are smaller than returns computed by the Market Adjusted Model, they are still larger in market upturns than downturns, especially for the windows longer than one month. In addition, excess returns in the one month window before an announcement date, (-30, -2), are statistically significant in all models, suggesting there is information leakage in stock split announcements, and the leakage is greater when splits are announced in bull markets. All these results provide evidence that firms make superior short-run excess returns by splitting shares in bull markets, which is the same as the Hypothesis 3 predicted in Section 3.1.1.

The long-term abnormal returns of stock split announcements are examined in Table 5.5 to investigate if there is a long-run price drift in different market conditions and determine whether there is market efficiency. According to the results, the long-run returns are economically small and slightly higher in bear markets than in bull markets. In particular, there are 1.37% to 2.29% abnormal returns one year after stock splits are announced, 0.90% to 1.48% after two years, 0.67% to 1.09% after three years, and 0.50% to 0.79% after five years when splits are announced. These results generally support the Market Efficiency Hypothesis in which there are no significantly large abnormal returns in the long run. The

Table 5.4 Short-Run Excess Returns of Stock Split Announcements in Bull and Bear Markets from 1926 to 2008

This table calculates excess returns for the firms announcing stock splits between bull and bear markets from 1926 to 2008. Bull and bear markets are classified by Ohn, Taylor and Pagan (2004)'s turning points. Mean adjusted returns are calculated by $AR_{it}=R_{it}-E(R_{it})$, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, $E(R_{it})$ is constant mean returns for security *i* at time *t* with estimation period of 255 trading days. Market adjusted returns are using $AR_{it}=R_{it}-R_{mt}$, where R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes. Market model adjusted returns are measured by $AR_{it}=R_{it}-\hat{\alpha}_i-\hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the Market Model of $R_{it}=\alpha_i+\beta_i * R_{mt}+\varepsilon_i$ with estimation period of 255 trading days. Short term event windows are examined one day surrounding an announcement date, one week after an announcement date, 10 days, 15 days, three weeks, one month, two months, three months and six months after an announcement date (0 represents the actual announcement day). All returns are in percentage with *t*-statistics underneath. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Bull Markets	Raw Returns	Market Adjusted Returns		Market Model Adjusted Returns		Mean Adjusted Returns
		EW	VW	EW	VW	
Event windows						
(-30,-2)	11.56	6.83	8.45	2.59	3.74	4.67
	[78.11]***	[44.02]***	[59.06]***	[18.78]***	[26.49]***	[30.69]***
(-1,+1)	3.60	3.20	3.33	2.77	2.84	2.88
	[58.43]***	[55.67]***	[58.89]***	[50.03]***	[51.72]***	[47.73]***
(-1, 0)	2.25	1.99	2.06	1.69	1.73	1.77
	[51.99]***	[47.46]***	[49.11]***	[42.32]***	[42.74]***	[41.68]***
(0, +1)	3.10	2.82	2.92	2.54	2.59	2.62
	[55.35]***	[54.22]***	[57.27]***	[50.10]***	[51.97]***	[47.59]***
(1, +7)	3.02	2.15	2.47	1.22	1.34	1.36
	[40.28]***	[29.68]***	[34.46]***	[19.94]***	[20.98]***	[20.98]***
(1, +10)	3.50	2.26	2.70	0.94	1.09	1.13
	[41.93]***	[27.45]***	[33.34]***	[15.15]***	[16.15]***	[17.09]***
(1, +15)	4.27	2.44	3.11	0.47	0.68	0.71
	[41.89]***	[24.00]***	[32.15]***	[8.78]***	[10.05]***	[11.22]***
(1, +21)	5.34	2.86	3.76	0.12	0.34	0.36
	[44.46]***	[23.50]***	[33.10]***	[5.26]***	[6.27]***	[7.82]***
After						
1month	7.13	3.68	4.89	-0.17	0.03	0.01
	[48.97]***	[24.74]***	[35.47]***	[3.59]***	[3.92]***	[5.92]***
2month	10.58	4.45	6.60	-3.16	-3.30	-3.65
	[53.79]***	[21.63]***	[35.15]***	[-7.97]***	[-9.89]***	[-7.70]***
3month	13.02	4.57	7.40	-6.78	-7.55	-8.32
	[54.48]***	[18.87]***	[33.47]***	[-16.94]***	[-21.42]***	[-18.62]***
6month	18.92	3.58	8.96	-18.83	-21.06	-23.66
	[58.81]***	[10.52]***	[29.34]***	[-34.41]***	[-41.69]***	[-41.71]***

Bear Markets	Raw Returns	Market Adjusted Returns		Market Model Adjusted Returns		Mean Adjusted Returns
		EW	VW	EW	VW	
Event windows						
(-30,-2)	5.72	5.31	6.30	1.61	0.89	-0.45
	[23.05]***	[24.78]***	[30.30]***	[6.84]***	[3.45]***	[-3.28]
(-1,+1)	2.54	2.61	2.68	2.25	2.12	1.90
	[29.60]***	[32.59]***	[32.78]***	[28.39]***	[26.62]***	[23.07]***
(-1, 0)	1.51	1.56	1.60	1.33	1.23	1.09
	[22.47]***	[24.77]***	[24.61]***	[21.13]***	[19.46]***	[16.71]***
(0, +1)	2.22	2.27	2.32	2.04	1.95	1.79
	[29.45]***	[31.94]***	[32.34]***	[28.70]***	[27.63]***	[24.49]***
(1, +7)	1.89	2.16	2.30	1.42	1.01	0.40
	[17.98]***	[21.77]***	[22.95]***	[15.27]***	[11.74]***	[6.47]***
(1, +10)	1.90	2.31	2.49	1.25	0.65	-0.22
	[15.32]***	[20.05]***	[21.27]***	[11.68]***	[7.29]***	[1.26]
(1, +15)	1.59	2.23	2.47	0.63	-0.31	-1.60
	[11.04]***	[16.63]***	[17.85]***	[6.01]***	[0.35]	[-6.47]***
(1, +21)	1.70	2.59	2.90	0.31	-0.99	-2.76
	[9.37]***	[16.06]***	[17.60]***	[2.98]***	[-3.73]***	[-11.76]***
After						
1month	1.96	3.10	3.54	-0.24	-2.03	-4.42
	[8.59]***	[15.88]***	[17.80]***	[0.33]	[-7.35]***	[-16.11]***
2month	2.48	4.13	4.81	-2.71	-6.13	-10.29
	[8.61]***	[15.99]***	[17.94]***	[-5.62]***	[-15.85]***	[-26.66]***
3month	3.60	4.15	5.58	-6.27	-10.57	-15.55
	[11.58]***	[14.35]***	[18.16]***	[-10.93]***	[-21.39]***	[-31.17]***
6month	8.65	4.46	8.38	-16.37	-22.98	-29.56
	[19.09]***	[11.18]***	[19.26]***	[-19.64]***	[-29.33]***	[-36.42]***

difference in these excess returns between bull and bear markets is also relatively small. For example, using the value-weighted three-factor model, the abnormal returns are 0.08% higher in bear markets for the one-year window, 0.04% for the two-year window, 0.3% for the three-year window, and 0.2% for the five-year window. These differences become smaller when the four-factor and the equal-weighted three-factor models are applied. This shows that the impact of market conditions on the abnormal returns of stock splits decreases after a year. Moreover, the long-run excess returns of stock split announcements are positive, especially in bull markets, indicating that firms would not make negative long-run price drifts if they take advantage of the market optimism to announce stock splits in bull markets.

Table 5.5 Long-Term Post-announcement Abnormal Returns Using Monthly Fama-French (1993) and Carhart (1997) Calendar Time Portfolio Regressions for Stock Split Announcements between Bull and Bear Markets from 1926 to 2008

This table calculates long term abnormal returns for the one-, two-, three-, and five-year post-announcement horizons, for the firms announcing stock splits between bull and bear markets during the period 1926 to 2008. Bull and bear markets are classified by Ohn, Taylor and Pagan (2004)'s turning points. Monthly rebalanced calendar time portfolio returns are calculated each month from all firms experience a stock split in the previous 12, 24, 36, or 60 calendar months. Monthly excess returns to calendar time portfolios are: $CTAR_t=R_{pt}-E(R_{pt})$, where R_{pt} is monthly return on portfolio of event firms at time t, and $E(R_{pt})$ is expected return on event portfolio at time t. The expected return on event portfolio, for each sample firm in month t, is measured by Fama-French (1993) three-factor model and Carhart (1997) four-factor model:

$$R_{it}-R_{ft}=\alpha_i+\beta_i(R_{mt}-R_{ft})+s_iSMB_t+h_iHML_t+\varepsilon_{it}$$

$$R_{it}-R_{ft}=\alpha_i+\beta_i(R_{mt}-R_{ft})+s_iSMB_t+h_iHML_t+m_iPR1YR_t+\varepsilon_{it}$$

R_{it} is firm i's monthly return, R_{ft} is the one-month T-bills return, and R_{mt} is the market return on both CRSP equal-weighted and value-weighted portfolio of all NYSE, AMEX, and Nasdaq stocks. SMB_t is the difference in returns between portfolios of small and big stocks. HML_t is the difference in returns between portfolios of high and low book-to-market ratio stocks. $PR1YR_t$ is defined as in Carhart (1997) as an equally weighted portfolio return of stocks with highest returns less an equally weighted portfolio return of stocks with lowest returns in months t-12 to t-2. Ordinary, Weighted Least Squares (White, 1980) and Generalized Method of Moment (GMM) are estimated. All abnormal returns are in percentage and t-statistics of intercepts are shown in brackets under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Calendar Portfolio post period	Model Estimated	Intercept of the Fama-French Regression Three-factor without momentum (Fama-French, 1993)				Intercept of the Fama-French-Carhart Regression Four-factor with momentum (Carhart, 1997)			
		Equal-weighted		Value-weighted		Equal-weighted		Value-weighted	
		Bull	Bear	Bull	Bear	Bull	Bear	Bull	Bear
Horizon =		1.64	1.68	1.61	1.69	1.37	1.39	1.49	1.51
1 year	OLS	[10.78]***	[13.26]***	[10.73]***	[14.20]***	[8.82]***	[11.24]***	[9.53]***	[12.64]***
	Hetero t	[9.93]***	[14.03]***	[9.82]***	[14.96]***	[7.83]***	[11.10]***	[8.28]***	[12.60]***
		2.29	2.03	2.16	2.00	1.99	1.75	2.03	1.82
	WLS	[32.03]***	[21.74]***	[35.30]***	[25.00]***	[30.09]***	[20.77]***	[33.19]***	[24.03]***
		1.64	1.68	1.61	1.69	1.37	1.39	1.49	1.51
	GMM	[9.83]***	[12.28]***	[9.66]***	[12.61]***	[8.81]***	[9.74]***	[9.24]***	[11.07]***
Horizon =		1.12	1.18	1.13	1.17	1.01	0.90	1.15	1.02
2 years	OLS	[7.75]***	[10.25]***	[7.83]***	[10.75]***	[6.74]***	[7.95]***	[7.67]***	[9.20]***
	Hetero t	[7.24]***	[12.14]***	[7.28]***	[13.00]***	[6.03]***	[8.44]***	[6.83]***	[10.28]***
		1.48	1.41	1.35	1.36	1.37	1.17	1.40	1.23
	WLS	[24.02]***	[17.64]***	[24.55]***	[20.04]***	[21.74]***	[15.49]***	[24.84]***	[18.35]***
		1.12	1.18	1.13	1.17	1.01	0.90	1.15	1.02
	GMM	[7.30]***	[10.10]***	[7.36]***	[10.40]***	[6.92]***	[6.99]***	[7.82]***	[8.41]***
Horizon =		0.71	1.01	0.73	1.02	0.67	0.86	0.81	0.96
3 years	OLS	[5.97]***	[11.22]***	[5.96]***	[12.32]***	[5.40]***	[9.43]***	[6.48]***	[11.40]***
	Hetero t	[5.95]***	[11.40]***	[5.88]***	[12.64]***	[4.92]***	[8.84]***	[5.93]***	[11.12]***
		1.09	1.07	0.97	1.01	1.04	0.90	1.10	0.93
	WLS	[19.51]***	[15.34]***	[18.98]***	[17.10]***	[18.01]***	[13.27]***	[21.95]***	[15.65]***
		0.71	1.01	0.73	1.02	0.67	0.86	0.81	0.96
	GMM	[6.51]***	[9.71]***	[6.56]***	[10.17]***	[5.27]***	[7.55]***	[6.49]***	[9.05]***
Horizon =		0.54	0.71	0.55	0.71	0.50	0.58	0.63	0.68
5 years	OLS	[9.43]***	[9.76]***	[9.70]***	[10.97]***	[8.33]***	[7.92]***	[10.88]***	[10.27]***
	Hetero t	[9.82]***	[9.95]***	[10.38]***	[11.35]***	[7.81]***	[7.41]***	[10.64]***	[10.42]***
		0.76	0.70	0.66	0.63	0.71	0.62	0.79	0.63
	WLS	[15.41]***	[11.93]***	[14.88]***	[12.85]***	[14.00]***	[10.42]***	[18.75]***	[12.53]***
		0.54	0.71	0.55	0.71	0.50	0.58	0.63	0.68
	GMM	[9.22]***	[8.71]***	[9.73]***	[9.19]***	[7.44]***	[6.65]***	[9.89]***	[8.65]***

5.1.4 Multivariate Regression Results for Abnormal Returns of Stock Splits

This section further uses multivariate regression to examine the relationship between market conditions and the abnormal returns of stock splits. As Table 5.6 shows, the coefficients of *Bull* are statistically significant and consistently positive in relation to the market adjusted abnormal returns in Panel A and the market model adjusted returns in Panel B. Event windows consist of one day before and after an announcement date, and five days, ten days, and one month after the announcement day. On average, abnormal returns are 0.8%[12] higher within one day, 1%[13] within two days, and 1.2%[14] after 10 days of an announcement if firms split shares in bull markets rather than in bear markets. In the one-month window, stock splits can produce up to 13.66%[15] more positive returns in bull markets. These figures confirm the event study results illustrated in the last section and additionally show evidence that bull market conditions increase the excess returns of stock split announcements. Split factors are also positively correlated to returns for stock splits, meaning the greater the split ratio, the higher the abnormal returns. The coefficients of *Ln(Size)* and *Ln(Price)* are shown to be negative, suggesting excess returns decrease when share prices or firm sizes increase. Overall, there is no significant difference in results between using the equal-weighted index and value-weighted index, but the value-weighted Market Model provides the highest coefficients of *Bull* among others.

Moreover, Table 5.7 shows the relationship between the short-term market reaction to stock split announcements and investor sentiment variables. The results are consistent with Hypothesis 5 in Section 3.1.1: the excess returns generated from stock split announcements increase when investment sentiment increases. In particular, the abnormal returns from stock split announcements increase by 1.65% within five days, 2.8% in 10 days, and over 3% in one month using the equal-weighted returns if there is a 1% increase in share turnover in the NYSE. These results are similar, but slightly lower with the value-weighted returns in Panel A of the market adjusted returns and in Panel B of the market model adjusted returns. In the one-month lagged forecasting models, the coefficients of *turn* are also positively significant; indicating an increase in share turnovers can predict a rise in the returns of stock split announcements in the next period. In addition, the first-day returns on IPOs (*ripo)* and the close-end fund discounts (*cefd)* are positively correlated to abnormal returns of stock splits.

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[12] $Average\ of\ (e^{\beta}-1)\ for\ the\ \beta s\ in\ the\ windows\ of\ (-1,+1),(0,+1)\ and\ (-1,0)$

[13] $Average\ of\ (e^{\beta}-1)\ for\ the\ \beta s\ in\ the\ windows\ of\ (-2,+2)$

[14] $Average\ of\ (e^{\beta}-1)\ for\ the\ \beta s\ in\ the\ windows\ of\ (-1,+9)$

[15] $13.66\% = e^{\beta}-1 = e^{2.6856}-1, in\ the\ window\ of\ (-1,+30)$

Table 5.6 Regression Results between Abnormal Returns of Stock Splits and the Bull Dummy for the period 1926 to 2008

This table shows the relationship between abnormal returns of stock splits and the *Bull* dummy variable for the period 1926 to 2008. The dependent variable in Panel A is market adjusted abnormal returns (CAR) and the dependent variable in Panel B is market model adjusted abnormal returns for firms announcing stock splits. EW and VW stand for equal-weighted market index and value-weighted market index, respectively. (-1, +1), (-2, +2), (-1, 0), (0, +1), (-1, +9) and (-1, +30) represent event windows (in days) relative to stock split announcements (0 represents the actual announcement day). *SplFac* is the split ratio obtained from CRSP and defined as the number of additional shares per existing share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to stock split announcements. *Ln(Price)* is the natural logarithm of stock price one day before stock split announcements. *Bull* is a dummy variable that takes a value of one for a split announced in bull markets and a value of zero for an announcement in bear markets. Bull and bear markets are defined from Ohn, Taylor and Pagan (2004)'s turning points. All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regression Results between Market Adjusted Cumulative Abnormal Returns and Bull Dummy for Stock Splits

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	8.5529	8.5986	12.1614	12.2351	4.8336	4.8859	7.6864	7.7037	15.3090	15.4828	18.0136	18.7130
	[17.69]***	[17.69]***	[20.83]***	[20.67]***	[14.55]***	[14.46]***	[17.58]***	[17.70]***	[20.94]***	[20.32]***	[14.58]***	[13.99]***
Bull	0.6548	0.7183	0.6666	0.7602	0.4640	0.5041	0.6033	0.6479	0.4361	0.6960	1.1460	1.9528
	[5.40]***	[5.79]***	[4.53]***	[4.97]***	[5.19]***	[5.49]***	[5.59]***	[5.94]***	[2.31]**	[3.48]***	[3.72]***	[5.83]***
SplFac	1.0889	1.0708	1.2860	1.2718	0.4447	0.4305	1.0460	1.0357	1.6667	1.6414	2.5450	2.4651
	[4.44]***	[4.40]***	[13.22]***	[4.60]***	[3.91]***	[3.78]***	[4.55]***	[4.58]***	[4.63]***	[4.64]***	[4.76]***	[4.83]***
Ln(Size)	-0.1109	-0.1051	-0.2084	-0.1938	-0.0824	-0.0853	-0.0546	-0.0481	-0.2604	-0.2441	-0.2212	-0.1689
	[-2.67]***	[-2.53]**	[-4.24]***	[-3.92]***	[-2.91]***	[-3.00]***	[-1.46]*	[-1.29]	[-4.34]***	[-4.04]***	[-2.34]**	[-1.73]**
Ln(Price)	-1.8536	-1.8577	-2.4111	-2.4403	-0.8686	-0.8565	-1.8738	-1.8814	-3.1881	-3.2234	-4.3109	-4.5100
	[-9.65]***	[-9.62]***	[-11.12]***	[-11.17]***	[-7.88]***	[-7.68]***	[-10.17]***	[-10.24]***	[-12.36]***	[-12.32]***	[-10.67]***	[-10.77]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0487	0.0481	0.0609	0.0602	0.0216	0.0214	0.0546	0.0542	0.0648	0.0639	0.042	0.0436
N	16622	16622	16622	16622	16622	16622	16622	16622	16622	16622	16622	16622

Panel B: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and Bull Dummy for Stock Splits

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	8.4980	8.2337	12.1053	11.6273	4.7503	4.6072	7.7233	7.5322	15.0635	14.2130	15.6966	14.6665
	[18.56]***	[17.68]***	[21.52]***	[20.25]***	[15.06]***	[14.20]***	[18.36]***	[17.79]***	[20.71]***	[19.07]***	[12.95]***	[10.80]***
Bull	0.5752	0.7769	0.5238	0.8776	0.4009	0.5314	0.5519	0.6859	0.1139	0.9096	0.5391	2.6856
	[4.86]***	[6.32]***	[3.67]***	[5.74]***	[4.58]***	[5.87]***	[5.20]***	[6.34]***	[0.61]	[4.45]***	[1.67]*	[7.34]***
SplFac	1.0734	1.0624	1.2908	1.2732	0.4336	0.4300	1.0329	1.0276	1.5880	1.5509	2.2760	2.2165
	[4.60]***	[4.56]***	[4.77]***	[4.74]***	[4.11]***	[4.06]***	[4.65]***	[4.64]***	[4.85]***	[4.82]***	[5.02]***	[5.02]***
Ln(Size)	-0.1068	-0.1023	-0.2041	-0.1948	-0.0794	-0.0802	-0.0512	-0.0480	-0.2161	-0.2333	-0.0809	-0.1467
	[-2.69]***	[-2.60]***	[-4.36]***	[-4.18]***	[-2.97]***	[-2.99]***	[-1.41]	[-1.33]	[-3.68]***	[-4.09]***	[-0.82]	[-1.55]
Ln(Price)	-1.9436	-1.9161	-2.5739	-2.5302	-0.9154	-0.8974	-1.9546	-1.9327	-3.5587	-3.4206	-4.9974	-4.987
	[-10.31]***	[-10.10]***	[-11.96]***	[-11.73]***	[-8.47]***	[-8.24]***	[-10.66]***	[-10.54]***	[-13.62]***	[-13.15]***	[-12.24]***	[-11.35]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0521	0.0513	0.0609	0.0646	0.0231	0.0232	0.0582	0.0574	0.0683	0.0667	0.0387	0.0453
N	16616	16616	16616	16616	16616	16616	16616	16616	16616	16616	16616	16616

Table 5.7 Regression Results between Abnormal Returns of Stock Splits and Investor Sentiment Variables for the period 1960 to 2008

This table shows the relationship between abnormal returns of stock splits and investor sentiment variables for the period 1960 to 2008. The dependent variable in Panel A is market adjusted abnormal returns (CAR) and the dependent variable in Panel B is market model adjusted abnormal returns for firms announcing stock splits. Both equal-weighted and value-weighted market indexes are employed. (-2, +2), (-1, +9) and (-1, +30) represent event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). *SplFac* is the split ratio obtained from CRSP and defined as the number of additional shares per existing share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to stock split announcements. *Ln(Price)* is the natural logarithm of stock price one day before stock split announcements. *pdnd* is the difference in returns on dividend- and non-dividend-paying stocks; *nipo* is the number of initial public offerings (IPOs); *ripo* is the first-day returns on IPOs; *turn* is the NYSE share turnovers; *cefd* is the close-end fund discounts; and *es* is the level of equity over the level of debt issuance. All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regression Results between Market Adjusted Cumulative Abnormal Returns and Sentiment Variables for Stock Splits

	(-2,+2)				(-1,+9)				(-1,+30)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
Control Variables												
Intercept	11.8346	12.0778	12.2731	12.5709	15.1690	15.5659	16.2006	16.7125	19.2227	19.8404	22.6106	23.0316
	[17.52]***	[17.60]***	[18.03]***	[18.15]***	[17.92]***	[17.82]***	[18.46]***	[18.43]***	[13.49]***	[13.32]***	[14.82]***	[14.16]***
SplFac	1.6479	1.6284	1.6382	1.6181	2.0030	1.9781	1.9980	1.9717	2.9660	2.9397	2.9210	2.8902
	[3.82]***	[3.72]***	[3.81]***	[3.75]***	[3.79]***	[3.70]***	[3.77]***	[3.70]***	[3.83]***	[3.75]***	[3.85]***	[3.80]***
Ln(Size)	-0.5317	-0.5253	-0.5171	-0.5044	-0.6774	-0.6962	-0.6595	-0.6641	-0.8484	-0.8811	-0.7700	-0.7673
	[-8.22]***	[-8.22]***	[-8.09]***	[-7.87]***	[-8.70]***	[-8.80]***	[-8.44]***	[-8.35]***	[-6.58]***	[-7.00]***	[-5.75]***	[-5.93]***
Ln(Price)	-1.8908	-1.8296	-1.9409	-1.8699	-2.5538	-2.4533	-2.6247	-2.5013	-3.2541	-3.1420	-3.5397	-3.4269
	[-6.65]***	[-6.45]***	[-6.83]***	[-6.54]***	[-7.66]***	[-7.27]***	[-7.71]***	[-7.28]***	[-6.06]***	[-6.00]***	[-6.28]***	[-6.34]***
Investor Sentiment Variables												
pdnd	0.0023		-0.0008		-0.0011		-0.0064		-0.0279		-0.0437	
	[0.29]		[-0.10]		[-0.11]		[-0.55]		[-1.34]		[-1.83]*	
nipo	0.0040		-0.0006		-0.0005		-0.0091		0.0035		-0.0223	
	[1.34]		[-0.19]		[-0.14]		[-2.20]**		[0.52]		[-3.02]***	
ripo	0.0366		0.0445		0.0310		0.0454		0.0270		0.0539	
	[6.93]***		[8.29]***		[4.19]***		[5.62]***		[2.17]**		[3.62]***	
turn	1.6544		1.4418		2.8144		2.2920		2.8618		1.2188	
	[5.76]***		[4.91]***		[7.23]***		[5.57]***		[4.41]***		[1.73]*	
cefd	0.0595		0.0499		0.0545		0.0356		0.0672		0.0059	
	[4.91]***		[4.05]***		[3.45]***		[2.09]**		[2.22]**		[0.17]	
es	0.3061		0.1321		0.5117		-0.1126		-0.4458		-2.1450	
	[0.74]		[0.31]		[1.12]		[-0.28]		[-0.52]		[-2.40]**	
$pdnd_{t-1}$		0.0005		-0.0019		0.0044		0.0021		-0.0150		-0.0110
		[0.06]		[-0.23]		[0.37]		[0.17]		[-0.80]		[-0.52]
$nipo_{t-1}$		0.0024		-0.0032		-0.0047		-0.0146		0.0005		-0.0222
		[0.74]		[-0.94]		[-1.09]		[-3.16]***		[0.07]		[-2.69]***
$ripo_{t-1}$		0.0303		0.0346		0.0273		0.0337		0.0265		0.0449
		[5.05]***		[5.25]***		[3.38]***		[3.63]***		[1.89]*		[2.45]**
$turn_{t-1}$		1.3826		1.0802		2.8835		2.1849		3.0316		1.3327
		[4.86]***		[3.66]***		[6.77]***		[4.92]***		[4.62]***		[1.87]*
$cefd_{t-1}$		0.0531		0.0434		0.0426		0.0210		0.0475		-0.0171
		[4.40]***		[3.34]***		[2.66]***		[1.20]		[1.62]		[-0.50]
es_{t-1}		-0.0992		-0.2820		0.1923		-0.4298		-1.0364		-2.3638
		[-0.28]		[-0.78]		[0.41]		[-0.88]		[-1.20]		[-2.58]***
p-value of F-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0776	0.0708	0.0804	0.0709	0.0766	0.0733	0.0791	0.0723	0.0471	0.0457	0.0506	0.0462
N	15018	14881	15018	14881	15018	14881	15018	14881	15018	14881	15018	14881

Panel B: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and Sentiment Variables for Stock Splits

	(-2,+2)				(-1,+9)				(-1,+30)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
Control Variables												
Intercept	11.6886	11.8539	11.7695	12.1326	14.5425	14.7672	15.1153	15.7476	16.0801	16.4227	19.2897	19.7872
	[17.19]***	[17.55]***	[17.44]***	[17.92]***	[16.73]***	[16.85]***	[17.55]***	[18.01]***	[11.50]***	[11.49]***	[12.71]***	[12.55]***
SplFac	1.6496	1.6283	1.6357	1.6126	1.9253	1.9006	1.8956	1.8671	2.6393	2.6210	2.6099	2.5796
	[3.93]***	[3.89]***	[3.93]***	[3.87]***	[3.98]***	[3.93]***	[3.97]***	[3.89]***	[4.13]***	[4.09]***	[4.15]***	[4.10]***
Ln(Size)	-0.4227	-0.4244	-0.4330	-0.4231	-0.4231	-0.4482	-0.4603	-0.4720	-0.2152	-0.2421	-0.2214	-0.2191
	[-6.57]***	[-6.65]***	[-6.88]***	[-6.74]***	[-5.24]***	[-5.53]***	[-5.78]***	[-5.96]***	[-1.54]	[-1.74]*	[-1.53]	[-1.59]
Ln(Price)	-2.2321	-2.1641	-2.2111	-2.1258	-3.2929	-3.1937	-3.2164	-3.0671	-4.7889	-4.7058	-5.0733	-4.9562
	[-7.91]***	[-7.64]***	[-7.84]***	[-7.51]***	[-9.68]***	[-9.38]***	[-9.39]***	[-9.01]***	[-8.92]***	[-8.89]***	[-8.51]***	[-8.74]***
Investor Sentiment Variables												
pdnd	0.0100		0.0110		0.0115		0.0156		-0.0151		0.0125	
	[1.32]		[1.39]		[1.10]		[1.38]		[-0.79]		[0.50]	
nipo	0.0021		-0.0012		-0.0051		-0.0126		-0.0046		-0.0351	
	[0.69]		[-0.39]		[-1.24]		[-2.99]***		[-0.64]		[-4.41]***	
ripo	0.0242		0.0387		0.0070		0.0332		-0.0335		0.0151	
	[5.19]***		[7.81]***		[1.11]		[4.90]***		[-3.19]***		[1.29]	
turn	1.2832		1.3196		2.1254		1.9259		1.0064		0.1242	
	[4.65]***		[4.60]***		[5.45]***		[4.75]***		[1.46]		[0.17]	
cefd	0.0481		0.0393		0.0442		0.0174		0.0636		-0.0483	
	[4.16]***		[3.17]***		[2.66]***		[0.98]		[2.06]**		[-1.25]	
es	0.4622		0.1171		0.8947		-0.0500		-0.3904		-2.0419	
	[1.16]		[0.28]		[1.94]*		[-0.10]		[-0.46]		[-2.09]**	
$pdnd_{t-1}$		0.0056		0.0073		0.0102		0.0189		-0.0186		0.0392
		[0.72]		[0.91]		[0.94]		[1.63]		[-1.03]		[1.74]*
$nipo_{t-1}$		0.0002		-0.0049		-0.0080		-0.0195		-0.0080		-0.0364
		[0.06]		[-1.44]		[-1.92]*		[-4.26]***		[-1.12]		[-4.21]***
$ripo_{t-1}$		0.0183		0.0268		0.0038		0.0175		-0.0339		0.0021
		[3.45]***		[4.40]***		[0.56]		[2.17]**		[-2.91]***		[0.13]
$turn_{t-1}$		1.1437		0.9560		2.2652		1.8100		1.1292		0.2613
		[4.16]***		[3.40]***		[5.58]***		[4.48]***		[1.65]*		[0.38]
$cefd_{t-1}$		0.0437		0.0299		0.0393		-0.0012		0.0492		-0.0840
		[3.65]***		[2.29]**		[2.32]**		[-0.07]		[1.54]		[-2.30]**
es_{t-1}		0.1483		-0.3041		0.5728		-0.4293		-0.8025		-2.0609
		[0.44]		[-0.81]		[1.30]		[-0.85]		[-0.92]		[-2.10]**
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0736	0.0692	0.0770	0.0687	0.0722	0.0708	0.0735	0.0701	0.0403	0.0398	0.0451	0.0458
N	15013	14876	15013	14876	15013	14876	15013	14876	15013	14876	15013	14876

On average, abnormal returns increase by 0.05% if the first-day returns of IPOs or close-end fund discounts increase by 1% within a month. However, five-day and ten-day returns of splits cannot be explained by the difference in returns on dividend- and non-dividend-paying stocks, and the ratio of equity and debt issuance, as the coefficients of *pdnd* and *es* are not statistically significant in all models. The number of initial public offerings is negatively correlated to ten-day and thirty-day value-weighted returns, but is economically insignificant. These findings provide additional support for the earlier inference that good market conditions and positive investor sentiment can affect or predict stock split announcements and their associated abnormal returns.

5.1.5 Robustness Check

This research has employed various models to examine the first research question of whether corporations follow market-timing opportunities to announce stock splits. In the robustness check, it further divides the sample into six industry groups, five size quintiles, and four sub-periods to avoid noise. As Appendix 4A shows, in general, the abnormal returns of stock splits are superior in bull markets over bear markets in these sub-samples using the Market Adjusted Model in Panel A and the Market Model Adjusted Model in Panel B. These result are particularly significant in the windows of one day surrounding and one month after the announcements. Regarding multivariate regression analysis, Appendix 4B offers additional evidence that the *Bull* market dummy remains positively significant in the sub-periods after 1961. Investor sentiment variables of *turn* are the most statistically and economically significant in the period 1976 to 1985; *nipo, ripo,* and *cefd* are significant after 1976 as shown in Appendix 4C. Interestingly, *pdnd* becomes significant within the five-day event window in the period 1976 to 1985, and *es* is significant from 1976 to 1995, although they are not in the overall sample. To sum up, the results confirm that firms do take advantage of market timing to split shares in bull markets or when investor sentiment is high to increase the excess returns from the announcements, especially in the peak era between 1976 and 1995.

5.2 Special Dividend Announcements

5.2.1 Frequency of Special Dividends in Bull and Bear Markets

Special dividends are argued as effective tools to reduce agency costs when firms face no profitable investments (Jensen, 1986; Lang & Litzenberger, 1989; Lie, 2000). They are also acknowledged as good strategies to deter hostile takeovers (Denis, 1990). Given the fact that limited investment opportunities are more likely to happen in economy-wide or market declines and hostile takeovers usually occur in bull markets (Rhodes-Kropf & Viswanathan, 2004; Rhodes-Kropf, Robinson & Viswanathan, 2005; Shleifer & Vishny, 2003), there is a puzzle of whether special dividend announcements are positively or negatively related to market conditions. More importantly, do firms time the market to pay special dividends? Section 5.2 focuses on special dividend distributions and provides the answers for these questions by analysing the frequency, likelihood, and abnormal returns of these announcements between bull and bear markets.

In Table 5.8, there is no significant difference in the frequency of firms paying extra cash dividends per month between bull and bear markets from 1926 to 2008. In particular, 17 special dividends are declared per month in market upturns, and 16 during market declines. Although the number of special dividend announcements is slightly larger in upward market trends compared to downward trends for the period between the 1940s and the 1980s, the overall evidence is not clear whether firms are more likely to announce special dividends in bull markets or bear markets. This implies that firms do not time the market to pay special dividends in overvalued or bull markets.

This result is similar in the t-test and non-parameter, Wilcoxon z test results in Table 5.9. The frequency that companies pay special dividends per month is both 16 in bull and bear markets; thus, the *p-values* are not statistically significant. In order to examine whether and how market conditions influence firms' decisions to announce special dividends, the logit models are applied in the next section.

5.2.2 Likelihood of Occurrence of Special Dividends in Bull Markets

As predicted in the Alternative Hypothesis 2 in Section 3.1.1, the likelihood of the occurrence of special dividend announcements is negatively correlated to the *Bull* market dummy between 1926 and 2008 in the logistic regressions in Panel A of Table 5.10. This finding is robust in three out of four sub-periods, the exception being from 1961 to 1985. Notably, the

Table 5.8 Number of Special Dividends in Bull and Bear Markets from 1926 to 2008

This table shows the number of special dividend announcements in total and in each period of bull and bear markets from 1926 to 2008. Special dividends are classified from the Centre for Research in Security Prices (CRSP) files by the criteria that the distribution code is 1272 for special and extra dividends, and 1262 for year-end irregular extra dividends combined. Bull and bear markets are classified by Ohn, Taylor and Pagan (2004)'s turning points.

Number of special dividends (SDD) between bull and bear markets							
Bull Markets				Bear Markets			
	No. of SDD	No. of month	No. of SDD a month		No. of SDD	No. of month	No. of SDD a month
01/26-09/29	107	45	2	10/29-06/32	56	33	2
07/32-02/34	48	20	2	03/34-03/35	132	13	10
04/35-02/37	555	23	24	03/37-04/38	272	14	19
05/38-10/39	149	18	8	11/39-05/42	524	31	17
06/42-05/46	697	48	15	06/46-02/48	738	21	35
03/48-06/48	72	4	18	07/48-06/49	439	12	37
07/49-12/52	1536	42	37	01/53-08/53	87	8	11
09/53-07/56	940	35	27	08/56-12/57	408	17	24
01/58-07/59	183	19	10	08/59-10/60	203	15	14
11/60-12/61	185	14	13	01/62-06/62	35	6	6
07/62-01/66	865	43	20	02/66-09/66	75	8	9
10/66-11/68	403	26	16	12/68-06/70	127	19	7
07/70-04/71	68	10	7	05/71-11/71	40	7	6
12/71-12/72	180	13	14	01/73-09/74	583	21	28
10/74-12/76	971	27	36	01/77-02/78	381	14	27
03/78-11/80	695	33	21	12/80-07/82	285	20	14
08/82-06/83	125	11	11	07/83-05/84	151	11	14
06/84-08/87	549	39	14	09/87-11/87	80	3	27
12/87-05/90	631	30	21	06/90-10/90	56	5	11
11/90-01/94	621	39	16	02/94-12/94	186	11	17
01/95-08/00	864	68	13	09/00-02/03	265	30	9
03/03-12/04	438	22	20	01/05-06/06	345	18	19
07/06-10/07	300	16	19				
Total	11182	645	17	Total	5468	337	16

Table 5.9 The Frequency of Special Dividend Announcements per month between Bull and Bear Markets – The t-test and non-parameter, Wilcoxon z test

This table presents the results of the t-test and non-parameter, Wilcoxon z test. *Bull* represents on average the number of special dividends per month in bull markets and *Bear* is the number of special dividends per month in bear markets from 1926 to 2008.

Mean			The t-test	non-parameter Test
Bull	Bear	Difference	P_Value	P_Value
16.6957	16.5000	0.1957	0.9439	0.3716

probability that firms initiate special dividends decreases by 9.69%[16] if the announcements are in bull markets compared to bear markets. In the sub-samples, the probability decreases by 30.95%[17] in the period from 1926 to 1940, 8.3%[18] from 1941 to 1961, and 8.69%[19] from 1986 to 2008. This indicates that firms are more likely to announce special dividends in market downturns when there are limited investment opportunities. These results are not compatible with the Catering Hypothesis that firms pay dividends when market demand is high (Baker & Wurgler, 2004), or the Market Driven Hypothesis in which corporate events are announced in the overvalued markets (Rhodes-Kropf & Viswanathan, 2004; Rhodes-Kropf, Robinson & Viswanathan, 2005; Shleifer & Vishny, 2003). However, they are consistent with the Free Cash Flow Hypothesis, suggesting that firms tend to distribute extra cash back to their shareholder to prevent managers from wasting money on daily basis or

[16] $e^{\beta} - 1 = e^{(-0.1019)} - 1 = -0.09688$
[17] $e^{\beta} - 1 = e^{(-0.3703)} - 1 = -0.30947$
[18] $e^{\beta} - 1 = e^{(-0.0867)} - 1 = -0.08305$
[19] $e^{\beta} - 1 = e^{(-0.0909)} - 1 = -0.08689$

unfavourable investment opportunities to reduce agency costs in market declines (Jensen, 1986; Lie, 2000).

Table 5.10 Logistic Regressions for the Likelihood of Special Dividends from 1926 to 2008

This table shows the likelihood of special dividend announcements related to the *Bull* market dummy in Panel A from 1926 to 2008, and associated with investor sentiment variables in Panel B. The dependent variable is a binary variable that contains a value of one if a firm announce a special dividend in the month, otherwise zero. *Ln(Size)* is the natural logarithm of monthly market capitalization. *Ln(Price)* is the natural logarithm of monthly stock price. *Bull* is a dummy variable for the market condition, takes a value of one for a special dividend announced in bull markets and a value of zero for an announcement in bear markets. Bull and bear markets are defined from Ohn, Taylor and Pagan (2004)'s turning points. *pdnd* is the difference in returns on dividend- and non-dividend-paying stocks in a month; *nipo* is the number of initial public offerings (IPOs); *ripo* is the first-day returns on IPOs; *turn* is the NYSE share turnovers; *cefd* is the close-end fund discount; and *es* is the level of equity over the level of debt issuance in a month. The logistic regressions run on the full sample period and on four sub-periods for a robustness check to avoid noise. *p-values* are in parentheses under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: The likelihood of special dividend announcements with Bull Dummy

	Full Sample	Sub-periods			
Variables	1926-2008	1926-1940	1941-1960	1961-1985	1986-2008
Bull	-0.1019	-0.3703	-0.0867	0.2698	-0.0909
	(0.0007)***	(<.0001)***	(0.0016)***	(<.0001)***	(0.0121)**
Ln(Size)	-0.3691	0.0680	-0.0965	-0.3365	-0.2408
	(<.0001)***	(0.0004)***	(<.0001)***	(<.0001)***	(<.0001)***
Ln(Price)	1.0157	0.6684	0.6831	1.0033	0.6664
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Intercept	-3.9833	-7.0247	-4.8735	-4.6469	-4.9225
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***

Panel B: The likelihood of special dividend announcements with sentiment variables

	Full Sample		Sub-periods							
Variables	1960-2008		1960-1975		1976-1985		1986-1995		1996-2008	
Intercept	-4.7407***	-4.9215***	-5.0491***	-5.0582***	-3.7554***	-4.2931***	-3.7963***	-4.6119***	-5.5461***	-6.0187***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Ln(Size)	-0.2691***	-0.2738***	-0.2375***	-0.2417***	-0.4495***	-0.4480***	-0.2860***	-0.2804***	-0.1817***	-0.1805***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Ln(Price)	0.8004***	0.8011***	1.0335***	1.0537***	1.1667***	1.1610***	0.8070***	0.7990***	0.5332***	0.5208***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
pdnd	0.0078***		-0.0054*		0.0205***		-0.0070		0.0078***	
	(<.0001)		(0.0517)		(<.0001)		(0.2176)		(0.0053)	
nipo	-0.0034***		-0.0050**		0.0007		0.0007		0.0020	
	(<.0001)		(0.0022)		(0.6701)		(0.5700)		(0.2399)	
ripo	-0.0067***		-0.0086***		-0.0054***		-0.0272***		-0.0033**	
	(<.0001)		(<.0001)		(<.0001)		(<.0001)		(0.0138)	
turn	-0.1323***		-3.6326***		-0.3286		-1.3327***		0.3904***	
	(0.0010)		(00001)		(0.3448)		(<.0001)		(<.0001)	
cefd	0.0229***		0.0383***		0.0131**		0.0339***		-0.0156	
	(<.0001)		(<.0001)		(0.0104)		(<.0001)		(0.1456)	
es	-0.0791		-0.2900**		0.3406***		-1.4762***		-0.1563	
	(0.1932)		(0.0360)		(0.0006)		(0.0013)		(0.6997)	
$pdnd_{t-1}$		0.0114***		-0.0116***		0.0223***		0.0217***		0.0184***
		(<.0001)		(<.0001)		(<.0001)		(0.0001)		(<.0001)
$nipo_{t-1}$		-0.0019***		-0.0072***		0.0018		-0.0002		0.0080***
		(0.0001)		(<.0001)		(0.2432)		(0.8998)		(<.0001)
$ripo_{t-1}$		-0.0071***		-0.0177***		-0.0054***		-0.0053		-0.0010
		(<.0001)		(<.0001)		(<.0001)		(0.1254)		(0.4762)
$turn_{t-1}$		-0.1144***		-3.2690***		0.6017*		-0.1434		0.8095***
		(0.0030)		(0.0008)		(0.0889)		(0.5428)		(<.0001)
$cefd_{t-1}$		0.0274***		0.0396***		0.0302***		0.0251***		-0.0325***
		(<.0001)		(<.0001)		(<.0001)		(0.0001)		(0.0028)
es_{t-1}		0.0675		0.0191		0.2285**		0.0727		0.7177*
		(0.2599)		(0.8835)		(0.0272)		(0.8698)		(0.0744)

Similarly, the propensity of firms paying special dividends are negatively related to some of the investment sentiment variables in Panel B. For example, the propensity increases when the number of IPOs (*nipo*), first-day returns of IPOs (*ripo*), or NYSE share turnovers (*turn*) decrease. With a 1% decline in *ripo*, the likelihood of firms paying special dividends increases by over 0.7% in the overall sample, and this negative relationship is robust in all sub-samples. A rise in share turnovers can considerably reduce the probability of special dividends in the period between 1926 and 2008 and in the sub-periods before 1995. This means that the higher the NYSE turnover, the greater the ability of the firm to invest in positive NPV projects. Therefore, the chance of paying special dividends reduces while the company's growth level increases. Moreover, a 1% increase in number of IPOs can decrease the likelihood of special dividends being announced by around 0.5%. The ratio of equity to debt (*es*) is also shown to be statistically negative in the sub-periods 1960 to 1975 and 1986 to 1995, meaning the higher the ratio, the lower the probability that firms initiate special dividends in these periods. Although the difference in returns on dividend- and non-dividend-paying stocks (*pdnd*) and the close-end discount (*cefd*) appear to be positive in some samples, the results in general provide supplementary evidence that firms have a tendency to announce special dividends in bear markets when investor sentiment is low. The announcements are also more likely to be used as a strategy to alleviate agency problems in market downturns rather than prevent hostile takeovers in upturns; this is consistent with Alternative Hypothesis 4 in Section 3.1.1. The findings indicate that not only do cash disbursements of share repurchase occur in market declines, but also special dividends.

5.2.3 Abnormal Returns of Special Dividends in Bull and Bear Markets

The market reaction to special dividend announcements between bull and bear markets is examined in this section. According to Table 5.11, the short-term abnormal returns of special dividends are higher in bear markets than in bull markets using the Market Adjusted Model. With the equal-weighted index, the abnormal returns decrease from 0.79% to -2.12% for the seven-day and six-month event windows in bull markets, however, the returns increase from 0.76% to 1.46% in bear markets. With the value-weighted index, the abnormal returns increase from 1.11% to 6.22% in bear markets, but 1.07% to 4.57% in bull markets. These results suggest that the signalling effect of special dividends is stronger in market declines. Firms use these announcements to indicate to the market that they are in a strong position to weather the downturn and are better performers in tough times. Investors feel protected and know that companies' agency costs are reduced by special dividend distributions in market downturns; hence, the price reactions are greater during these periods. These findings are in line with Below and Johnson (1996) and Fuller and Goldstein (2011), and help to explain why there is a higher tendency of special dividend announcements in bear markets as discussed in the last section. However, the mean adjusted and market model adjusted returns are larger in bull markets, which support the study of Mian and Sankaraguruswamy (2012). This result implies that whether the abnormal returns of special dividends are pro-cyclical or counter-cyclical depends on which models are used.

Table 5.11 Short-Run Excess Returns of Special Dividend Announcements in Bull and Bear Markets from 1926 to 2008

This table calculates excess returns for the firms initiating special dividends between bull and bear markets from 1926 to 2008. Bull and bear markets are classified by Ohn, Taylor and Pagan (2004)'s turning points. Mean adjusted returns are calculated by $AR_{it}=R_{it}-E(R_{it})$, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, $E(R_{it})$ is constant mean returns for security *i* at time *t* with estimation period of 255 trading days. Market adjusted returns are using $AR_{it}=R_{it}-R_{mt}$, where R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes. Market model adjusted returns are measured by $AR_{it}=R_{it}-\hat{\alpha}_i-\hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the Market Model of $R_{it}=\alpha_i+\beta_i * R_{mt}+\varepsilon_i$ with estimation period of 255 trading days. Short term event windows are examined one day surrounding an announcement date, one week after an announcement date, 10 days, 15 days, three weeks, one month, two months, three months and six months after an announcement date (0 represents the actual announcement day). All returns are in percentage with *t*-statistics underneath. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Bull Markets	Raw Returns	Market Adjusted Returns		Market Model Adjusted Returns		Mean Adjusted Returns
		EW	VW	EW	VW	
Event windows						
(-30,-2)	3.83	0.39	1.13	0.37	0.24	0.98
	[41.47]***	[1.62]	[10.42]***	[6.03]***	[4.22]***	[11.63]***
(-1,+1)	1.50	1.08	1.16	1.10	1.08	1.21
	[32.06]***	[21.38]***	[23.37]***	[23.21]***	[22.78]***	[25.14]***
(-1, 0)	0.85	0.59	0.64	0.60	0.58	0.65
	[22.27]***	[13.92]***	[15.36]***	[15.16]***	[14.69]***	[16.60]***
(0, +1)	1.31	1.01	1.06	1.02	1.01	1.12
	[30.83]***	[22.40]***	[23.97]***	[23.84]***	[23.63]***	[25.66]***
(1, +7)	1.89	0.79	1.07	0.86	0.92	1.20
	[35.61]***	[11.87]***	[17.80]***	[15.93]***	[16.66]***	[22.54]***
(1, +10)	2.23	0.67	1.14	0.80	0.92	1.25
	[33.59]***	[7.16]***	[15.21]***	[11.87]***	[13.52]***	[18.86]***
(1, +15)	2.79	0.37	1.19	0.57	0.82	1.33
	[38.33]***	[0.97]	[13.98]***	[7.54]***	[10.86]***	[18.28]***
(1, +21)	3.57	0.22	1.44	0.48	0.92	1.52
	[42.33]***	[-2.19]**	[14.91]***	[5.73]***	[10.84]***	[18.00]***
After						
1month	4.80	-0.14	1.72	0.27	0.99	1.88
	[49.55]***	[-6.66]***	[15.69]***	[3.67]***	[10.82]***	[19.54]***
2month	8.51	-0.98	2.75	-0.31	1.21	2.70
	[62.08]***	[-13.96]***	[17.51]***	[-0.51]	[9.49]***	[18.98]***
3month	10.84	-1.34	3.44	-0.85	0.77	2.17
	[63.75]***	[-15.60]***	[17.40]***	[-3.01]***	[5.01]***	[12.22]***
6month	16.11	-2.12	4.57	-2.42	-1.63	-1.08
	[61.58]***	[-15.17]***	[15.02]***	[-5.03]***	[-3.87]***	[-0.86]

Bear Markets	Raw Returns	Market Adjusted Returns		Market Model Adjusted Returns		Mean Adjusted Returns
		EW	VW	EW	VW	
Event windows						
(-30,-2)	0.06	1.33	1.55	0.25	-0.35	-1.68
	[0.05]	[10.15]***	[11.88]***	[2.22]**	[-2.11]**	[-10.94]***
(-1,+1)	1.02	0.99	1.06	0.91	0.85	0.84
	[15.07]***	[14.75]***	[16.19]***	[13.91]***	[13.07]***	[12.13]***
(-1, 0)	0.51	0.50	0.56	0.44	0.40	0.39
	[9.55]***	[9.50]***	[10.88]***	[8.51]***	[7.83]***	[7.06]***
(0, +1)	0.96	0.93	0.98	0.87	0.84	0.84
	[16.50]***	[15.80]***	[17.04]***	[15.43]***	[15.10]***	[14.22]***
(1, +7)	0.86	0.94	1.11	0.72	0.66	0.44
	[10.30]***	[12.16]***	[14.65]***	[9.41]***	[8.56]***	[5.34]***
(1, +10)	0.80	0.92	1.18	0.63	0.54	0.19
	[8.31]***	[10.28]***	[13.79]***	[7.06]***	[6.20]***	[2.15]**
(1, +15)	0.75	0.76	1.22	0.36	0.27	-0.15
	[6.79]***	[6.76]***	[12.12]***	[3.39]***	[2.76]***	[-0.79]
(1, +21)	0.88	0.80	1.58	0.24	0.24	-0.37
	[6.87]***	[5.52]***	[13.43]***	[1.77]*	[2.15]**	[-2.19]**
After						
1month	0.97	0.78	1.99	0.03	0.14	-0.82
	[7.01]***	[4.12]***	[14.73]***	[0.06]	[1.35]	[-4.16]***
2month	1.66	1.46	3.58	0.06	0.14	-1.90
	[8.06]***	[5.83]***	[19.13]***	[0.17]	[1.04]	[-8.34]***
3month	3.46	1.46	4.69	-0.28	-0.02	-1.85
	[14.21]***	[3.85]***	[19.91]***	[-0.85]	[0.48]	[-5.81]***
6month	7.31	0.27	6.22	-2.54	-2.20	-3.17
	[20.00]***	[0.58]	[18.41]***	[-4.20]***	[-3.51]***	[-5.15]***

Table 5.12 Long-Term Post-announcement Abnormal Returns Using Monthly Fama-French (1993) and Carhart (1997) Calendar Time Portfolio Regressions for Special Dividend Announcements between Bull and Bear Markets from 1926 to 2008

This table calculates long term abnormal returns for the one-, two-, three-, and five-year post-announcement horizons, for the firms initiating special dividends between bull and bear markets during the period 1926 to 2008. Bull and bear markets are classified by Ohn, Taylor and Pagan (2004)'s turning points. Monthly rebalanced calendar time portfolio returns are calculated each month from all firms experience a special dividend in the previous 12, 24, 36, or 60 calendar months. Monthly excess returns to calendar time portfolios are: $CTAR_t=R_{pt}-E(R_{pt})$, where R_{pt} is monthly return on portfolio of event firms at time t, and $E(R_{pt})$ is expected return on event portfolio at time t. The expected return on event portfolio, for each sample firm in month t, is measured by Fama-French (1993) three-factor model and Carhart (1997) four-factor model:

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + m_i PR1YR_t + \varepsilon_{it}$$

R_{it} is firm i's monthly return, R_{ft} is the one-month T-bills return, and R_{mt} is the market return on both CRSP equal-weighted and value-weighted portfolio of all NYSE, AMEX, and Nasdaq stocks. SMB_t is the difference in returns between portfolios of small and big stocks. HML_t is the difference in returns between portfolios of high and low book-to-market ratio stocks. $PR1YR_t$ is defined as in Carhart (1997) as an equally weighted portfolio return of stocks with highest returns less an equally weighted portfolio return of stocks with lowest returns in months *t-12* to *t-2*. Ordinary, Weighted Least Squares (White, 1980) and Generalized Method of Moment (GMM) are estimated. All abnormal returns are in percentage and *t*-statistics of intercepts are shown in brackets under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Calendar Portfolio post period	Model Estimated	Intercept of the Fama-French Regression Three-factor without momentum (Fama-French, 1993)				Intercept of the Fama-French-Carhart Regression Four-factor with momentum (Carhart, 1997)			
		Equal-weighted		Value-weighted		Equal-weighted		Value-weighted	
		Bull	Bear	Bull	Bear	Bull	Bear	Bull	Bear
Horizon =		0.74	0.57	0.73	0.60	0.61	0.53	0.68	0.66
1 year	OLS	[11.46]***	[6.28]***	[11.29]***	[6.68]***	[9.26]***	[5.69]***	[10.27]***	[7.10]***
	Hetero t	[11.80]***	[6.66]***	[11.42]***	[7.09]***	[8.64]***	[5.54]***	[9.57]***	[7.08]***
		0.60	0.62	0.60	0.63	0.52	0.52	0.58	0.60
	WLS	[12.25]***	[9.85]***	[11.89]***	[10.20]***	[10.37]***	[8.32]***	[11.24]***	[9.50]***
		0.74	0.57	0.73	0.60	0.61	0.53	0.68	0.66
	GMM	[9.99]***	[5.99]***	[9.36]***	[6.26]***	[7.82]***	[5.19]***	[8.56]***	[6.54]***
Horizon =		0.58	0.49	0.59	0.49	0.50	0.39	0.60	0.49
2 years	OLS	[8.79]***	[7.36]***	[8.78]***	[7.42]***	[7.42]***	[5.79]***	[8.75]***	[7.22]***
	Hetero t	[8.83]***	[7.66]***	[8.77]***	[7.68]***	[6.55]***	[5.79]***	[7.82]***	[7.38]***
		0.43	0.47	0.43	0.48	0.39	0.36	0.46	0.45
	WLS	[9.54]***	[8.41]***	[9.00]***	[8.79]***	[8.29]***	[6.57]***	[9.31]***	[8.03]***
		0.58	0.49	0.59	0.49	0.50	0.39	0.60	0.49
	GMM	[7.48]***	[7.01]***	[7.18]***	[6.89]***	[5.90]***	[5.32]***	[6.87]***	[6.78]***
Horizon =		0.46	0.40	0.47	0.41	0.42	0.34	0.53	0.43
3 years	OLS	[7.74]***	[6.76]***	[7.73]***	[6.85]***	[6.90]***	[5.49]***	[8.47]***	[7.04]***
	Hetero t	[7.78]***	[6.91]***	[7.66]***	[6.97]***	[6.22]***	[5.39]***	[7.75]***	[7.04]***
		0.36	0.39	0.36	0.40	0.31	0.31	0.40	0.38
	WLS	[8.20]***	[7.63]***	[7.84]***	[7.88]***	[6.94]***	[5.96]***	[8.33]***	[7.29]***
		0.46	0.40	0.47	0.41	0.42	0.34	0.53	0.43
	GMM	[6.56]***	[6.28]***	[6.30]***	[6.22]***	[5.52]***	[4.99]***	[6.72]***	[6.44]***
Horizon =		0.32	0.30	0.33	0.31	0.29	0.23	0.39	0.33
5 years	OLS	[6.13]***	[5.43]***	[5.98]***	[5.49]***	[5.33]***	[4.16]***	[7.01]***	[5.78]***
	Hetero t	[6.33]***	[5.48]***	[6.15]***	[5.52]***	[5.01]***	[3.97]***	[6.83]***	[5.67]***
		0.29	0.32	0.29	0.33	0.24	0.25	0.33	0.32
	WLS	[6.80]***	[6.76]***	[6.40]***	[7.08]***	[5.43]***	[5.20]***	[6.95]***	[6.72]***
		0.32	0.30	0.33	0.31	0.29	0.23	0.39	0.33
	GMM	[5.45]***	[4.95]***	[5.36]***	[4.89]***	[4.53]***	[3.70]***	[6.24]***	[5.19]***

In contrast, the long-term abnormal returns of special dividend announcements have shown a more consistent result in Table 5.12. They are economically small and slightly higher in advancing markets, except for the Weighted Least Square (WLS) estimates in the Fama-French three-factor models. In particular, there are about 0.7% abnormal returns one year after the announcements, 0.6% after two years, 0.5% after three years, and 0.35% after five years in bull markets; in comparison, in bear markets, there are 0.6%, 0.45%, 0.4%, and 0.3%, respectively. Since the difference in these abnormal returns between bull markets and declines is small, the market condition is not a significant factor to influence price reactions to corporate announcements in the long run. These results also generally support the Market

Efficiency Hypothesis as there is no significant long-run price drift in special dividend announcements.

5.2.4 Multivariate Regression Results for Abnormal Returns of Special Dividends

This section presents the results of the relationship between market conditions and short-run abnormal returns of special dividends using multivariate regressions. In Table 5.13, the *Bull* market dummy is only statistically significant and positive in the market model adjusted returns in Panel B. This is in accordance with the event study results in the last section. For the one day within the announcements, excess returns are 0.19%[20] higher in bull markets than in bear markets with the equal-weighted market index and 0.24%[21] higher with the value-weighted market index. For the ten-day window of (-1, +9), the returns are up to 0.76%[22] larger in market upturns. After one month, the difference in price reactions between market upturns and downturns increases to 1.76%[23] in the value-weighted market returns. These figures provide some evidence that excess returns of special dividends can be positively affected by good market conditions, but only to some extent, as the result is subject to which model is applied. Additionally, the coefficients of *Divamt* are positive, indicating that price reactions to the announcements increase with the amount of special dividends paid. *Ln(Size)* is also positive in both Panels A and B, meaning that abnormal returns are higher in larger size firms in comparison to smaller size ones. The negative coefficients of *Ln(Price)* show a negative relationship in that abnormal returns of special dividends increase when share prices decrease.

The relationship between investor sentiment variables and price reactions to special dividend declarations are further shown in Table 5.14. Similar to the results in logistic models, the majority of the sentiment variables are negatively correlated to excess returns of special dividends in both the Market Adjusted Model in Panel A and the Market Model in Panel B. A 1% increase in the difference in returns on dividend- and non-dividend-paying stocks (*pdnd*), on average, reduces 0.03% excess returns one month after special dividend announcements. If there is a 1% decrease in *pdnd*, the abnormal returns of the ten-day window of (-1, +9) can be predicted to increase by around 0.02%. An increase in the number of IPOs (*nipo*) can also reduce value-weighted excess returns of special dividends up to 0.03%, and a decrease in the returns of IPOs (*ripo*) can predict ten-day returns to increase by almost 0.06%. The share

[20] $e^{\beta} - 1 = e^{(0.1699)} - 1 = 0.1852$
[21] $e^{\beta} - 1 = e^{(0.2180)} - 1 = 0.2436$
[22] $e^{\beta} - 1 = e^{(0.5647)} - 1 = 0.7589$
[23] $e^{\beta} - 1 = e^{(1.0144)} - 1 = 1.7578$

Table 5.13 Regression Results between Abnormal Returns of Special Dividends and the Bull Dummy for the period 1926 to 2008

This table shows the relationship between abnormal returns of special dividends and the *Bull* dummy variable for the period 1926 to 2008. The dependent variable in Panel A is market adjusted abnormal returns (CAR) and the dependent variable in Panel B is market model adjusted abnormal returns for firms initiating special dividends. EW and VW stand for equal-weighted market index and value-weighted market index, respectively. (-1, +1), (-2, +2), (-1, 0), (0, +1), (-1, +9) and (-1, +30) represent event windows (in days) relative to special dividend announcements (0 represents the actual announcement day). *Bull* is a dummy variable that takes a value of one for a special dividend announced in bull markets and a value of zero for an announcement in bear markets. Bull and bear markets are defined from Ohn, Taylor and Pagan (2004)'s turning points. *Divamt* is an amount of special dividend paid per share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to special dividend announcements. *Ln(Price)* is the natural logarithm of stock price one day before special dividend announcements. All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Panel A: Regression Results between Market Adjusted Cumulative Abnormal Returns and Bull Dummy for Special Dividends

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	3.8729	4.0294	4.7107	5.0810	1.8322	1.9510	3.8279	3.9162	6.1593	6.8907	7.9458	10.3837
	[11.42]***	[11.66]***	[11.52]***	[12.28]***	[7.52]***	[7.77]***	[12.17]***	[12.32]***	[12.91]***	[14.29]***	[11.84]***	[15.18]***
Bull	0.6590	0.0896	-0.0551	-0.0061	0.1075	0.1070	0.0525	0.0622	-0.0877	0.1263	-0.8065	-0.1514
	[0.73]	[0.95]	[-0.46]	[-0.05]	[1.47]	[1.44]	[0.63]	[0.76]	[-0.57]	[0.87]	[-3.28]***	[-0.70]
Divamt	0.2913	0.2844	0.3644	0.3642	0.1694	0.1644	0.2860	0.2837	0.3496	0.3456	0.4031	0.3857
	[4.58]***	[4.53]***	[5.43]***	[5.48]***	[4.44]***	[4.20]***	[4.71]***	[4.73]***	[5.29]***	[5.09]***	[5.61]***	[5.22]***
Ln(Size)	0.1161	0.0908	0.1439	0.0993	0.0586	0.0414	0.1022	0.0863	0.1124	0.0436	0.0563	-0.0097
	[4.45]***	[3.47]***	[4.40]***	[3.08]***	[2.75]***	[1.93]*	[4.50]***	[3.80]***	[2.75]***	[1.14]	[0.87]	[-0.16]
Ln(Price)	-1.3530	-1.2951	-1.6295	-1.5628	-0.6496	-0.6107	-1.3080	-1.2656	-1.9475	-1.8641	-2.3787	-2.5214
	[-14.69]***	[-13.83]***	[-15.31]***	[-14.46]***	[-10.56]***	[-9.70]***	[-15.58]***	[-14.88]***	[-16.21]***	[-15.37]***	[-13.29]***	[-14.05]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0513	0.0478	0.0538	0.0514	0.0211	0.0191	0.0587	0.0557	0.0496	0.0486	0.0371	0.0434
N	16144	16144	16144	16144	16144	16144	16144	16144	16144	16144	16144	16144

Panel B: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and Bull Dummy for Special Dividends

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	3.7549	3.7461	4.5897	4.6360	1.7600	1.7597	3.7060	3.7011	5.8340	6.0697	7.3367	8.1165
	[11.07]***	[10.81]***	[11.26]***	[11.12]***	[7.18]***	[7.04]***	[11.81]***	[11.66]***	[12.23]***	[12.36]***	[10.55]***	[11.06]***
Bull	0.1699	0.2180	0.1218	0.1992	0.1759	0.2018	0.1180	0.1413	0.3562	0.5647	0.3842	1.0144
	[1.92]*	[2.39]**	[1.11]	[1.73]*	[2.51]**	[2.79]***	[1.51]	[1.77]*	[2.66]***	[3.96]***	[1.90]*	[4.48]***
Divamt	0.2780	0.2746	0.3416	0.3437	0.1650	0.1620	0.2726	0.2712	0.3012	0.3103	0.2902	0.2841
	[4.36]***	[4.38]***	[4.99]***	[5.05]***	[4.43]***	[4.35]***	[4.48]***	[4.51]***	[4.54]***	[4.62]***	[4.07]***	[3.68]***
Ln(Size)	0.1063	0.0914	0.1280	0.1028	0.0518	0.0397	0.0982	0.0900	0.1345	0.0792	0.1198	0.0871
	[4.18]***	[3.56]***	[4.05]***	[3.22]***	[2.46]**	[1.88]*	[4.44]***	[4.06]***	[3.48]***	[2.11]**	[1.97]**	[1.47]
Ln(Price)	-1.3074	-1.2714	-1.5790	-1.5364	-0.6226	-0.5922	-1.2718	-1.2498	-2.0183	-1.9429	-2.6361	-2.7434
	[-14.26]***	[-13.59]***	[-15.02]***	[-14.18]***	[-10.16]***	[-9.43]***	[-15.30]***	[-14.83]***	[-17.32]***	[-16.05]***	[-15.06]***	[-14.45]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0492	0.0470	0.0515	0.0495	0.0204	0.0191	0.0563	0.0548	0.0527	0.0514	0.0389	0.0444
N	16139	16139	16139	16139	16139	16139	16139	16139	16139	16139	16139	16139

Table 5.14 Regression Results between Abnormal Returns of Special Dividends and Investor Sentiment Variables for the period 1960 to 2008

This table shows the relationship between abnormal returns of special dividends and investor sentiment variables for the period 1960 to 2008. The dependent variable in Panel A is market adjusted abnormal returns (CAR) and the dependent variable in Panel B is market model adjusted abnormal returns for firms initiating special dividends. Both equal-weighted and value-weighted market indexes are employed. (-2, +2), (-1, +9) and (-1, +30) represent event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). *Divamt* is an amount of special dividend paid per share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to special dividend announcements. *Ln(Price)* is the natural logarithm of stock price one day before special dividend announcements. *pdnd* is the difference in returns on dividend- and non-dividend-paying stocks; *nipo* is the number of initial public offerings (IPOs); *ripo* is the first-day returns on IPOs; *turn* is the NYSE share turnovers; *cefd* is the close-end fund discount; and *es* is the level of equity over the level of debt issuance. All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1%, respectively.

Panel A: Regression Results between Market Adjusted Cumulative Abnormal Returns and Sentiment Variables for Special dividends

	(-2,+2)				(-1,+9)				(-1,+30)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
Control Variables												
Intercept	9.4254	9.2367	10.2962	9.9618	11.5716	11.5023	13.3279	13.0195	12.2467	12.1627	17.4532	16.7556
	[12.77]***	[12.63]***	[13.64]***	[13.51]***	[13.56]***	[13.52]***	[15.22]***	[15.25]***	[10.07]***	[10.08]***	[14.17]***	[13.72]***
Divamt	0.4343	0.4866	0.4350	0.4829	0.3919	0.4419	0.3726	0.4245	0.4517	0.4873	0.4019	0.4299
	[5.07]***	[5.44]***	[5.15]***	[5.42]***	[4.94]***	[5.36]***	[4.69]***	[5.27]***	[5.62]***	[5.62]***	[4.95]***	[4.87]***
Ln(Size)	-0.2210	-0.2366	-0.2365	-0.2527	-0.4345	-0.4517	-0.4309	-0.4445	-0.5941	-0.6284	-0.5009	-0.5278
	[-4.02]***	[-4.36]***	[-4.24]***	[-4.63]***	[-6.49]***	[-6.74]***	[-6.40]***	[-6.65]***	[-5.67]***	[-5.98]***	[-4.93]***	[-5.17]***
Ln(Price)	-1.4094	-1.3463	-1.4385	-1.3642	-1.3894	-1.3258	-1.5008	-1.4285	-1.7442	-1.6318	-2.2029	-2.1046
	[-7.80]***	[-7.57]***	[-7.79]***	[-7.57]***	[-7.08]***	[-6.81]***	[-7.45]***	[-7.25]***	[-5.97]***	[-5.54]***	[-7.35]***	[-7.01]***
Investor Sentiment Variables												
pdnd	0.0042		0.0012		-0.0077		-0.0132		-0.0134		-0.0335	
	[0.55]		[0.15]		[-0.78]		[-1.28]		[-0.82]		[-2.06]**	
nipo	-0.0077		-0.0130		-0.0064		-0.0172		-0.0035		-0.0333	
	[-1.95]*		[-3.24]***		[-1.30]		[-3.37]***		[-0.40]		[-4.03]***	
ripo	-0.0133		-0.0075		-0.0220		-0.0082		-0.0599		-0.0303	
	[-2.75]***		[-1.51]		[-3.42]***		[-1.26]		[-4.83]***		[-2.90]***	
turn	-0.1878		-0.5728		0.5897		-0.2166		2.6160		0.1097	
	[-0.70]		[-2.10]**		[1.55]		[-0.56]		[4.83]***		[0.20]	
cefd	-0.0317		-0.0485		-0.0278		-0.0570		-0.0155		-0.0693	
	[-2.14]**		[-3.12]***		[-1.47]		[-2.96]***		[-0.50]		[-2.30]**	
es	-0.0849		-0.5651		0.1601		-1.3100		4.0020		-0.2594	
	[-0.20]		[-1.20]		[0.30]		[-2.05]**		[4.55]***		[-0.28]	
$pdnd_{T-1}$		-0.0062		-0.0088		-0.0217		-0.0233		-0.0288		-0.0389
		[-0.83]		[-1.13]		[-2.33]**		[-2.43]**		[-1.68]*		[-2.38]**
$nipo_{T-1}$		-0.0023		-0.0064		-0.0020		-0.0097		0.0012		-0.0207
		[-0.62]		[-1.66]*		[-0.42]		[-2.07]**		[0.14]		[-2.78]***
$ripo_{T-1}$		-0.0203		-0.0189		-0.0250		-0.0186		-0.0516		-0.0427
		[-4.08]***		[-3.70]***		[-4.01]***		[-2.96]***		[-3.85]***		[-3.84]***
$turn_{T-1}$		-0.2998		-0.5617		0.2816		-0.3245		2.2294		0.4202
		[-1.30]		[-2.49]**		[0.77]		[-0.87]		[5.03]***		[0.83]
$cefd_{T-1}$		-0.0131		-0.0224		-0.0074		-0.0282		0.0133		-0.0256
		[-0.88]		[-1.45]		[-0.38]		[-1.47]		[0.42]		[-0.86]
es_{T-1}		-0.4710		-0.8959		-0.5207		-1.8622		2.5072		-0.8112
		[-1.12]		[-2.07]**		[-0.95]		[-3.25]***		[2.91]***		[-0.91]
p-value of F-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0545	0.0552	0.0564	0.0567	0.0478	0.0475	0.0508	0.0506	0.0451	0.0409	0.0453	0.0440
N	8083	7956	8083	7956	8083	7956	8083	7956	8083	7956	8083	7956

Panel B: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and Sentiment Variables for Special dividends

	(-2,+2)				(-1,+9)				(-1,+30)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
Control Variables												
Intercept	9.2107	8.9710	9.8234	9.5032	11.1253	10.9943	12.4954	12.2676	11.9210	11.5745	14.9711	14.2832
	[12.31]***	[12.31]***	[12.83]***	[12.96]***	[12.99]***	[13.05]***	[14.08]***	[14.36]***	[9.27]***	[9.06]***	[10.99]***	[10.67]***
Divamt	0.4187	0.4759	0.4183	0.4750	0.3343	0.3909	0.3348	0.3904	0.3069	0.3371	0.2863	0.3121
	[4.81]***	[5.37]***	[4.83]***	[5.43]***	[4.20]***	[4.96]***	[4.25]***	[5.07]***	[3.67]***	[3.66]***	[3.09]***	[3.03]***
Ln(Size)	-0.1611	-0.1694	-0.1883	-0.2000	-0.2756	-0.2776	-0.3227	-0.3268	-0.2362	-0.2357	-0.1960	-0.2047
	[-2.92]***	[-3.14]***	[-3.37]***	[-3.70]***	[-4.06]***	[-4.12]***	[-4.71]***	[-4.86]***	[-2.19]**	[-2.17]**	[-1.83]*	[-1.91]*
Ln(Price)	-1.5412	-1.4812	-1.5234	-1.4486	-1.7699	-1.7213	-1.7586	-1.6917	-2.6305	-2.5749	-2.8345	-2.7607
	[-8.43]***	[-8.30]***	[-8.18]***	[-8.07]***	[-8.79]***	[-8.69]***	[-8.59]***	[-8.54]***	[-8.51]***	[-8.32]***	[-8.95]***	[-8.73]***
Investor Sentiment Variables												
pdnd	0.0014		0.0047		-0.0193		-0.0144		-0.0437		-0.0287	
	[0.19]		[0.58]		[-2.14]**		[-1.38]		[-3.12]***		[-1.66]*	
nipo	-0.0087		-0.0119		-0.0085		-0.0148		-0.0100		-0.0285	
	[-2.26]**		[-2.93]***		[-1.79]*		[-2.83]***		[-1.26]		[-3.14]***	
ripo	-0.0064		-0.0008		-0.0089		0.0026		-0.0305		-0.0120	
	[-1.42]		[-0.16]		[-1.65]		[0.45]		[-3.40]***		[-1.24]	
turn	-0.4670		-0.6403		0.0450		-0.4044		1.1054		-0.3883	
	[-1.72]*		[-2.32]**		[0.12]		[-1.06]		[1.98]**		[-0.67]	
cefd	-0.0318		-0.0493		-0.0199		-0.0489		0.0021		-0.0527	
	[-2.15]**		[-3.15]***		[-1.10]		[-2.52]**		[0.07]		[-1.57]	
es	-0.6421		-1.1499		-1.1827		-2.6059		-0.0648		-3.5259	
	[-1.52]		[-2.46]**		[-2.15]**		[-3.88]***		[-0.08]		[-3.43]***	
$pdnd_{T-1}$		-0.0057		-0.0026		-0.0261		-0.0207		-0.0467		-0.0243
		[-0.82]		[-0.35]		[-3.07]***		[-2.17]**		[-3.31]***		[-1.40]*
$nipo_{T-1}$		-0.0042		-0.0063		-0.0051		-0.0090		-0.0050		-0.0164
		[-1.15]		[-1.63]		[-1.16]		[-1.90]*		[-0.67]		[-1.96]*
$ripo_{T-1}$		-0.0152		-0.0150		-0.0146		-0.0133		-0.0326		-0.0337
		[-3.25]***		[-3.12]***		[-2.84]***		[-2.44]**		[-3.30]***		[-3.17]***
$turn_{T-1}$		-0.4923		-0.5654		-0.1239		-0.4388		1.0900		0.1479
		[-2.15]**		[-2.51]**		[-0.35]		[-1.18]		[2.39]**		[0.28]
$cefd_{T-1}$		-0.0195		-0.0330		-0.0130		-0.0373		0.0059		-0.0403
		[-1.34]		[-2.16]**		[-0.72]		[-1.95]*		[0.21]		[-1.19]
es_{T-1}		-0.7619		-1.1750		-1.3992		-2.6959		-0.1270		-2.9579
		[-1.86]*		[-2.70]***		[-2.60]***		[-4.65]***		[-0.15]		[-2.98]***
p-value of												
F-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0551	0.0557	0.0566	0.0568	0.0496	0.0493	0.0546	0.0532	0.0401	0.0390	0.0462	0.0435
N	8079	7952	8079	7952	8079	7952	8079	7952	8079	7952	8079	7952

turnovers in the NYSE (*turn*) are economically large and statistically significant in relation to abnormal returns within five days and one month after announcements. As the results show, one-month equal-weighted market adjusted returns can increase 2.62%, and market model adjusted returns can increase 1.11% if share turnovers increase 1%. The close-end fund discounts (*cefd*) cannot predict returns as the coefficients of *cefd* are not statistically significant in one-period lagged forecasting models, but they still negatively affect price reactions to special dividends in the same period. The equity to debt ratios (*es*) are also economically significant and negative in the market model adjusted returns, especially for the windows of 10 days and 30 days after special dividend declarations. In detail, 1% increase in *es* can reduce 2.7% ten-day returns and 3.53% 30-day returns.

To sum up, these results indicate that short-term price reactions to special dividends are higher when investor sentiment is decreasing, which is the same as the Alternative Hypothesis 5 conjectured in Section 3.1.1. This conclusion is compatible with the finding that short-run abnormal returns are larger in bear markets using the Market Adjusted Model, and why special dividends are more likely to happen in market downturns. The evidence does not support the Catering Theory of dividends and it is the opposite of the overvalued Market Driven Hypothesis, but it is in line with the Free Cash Flow Hypothesis. Firms distribute extra dividends back to shareholders when the market is declining with pessimistic investor sentiment and fewer investment opportunities.

5.2.5 Robustness Check

The robustness results for special dividend announcements with respect to market conditions are shown in this section. In Panel A of Appendix 5A, the market adjusted abnormal returns are generally higher in bear markets than in bull markets, except for the sub-period 1941 to 1960, the Manufacturing Industry, and the first quintile of firm sizes. However, in Panel B, the market model adjusted returns are larger in bull markets in the sub-periods 1941 to 1960 and 1961 to 1985. After the 1986 Tax Reform, the price reactions to special dividend announcements become higher in bear markets. Additionally, the industries of Finance, Insurance and Real Estate, and Services and Public Administration tend to produce greater abnormal returns in market downturns, but other industries have generally higher returns in market upturns. The excess returns of special dividends are also higher in the first and second quintiles of firm sizes, but lower in the third, fourth, and fifth quintiles in uptrend markets than in downtrend markets. These findings indicate that the Manufacturing industry and smaller size firms normally have higher excess returns if special dividends are announced in bull markets. The mixed results confirm the outcomes in Section 5.2.3 in which the abnormal returns of special dividend announcements are, in general, larger during market declines using the Market Adjusted Model, but smaller using the Market Model.

In Appendix 5B, the *Bull* market dummy is negatively correlated to the abnormal returns of special dividends within five days in the period 1926 to 1975 in all models, and in the period 1996 to 2008 with the Market Adjusted Model. The abnormal returns of one-month after the announcements are also lower in bull markets in the sub-periods of 1926 to 1960 and 1996 to 2008 using the Market Adjusted Model, while the market model adjusted returns are higher in the period 1961 to 1995. In Appendix 5C, *pdnd* is not statistically significant in most sub-periods, but *nipo* and *ripo* are consistently negative in the period 1986 to 1995 and 1996 to 2008, respectively. The coefficients of *cefd* and *es* are also negative from 1960 to 1975, which provide evidence that investor sentiment can also negatively affect abnormal returns of special dividends in sub-periods. Although *turn* appears to be positive from 1960 to 1975 and in the equal-weighted market adjusted returns, the overall results endorse the fact that the price reactions to special dividend announcements decrease with investor sentiment variables.

5.3 Summary

In conclusion, this chapter discusses the results of whether market-timing opportunities drive corporate decisions and abnormal returns of stock split and special dividend events. For stock splits, the frequency, likelihood, and short-run excess returns of these announcements are positively correlated to the *Bull* market dummy and investor sentiment variables. Firms are more likely to split shares when the market is overvalued or when the investor sentiment is increasing. High investment demands and the market optimism can increase excess returns of stock split announcements. This finding is consistent with the Market Driven Theory or Behavioural Hypothesis and is in line with the study of Mian and Sankaraguruswamy (2012).

On the other hand, there is no significant difference in frequency of initiating special dividends in bull and bear markets. The abnormal returns of special dividends are higher in bear markets than in bull markets using the Market Adjusted Model, but lower using the Market Model. Nevertheless, the likelihood of special dividends and the market adjusted abnormal returns are negatively correlated to the *Bull* market dummy and investor sentiment variables. Firms tend to pay special dividends when the market is decreasing or investor sentiment is low. This finding is different from the Catering Theory of dividends and opposite to the Market Driven Hypothesis that the overvalued market drives corporate events, but it is consistent with the Free Cash Flow Hypothesis. Firms are more likely to distribute extra cash back to their shareholders to reduce agency costs and prevent managers from wasting money on negative NPVs in declining markets or economic downturns. The market reacts strongly and positively to these announcements, and event firms with special dividend payments usually perform better in bear markets than in bull markets. Similar to share repurchases, cash disbursements of special dividends also occur when the market is undervalued or with pessimistic and decreasing investor sentiment.

CHAPTER SIX – RESULTS AND DISCUSSION OF THE EFFECT OF THE BUSINESS CYCLE

This chapter presents the results to the question of whether the business cycle can drive stock split and special dividend activities and their associated returns. It starts with a comparison of the frequency of stock split and special dividend announcements between economic expansions and contractions to explore whether these announcements are more likely to happen in expansionary periods. Next, logistic models are used to further test if the propensity of firms splitting shares or paying special dividends is positively correlated to the *Expansion* dummy and business cycle variables. This is followed by an examination of event studies on whether the abnormal returns of stock splits and special dividends are higher in expansions than in contractions. Multivariate regressions are subsequently employed to investigate if economic upturns and an increase in business cycle variables can drive up the returns of these announcements. Finally, a robustness check is conducted for each event to re-examine the results in different sub-periods, industries groups, and size quintiles.

6.1 Stock Split Announcements

6.1.1 Frequency of Stock Splits in Expansions and Contractions

The last chapter has shown the empirical results of how market conditions and investor sentiment affect firm's decision on, and price reaction to stock splits and special dividends. However, the traditional view and rational theory argue that companies undertake corporate events due to economic efficiency reasons. For example, firms issue equities, such as IPOs and SEOs, when they require external capitals, repurchase shares when they have excess internal funds, or engage in mergers and acquisitions when the industry has economic, technological or regulatory shocks (Harford, 2005). Therefore, corporations should announce stock splits and pay special dividends in relation to the business cycle, as one of the fundamental explanations for these announcements is related to firms' earnings and cash flow levels.

This chapter will examine this rational theory in distinguish with the Behavioural Hypothesis in the last chapter, and explore the relationship between the business cycle and propensity of firms splitting shares and distributing special dividends. It starts with stock splits and proposes that the announcements should be more likely to occur in economic expansions than in contractions. According to the Signalling Hypothesis and Retained Earnings Hypothesis, firms split shares when they experience earnings increases, which is more likely to happen in economic growth. Section 6.1 will address this conjecture and examine the frequency, likelihood, and abnormal returns of stock splits in expansions and contractions.

As Table 6.1 shows, the total number of stock splits in expansions is 15,852, which is considerably higher than 1,339 in contractions between 1926 and 2008. According to the National Bureau of Economic Research (NBER), the frequency is also counted for each period of business cycles. During the two prolonged expanding eras of 12/82 to 07/90 and 04/91 to 03/01, almost 9,000 splits are carried out in firms. This research is aware of expansionary periods usually being longer in duration than contractionary periods. Thus, the number of stock split announcements is further computed in every month for each period. From 1945 to 1975, the number of splits per month more than doubled during economic upturns in comparison to downturns, and the difference between them nearly tripled after 1980. On average, there are 20 splits each month when the economy is expanding and 7 splits when the economy is contracting. These results are consistent with Hypothesis 1 in Section 3.1.2: firms split shares when they have been experiencing earnings increases, which is more likely to occur during periods of economic growth.

Table 6.1 Number of Stock Splits in Economic Expansions and Contractions from 1926 to 2008

This table shows the number of stock split announcements in total and each period of expansions and contractions from 1926 to 2008. Stock splits are identified from the Centre of Research in Security Prices (CRSP) files, using distribution codes 5523, 5543 and 5552 when the factor to adjust price is greater than 0, and code 5533 when distribution is greater than or equal to 25 percent. Economic expansion and contraction periods are determined by the NBER (www.nber.org/cycles/cyclesmain.html).

Number of stock splits between expansions and contractions							
Expansions				Contractions			
	No. of splits	No. of month	No. of splits per month		No. of splits	No. of month	No. of splits per month
01/26-10/26	16	10	2	11/26-11/27	28	13	2
12/27-08/29	77	21	4	09/29-03/33	28	43	1
04/33-05/37	35	50	1	06/37-06/38	15	13	1
07/38-02/45	34	80	0	03/45-10/45	28	8	4
11/45-11/48	159	37	4	12/48-10/49	19	11	2
11/49-07/53	167	45	4	08/53-05/54	24	10	2
06/54-08/57	254	39	7	09/57-04/58	14	8	2
05/58-04/60	161	24	7	05/60-02/61	42	10	4
03/61-12/69	1346	106	13	01/70-11/70	57	11	5
12/70-11/73	596	36	17	12/73-03/75	134	16	8
04/75-01/80	1686	58	29	02/80-07/80	241	6	40
08/80-07/81	734	12	61	08/81-11/82	453	16	28
12/82-07/90	4232	92	46	08/90-03/91	110	8	14
04/91-03/01	4740	120	40	04/01-11/01	146	8	18
12/01-12/07	1615	73	22				
Total	15852	803	20	Total	1339	181	7

However, when the t-test and non-parameter, Wilcoxon z test are employed, the difference in the frequency of split announcements per month between expansions and contractions is not statistically significant. In Table 6.2, the average number of splits in each month during business growth is 17, whereas the number in recessions is 9. Although the difference of mean is around 8, the *p_values* are not significant at 1%, 5%, and 10% significance levels. Since the univariate t-test may be too crude to draw a conclusion, multivariate logistic likelihood analysis is conducted in the next section.

Table 6.2 The Frequency of Stock Split Announcements per month between Economic Expansions and Contractions – The t-test and non-parameter, Wilcoxon z test

This table presents the results of the t-test and non-parameter, Wilcoxon z test. *Expansion* represents on average the number of stock splits per month in economic expansions and *Bear* is the number of stock splits per month in economic contractions from 1926 to 2008.

Mean			The t-test	non-parameter Test
Expansion	Contraction	Difference	P_Value	P_Value
17.1333	9.3571	7.7762	0.1927	0.1317

6.1.2 Likelihood of Occurrence of Stock Splits in Economic Expansions

The logistic regressions are commonly used statistical tools to investigate the probability of occurrence of an announcement. In this section, the dependent variable of logit models is the binary variable that contains a value of one if firms announce stock splits, otherwise zero. The independent variable, *Expansion*, is a dummy variable and it should be statistically positive if stock split announcements are more likely to occur in economic expansions than in contractions. As the results in Panel A of Table 6.3 show, the probability that firms split shares is positively correlated to the *Expansion* dummy in the full sample period 1926 to 2008 and in the four sub-sample periods, which strongly supports Hypothesis 2 in Section 3.1.2. The overall likelihood of firms announcing splits is 63.57%[24] higher in expansions, and 58.72%[25] higher in the sub-period 1926 to 1960, 25.82%[26] higher in 1961 to 1975, 22.51%[27] higher in 1976 to 1995, and 38.90%[28] higher in 1996 to 2008.

Following Antoniou, Lam, and Paudyal (2007), Chordia and Shivakumar (2002), and Griffin, Ji, and Martin (2003), Panel B uses macroeconomic risk factors to examine the relationship between firms' decisions to split shares and the business cycle effect. According to the results, the coefficients of market dividend yield (*DIV*) are negative in the whole sample and in four sub-samples, indicating that an increase in the market dividend yield decreases the chance of stock split announcements. This negative effect is substantially large in the period 1961 to 1975: when *DIV* increases by 1%, the chance decreases by around 40%. The default spread (*DEF*) is also negative in the full sample period 1926 to 2008 and in the sub-sample periods 1926 to 1960 and 1996 to 2008. Noticeably, the coefficients of *DEF* are greater than one in the absolute value in these two sub-periods, meaning a decrease in the default spread will indeed increase the likelihood of occurrence of stock splits. In total, between 1926 and 2008, for every percentage increase in *DEF*, the likelihood decreases by about 35%. However, the

[24] $e^{\beta} - 1 = e^{(0.4921)} - 1 = 0.6357$
[25] $e^{\beta} - 1 = e^{(0.4620)} - 1 = 0.5872$
[26] $e^{\beta} - 1 = e^{(0.2297)} - 1 = 0.2582$
[27] $e^{\beta} - 1 = e^{(0.2030)} - 1 = 0.2251$
[28] $e^{\beta} - 1 = e^{(0.3286)} - 1 = 0.3890$

Table 6.3 Logistic Regressions for the Likelihood of Stock Splits from 1926 to 2008

This table shows the likelihood of stock split announcements related to the *Expansion* dummy in Panel A from 1926 to 2008, and associated with macroeconomic variables in Panel B and C. The dependent variable is a binary variable that contains a value of one if a firm announces a stock split in the month; otherwise, zero. *Ln(Size)* is the natural logarithm of monthly market capitalization. *Ln(Price)* is the natural logarithm of monthly stock price. *Expansion* is a dummy variable that takes a value of one for a split announced in economic expansion periods and a value of zero for an announcement in contraction periods. Economic expansion and contraction periods are determined by the NBER (www.nber.org/cycles/cyclesmain.html). *DIV* is the market dividend yield, defined as the total dividend payments on the market over the current level of the index. *DEF* is the default spread, defined as the difference between the average yield of bonds rated BAA by Moodys and the average yield of bonds with a Moodys rating of AAA. *TERM* is the term spread, measured as the difference between the average yield of long term Treasury bonds (more than 10 years) and the average yield of T-bills that mature in three months. *YLD* is the three-month T-bills yield. *GDP* is the change in nominal GDP; *UNEMP* is the unemployment rate; *cpi* is the consumer price index; and *inf* is the inflation rate in the US. The logistic regressions run on the full sample period and on four sub-periods for a robustness check to avoid noise. *p-values* are in parentheses under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: The likelihood of stock split announcements with Expansion Dummy

	Full Sample	Sub-periods			
Variables	1926-2008	1926-1960	1961-1975	1976-1995	1996-2008
Expansion	0.4921	0.4620	0.2297	0.2030	0.3286
	(<.0001)***	(<.0001)***	(0.0028)***	(<.0001)***	(0.0002)***
Ln(Size)	-0.0683	0.0958	-0.4457	-0.2444	-0.0331
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(0.0003)***
Ln(Price)	1.0926	1.0754	2.0449	1.4757	1.0868
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Intercept	-8.2036	-10.9992	-7.2466	-6.5524	-8.7311
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***

Panel B: The likelihood of stock split announcements with macroeconomic variables

	Full Sample		Sub-periods							
Variables	1926-2008		1926-1960		1961-1975		1976-1995		1996-2008	
Intercept	-8.5281***	-8.5482***	-8.6063***	-8.6446***	-7.3583***	-6.9587***	-6.6557***	-6.5950***	-9.1735***	-9.3206***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Ln(Size)	-0.1549***	-0.1541***	0.0247	0.0206	-0.5091***	-0.5097***	-0.2359***	-0.2351***	-0.0146	-0.0148
	(<.0001)	(<.0001)	(0.2697)	(0.3573)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.1128)	(0.1073)
Ln(Price)	1.3182***	1.3153***	1.1098***	1.1204***	2.2206***	2.2182***	1.4676***	1.4663***	1.0784***	1.0762***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
DIV	-0.1009***		-0.0914***		-0.4367***		-0.0348**		-0.2019***	
	(<.0001)		(0.0090)		(<.0001)		(0.0496)		(<.0001)	
DEF	-0.4232***		-1.3224***		-0.1663		0.3152***		-1.2180***	
	(<.0001)		(<.0001)		(0.1930)		(<.0001)		(<.0001)	
YLD	0.2449***		0.0546		0.3231***		0.0002		0.2806***	
	(<.0001)		(0.4333)		(<.0001)		(0.9812)		(<.0001)	
TERM	0.2919***		0.0768		0.4661***		-0.0157		0.4142***	
	(<.0001)		(0.4375)		(<.0001)		(0.1771)		(<.0001)	
DIV_{t-1}		-0.1005***		-0.1027***		-0.5416***		-0.0181		-0.2102***
		(<.0001)		(0.0033)		(<.0001)		(0.3065)		(<.0001)
DEF_{t-1}		-0.3477***		-1.3271***		0.2237*		0.3980***		-1.1187***
		(<.0001)		(<.0001)		(0.0846)		(<.0001)		(<.0001)
YLD_{t-1}		0.2361***		0.0686		0.2728***		-0.0254***		0.2938***
		(<.0001)		(0.3231)		(<.0001)		(0.0041)		(<.0001)
$TERM_{t-1}$		0.2877***		0.1458		0.3311***		-0.0392***		0.4319***
		(<.0001)		(0.1425)		(<.0001)		(0.0009)		(<.0001)

Panel C: The likelihood of stock split announcements with more general business cycle variables

	Full Sample		Sub-periods							
Variables	1926-2008		1926-1960		1961-1975		1976-1995		1996-2008	
Intercept	-8.3864***	-8.3609***	-11.413***	-11.271***	-8.6066***	-8.8094***	-7.4144***	-7.2961***	-5.4791***	-5.6246***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Ln(Size)	-0.1043***	-0.1035***	0.0043	0.0055	-0.5012***	-0.5033***	-0.2293***	-0.2293***	-0.0140	-0.0133
	(<.0001)	(<.0001)	(0.8490)	(0.8072)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.1384)	(0.1618)
Ln(Price)	1.1751***	1.1728***	1.1684***	1.1562***	2.2214***	2.2246***	1.4695***	1.4684***	1.1286***	1.1300***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
GDP	0.0388***		-0.0297*		0.0552***		0.0457***		0.1003***	
	(<.0001)		(0.0761)		(0.0032)		(<.0001)		(<.0001)	
UNEMP	0.0500***		-0.0483***		-0.1447***		0.1354***		0.1195***	
	(<.0001)		(<.0001)		(<.0001)		(<.0001)		(<.0001)	
cpi	0.0033***		0.0721***		0.0628***		-0.0012**		-0.0228***	
	(<.0001)		(<.0001)		(<.0001)		(0.0135)		(<.0001)	
inf	0.3719***		0.2928***		-0.2985***		0.1036***		0.3326***	
	(<.0001)		(<.0001)		(0.0043)		(0.0075)		(<.0001)	
GDP_{t-1}		0.0438***		-0.0655***		0.0961***		0.0649***		0.0825***
		(<.0001)		(<.0001)		(<.0001)		(<.0001)		(0.0001)
$UNEMP_{t-1}$		0.0501***		-0.0503***		-0.1690***		0.1313***		0.1615***
		(<.0001)		(<.0001)		(<.0001)		(<.0001)		(<.0001)
cpi_{t-1}		0.0032***		0.0706***		0.0743***		-0.0017***		-0.0232***
		(<.0001)		(<.0001)		(<.0001)		(0.0003)		(<.0001)
inf_{t-1}		0.3117***		0.0926*		-0.6321***		-0.0043		0.2919***
		(<.0001)		(0.0715)		(<.0001)		(0.9316)		(<.0001)

three-month T-bill yield (*YLD*) and term spread (*TERM*) are positively correlated to the probability of firms announcing splits, and this positive relationship is robust in the sub-periods 1961 to 1975 and 1996 to 2008. If there is a 1% increase, the probability can increase to more than 30% in *YLD* and 50% in *TERM*, which is similar to the results using the one-period lagged forecasting models. This evidence shows that the macroeconomic risk can statistically affect and predict the probability of stock split announcements, but the relationship effect is mixed.

Panel C further examines the link between the propensity that firms split shares and more business cycle variables. In Table 6.3, the coefficients of inflation rate (*inf*), GDP changes (*GDP*), unemployment rate (*UNEMP*), and consumer price index (*cpi*) are statistically positive from 1926 to 2008. The most significant factor is *inf* since the coefficients are economically large in comparison to the rest of the variables. The probability of firms announcing splits can increase by 45.05%[29] if there is a 1% rise in inflation rate. This positive relationship is consistent in most sub-periods, except from 1961 to 1975. An increase in *GDP* also enhances the possibility of stock splits. Although the coefficients of *GDP* are negative in the early years (1926 to 1960), they reverse back to positive in the rest of the sub-periods from 1961 to 2008. Interestingly, the consumer price index (*cpi*) increases the likelihood of split announcements in the period 1926 to 1975 and decreases it afterwards, while the unemployment rate (*UNEMP*) decreases the likelihood in the period 1926 to 1975 and increases it thereafter. However, this may be due to the negative relationship between *cpi* and *UNEMP*. These results indicate that firms' decisions on stock splits are more positively driven by macroeconomic changes in the uptrends of the business cycle, which is consistent with Hypothesis 4 in Section 3.1.2.

6.1.3 Abnormal Returns of Stock Splits in Expansions and Contractions

This section examines the difference in the market reaction to stock split announcements between economic expansions and contractions. Interestingly, the short-run abnormal returns of stock splits are larger in expansions than in contractions one day surrounding the announcements, but smaller thereafter. This result is robust in all models in Table 6.4, except for the equal-weighted Market Model. Firms can generate 3.19% market adjusted returns, 2.67% market model adjusted returns, and 2.63% mean adjusted returns in expansions within one day around stock splits, but 2.94%, 2.53%, and 2.6%, respectively, in contractions.

[29] $e^{\beta} - 1 = e^{(0.3719)} - 1 = 0.4505$

Table 6.4 Short-Run Excess Returns of Stock Split Announcements in Economic Expansions and Contractions from 1926 to 2008

This table calculates excess returns for the firms announcing stock splits between economic expansions and contractions from 1926 to 2008. Economic expansion and contraction periods are determined by the NBER (www.nber.org/cycles/cyclesmain.html). Mean adjusted returns are calculated by $AR_{it}=R_{it}-E(R_{it})$, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, $E(R_{it})$ is constant mean returns for security *i* at time *t* with estimation period of 255 trading days. Market adjusted returns are using $AR_{it}=R_{it}-R_{mt}$, where R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes. Market model adjusted returns are measured by $AR_{it}=R_{it}-\hat{\alpha}_i-\hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the Market Model of $R_{it}=\alpha_i+\beta_i * R_{mt}+\varepsilon_i$ with estimation period of 255 trading days. Short term event windows are examined one day surrounding an announcement date, one week after an announcement date, 10 days, 15 days, three weeks, one month, two months, three months and six months after an announcement date (0 represents the actual announcement day). All returns are in percentage with *t*-statistics underneath. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Expansion Periods

	Raw Returns	Market Adjusted Returns		Market Model Adjusted Returns		Mean Adjusted Returns
		EW	VW	EW	VW	
Event windows						
(-30,-2)	10.03	6.36	7.87	2.31	2.94	3.16
	[76.01]***	[47.69]***	[63.46]***	[18.83]***	[23.19]***	[22.76]***
(-1,+1)	3.35	3.07	3.19	2.66	2.67	2.63
	[63.64]***	[62.51]***	[65.38]***	[55.88]***	[56.43]***	[51.30]***
(-1, 0)	2.08	1.90	1.96	1.62	1.62	1.60
	[54.60]***	[51.78]***	[53.05]***	[45.89]***	[45.34]***	[43.04]***
(0, +1)	2.88	2.69	2.78	2.42	2.43	2.41
	[60.73]***	[60.96]***	[63.80]***	[56.05]***	[57.06]***	[51.69]***
(1, +7)	2.72	2.13	2.40	1.26	1.22	1.07
	[42.39]***	[34.85]***	[39.43]***	[23.79]***	[22.75]***	[20.14]***
(1, +10)	3.09	2.25	2.61	1.01	0.92	0.72
	[42.49]***	[32.33]***	[37.77]***	[18.36]***	[16.54]***	[14.17]***
(1, +15)	3.61	2.38	2.93	0.51	0.38	0.06
	[40.98]***	[28.10]***	[35.60]***	[10.56]***	[8.29]***	[5.88]***
(1, +21)	4.48	2.80	3.54	0.21	-0.03	-0.50
	[42.36]***	[27.36]***	[36.30]***	[6.40]***	[3.31]***	[0.73]
After						
1month	5.85	3.52	4.52	-0.14	-0.56	-1.26
	[45.52]***	[28.19]***	[38.16]***	[3.80]***	[-0.50]	[-3.24]***
2month	8.36	4.34	6.02	-2.92	-4.23	-5.86
	[48.16]***	[25.43]***	[37.18]***	[-8.54]***	[-16.98]***	[-21.27]***
3month	10.21	4.34	6.65	-6.54	-8.75	-11.11
	[49.93]***	[22.03]***	[35.37]***	[-18.97]***	[-30.34]***	[-34.06]***
6month	15.15	3.55	8.10	-18.01	-22.57	-27.39
	[55.47]***	[13.48]***	[31.45]***	[-37.77]***	[-52.28]***	[-59.29]***

Contraction Periods

	Raw Returns	Market Adjusted Returns		Market Model Adjusted Returns		Mean Adjusted Returns
		EW	VW	EW	VW	
Event windows						
(-30,-2)	10.35	7.38	8.25	2.68	3.88	5.72
	[19.82]***	[17.12]***	[19.43]***	[6.05]***	[8.30]***	[10.21]***
(-1,+1)	3.08	2.81	2.94	2.43	2.53	2.60
	[15.83]***	[16.30]***	[16.82]***	[13.40]***	[13.67]***	[13.41]***
(-1, 0)	1.82	1.65	1.73	1.38	1.43	1.50
	[13.53]***	[13.58]***	[13.89]***	[11.27]***	[11.33]***	[11.12]***
(0, +1)	2.75	2.54	2.64	2.30	2.39	2.43
	[15.72]***	[15.84]***	[16.41]***	[13.76]***	[14.04]***	[13.95]***
(1, +7)	2.81	2.38	2.74	1.48	1.73	1.69
	[11.70]***	[11.17]***	[12.38]***	[7.34]***	[8.12]***	[7.49]***
(1, +10)	3.10	2.52	3.03	1.17	1.56	1.51
	[11.34]***	[10.05]***	[11.72]***	[5.15]***	[6.21]***	[6.14]***
(1, +15)	3.20	2.53	3.19	0.48	0.97	0.80
	[9.15]***	[7.93]***	[9.65]***	[2.26]**	[3.38]***	[2.93]***
(1, +21)	3.55	2.67	3.49	-0.24	0.35	0.20
	[9.15]***	[7.72]***	[9.63]***	[0.17]	[1.40]	[1.24]
After						
1month	5.20	3.64	4.82	-0.68	0.21	0.41
	[10.31]***	[8.34]***	[10.81]***	[-0.84]	[0.70]	[1.25]
2month	10.10	4.65	7.52	-4.52	-1.55	0.53
	[15.39]***	[8.27]***	[13.38]***	[-5.04]***	[-1.08]	[2.15]***
3month	15.12	5.93	10.28	-7.89	-3.26	0.75
	[17.58]***	[8.33]***	[14.57]***	[-6.75]***	[-1.85]*	[2.84]**
6month	29.59	6.77	17.22	-20.32	-9.45	0.91
	[24.75]***	[5.92]***	[16.79]***	[-12.09]***	[-4.63]***	[3.89]***

However, there are 2.4% market adjusted abnormal returns, 1.26% market model adjusted abnormal returns, and 1.07% mean adjusted abnormal returns in expansions one week after the announcements, but 2.74%, 1.73%, and 1.69%, respectively, in contractions. The excess returns are also higher in recessions by about 0.5% for the event window of 10 days after stock splits, and 0.2% higher using market adjusted returns 15 days after the announcements. The difference in returns between economic upturns and downturns further increases after a month, especially with the Market Adjusted Model. In particular, firms splitting shares in expansions can create abnormal returns of 4.52% in the one month window, 6.02% in the two-month window, 6.65% in the three-month window, and 8.1% in the six-month window. In contrast, if firms split shares in contractions, there are 4.82% excess returns after one month, 7.52% after two months, 10.28% after three months, and 17.22% after six months. Similarly, the value-weighted Market Model produces less negative returns in recessions, and the mean-adjusted returns are positive in downturns but negative in upturns one month and afterwards. These results suggest that the signalling effect of stock split announcements is, in fact, stronger in contractions. Corporations are better performers if they still experience earnings increases and have confidence in their future performance to carry out stock splits during economic declines, in comparison to their counterparts in expansions.

The long-term abnormal returns of stock split announcements are calculated to see whether there is market efficiency for firms to split shares either in economic expansions and contractions. As the results shown in Table 6.5, the long-run returns are economically small. Using the Ordinary Least Square (OLS) and Generalized Moment Methods (GMM) estimations, the abnormal returns are slightly larger in expansions than in contractions, but smaller in expansions using the Weighted Least Square (WLS) regressions. In particular, excess returns are 1.52% to 1.81% one year after splits, 1.08% to 1.2% two years after splits, and 0.88% to 1.02% three years after splits in expansions, which is about 0.1% higher than in contractions with OLS and GMM. However, WLS creates abnormal returns of 2.09% to 2.54% in one year, 1.32% to 1.69% in two years, and 1.02% to 1.31% in three years in recessions, which is about 0.2% to 0.3% higher than in expansions. In the five years after stock split announcements, excess returns are around 0.2% larger in economic downturns than in upturns in most models. These figures suggest that there is no substantial long-run price drift in stock splits, and the business cycle effect in the long-term abnormal returns of these announcements is negligible.

Table 6.5 Long-Term Post-announcement Abnormal Returns Using Monthly Fama-French (1993) and Carhart (1997) Calendar Time Portfolio Regressions for Stock Split Announcements between Economic Expansions and Contractions from 1926 to 2008

This table calculates long term abnormal returns for the one-, two-, three-, and five-year post-announcement horizons, for the firms announcing stock splits between economic expansions and contractions during the period 1926 to 2008. Economic expansion and contraction periods are determined by the NBER (www.nber.org/cycles/cyclesmain.html). Monthly rebalanced calendar time portfolio returns are calculated each month from all firms experience a stock split in the previous 12, 24, 36, or 60 calendar months. Monthly excess returns to calendar time portfolios are: $CTAR_t=R_{pt}-E(R_{pt})$, where R_{pt} is monthly return on portfolio of event firms at time t, and $E(R_{pt})$ is expected return on event portfolio at time t. The expected return on event portfolio, for each sample firm in month t, is measured by Fama-French (1993) three-factor model and Carhart (1997) four-factor model:

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + m_i PR1YR_t + \varepsilon_{it}$$

R_{it} is firm i's monthly return, R_{ft} is the one-month T-bills return, and R_{mt} is the market return on both CRSP equal-weighted and value-weighted portfolio of all NYSE, AMEX, and Nasdaq stocks. SMB_t is the difference in returns between portfolios of small and big stocks. HML_t is the difference in returns between portfolios of high and low book-to-market ratio stocks. $PR1YR_t$ is defined as in Carhart (1997) as an equally weighted portfolio return of stocks with highest returns less an equally weighted portfolio return of stocks with lowest returns in months *t-12* to *t-2*. Ordinary, Weighted Least Squares (White, 1980) and Generalized Method of Moment (GMM) are estimated. All abnormal returns are in percentage and *t*-statistics of intercepts are shown in brackets under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Calendar Portfolio post period	Model Estimated	Intercept of the Fama-French Regression Three-factor without momentum (Fama-French, 1993)				Intercept of the Fama-French-Carhart Regression Four-factor with momentum (Carhart, 1997)			
		Equal-weighted		Value-weighted		Equal-weighted		Value-weighted	
		Exp	Con	Exp	Con	Exp	Con	Exp	Con
Horizon =		1.81	1.73	1.80	1.80	1.52	1.50	1.62	1.72
1 year	OLS	[20.02]***	[5.95]***	[20.58]***	[6.25]***	[17.51]***	[4.99]***	[18.51]***	[5.74]***
	Hetero t	[18.92]***	[6.13]***	[18.68]***	[6.41]***	[16.10]***	[4.81]***	[15.91]***	[5.57]***
		2.24	2.54	2.11	2.50	1.94	2.09	1.97	2.19
	WLS	[33.70]***	[16.69]***	[38.94]***	[18.79]***	[32.92]***	[14.52]***	[37.37]***	[16.82]***
		1.81	1.73	1.80	1.80	1.52	1.50	1.62	1.72
	GMM	[17.92]***	[6.60]***	[17.09]***	[7.00]***	[15.08]***	[5.37]***	[14.92]***	[6.41]***
Horizon =		1.19	1.11	1.20	1.14	1.08	0.78	1.20	0.92
2 years	OLS	[14.99]***	[4.94]***	[15.25]***	[5.12]***	[13.31]***	[3.42]***	[14.80]***	[4.05]***
	Hetero t	[13.98]***	[5.86]***	[13.70]***	[6.07]***	[11.42]***	[3.77]***	[12.42]***	[4.64]***
		1.45	1.69	1.34	1.63	1.32	1.32	1.36	1.36
	WLS	[26.46]***	[13.38]***	[29.68]***	[14.38]***	[24.02]***	[11.13]***	[29.16]***	[12.39]***
		1.19	1.11	1.20	1.14	1.08	0.78	1.20	0.92
	GMM	[13.27]***	[5.71]***	[12.92]***	[5.90]***	[11.09]***	[3.45]***	[12.16]***	[4.25]***
Horizon =		0.91	0.89	0.92	0.90	0.88	0.73	1.02	0.85
3 years	OLS	[12.08]***	[6.77]***	[11.87]***	[7.21]***	[11.33]***	[5.41]***	[12.89]***	[6.56]***
	Hetero t	[11.56]***	[6.81]***	[11.03]***	[7.30]***	[9.94]***	[5.49]***	[11.24]***	[7.05]***
		1.07	1.31	0.97	1.21	1.01	1.02	1.06	1.03
	WLS	[21.72]***	[12.27]***	[22.94]***	[12.59]***	[19.86]***	[9.72]***	[25.30]***	[10.57]***
		0.91	0.89	0.92	0.90	0.88	0.73	1.02	0.85
	GMM	[10.93]***	[6.36]***	[10.42]***	[6.68]***	[9.05]***	[4.94]***	[10.15]***	[6.17]***
Horizon =		0.57	0.76	0.58	0.78	0.53	0.60	0.66	0.73
5 years	OLS	[10.56]***	[6.45]***	[10.89]***	[6.76]***	[9.58]***	[4.96]***	[12.46]***	[6.09]***
	Hetero t	[11.36]***	[7.12]***	[12.12]***	[7.52]***	[9.21]***	[5.30]***	[12.64]***	[6.94]***
		0.73	0.90	0.64	0.78	0.69	0.69	0.76	0.66
	WLS	[15.92]***	[10.57]***	[16.24]***	[9.81]***	[14.50]***	[8.09]***	[19.90]***	[8.16]***
		0.57	0.76	0.58	0.78	0.53	0.60	0.66	0.73
	GMM	[10.26]***	[6.50]***	[10.79]***	[6.68]***	[8.67]***	[4.87]***	[11.49]***	[6.20]***

6.1.4 Multivariate Regression Results for Abnormal Returns of Stock Splits

Apart from the event study analysis, this section applies the multivariate regressions to examine the relationship between the short-term abnormal returns of stock splits and macroeconomic variations. According to Table 6.6, the *Expansion* dummies are positively correlated to the abnormal returns one day surrounding stock splits and five days within the split announcements. This finding is consistent with the event study results discussed in the last section. The market reaction to split announcements is higher in expansions than in contractions, but only for the event windows within a week after the announcements. In detail, firms can have up to 0.9%[30] higher excess returns within one day and 1.27%[31] higher returns within two days if they split shares in economic upturns rather than in downturns. The coefficients of *Expansion* are also statistically significant and economically large in the ten-day and 30-day equal-weighted abnormal returns. These results indicate that the expansionary business cycle is a significant factor affecting the short-term excess returns of stock split announcements.

The results of how macroeconomic risk factors influence the market reaction to stock splits are presented in Table 6.7. Although the abnormal returns are significantly correlated to the variables of the market dividend yield (*DIV*), term spread (*TERM*), default spread (*DEF*), and three-month T-bill yield (*YLD*), the relationship is varied. For example, *DIV* is negatively correlated to the returns of stock splits: with a 1% increase in the market dividend yield, the excess returns decrease by 0.6% to 0.9% two days within the announcements, 0.5% to 1.1% ten days after, and nearly 1.6% one month after stock splits. In contrast, *DEF* is positively correlated to abnormal returns of splits. A 1% increase in the default spread can increase excess returns by up to 0.8% within two days, 1.3% after 10 days, and 1.7% after one month. The coefficients of *YLD* are also positive using the Market Adjusted Model and positive in the two-day event window using the Market Model. For instance, abnormal returns of split announcements can increase by 0.5% in a month if there is a 1% increase in the three-month T-bill yield. The term spread (*TERM*) is negatively correlated to the market model adjusted returns, but positively correlated to one-month market adjusted returns. These results are generally consistent with the one-month lagged forecasting models, indicating that abnormal returns from stock split announcements can be driven and predicted by these macroeconomic variables, but the effect is mixed.

The market reaction to stock splits in relation to further business cycle variables is examined in Table 6.8. These variables are common economic indicators: the consumer price index (*cpi*), inflation rate (*inf*), GDP changes (*GDP*), and unemployment rate (*UNEMP*). As the results show, the coefficients of *cpi* are statistically positive in most models in the table, meaning that excess returns of stock splits increase as the consumer price index increases, although the magnitude is only about 0.01% to 0.03% in a month. The coefficients of *inf* are economically large and statistically positive in the five-day window (-2, +2), but negative in the one-month window. If there is a 1% increase in the inflation rate, abnormal returns can

[30] $e^{\beta} - 1 = e^{(0.6468)} - 1 = 0.9094$

[31] $e^{\beta} - 1 = e^{(0.8235)} - 1 = 1.2784$

Table 6.6 Regression Results between Abnormal Returns of Stock Splits and the Expansion Dummy for the period 1926 to 2008

This table shows the relationship between abnormal returns of stock splits and the *Expansion* dummy variable for the period 1926 to 2008. The dependent variable in Panel A is market adjusted abnormal returns (CAR) and the dependent variable in Panel B is market model adjusted abnormal returns for firms announcing stock splits. EW and VW stand for equal-weighted market index and value-weighted market index, respectively. (-1, +1), (-2, +2), (-1, 0), (0, +1), (-1, +9) and (-1, +30) represent event windows (in days) relative to stock split announcements (0 represents the actual announcement day). *SplFac* is the split ratio obtained from CRSP and defined as the number of additional shares per existing share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to stock split announcements. *Ln(Price)* is the natural logarithm of stock price one day before stock split announcements. *Expansion* is a dummy variable that takes a value of one for a split announced in economic expansion periods and a value of zero for an announcement in contraction periods. Economic expansion and contraction periods are determined by the NBER (www.nber.org/cycles/cyclesmain.html). All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regression Results between Market Adjusted Cumulative Abnormal Returns and Expansion Dummy for Stock Splits

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	8.4823	8.5835	11.9772	12.1660	4.7974	4.8855	7.6872	7.7424	15.0626	15.5421	17.9849	19.3824
	[16.87]***	[17.01]***	[19.73]***	[19.80]***	[13.79]***	[13.89]***	[17.10]***	[17.27]***	[19.80]***	[19.45]***	[14.15]***	[13.91]***
Expansion	0.6468	0.6328	0.8136	0.7497	0.4486	0.4385	0.4999	0.4887	0.6876	0.5275	0.9847	0.7936
	[3.16]***	[3.07]***	[3.32]***	[2.99]***	[2.80]***	[2.73]***	[2.89]***	[2.81]***	[2.24]**	[1.58]	[1.84]*	[1.29]
SplFac	1.0863	1.0680	1.2835	1.2691	0.4426	0.4284	1.0438	1.0333	1.6648	1.6386	2.5387	2.4555
	[4.46]***	[4.42]***	[4.59]***	[4.62]***	[3.93]***	[3.80]***	[4.56]***	[4.59]***	[4.64]***	[4.66]***	[4.78]***	[4.86]***
Ln(Size)	-0.1101	-0.1036	-1.2835	-0.1938	-0.0821	-0.0846	-0.0523	-0.0451	-0.2633	-0.2425	-0.2167	-0.1533
	[-2.65]***	[-2.49]**	[-4.29]***	[-3.93]***	[-2.88]***	[-2.95]***	[-1.40]	[-1.21]	[-4.40]***	[-4.01]***	[-2.30]**	[-1.58]
Ln(Price)	-1.8654	-1.8706	-2.4239	-2.4547	-0.8776	-0.8610	-1.8836	-1.8918	-3.1951	-3.2353	-4.3300	-4.5441
	[-9.71]***	[-9.69]***	[-11.18]***	[-11.25]***	[-8.00]***	[-7.81]***	[-17.10]***	[-10.28]***	[-12.38]***	[-12.37]***	[-10.77]***	[-10.93]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0473	0.0463	0.0602	0.0591	0.0204	0.0200	0.0528	0.0520	0.0647	0.0631	0.0411	0.0408
N	16636	16636	16636	16636	16636	16636	16636	16636	16636	16636	16636	16636

Panel B: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and Expansion Dummy for Stock Splits

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	8.3875	8.3377	11.8120	11.7272	4.6743	4.6617	7.7022	7.6656	14.5312	14.5938	14.7419	16.1654
	[17.69]***	[17.01]***	[20.22]***	[19.25]***	[14.26]***	[13.74]***	[17.82]***	[17.41]***	[19.09]***	[18.35]***	[11.80]***	[11.18]***
Expansion	0.6272	0.5258	0.8235	0.6229	0.4451	0.3905	0.4808	0.3967	0.7740	0.2839	1.6666	0.3390
	[3.25]***	[2.47]**	[3.43]***	[2.31]**	[2.94]***	[2.46]**	[2.86]***	[2.21]**	[2.33]**	[0.79]	[2.93]***	[0.49]
SplFac	1.0707	1.0588	1.2890	1.2697	0.4315	0.4275	1.0305	1.0245	1.5878	1.5467	2.2730	2.2017
	[4.61]***	[4.58]***	[4.78]***	[4.76]***	[4.13]***	[4.08]***	[4.67]***	[4.65]***	[4.86]***	[4.84]***	[5.03]***	[5.07]***
Ln(Size)	-0.1066	-0.0985	-0.2071	-0.1912	-0.0798	-0.0784	-0.0491	-0.0433	-0.2235	-0.2252	-0.0924	-0.1149
	[-2.68]***	[-2.49]**	[-4.43]***	[-4.10]***	[-2.97]***	[-2.89]***	[-1.35]	[-1.20]	[-3.80]***	[-3.94]***	[-0.93]	[-1.22]
Ln(Price)	-1.9534	-1.9298	-2.5835	-2.5465	-0.9230	-0.9074	-1.9630	-1.9436	-3.5595	-3.4364	-5.0060	-5.0351
	[-10.36]***	[-10.17]***	[-12.00]***	[-11.81]***	[-8.57]***	[-8.37]***	[-10.69]***	[-10.58]***	[-13.59]***	[-13.22]***	[-12.26]	[-11.51]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0511	0.0488	0.0657	0.0625	0.0223	0.0211	0.0567	0.0547	0.0686	0.0652	0.0390	0.0406
N	16630	16630	16630	16630	16630	16630	16630	16630	16630	16630	16630	16630

Table 6.7 Regression Results between Abnormal Returns of Stock Splits and Macroeconomic Variables for the period 1926 to 2008

This table shows the relationship between abnormal returns of stock splits and macroeconomic variables for the period 1926 to 2008. The dependent variable in Panel A is market adjusted abnormal returns (CAR) and the dependent variable in Panel B is market model adjusted abnormal returns for firms announcing stock splits. Both equal-weighted and value-weighted market indexes are employed. (-2, +2), (-1, +9) and (-1, +30) represent event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). *SplFac* is the split ratio obtained from CRSP and defined as the number of additional shares per existing share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to stock split announcements. *Ln(Price)* is the natural logarithm of stock price one day before stock split announcements. *DIV* is the market dividend yield, defined as the total dividend payments on the market over the current level of the index. *DEF* is the default spread, defined as the difference between the average yield of bonds rated BAA by Moodys and the average yield of bonds with a Moodys rating of AAA. *TERM* is the term spread, measured as the difference between the average yield of long term Treasury bonds (more than 10 years) and the average yield of T-bills that mature in three months. *YLD* is the three-month T-bills yield. All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regression Results between Market Adjusted Cumulative Abnormal Returns and Macroeconomic Variables for Stock Splits

	(-2,+2)				(-1,+9)				(-1,+30)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
Control Variables												
Intercept	16.0485	15.7608	16.1767	15.9640	20.6505	20.3208	21.0286	20.7474	23.9692	23.6092	25.5342	24.7949
	[22.99]***	[22.53]***	[22.89]***	[22.56]***	[23.40]***	[23.01]***	[23.54]***	[23.19]***	[17.75]***	[17.42]***	[18.56]***	[17.91]***
SplFac	1.2436	1.2367	1.2211	1.2146	1.6110	1.6007	1.5734	1.5644	2.4264	2.4154	2.2980	2.2907
	[4.57]***	[4.55]***	[4.57]***	[4.57]***	[4.66]***	[4.63]***	[4.64]***	[4.63]***	[4.67]***	[4.64]***	[4.70]***	[4.71]***
Ln(Size)	-0.4952	-0.4841	-0.4960	-0.4754	-0.5983	-0.5985	-0.6005	-0.5769	-0.7896	-0.7920	-0.7442	-0.6873
	[-9.28]***	[-9.03]***	[-9.18]***	[-8.77]***	[-9.03]***	[-9.06]***	[-9.02]***	[-8.69]***	[-7.50]***	[-7.51]***	[-6.95]***	[-6.38]***
Ln(Price)	-1.9868	-1.9859	-1.9778	-2.0096	-2.7949	-2.7618	-2.7866	-2.8212	-3.3223	-3.2794	-3.5420	-3.6185
	[-8.75]***	[-8.73]***	[-8.63]***	[-8.74]***	[-10.20]***	[-10.10]***	[-9.98]***	[-10.13]***	[-7.42]***	[-7.29]***	[-7.52]***	[-7.61]***
Macroeconomic Variables												
DIV	-0.9265		-0.9403		-1.0991		-1.1101		-1.5968		-1.5729	
	[-11.27]***		[-10.84]***		[-10.09]***		[-9.32]***		[-8.59]***		[-7.43]***	
DEF	0.4849		0.6302		0.8214		1.1105		0.3728		1.3450	
	[2.00]**		[2.55]**		[2.86]***		[3.51]***		[0.79]		[2.57]**	
YLD	0.2169		0.1968		0.1344		0.0774		0.4958		0.2677	
	[5.16]***		[4.58]***		[2.63]***		[1.43]		[5.84]***		[2.75]***	
TERM	-0.0527		-0.0000		-0.1481		-0.0620		0.2253		0.3512	
	[-0.90]		[-0.00]		[-2.07]**		[-0.81]		[1.84]*		[2.69]***	
DIV_{T-1}		-0.8720		-0.8855		-1.0580		-1.0467		-1.5633		-1.4264
		[-10.56]***		[-10.15]***		[-9.64]***		[-8.75]***		[-8.46]***		[-6.72]***
DEF_{T-1}		0.5247		0.8026		0.8533		1.3474		0.4473		1.6511
		[2.23]**		[3.37]***		[2.83]***		[4.18]***		[0.95]		[3.20]***
YLD_{T-1}		0.1992		0.1556		0.1247		0.02412		0.4911		0.1948
		[4.62]***		[3.58]***		[2.32]**		[0.43]		[5.65]***		[1.97]**
$TERM_{T-1}$		-0.0201		-0.0123		-0.0742		-0.0655		0.2924		0.3316
		[-0.33]		[-0.20]		[-0.99]		[-0.85]		[2.34]**		[2.47]**
p-value of F-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0717	0.0698	0.0700	0.0684	0.0748	0.0735	0.0730	0.0722	0.0496	0.0492	0.0488	0.0478
N	16711	16711	16711	16711	16711	16711	16711	16711	16711	16711	16711	16711

Panel B: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and Macroeconomic Variables for Stock Splits

	(-2,+2)				(-1,+9)				(-1,+30)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
Control Variables												
Intercept	15.5061	15.2844	15.3293	14.9866	19.1470	18.9630	18.9591	18.4074	18.9822	18.8222	18.7884	17.7441
	[22.22]***	[21.90]***	[21.79]***	[21.30]***	[21.44]***	[21.24]***	[21.34]***	[20.62]***	[13.65]***	[13.55]***	[13.59]***	[12.69]***
SplFac	1.2676	1.2613	1.2322	1.2273	1.5560	1.5458	1.4977	1.4919	2.2098	2.2021	2.0941	2.0954
	[4.85]***	[4.83]***	[4.79]***	[4.79]***	[5.03]***	[4.99]***	[4.97]***	[4.97]***	[5.18]***	[5.15]***	[5.22]***	[5.25]***
Ln(Size)	-0.3937	-0.3850	-0.4118	-0.3835	-0.3446	-0.3544	-0.3891	-0.3524	-0.0966	-0.1132	-0.1082	-0.0329
	[-7.40]***	[-7.21]***	[-7.81]***	[-7.22]***	[-5.01]***	[-5.15]***	[-5.80]***	[-5.23]***	[-0.84]	[-0.98]	[-0.94]	[-0.28]
Ln(Price)	-2.3597	-2.3595	-2.2513	-2.2905	-3.6012	-3.5582	-3.4019	-3.4433	-5.2174	-5.1579	-5.2785	-5.3721
	[-10.38]***	[-10.36]***	[-9.90]***	[-10.04]***	[-12.75]***	[-12.59]***	[-12.16]***	[-12.30]***	[-11.46]***	[-11.31]***	[-10.64]***	[-10.70]***
Macroeconomic Variables												
DIV	-0.6728		-0.7533		-0.5404		-0.6617		-1.1035		-0.1480	
	[-9.08]***		[-9.30]***		[-5.52]***		[-6.09]***		[-0.62]		[-0.73]	
DEF	0.3462		0.8011		0.3158		1.3036		-1.2250		1.7532	
	[1.51]		[3.18]***		[1.10]		[3.90]***		[-2.55]**		[3.07]***	
YLD	0.1135		0.0857		-0.0399		-0.1362		0.0228		-0.3659	
	[2.87]***		[2.01]**		[-0.80]		[-2.40]**		[0.28]		[-3.52]***	
TERM	-0.1439		-0.1164		-0.3142		-0.3047		-0.1903		-0.3079	
	[-2.56]**		[-1.90]*		[-4.33]***		[-3.80]***		[-1.52]		[-2.15]**	
DIV_{T-1}		-0.6271		-0.6690		-0.5247		-0.5413		-0.0933		0.0741
		[-8.38]***		[-8.14]***		[-5.35]***		[-4.92]***		[-0.57]		[0.37]
DEF_{T-1}		0.3823		0.8924		0.3433		1.3597		-1.3183		1.7061
		[1.75]*		[3.70]***		[1.21]		[4.12]***		[-2.71]***		[3.07]***
YLD_{T-1}		0.0953		0.0480		-0.0483		-0.1783		0.0331		-0.4127
		[2.36]**		[1.10]		[-0.94]		[-3.02]***		[0.40]		[-3.88]***
$TERM_{T-1}$		-0.1130		-0.1165		-0.2337		-0.2751		-0.0875		-0.2876
		[-1.97]**		[-1.90]*		[-3.16]***		[-3.41]***		[0.68]		[-1.94]*
p-value of												
F-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0716	0.0704	0.0696	0.0680	0.0723	0.0714	0.0702	0.0692	0.0401	0.0400	0.0426	0.0427
N	16705	16705	16705	16705	16705	16705	16705	16705	16705	16705	16705	16705

Table 6.8 Regression Results between Abnormal Returns of Stock Splits and general Business Cycle Variables for the period 1926 to 2008

This table shows the relationship between abnormal returns of stock splits and general business cycle variables for the period 1926 to 2008. The dependent variable in Panel A is market adjusted abnormal returns (CAR) and the dependent variable in Panel B is market model adjusted abnormal returns for firms announcing stock splits. Both equal-weighted and value-weighted market indexes are employed. (-2, +2), (-1, +9) and (-1, +30) represent event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). *SplFac* is the split ratio obtained from CRSP and defined as the number of additional shares per existing share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to stock split announcements. *Ln(Price)* is the natural logarithm of stock price one day before stock split announcements. *GDP* is the change in nominal GDP; *UNEMP* is the unemployment rate; *cpi* is the consumer price index; and *inf* is the inflation rate in the US. All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regression Results between Market Adjusted Cumulative Abnormal Returns and more general Business Cycle Variables for Stock Splits

	(-2,+2)				(-1,+9)				(-1,+30)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
Control Variables												
Intercept	12.8966	12.8874	12.6167	12.6990	17.0033	16.8517	16.6707	16.6554	20.4463	20.3009	20.3207	20.4402
	[15.66]***	[12.36]***	[15.08]***	[14.87]***	[18.23]***	[17.94]***	[17.92]***	[17.72]***	[16.21]***	[16.01]***	[16.30]***	[16.22]***
SplFac	1.2149	1.2139	1.1935	1.1918	1.5626	1.5650	1.5288	1.5306	2.3514	2.3521	2.2297	2.2288
	[4.18]***	[4.18]***	[4.20]***	[4.19]***	[4.39]***	[4.38]***	[4.33]***	[4.32]***	[4.70]***	[4.68]***	[4.64]***	[4.63]***
Ln(Size)	-0.4086	-0.4079	-0.4164	-0.4129	-0.6361	-0.6408	-0.6513	-0.6521	-0.8069	-0.8105	-0.8302	-0.8281
	[-6.93]***	[-6.97]***	[-6.90]***	[-6.90]***	[-9.12]***	[-9.23]***	[-9.14]***	[-9.20]***	[-7.48]***	[-7.51]***	[-7.76]***	[-7.75]***
Ln(Price)	-2.0441	-2.0349	-1.9961	-1.9998	-2.5651	-2.5411	-2.4825	-2.4804	-3.3022	-3.2806	-3.2433	-3.2699
	[-7.45]***	[-7.43]***	[-7.41]***	[-7.43]***	[-8.31]***	[-8.25]***	[-7.94]***	[-7.95]***	[-7.92]***	[-7.86]***	[-7.46]***	[-7.52]***
Business Cycle Variables												
GDP	0.0930		0.1290		0.0082		0.0558		0.0813		0.0777	
	[1.83]*		[2.48]**		[0.12]		[0.84]		[0.76]		[0.72]	
UNEMP	-0.0618		-0.0106		-0.1478		-0.0572		-0.1469		0.0995	
	[-1.51]		[-0.25]		[-3.04]***		[-1.18]		[-2.05]**		[1.35]	
cpi	0.0105		0.0114		0.0179		0.0192		0.0273		0.0303	
	[5.04]***		[5.43]***		[7.75]***		[8.20]***		[8.91]***		[9.63]***	
inf	0.4995		0.4676		0.2719		0.0999		0.2792		-0.6896	
	[3.05]***		[2.86]***		[1.17]		[0.51]		[0.92]		[-2.19]***	
GDP_{T-1}		0.0599		0.0740		0.1393		0.2036		0.2527		0.2642
		[1.11]		[1.42]		[1.99]**		[3.03]***		[2.41]**		[2.40]**
$UNEMP_{T-1}$		-0.0573		-0.0595		-0.1535		-0.0653		-0.1460		0.0899
		[-1.43]		[-1.45]		[-3.23]***		[-1.38]		[-2.05]**		[1.22]
cpi_{T-1}		0.0102		0.0109		0.0182		0.0193		0.0276		0.0305
		[5.07]***		[5.37]***		[8.10]***		[8.48]***		[9.10]***		[9.78]***
inf_{T-1}		0.5059		0.3548		0.3972		0.0033		0.2371		-1.0587
		[3.03]***		[2.16]**		[2.02]**		[0.16]		[0.70]		[-3.09]***
p-value of F-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0629	0.0627	0.0621	0.0616	0.0707	0.0711	0.0692	0.0696	0.0466	0.0468	0.0478	0.0483
N	16706	16706	16706	16706	16706	16706	16706	16706	16706	16706	16706	16706

Panel B: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and more general Business Cycle Variables for Stock Splits

	(-2,+2)				(-1,+9)				(-1,+30)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
Control Variables												
Intercept	12.8596	12.7677	12.3496	12.4304	16.7765	16.4802	16.0735	16.0365	18.4753	18.0236	18.3529	18.2659
	[14.92]***	[14.51]***	[14.41]***	[14.17]***	[17.31]***	[16.88]***	[16.83]***	[16.49]***	[13.96]***	[13.56]***	[14.50]***	[14.17]***
SplFac	1.2533	1.2477	1.2256	1.2215	1.5352	1.5286	1.4943	1.4910	2.2014	2.1881	2.1468	2.1299
	[4.47]***	[4.45]***	[4.34]***	[4.33]***	[4.66]***	[4.64]***	[4.55]***	[4.53]***	[5.12]***	[5.09]***	[5.11]***	[5.09]***
Ln(Size)	-0.3233	-0.3242	-0.3231	-0.3199	-0.3989	-0.4061	-0.4203	-0.4223	-0.1721	-0.1814	-0.1739	-0.1787
	[-5.76]***	[-5.80]***	[-5.76]***	[-5.75]***	[-5.80]***	[-5.94]***	[-6.08]***	[-6.15]***	[-1.56]	[-1.65]	[-1.63]	[-1.68]*
Ln(Price)	-2.3734	-2.3497	-2.2874	-2.2901	-3.3362	-3.2849	-3.1510	-3.1432	-5.0424	-4.9650	-5.0985	-5.0881
	[-8.67]***	[-8.58]***	[-8.43]***	[-8.43]***	[-10.54]***	[-10.42]***	[-10.18]***	[-10.17]***	[-11.59]***	[-11.41]***	[-11.70]***	[-11.65]***
Business Cycle Variables												
GDP	0.1398		0.1454		0.1101		0.0949		0.2345		0.1876	
	[2.67]***		[2.68]***		[1.60]		[1.38]		[1.95]*		[1.60]	
UNEMP	-0.0814		-0.0391		-0.1947		-0.1193		-0.2856		-0.0715	
	[-1.99]**		[-0.99]		[-3.93]***		[-2.47]**		[-3.60]***		[-0.92]	
cpi	0.0066		0.0070		0.0089		0.0091		0.0049		0.0013	
	[3.29]***		[3.46]***		[3.96]***		[3.97]***		[1.49]		[0.38]	
inf	0.3486		0.2442		0.1114		-0.2888		0.1827		-1.8720	
	[2.22]**		[1.47]		[0.56]		[-1.40]		[0.53]		[-5.63]***	
GDP_{T-1}		0.0204		0.0573		0.0508		0.1656		0.1068		0.1443
		[0.38]		[1.07]		[0.74]		[2.43]**		[0.93]		[1.23]
$UNEMP_{T-1}$		-0.0693		-0.0333		-0.1840		-0.1260		-0.2566		-0.0737
		[-173]*		[-0.86]		[-3.76]***		[-2.63]***		[-3.02]***		[-0.94]
cpi_{T-1}		0.0065		0.0066		0.0093		0.0094		0.0543		0.0022
		[3.30]***		[3.37]***		[4.27]***		[4.22]***		[1.67]*		[0.67]
inf_{T-1}		0.5066		0.1603		0.5179		-0.2679		0.6794		-1.7122
		[3.02]***		[0.95]		[2.47]**		[-1.28]		[1.75]*		[-4.69]***
p-value of												
F-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0666	0.0663	0.0636	0.0631	0.0706	0.0707	0.0669	0.0671	0.0402	0.0401	0.0428	0.0424
N	16700	16700	16700	16700	16700	16700	16700	16700	16700	16700	16700	16700

increase by up to 0.5% within two days, but decrease by almost 2% one month after split announcements. An increase in GDP changes can also predict a 0.2% increase in the ten-day excess returns and a 0.25% increase in 30-day returns using the Market Adjusted Model. Five-day returns generally increase by 0.1% for every percentage of *GDP* increase. Conversely, *UNEMP* is negatively correlated to the abnormal returns of splits, but mainly using the equal-weighted market index. On average, when the unemployment rate increases by 1%, there is a 0.08% decrease in five-day returns, 0.15% in ten-day returns, and 0.2% in 30-day returns. These figures generally support the conjecture of business cycle variables positively affecting market response to stock split announcements.

6.1.5 Robustness Check

Appendix 6A shows the results for the robustness check of the abnormal returns of stock splits between economic expansions and contractions in different sub-periods, industries, and size quintiles. The overall findings are in agreement with the results in event studies in Table 6.4. Abnormal returns are higher in expansions than in contractions for the event window of one day surrounding split announcements, but lower for the windows of one-month, two-months, and three-months after the announcements in most sub-periods, industries, and size quintiles. However, the market reaction to stock splits is stronger in contractions using the equal-weighted market model, which is also the same as the results in Table 6.4.

Appendix 6B lists the multivariate regression results of the relationship between the *Expansion* dummy and excess returns of stock splits in four sub-periods. The finding that *Expansion* is positively correlated to excess returns is robust for the windows of ten days after and two days within the announcements in the sub-periods 1926 to 1960 and 1996 to 2008. Appendix 6C generally confirms the negative relationship between the macroeconomic variable of the market dividend yield and abnormal returns of splits in the sub-period 1996 to 2008, and the negative relationship between the default spread and returns between 1976 and 1995. The three-month T-bill yield (*YLD*) is statistically negative from 1976 to 1995, which is different from the results in Table 6.7. However, the coefficients of *YLD* change back to being statistically positive in the period 1996 to 2008. Similarly, the term spread (*TERM*) is negatively correlated to abnormal returns of split announcements between 1976 and 1995, but the coefficients of *TERM* become positive after 1996. Appendix 6D shows that the negative relationship between the economic indicator of unemployment rate and excess returns of stock splits remains unchanged after 1961. The coefficients of the consumer price index are robust to be positive from 1976 to 2008. The inflation rate is also positively correlated to abnormal returns in the sub-period 1996 to 2008 for the five-day window and negatively correlated to the value-weighted returns in 1976 to 1995 for the one-month window. This result is similar to the outcomes in Table 6.8. *GDP* appears to be insignificant in most sub-periods, but it is statistically positive in the five-day market model adjusted returns between 1996 and 2008. In brief, these robustness checks show that the business cycle effect particularly exists in the abnormal returns of stock split announcements in the period 1976 to 2008.

6.2 Special Dividend Announcements

6.2.1 Frequency of Special Dividends in Expansions and Contractions

Special dividends are cash distributions paid by companies when they have excess funds. In economic expansions, firms may find it easier to generate and accumulate cash inflow from ample profitable growth opportunities. Hence, they should have more capacity to pay special dividends in these periods. However, Jensen (1986), Lang and Litzenberger (1989), and Lie (2000) argue that cash dividends should be disbursed when companies have limited or no favourable investment opportunities in order to prevent managers' waste and reduce agency costs. This is more likely to happen in economic contractions. Given these two sides of the argument, Section 6.2 examines the relationship between special dividends and the business cycle and investigates whether these announcements are counter-cyclical or pro-cyclical. The analysis includes the examinations of the frequency, likelihood, and abnormal returns of special dividend announcements in economic growth and recessions.

In Table 6.9, there is no clear and strong evidence to show that firms are more likely to announce special dividends in expansions compared to contractions from 1926 to 2008. On average, 18 special dividends are paid each month in economic upturns, which is slightly higher than 14 in economic downturns. However, the frequency of these announcements per month in the contractionary period of 12/73 to 03/75 is twice as much as it is in the preceding expansionary period of 12/70 to 11/73. Additionally, firms are more likely to initiate special dividends in the contractionary periods of 06/37 to 06/38, 12/48 to 10/49, and 08/90 to 03/91. These findings indicate that there is a mixed result in the frequency of special dividend announcements.

Table 6.9 Number of Special Dividends in Economic Expansions and Contractions from 1926 to 2008

This table shows the number of special dividend announcements in total and each period of expansions and contractions from 1926 to 2008. Special dividends are classified from the Centre for Research in Security Prices (CRSP) files by the criteria that the distribution code is 1272 for special and extra dividends, and 1262 for year-end irregular extra dividends combined. Economic expansion and contraction periods are determined by the NBER (www.nber.org/cycles/cyclesmain.html).

Number of special dividends (SDD) between expansions and contractions							
Expansion				Contraction			
	No. of SDD	No. of month	No. of SDD per month		No. of SDD	No. of month	No. of SDD per month
01/26-10/26	18	10	2	11/26-11/27	26	13	2
12/27-08/29	60	21	3	09/29-03/33	63	43	1
04/33-05/37	762	50	15	06/37-06/38	251	13	19
07/38-02/45	1126	80	14	03/45-10/45	84	8	11
11/45-11/48	1113	37	30	12/48-10/49	392	11	36
11/49-07/53	1507	45	33	08/53-05/54	293	10	29
06/54-08/57	924	39	24	09/57-04/58	171	8	21
05/58-04/60	317	24	13	05/60-02/61	116	10	12
03/61-12/69	1594	106	15	01/70-11/70	62	11	6
12/70-11/73	593	36	16	12/73-03/75	506	16	32
04/75-01/80	1609	58	28	02/80-07/80	68	6	11
08/80-07/81	208	12	17	08/81-11/82	233	16	15
12/82-07/90	1497	92	16	08/90-03/91	143	8	18
04/91-03/01	1629	120	14	04/01-11/01	40	8	5
12/01-12/07	1360	73	19				
Total	14317	803	18	Total	2448	181	14

A similar outcome is shown in the results of the t-test and non-parameter, Wilcoxon z test in Table 6.10. The number of firms paying special dividends per month in expansions is 17, whereas it is 15 in contractions. The difference is only about 2, which is not big enough to generate statistically significant *p_value* for these two tests at 1%, 5% or 10% significance level. Therefore, the conclusion of whether there are more special dividend distributions in expansions or contractions cannot be drawn, leading to more statistical tools employed in the following sections.

Table 6.10 The Frequency of Special Dividend Announcements per month between Economic Expansions and Contractions – The t-test and non-parameter, Wilcoxon z test

This table presents the results of the t-test and non-parameter, Wilcoxon z test. *Expansion* represents on average the number of special dividends per month in economic expansions and *Bear* is the number of special dividends per month in economic contractions from 1926 to 2008.

Mean			The t-test	non-parameter Test
Expansion	Contraction	Difference	P_Value	P_Value
17.2667	15.5714	1.6952	0.6508	0.2658

6.2.2 Likelihood of Occurrence of Special Dividends in Economic Expansions

Table 6.11 uses logit models to examine the likelihood of occurrence of special dividend announcements in relation to the business cycle. In Panel A, the coefficients of *Expansion* are statistically significant and positive in the period 1926 to 1940, suggesting that firms are more likely to initiate special dividends in expansions than in contractions only in the early years of the announcements. In Panel B, the likelihood of special dividend distributions is negatively correlated to the three-month T-bill yield (*YLD*) and term spread (*TERM*) in the overall sample and four sub-samples. For every percentage that *TERM* or *YLD* increases, the probability that firms pay special dividends reduces by more than 10% between 1926 and 2008. This negative relationship is strongly robust in the sub-period, 1926 to 1960, as the coefficients of these two variables are economically large. The default spread (*DEF*) is also negative in the full sample period and some sub-periods. With a 1% increase in *DEF*, the tendency for special dividend announcements can decrease by more than 30%. However, the market dividend yield (*DIV*) increases the propensity of these announcements as its coefficients are statistically positive in all models. These results are similar to the outcomes in the one-period lagged forecasting regressions, indicating that macroeconomic risk factors, in general, negatively affect the probability of special dividend payments.

Panel C presents the relationship between firms' decisions to pay special dividends and the economic indicators of GDP changes (*GDP*), unemployment rate (*UNEMP*), consumer price index (*cpi*), and inflation rate (*inf*). Firms tend to announce special dividends when *GDP*

Table 6.11 Logistic Regressions for the Likelihood of Special Dividends from 1926 to 2008

This table shows the likelihood of special dividend announcements related to the *Expansion* dummy in Panel A from 1926 to 2008, and associated with macroeconomic variables in Panel B and C. The dependent variable is a binary variable that contains a value of one if a firm announces a special dividend in the month; otherwise, zero. *Ln(Size)* is the natural logarithm of monthly market capitalization. *Ln(Price)* is the natural logarithm of monthly stock price. *Expansion* is a dummy variable that takes a value of one for a special dividend announced in economic expansion periods and a value of zero for an announcement in contraction periods. Economic expansion and contraction periods are determined by the NBER (www.nber.org/cycles/cyclesmain.html). *DIV* is the market dividend yield, defined as the total dividend payments on the market over the current level of the index. *DEF* is the default spread, defined as the difference between the average yield of bonds rated BAA by Moodys and the average yield of bonds with a Moodys rating of AAA. *TERM* is the term spread, measured as the difference between the average yield of long term Treasury bonds (more than 10 years) and the average yield of T-bills that mature in three months. *YLD* is the three-month T-bills yield. *GDP* is the change in nominal GDP; *UNEMP* is the unemployment rate; *cpi* is the consumer price index; and *inf* is the inflation rate in the US. The logistic regressions run on the full sample period and on four sub-periods for a robustness check to avoid noise. *p-values* are in parentheses under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: The likelihood of special dividend announcements with Expansion Dummy

	Full Sample	Sub-periods			
Variables	1926-2008	1926-1940	1941-1960	1961-1985	1986-2008
Expansion	-0.0168	0.7606	0.0262	0.0147	0.1073
	(0.4479)	(<.0001)***	(0.4458)	(0.6967)	(0.1670)
Ln(Size)	-0.3695	0.0823	-0.0946	-0.3405	-0.2392
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Ln(Price)	1.0147	0.6145	0.6784	1.0170	0.6646
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Intercept	-4.0305	-7.7272	-4.9527	-4.4796	-5.1075
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***

Panel B: The likelihood of special dividend announcements with macroeconomic variables

	Full Sample		Sub-periods							
Variables	1926-2008		1926-1940		1941-1960		1961-1985		1986-2008	
Intercept	-5.3513***	-5.3660***	-4.5889***	-4.6839***	-3.3317***	-3.9878***	-4.9149***	-4.8984***	-4.6745***	-4.5893***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Ln(Size)	-0.1851***	-0.1882***	-0.0362*	-0.0328	-0.0479***	-0.0456**	-0.3070***	-0.3081***	-0.2286***	-0.2283***
	(<.0001)	(<.0001)	(0.0735)	(0.1049)	(<.0001)	(0.0490)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Ln(Price)	0.7521***	0.7565***	1.0708***	1.0556***	0.6871***	0.6849***	0.9609***	0.9602***	0.6498***	0.6506***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
DIV	0.3060***		0.0662**		0.0859***		0.3587***		0.7348***	
	(<.0001)		(0.0291)		(<.0001)		(<.0001)		(<.0001)	
DEF	-0.3714***		-0.6711***		0.0136		0.1567***		0.3398***	
	(<.0001)		(<.0001)		(0.8220)		(0.0003)		(<.0001)	
YLD	-0.1189***		-1.3229***		-0.6723***		-0.1664***		-0.3491***	
	(<.0001)		(<.0001)		(<.0001)		(<.0001)		(<.0001)	
TERM	-0.1165***		-0.4691***		-1.2723***		-0.2057***		-0.3881***	
	(<.0001)		(<.0001)		(<.0001)		(<.0001)		(<.0001)	
DIV_{t-1}		0.3135***		0.0333		0.1327***		0.3372***		0.7582***
		(<.0001)		(0.2781)		(<.0001)		(<.0001)		(<.0001)
DEF_{t-1}		-0.4220***		-0.7090***		-0.2259***		-0.0545		0.1667**
		(<.0001)		(<.0001)		(0.0002)		(0.2129)		(0.0200)
YLD_{t-1}		-0.1150***		-1.2261***		-0.5499***		-0.1294***		-0.3512***
		(<.0001)		(<.0001)		(<.0001)		(<.0001)		(<.0001)
$TERM_{t-1}$		-0.0911***		-0.3267***		-0.9612***		-0.1493***		-0.3796***
		(<.0001)		(0.0033)		(<.0001)		(<.0001)		(<.0001)

Panel C: The likelihood of special dividend announcements with more general business cycle variables

	Full Sample		Sub-periods							
Variables	1926-2008		1926-1940		1941-1960		1961-1985		1986-2008	
Intercept	-4.4497***	-4.4755***	19.679***	20.094***	-4.6804***	-4.6347***	-4.4841***	-4.6417***	-5.1018***	-5.8042***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Ln(Size)	-0.2035***	-0.2057***	-0.0209	-0.0227	-0.0759***	-0.0754***	-0.3115***	-0.3134***	-0.2421***	-0.2425***
	(<.0001)	(<.0001)	(0.2989)	(0.2606)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Ln(Price)	0.7967***	0.8028***	1.0189***	1.0269***	0.6645***	0.6626***	0.9570***	0.9669***	0.6653***	0.6642***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
GDP	-0.0357***		-0.0531***		-0.0379***		-0.0964***		-0.2447***	
	(<.0001)		(0.0001)		(<.0001)		(<.0001)		(<.0001)	
UNEMP	-0.0053**		-0.2430***		-0.0157**		0.0884***		0.0728***	
	(0.0180)		(<.0001)		(0.0367)		(<.0001)		(0.0002)	
cpi	-0.0088***		-1.6399***		-0.0139***		-0.0106***		0.0003	
	(<.0001)		(<.0001)		(<.0001)		(<.0001)		(0.6634)	
inf	0.0182		0.0184		0.0867***		0.0281		-1.1086***	
	(0.2640)		(0.6985)		(<.0001)		(0.5060)		(<.0001)	
GDP_{t-1}		-0.0240***		-0.0947***		-0.0855***		0.1172***		0.0819***
		(<.0001)		(<.0001)		(<.0001)		(<.0001)		(0.0002)
$UNEMP_{t-1}$		-0.0041*		-0.2466***		-0.0175**		0.0811***		0.0986***
		(0.0662)		(<.0001)		(0.0163)		(<.0001)		(<.0001)
cpi_{t-1}		-0.0088***		-1.6649***		-0.0146***		-0.0109***		0.0024***
		(<.0001)		(<.0001)		(<.0001)		(<.0001)		(0.0008)
inf_{t-1}		0.0614***		0.0865*		0.0831***		0.1243***		-0.5451***
		(0.0001)		(0.0638)		(<.0001)		(0.0036)		(<.0001)

decreases. This result is consistent in most sub-periods, except during 1961 to 2008 in the one-month lagged forecasting models. The possibility of special dividend distributions can increase up to 10% if there is a 1% decrease in *GDP*; likewise, a 1% increase in *UNEMP* can lead to a decrease in the possibility by up to 20% before 1960. The coefficients of *cpi* are also negative in the overall sample and three sub-samples. Of note, a rise in the consumer price index certainly reduces the tendency for firms to pay special dividends from 1926 and 1940 as the coefficients are substantially large in this period. In contrast, a higher inflation rate can predict the likelihood of occurrence of special dividends to increase, with the exception of the most recent period, 1986 to 2008. These results provide additional evidence to support the hypothesis that special dividend declarations can be negatively driven by the business cycle: firms are more likely to pay special dividends when the economy declines.

6.2.3 Abnormal Returns of Special Dividends in Expansions and Contractions

As predicted in Alternative Hypothesis 3 in Section 3.1.2, the short-term abnormal returns of special dividend announcements are consistently higher in contractions than in expansions using all models. This is shown in Table 6.12. On average, there is a 1.2% return for special dividends in economic declines and a 1% return in periods of economic growth one day surrounding the announcements. The difference in returns between expansions and contractions starts to increase one week after special dividends. At the end of one month, the excess returns rise up to 3.1% in downturns and 1.77% in upturns[32]. Subsequently, in recessions, the returns further increase to the range of 2.97% to 6.26% in two months, 5.18% to 9.39% in three months, and 5.33% to 16.76% in six months. These returns are about 2% to 5% higher than in expansions using the Market Model and Market Adjusted Model, and 6% to 10% using the Mean Adjusted Model[33]. These figures indicate that special dividend announcements create a stronger signal and greater market reaction in contractions. By distributing extra cash back to shareholders rather than wasting it on negative NPV investments during economic downturns, firms can alleviate agency problems and increase their shareholders' cash protection and loyalty. In addition, this research finds that the Market Adjusted Model yields the highest excess returns in expansions, whereas the Mean Adjusted Model produces the largest returns in contractions. The short-term abnormal returns

[32] These figures are the average of the market adjusted returns, market model adjusted returns and mean adjusted returns shown in Table 6.12.

[33] These figures are the maximum and minimum returns of the market adjusted returns, market model adjusted returns and mean adjusted returns shown in Table 6.12.

Table 6.12 Short-Run Excess Returns of Special Dividend Announcements in Economic Expansions and Contractions from 1926 to 2008

This table calculates excess returns for the firms announcing special dividends between economic expansions and contractions from 1926 to 2008. Economic expansion and contraction periods are determined by the NBER (www.nber.org/cycles/cyclesmain.html). Mean adjusted returns are calculated by $AR_{it}=R_{it}-E(R_{it})$, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, $E(R_{it})$ is constant mean returns for security *i* at time *t* with estimation period of 255 trading days. Market adjusted returns are using $AR_{it}=R_{it}-R_{mt}$, where R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes. Market model adjusted returns are measured by $AR_{it}=R_{it}-\hat{\alpha}_i-\hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the Market Model of $R_{it}=\alpha_i+\beta_i * R_{mt}+\varepsilon_i$ with estimation period of 255 trading days. Short term event windows are examined one day surrounding an announcement date, one week after an announcement date, 10 days, 15 days, three weeks, one month, two months, three months and six months after an announcement date (0 represents the actual announcement day). All returns are in percentage with *t*-statistics underneath. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Excess returns for special dividends

Expansion Periods

	Raw Returns	Market Adjusted Returns		Market Model Adjusted Returns		Mean Adjusted Returns
		EW	VW	EW	VW	
Event windows						
(-30,-2)	2.85	0.56	1.27	0.28	-0.03	0.03
	[34.22]***	[4.51]***	[14.18]***	[5.02]***	[1.17]	[1.79]*
(-1,+1)	1.36	1.03	1.11	1.01	0.98	1.06
	[33.66]***	[24.20]***	[26.91]***	[25.28]***	[24.54]***	[25.85]***
(-1, 0)	0.75	0.55	0.61	0.53	0.51	0.56
	[23.67]***	[15.95]***	[18.17]***	[16.61]***	[15.91]***	[16.96]***
(0, +1)	1.20	0.96	1.02	0.95	0.94	1.00
	[33.26]***	[25.65]***	[27.80]***	[26.64]***	[26.29]***	[27.37]***
(1, +7)	1.56	0.79	1.06	0.78	0.78	0.88
	[32.89]***	[14..91]***	[21.45]***	[16.99]***	[17.05]***	[18.87]***
(1, +10)	1.79	0.70	1.14	0.71	0.76	0.81
	[31.15]***	[10.15]***	[19.18]***	[12.92]***	[13.90]***	[14.81]***
(1, +15)	2.14	0.43	1.18	0.46	0.58	0.69
	[33.26]***	[3.43]***	[17.41]***	[7.55]***	[9.69]***	[11.66]***
(1, +21)	2.65	0.34	1.44	0.37	0.60	0.62
	[34.85]***	[0.70]	[18.49]***	[5.45]***	[8.81]***	[9.20]***
After						
1month	3.51	0.10	1.77	0.18	0.59	0.62
	[40.44]***	[-3.24]***	[20.18]***	[3.17]***	[8.39]***	[8.73]***
2month	6.02	-0.28	2.93	-0.24	0.53	0.26
	[49.23]***	[-8.30]***	[23.45]***	[-0.68]	[5.77]***	[3.70]***
3month	7.95	-0.54	3.63	-0.71	-0.06	-0.65
	[53.14]***	[-10.53]***	[23.06]***	[-3.12]***	[1.07]	[-2.16]**
6month	11.97	-1.32	4.65	-2.47	-3.02	-5.07
	[52.34]***	[-11.65]***	[19.40]***	[-6.60]***	[-9.38]***	[-15.76]***

Contraction Periods

	Raw Returns	Market Adjusted Returns		Market Model Adjusted Returns		Mean Adjusted Returns
		EW	VW	EW	VW	
Event windows						
(-30,-2)	0.77	1.56	1.11	0.68	0.39	0.25
	[4.07]***	[7.81]***	[5.38]***	[4.61]***	[2.56]**	[1.64]
(-1,+1)	1.28	1.20	1.21	1.17	1.15	1.23
	[10.72]***	[9.80]***	[9.58]***	[10.01]***	[9.73]***	[10.06]***
(-1, 0)	0.62	0.61	0.63	0.58	0.56	0.59
	[6.00]***	[5.50]***	[5.47]***	[5.56]***	[5.34]***	[5.53]***
(0, +1)	1.20	1.13	1.13	1.10	1.10	1.16
	[11.32]***	[10.28]***	[10.24]***	[10.44]***	[10.37]***	[10.82]***
(1, +7)	1.52	1.22	1.31	1.14	1.18	1.40
	[11.25]***	[8.68]***	[9.10]***	[8.61]***	[8.73]***	[9.93]***
(1, +10)	1.61	1.21	1.35	1.05	1.11	1.44
	[9.66]***	[6.90]***	[7.48]***	[6.32]***	[6.48]***	[8.16]***
(1, +15)	2.01	1.13	1.46	0.91	1.11	1.75
	[10.76]***	[5.67]***	[7.64]***	[5.10]***	[6.10]***	[8.79]***
(1, +21)	2.80	1.06	1.94	0.81	1.42	2.44
	[13.61]***	[4.02]***	[9.02]***	[3.79]***	[6.81]***	[10.95]***
After						
1month	3.59	0.80	2.26	0.52	1.66	3.10
	[15.46]***	[1.90]*	[9.06]***	[2.35]**	[6.81]***	[12.07]***
2month	7.25	0.63	3.67	0.30	2.97	6.26
	[21.19]***	[-0.19]	[10.57]***	[2.13]**	[8.74]***	[16.15]***
3month	10.88	0.56	5.18	-0.13	4.06	9.39
	[26.25]***	[-1.07]	[12.21]***	[1.43]	[9.68]***	[19.60]***
6month	19.67	-1.25	7.72	-2.27	5.33	16.76
	[32.37]***	[-4.67]**	[13.17]***	[-0.32]	[9.26]***	[23.08]***

Table 6.13 Long-Term Post-announcement Abnormal Returns Using Monthly Fama-French (1993) and Carhart (1997) Calendar Time Portfolio Regressions for Special Dividend Announcements between Economic Expansions and Contractions from 1926 to 2008

This table calculates long term abnormal returns for the one-, two-, three-, and five-year post-announcement horizons, for the firms announcing special dividends between economic expansions and contractions during the period 1926 to 2008. Economic expansion and contraction periods are determined by the NBER (www.nber.org/cycles/cyclesmain.html). Monthly rebalanced calendar time portfolio returns are calculated each month from all firms experience a special dividend in the previous 12, 24, 36, or 60 calendar months. Monthly excess returns to calendar time portfolios are: $CTAR_t = R_{pt} - E(R_{pt})$, where R_{pt} is monthly return on portfolio of event firms at time t, and $E(R_{pt})$ is expected return on event portfolio at time t. The expected return on event portfolio, for each sample firm in month t, is measured by Fama-French (1993) three-factor model and Carhart (1997) four-factor model:

$$R_{it} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

$$R_{it} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + m_i PR1YR_t + \varepsilon_{it}$$

R_{it} is firm i's monthly return, R_{ft} is the one-month T-bills return, and R_{mt} is the market return on both CRSP equal-weighted and value-weighted portfolio of all NYSE, AMEX, and Nasdaq stocks. SMB_t is the difference in returns between portfolios of small and big stocks. HML_t is the difference in returns between portfolios of high and low book-to-market ratio stocks. $PR1YR_t$ is defined as in Carhart (1997) as an equally weighted portfolio return of stocks with highest returns less an equally weighted portfolio return of stocks with lowest returns in months *t-12* to *t-2*. Ordinary, Weighted Least Squares (White, 1980) and Generalized Method of Moment (GMM) are estimated. All abnormal returns are in percentage and *t*-statistics of intercepts are shown in brackets under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Calendar Portfolio post period	Model Estimated	Intercept of the Fama-French Regression Three-factor without momentum (Fama-French, 1993)				Intercept of the Fama-French-Carhart Regression Four-factor with momentum (Carhart, 1997)			
		Equal-weighted		Value-weighted		Equal-weighted		Value-weighted	
		Exp	Con	Exp	Con	Exp	Con	Exp	Con
Horizon = 1 year		0.76	0.72	0.75	0.77	0.60	0.61	0.67	0.77
	OLS	[10.79]***	[6.39]***	[10.82]***	[6.65]***	[8.50]***	[5.28]***	[9.51]***	[6.43]***
	Hetero t	[10.99]***	[6.63]***	[10.94]***	[6.86]***	[7.67]***	[5.28]***	[8.47]***	[6.72]***
		0.59	0.68	0.58	0.70	0.49	0.65	0.55	0.73
	WLS	[11.56]***	[11.31]***	[11.40]***	[10.81]***	[9.40]***	[10.39]***	[10.34]***	[10.95]***
		0.76	0.72	0.75	0.77	0.60	0.61	0.67	0.77
	GMM	[9.24]***	[6.35]***	[8.84]***	[6.44]***	[7.27]***	[4.95]***	[7.88]***	[6.26]***
Horizon = 2 years		0.61	0.68	0.62	0.71	0.52	0.49	0.61	0.62
	OLS	[8.89]***	[7.11]***	[9.00]***	[7.32]***	[7.34]***	[5.11]***	[8.60]***	[6.21]***
	Hetero t	[9.24]***	[7.40]***	[9.29]***	[7.64]***	[6.53]***	[5.35]***	[7.63]***	[6.66]***
		0.43	0.55	0.43	0.56	0.37	0.46	0.44	0.54
	WLS	[8.92]***	[9.33]***	[8.79]***	[9.04]***	[7.49]***	[7.75]***	[8.78]***	[8.41]***
		0.61	0.68	0.62	0.71	0.52	0.49	0.61	0.62
	GMM	[7.78]***	[7.08]***	[7.62]***	[7.18]***	[6.20]***	[4.80]***	[7.09]***	[6.12]***
Horizon = 3 years		0.45	0.61	0.46	0.62	0.43	0.47	0.53	0.59
	OLS	[7.48]***	[7.85]***	[7.42]***	[8.10]***	[6.79]***	[5.99]***	[8.29]***	[7.34]***
	Hetero t	[7.35]***	[8.04]***	[7.17]***	[8.35]***	[5.99]***	[6.12]***	[7.42]***	[7.64]***
		0.35	0.50	0.35	0.50	0.30	0.39	0.38	0.47
	WLS	[7.54]***	[9.60]***	[7.46]***	[9.30]***	[6.32]***	[7.58]***	[7.75]***	[8.43]***
		0.45	0.61	0.46	0.62	0.43	0.47	0.53	0.59
	GMM	[6.03]***	[7.64]***	[5.78]***	[7.81]***	[5.19]***	[5.74]***	[6.26]***	[7.27]***
Horizon = 5 years		0.31	0.42	0.32	0.43	0.28	0.29	0.39	0.40
	OLS	[5.70]***	[5.85]***	[5.56]***	[6.05]***	[5.07]***	[4.02]***	[6.69]***	[5.44]***
	Hetero t	[5.88]***	[6.10]***	[5.71]***	[6.35]***	[4.72]***	[4.21]***	[6.43]***	[5.81]***
		0.28	0.39	0.29	0.39	0.23	0.29	0.32	0.37
	WLS	[6.35]***	[8.51]***	[6.22]***	[8.41]***	[5.11]***	[6.37]***	[6.64]***	[7.66]***
		0.31	0.42	0.32	0.43	0.28	0.29	0.39	0.40
	GMM	[5.03]***	[5.93]***	[4.95]***	[6.08]***	[4.29]***	[3.97]***	[5.91]***	[5.60]***

measured using the value-weighted market index are larger than the returns calculated with the equal-weighted index, especially when the post-announcement horizon is increasing.

Following on from this, the long-run abnormal returns of special dividend distributions are also slightly higher in economic recessions, which are robust in most models as shown in Table 6.13. According to the results, excess returns, on average, are 0.7% in contractions one year after the announcements, 0.6% after two years, 0.5% after three years, and 0.4% after five years. They are about 0.1% larger than in expansions, especially for the two- and five-year post-announcement horizons or using the Weighted Least Squares (WLS) estimations. There is no significant difference in returns between using the equal-weighted index and value-weighted index in both the Fama-French three-factor model (1993) and Carhart four-factor model (1997). The Ordinary Least Square (OLS) and Generalized Method of Moment (GMM) estimates produce the same long-run abnormal returns, which are marginally larger than using the WLS estimates. Since these excess returns are economically small, the findings support the Efficient Market Hypothesis in which corporate events do not generate significant price increases in the long run.

6.2.4 Multivariate Regression Results for Abnormal Returns of Special Dividends

This section uses multivariate regressions to examine the short-term abnormal returns of special dividend announcements relative to business cycle variations. Similar to the results in event studies, the market reaction to special dividends is negatively correlated to the *Expansion* dummy in Table 6.14. Within two days, firms can achieve almost 0.4% more excess returns if they initiate extra cash dividends in contractions rather than in expansions. For the event window of one day within the announcements, the coefficients of *Expansion* are only statistically significant in equal-weighted market index models, which means that returns of special dividends are more than 0.25% lower in expansions than in contractions. Similarly, returns are lower by up to 0.29% if firms pay special dividends in economic upturns in comparison to downturns one day after the announcements, and by up to 0.7% ten days and 1.24% one month after the announcements. These results confirm the earlier results that the short-run price reactions to special dividend distributions are higher in recessions, which is one of the reasons why companies prefer to announce them at that time.

Table 6.15 investigates the relationship between the excess returns from special dividend declarations and macroeconomic risk factors. According to the results, the market dividend yield (*DIV*), three-month T-bill yield (*YLD*), and term spread (*TERM*) are statistically significant in most models, but the default spread (*DEF*) is only significant in the ten-day and 30-day equal-weighted market adjusted returns and 30-day value-weighted market model adjusted returns. The coefficients of *DIV* are consistently negative related to the market adjusted returns in Panel A and market model adjusted returns in Panel B, suggesting that excess returns of special dividends increase by more than 0.2% if there is a 1% decrease in the market dividend yield. However, *YLD* and *TERM* are statistically positive in all event windows and the one-period lagged forecasting models. In particular, a 1% increase in the three-month T-bill yield can increase returns up to 0.17% five days within special dividend announcements, nearly 0.3% after ten days, and 0.4% one month after special dividends.

Table 6.14 Regression Results between Abnormal Returns of Special Dividends and the Expansion Dummy for the period 1926 to 2008

This table shows the relationship between abnormal returns of special dividends and the *Expansion* dummy variable for the period 1926 to 2008. The dependent variable in Panel A is market adjusted abnormal returns (CAR) and the dependent variable in Panel B is market model adjusted abnormal returns for firms announcing special dividends. EW and VW stand for equal-weighted market index and value-weighted market index, respectively. (-1, +1), (-2, +2), (-1, 0), (0, +1), (-1, +9) and (-1, +30) represent event windows (in days) relative to special dividend announcements (0 represents the actual announcement day). *Divamt* is the amount of the special dividend paid per share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to special dividend announcements. *Ln(Price)* is the natural logarithm of stock price one day before special dividend announcements. *Expansion* is a dummy variable that takes a value of one for a special dividend announced in economic expansion periods and a value of zero for an announcement in contraction periods. Economic expansion and contraction periods are determined by the NBER (www.nber.org/cycles/cyclesmain.html). All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regression Results between Market Adjusted Cumulative Abnormal Returns and Expansion Dummy for Special Dividends

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	4.1101	4.2179	5.0204	5.3068	2.0311	2.1289	4.0279	4.0711	6.5736	7.1546	7.8934	10.5589
	[10.78]***	[10.53]***	[11.20]***	[11.38]***	[6.72]***	[6.76]***	[11.41]***	[11.17]***	[12.50]***	[12.96]***	[10.63]***	[13.76]***
Expansion	-0.3080	-0.2165	-0.4922	-0.3301	-0.1633	-0.1272	-0.2883	-0.2137	-0.7001	-0.3204	-0.7788	-0.6477
	[-1.93]*	[-1.27]	[-2.58]***	[-1.69]*	[-1.04]	[-0.79]	[-2.03]**	[-1.44]	[-2.81]***	[-1.26]	[-2.06]**	[-1.86]*
Divamt	0.2920	0.2851	0.3639	0.3631	0.1703	0.1652	0.2869	0.2844	0.3467	0.3416	0.4040	0.3854
	[4.59]***	[4.54]***	[5.43]***	[5.48]***	[4.48]***	[4.24]***	[4.72]***	[4.74]***	[5.27]***	[5.08]***	[5.59]***	[5.20]***
Ln(Size)	0.1188	0.0915	0.1459	0.0986	0.0553	0.0366	0.1078	0.0902	0.1223	0.0502	0.0807	0.0289
	[4.67]***	[3.60]***	[4.56]***	[3.14]***	[2.73]***	[1.80]*	[4.86]***	[4.08]***	[3.04]***	[1.32]	[1.26]	[0.49]
Ln(Price)	-1.3385	-1.2796	-1.6101	-1.5429	-0.6356	-0.5954	-1.2997	-1.2563	-1.9354	-1.8545	-2.3917	-2.5531
	[-14.72]***	[-13.83]***	[-15.34]***	[-14.47]***	[-10.38]***	[-9.51]***	[-15.68]***	[-14.96]***	[-16.30]***	[-15.46]***	[-13.47]***	[-14.39]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0508	0.0471	0.0537	0.0508	0.0205	0.0185	0.0584	0.0552	0.0500	0.0480	0.0365	0.0438
N	16258	16258	16258	16258	16258	16258	16258	16258	16258	16258	16258	16258

Panel B: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and Expansion Dummy for Special Dividends

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	4.0380	4.0467	4.9391	5.0336	1.9938	2.0051	3.9370	3.9399	6.3480	6.6754	7.6185	9.2919
	[10.41]***	[9.93]***	[10.82]***	[10.45]***	[6.51]***	[6.34]***	[11.08]***	[10.76]***	[11.97]***	[11.55]***	[10.02]***	[10.65]***
Expansion	-0.2874	-0.2770	-0.4124	-0.4222	-0.1580	-0.1540	-0.2682	-0.2615	-0.5331	-0.4905	-0.4390	-1.2380
	[-1.82]*	[-1.61]	[-2.22]**	[-2.07]**	[-1.01]	[-0.96]	[-1.92]*	[-1.76]*	[-2.38]**	[-1.86]*	[-1.29]	[-3.01]***
Divamt	0.2789	0.2754	0.3413	0.3429	0.1658	0.1627	0.2737	0.2721	0.2982	0.3066	0.2932	0.2868
	[4.37]***	[4.39]***	[4.99]***	[5.04]***	[4.46]***	[4.38]***	[4.49]***	[4.52]***	[4.51]***	[4.59]***	[4.08]***	[3.65]***
Ln(Size)	0.1101	0.0959	0.1323	0.1087	0.0497	0.0378	0.1038	0.0958	0.1522	0.0984	0.1671	0.1585
	[4.45]***	[3.86]***	[4.30]***	[3.52]***	[2.49]*	[1.90]*	[4.82]***	[4.44]***	[3.99]***	[2.64]***	[2.76]***	[2.69]***
Ln(Price)	-1.2955	-1.2604	-1.5649	-1.5241	-0.6105	-0.5805	-1.2652	-1.2434	-2.0173	-1.9445	-2.6767	-2.7954
	[-14.32]***	[-13.65]***	[-15.11]***	[-14.29]***	[-10.02]***	[-9.30]***	[-15.43]***	[-14.95]***	[-17.51]***	[-16.24]***	[-15.48]***	[-14.99]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0485	0.0462	0.0512	0.0490	0.0196	0.0182	0.0559	0.0543	0.0521	0.0499	0.0389	0.0440
N	16253	16253	16253	16253	16253	16253	16253	16253	16253	16253	16253	16253

Table 6.15 Regression Results between Abnormal Returns of Special Dividends and Macroeconomic Variables for the period 1926 to 2008

This table shows the relationship between abnormal returns of special dividend and macroeconomic variables for the period 1926 to 2008. The dependent variable in Panel A is market adjusted abnormal returns (CAR) and the dependent variable in Panel B is market model adjusted abnormal returns for firms announcing special dividends. Both equal-weighted and value-weighted market indexes are employed. (-2, +2), (-1, +9) and (-1, +30) represent event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). *Divamt* is the amount of the special dividend paid per share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to special dividend announcements. *Ln(Price)* is the natural logarithm of stock price one day before special dividend announcements. *DIV* is the market dividend yield, defined as the total dividend payments on the market over the current level of the index. *DEF* is the default spread, defined as the difference between the average yield of bonds rated BAA by Moodys and the average yield of bonds with a Moodys rating of AAA. *TERM* is the term spread, measured as the difference between the average yield of long term Treasury bonds (more than 10 years) and the average yield of T-bills that mature in three months. *YLD* is the three-month T-bills yield. All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regression Results between Market Adjusted Cumulative Abnormal Returns and Macroeconomic Variables for Special Dividends

	(-2,+2)				(-1,+9)				(-1,+30)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
Control Variables												
Intercept	5.6627	5.8301	5.8488	5.9556	6.2596	6.6776	6.9574	7.1859	7.6605	8.2522	9.9777	10.0449
	[9.80]***	[10.50]***	[10.17]***	[10.74]***	[9.53]***	[10.33]***	[10.84]***	[11.22]***	[7.98]***	[8.73]***	[10.68]***	[10.79]***
Divamt	0.3557	0.3552	0.3535	0.3536	0.3531	0.3512	0.3417	0.3411	0.4214	0.4178	0.3870	0.3866
	[5.36]***	[5.35]***	[5.41]***	[5.41]***	[5.20]***	[5.19]***	[5.01]***	[5.00]***	[5.60]***	[5.57]***	[5.19]***	[5.17]***
Ln(Size)	-0.0670	-0.0781	-0.0910	-0.0928	-0.1015	-0.1272	-0.1339	-0.1392	-0.1579	-0.2019	-0.1637	-0.1639
	[-1.46]	[-1.72]*	[-1.97]**	[-2.02]**	[-2.19]**	[-2.76]***	[-3.02]***	[-3.12]***	[-2.16]**	[-2.78]***	[-2.53]**	[-2.52]**
Ln(Price)	-1.1483	-1.1262	-1.1321	-1.1312	-1.3468	-1.3052	-1.3680	-1.3660	-1.7064	-1.6283	-2.0084	-2.0109
	[-9.13]***	[-8.88]***	[-8.65]***	[-8.53]***	[-9.92]***	[-9.60]***	[-9.79]***	[-9.72]***	[-8.54]***	[-8.16]***	[-10.30]***	[-10.23]***
Macroeconomic Variables												
DIV	-0.2716		-0.2627		-0.2056		-0.2123		-0.1785		-0.2620	
	[-4.79]***		[-4.68]***		[-3.78]***		[-4.26]***		[-2.00]**		[-3.43]***	
DEF	0.0800		0.2161		-0.3596		-0.0889		-1.0335		0.1502	
	[0.30]		[0.79]		[-1.74]*		[-0.45]		[-3.28]***		[0.63]	
YLD	0.1743		0.1424		0.2887		0.2087		0.3874		0.2040	
	[5.55]***		[4.28]***		[8.96]***		[6.31]***		[7.86]***		[4.57]***	
TERM	0.1412		0.2080		0.2718		0.3797		0.2153		0.3776	
	[1.98]**		[2.76]***		[3.41]***		[4.58]***		[1.78]*		[3.40]***	
DIV_{T-1}		-0.2792		-0.2636		-0.2459		-0.2315		-0.2425		-0.2676
		[-5.31]***		[-5.08]***		[-4.60]***		[-4.65]***		[-2.76]***		[-3.53]***
DEF_{T-1}		-0.0624		0.1422		-0.4814		-0.0862		-1.2146		0.1738
		[-0.25]		[0.56]		[-2.38]**		[-0.46]		[-3.72]***		[0.73]
YLD_{T-1}		0.1849		0.1458		0.2941		0.2027		0.3966		0.2027
		[6.35]***		[4.72]***		[9.30]***		[6.29]***		[8.10]***		[4.59]***
$TERM_{T-1}$		0.1540		0.1920		0.2685		0.3298		0.2443		0.3410
		[2.34]**		[2.77]***		[3.39]***		[4.04]***		[1.95]*		[2.99]***
p-value of F-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0574	0.0582	0.0543	0.0541	0.0616	0.0631	0.0566	0.0563	0.0472	0.0487	0.0477	0.0476
N	16472	16472	16472	16472	16472	16472	16472	16472	16472	16472	16472	16472

Panel B: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and Macroeconomic Variables for Special Dividends

	(-2,+2)				(-1,+9)				(-1,+30)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
Control Variables												
Intercept	5.5086	5.4898	5.6536	5.5458	6.2712	6.2545	6.8300	6.5753	8.2061	8.0667	9.0532	8.4728
	[9.75]***	[10.10]***	[9.89]***	[10.10]***	[9.97]***	[10.04]***	[10.63]***	[10.32]***	[8.60]***	[8.57]***	[9.33]***	[8.78]***
Divamt	0.3362	0.3341	0.3353	0.3364	0.3035	0.3036	0.3080	0.3093	0.3076	0.3077	0.2983	0.3012
	[4.93]***	[4.93]***	[4.99]***	[4.99]***	[4.48]***	[4.48]***	[4.57]***	[4.58]***	[4.18]***	[4.18]***	[3.81]***	[3.84]***
Ln(Size)	-0.0480	-0.0467	-0.0634	-0.0551	-0.0293	-0.0299	-0.0598	-0.0452	0.0145	0.0162	0.0803	0.1078
	[-1.06]	[-1.04]	[-1.38]	[-1.20]	[-0.66]	[-0.67]	[-1.36]	[-1.02]	[0.20]	[0.23]	[1.18]	[1.58]
Ln(Price)	-1.1879	-1.1856	-1.1797	-1.1892	-1.5662	-1.5601	-1.5748	-1.5906	-2.3042	-2.2940	-2.6424	-2.6667
	[-9.49]***	[-9.36]***	[-9.03]***	[-8.95]***	[-11.81]***	[-11.67]***	[-11.31]***	[-11.25]***	[-11.80]***	[-11.65]***	[-12.91]***	[-12.85]***
Macroeconomic Variables												
DIV	-0.2560		-0.2648		-0.2188		-0.2383		-0.2531		-0.2359	
	[-4.82]***		[-4.84]***		[-4.78]***		[-5.00]***		[-3.46]***		[-3.05]***	
DEF	0.2577		0.3015		-0.0237		0.0691		-0.1257		0.5013	
	[1.02]		[1.12]		[-0.13]		[0.36]		[-0.55]		[1.89]*	
YLD	0.1223		0.1034		0.1874		0.1367		0.1363		0.0138	
	[4.13]***		[3.20]***		[6.30]***		[4.10]***		[3.29]***		[0.28]	
TERM	0.1461		0.1600		0.2566		0.2548		0.1214		-0.0311	
	[2.16]**		[2.18]**		[3.48]***		[3.05]***		[1.20]		[-0.24]	
DIV_{T-1}		-0.2416		-0.2385		-0.2077		-0.1971		-0.2316		-0.1605
		[-4.92]***		[-4.74]***		[-4.56]***		[-4.17]***		[-3.21]***		[-2.10]**
DEF_{T-1}		0.1522		0.2176		-0.0984		0.0271		-0.2006		0.4708
		[0.65]		[0.87]		[-0.58]		[0.15]		[-0.85]		[1.74]*
YLD_{T-1}		0.1320		0.1122		0.1957		0.1460		0.1493		0.0356
		[4.83]***		[3.76]***		[6.79]***		[4.53]***		[3.63]***		[0.73]
$TERM_{T-1}$		0.1516		0.1538		0.2549		0.2404		0.1379		-0.0305
		[2.42]**		[2.24]**		[3.46]***		[2.85]***		[1.33]		[-0.23]
p-value of												
F-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0527	0.0524	0.0510	0.0503	0.0586	0.0587	0.0558	0.0551	0.0408	0.0408	0.0440	0.0436
N	16467	16467	16467	16467	16467	16467	16467	16467	16467	16467	16467	16467

Abnormal returns can also increase up to 0.2% in the five-day window and almost 0.4% in the ten-day and 30-day windows if the term spread increases by 1%. Although some of these variables contain positive signs instead of negative ones, they are statistically significant and economically large. These results indicate that the abnormal returns of special dividend announcements can be predicted and driven by the common macroeconomic risk factors, but the effect varies.

Table 6.16 presents the results of how other business cycle variables, the GDP changes (*GDP*), consumer price index (*cpi*), unemployment rate (*UNEMP*), and inflation rate (*inf*), affect the market reaction to firms initiating special dividends. In all models, *cpi* is consistently significant and positive, but the coefficients are relatively small. If the consumer price index increases by 1%, the abnormal returns of special dividend announcements only increase by 0.01%. In contrast, *inf* is economically significant, but only in the ten-day window and the equal-weighted 30-day window. A 1% increase in the inflation rate can increase abnormal returns up to 0.7% ten days and 0.88% thirty days after the announcements. *UNEMP* is mainly significantly negative in the equal-weighted Market Adjusted Model; there is 0.1% increase in the 30-day equal-weighted market adjusted returns when the unemployment rate decreases by 1%. *GDP* appears to only be significant in the 30-day window and the ten-day one-month lagged forecasting model. The abnormal returns of special dividends will increase by 0.13% ten days and 0.18% thirty days after the announcements if *GDP* decreases by 1%. Although these business cycle variables are not as significant as the macroeconomic risk factors discussed in Table 6.15, the results offer some additional evidence to support the hypothesis that the business cycle can affect the market reaction to special dividend declarations.

6.2.5 Robustness Check

The robustness check for abnormal returns of special dividend announcements between expansions and contractions is shown in Appendix 7A. The returns are calculated in four sub-periods, six industries, and five size quintiles; the event windows consist of one day surrounding special dividends, and one month, two months, and three months after special dividends. According to the results, the excess returns of the announcements are higher in contractions than in expansions in all sub-samples, which is consistent with the findings in the event studies in Table 6.12. Appendix 7B shows the correlation between excess returns of special dividend distributions and the *Expansion* dummy in four different sub-periods. The

Table 6.16 Regression Results between Abnormal Returns of Special Dividends and general Business Cycle Variables for the period 1926 to 2008

This table shows the relationship between abnormal returns of special dividend and general business cycle variables for the period 1926 to 2008. The dependent variable in Panel A is market adjusted abnormal returns (CAR) and the dependent variable in Panel B is market model adjusted abnormal returns for firms announcing special dividends. Both equal-weighted and value-weighted market indexes are employed. (-2, +2), (-1, +9) and (-1, +30) represent event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). *Divamt* is the amount of the special dividend paid per share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to special dividend announcements. *Ln(Price)* is the natural logarithm of stock price one day before special dividend announcements. *GDP* is the change in nominal GDP; *UNEMP* is the unemployment rate; *cpi* is the consumer price index; and *inf* is the inflation rate in the US. All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regression Results between Market Adjusted Cumulative Abnormal Returns and more general Business Cycle Variables for Special Dividends

	(-2,+2)				(-1,+9)				(-1,+30)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
Control Variables												
Intercept	5.1461	5.1039	5.2073	5.2735	6.0845	6.03939	6.4229	6.5285	7.8499	7.7898	9.3546	9.4557
	[6.58]***	[6.44]***	[6.58]***	[6.58]***	[8.00]***	[7.92]***	[8.31]***	[8.42]***	[8.53]***	[8.46]***	[10.06]***	[10.15]***
Divamt	0.3362	0.3368	0.3381	0.3389	0.3249	0.3246	0.3203	0.3195	0.3760	0.3789	0.3652	0.3641
	[4.76]***	[4.77]***	[4.79]***	[4.81]***	[4.64]***	[4.65]***	[4.57]***	[4.58]***	[4.91]***	[4.95]***	[4.70]***	[4.70]***
Ln(Size)	-0.0211	-0.0224	-0.0401	-0.0412	-0.0616	-0.0610	-0.0940	-0.0927	-0.1642	-0.1644	-0.1285	-0.1269
	[-0.32]	[-0.34]	[-0.60]	[-0.61]	[-1.26]	[-1.24]	[-1.96]**	[-1.93]*	[-2.43]**	[-2.43]***	[-1.98]**	[-1.95]*
Ln(Price)	-1.3082	-1.3004	-1.2973	-1.2991	-1.5310	-1.5238	-1.5285	-1.5365	-1.8188	-1.8097	-2.1851	-2.1981
	[-5.29]***	[-5.29]***	[-5.19]***	[-5.22]***	[-7.23]***	[-7.21]***	[-7.11]***	[-7.17]***	[-6.72]***	[-6.69]***	[-7.94]***	[-8.00]***
Business Cycle Variables												
GDP	-0.0663		0.0067		-0.0410		0.0482		-0.0920		-0.0893	
	[-2.50]**		[0.29]		[-1.11]		[1.58]		[-1.66]*		[-1.99]**	
UNEMP	-0.0259		0.0102		-0.0328		0.0361		-0.1238		0.0820	
	[-1.90]*		[0.88]		[-1.71]*		[2.19]**		[-4.62]***		[3.60]***	
cpi	0.0076		0.0073		0.0098		0.0093		0.0120		0.0098	
	[4.46]***		[4.23]***		[6.32]***		[5.99]***		[5.94]***		[4.96]***	
inf	0.0657		0.0825		0.5072		0.3728		0.7872		0.2337	
	[0.69]		[0.88]		[4.25]***		[3.22]***		[5.06]***		[1.56]	
GDP_{T-1}		0.0249		0.0250		-0.0504		-0.0816		0.0061		-0.0997
		[0.67]		[0.66]		[-1.09]		[-1.75]*		[0.86]		[-1.40]
$ENEMP_{T-1}$		-0.0327		0.0052		-0.0394		0.0330		-0.1346		0.0735
		[-2.49]**		[0.46]		[-2.13]**		[2.05]**		[-5.13]***		[3.29]***
cpi_{T-1}		0.0078		0.0071		0.0099		0.0091		0.0119		0.0097
		[4.64]***		[4.26]***		[6.46]***		[5.94]***		[5.93]***		[4.97]***
inf_{T-1}		0.1318		0.0209		0.6950		0.3867		0.8852		0.1951
		[[0.96]		[0.15]		[5.26]***		[2.91]***		[5.49]***		[1.22]
p-value of F-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0524	0.0524	0.0501	0.0501	0.0544	0.0555	0.0530	0.0528	0.0411	0.0418	0.0457	0.0456
N	16123	16123	16123	16123	16123	16123	16123	16123	16123	16123	16123	16123

Panel B: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and more general Business Cycle Variables for Special Dividends

	(-2,+2)				(-1,+9)				(-1,+30)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
Control Variables												
Intercept	4.8666	4.8438	4.9650	5.0128	5.6865	5.6113	6.1378	6.1918	7.2456	7.0971	8.4609	8.4726
	[6.15]***	[6.07]***	[6.20]***	[6.20]***	[7.37]***	[7.26]***	[7.83]***	[7.86]***	[7.38]***	[7.24]***	[8.62]***	[8.63]***
Divamt	0.3199	0.3203	0.3230	0.3234	0.2849	0.2830	0.2913	0.2887	0.2808	0.2803	0.2914	0.2870
	[4.48]***	[4.48]***	[4.52]***	[4.52]***	[4.13]***	[4.11]***	[4.27]***	[4.24]***	[3.49]***	[3.48]***	[3.48]***	[3.45]***
Ln(Size)	0.0041	0.0027	-0.0136	-0.0152	0.0119	0.0127	-0.0299	-0.0295	-0.0229	-0.0230	0.0734	0.0724
	[0.06]	[0.04]	[-0.21]	[-0.23]	[0.24]	[0.26]	[-0.62]	[-0.61]	[-0.32]	[-0.32]	[1.11]	[1.09]
Ln(Price)	-1.3456	-1.3392	-1.3284	-1.3270	-1.7138	-1.7045	-1.6837	-1.6843	-2.2462	-2.2303	-2.6487	-2.6443
	[-5.35]***	[-5.35]***	[-5.23]***	[-5.25]***	[-8.00]***	[-7.98]***	[-7.71]***	[-7.74]***	[-7.69]***	[-7.66]***	[-9.15]***	[-9.15]***
Business Cycle Variables												
GDP	-0.0124		0.0096		-0.0012		0.0335		-0.0262		-0.1089	
	[-0.54]		[0.45]		[-0.04]		[1.11]		[-0.54]		[-2.27]**	
UNEMP	0.0047		0.0056		0.0222		0.0186		0.0059		0.0182	
	[0.37]		[0.46]		[1.26]		[1.11]		[0.24]		[0.73]	
cpi	0.0064		0.0063		0.0082		0.0079		0.0100		0.0045	
	[3.73]***		[3.65]***		[5.30]***		[5.15]***		[4.75]***		[2.17]**	
inf	-0.0208		-0.0593		0.2040		0.0333		0.0416		-0.4741	
	[-0.22]		[-0.63]		[1.75]*		[0.29]		[0.26]		[-2.98]***	
GDP_{T-1}		0.0299		0.0200		-0.0796		-0.1315		0.0037		-0.1777
		[0.81]		[0.56]		[-1.75]*		[-2.97]***		[0.05]		[-2.47]**
$UNEMP_{T-1}$		0.0053		0.0010		0.0204		0.0164		0.0043		0.0094
		[0.04]		[0.09]		[1.19]		[1.00]		[0.18]		[0.38]
cpi_{T-1}		0.0065		0.0063		0.0084		0.0080		0.0104		0.0050
		[3.87]***		[3.72]***		[5.55]***		[5.29]***		[4.96]***		[2.45]**
inf_{T-1}		0.0289		-0.0902		0.4496		0.1552		0.2869		-0.3108
		[0.21]		[-0.65]		[3.36]***		[1.14]		[1.72]*		[-1.80]*
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0494	0.0494	0.0481	0.0482	0.0550	0.0558	0.0536	0.0540	0.0398	0.0400	0.0441	0.0439
N	16118	16118	16118	16118	16118	16118	16118	16118	16118	16118	16118	16118

coefficients of *Expansion* are negative, but they are mainly statistically significant in the equal-weighted market adjusted returns and the value-weighted market model adjusted returns. For the five-day window (-2, +2), *Expansion* is negatively correlated to excess returns from 1926 to 1985, whereas for the one-month window (-1, +30), it is negative from 1926 to 2008.

Appendix 7C indicates that the strongest effect on the relationship between macroeconomic risk factors and abnormal returns of special dividend announcements is in the sub-period 1941 to 1960. The four variables of *DIV*, *DEF*, *TERM*, and *YLD* are statistically significant in all models. The coefficients of *YLD* and *TERM* are negative, except for *YLD* in the five-day window and *TERM* in the one-month window for the period 1961 to 1985. *DIV* is also statistically negative in 1941 to 1960, which is the same as in the total sample, but it is positive in 1926 to 1940. In contrast, *DEF* is negative from 1926 to 1940, but positive from 1986 to 2008. In Appendix 7D, the robustness results for the relationship between other business cycle variables or economic indicators and the market reaction to special dividend distributions is not as significant as the results in Appendix 7C. However, the positive effects of *cpi* on returns is confirmed in the period 1986 to 2008. For the one-month window from 1941 to 2008 using the equal-weighted Market Adjusted Model, *inf* is also statistically positive. The unemployment rate (*UNEMP*) appears to be negatively correlated to the one-month abnormal returns in 1961 to 2008, and *GDP* is relatively significant between 1961 and 1985. These findings show a moderate robustness result that business cycle variations affect the excess returns of special dividend announcements.

6.3 Summary

In summary, this chapter examines whether the likelihood and abnormal returns of stock split and special dividend announcements can be driven by the business cycle. In section 6.1, firms are more likely to split shares during economic upturns presumably because they have a greater chance to experience earnings increases. The likelihood of stock split announcements is positively correlated to the *Expansion* dummy, three-month T-bill yield (*YLD*), term spread (*TERM*), inflation rate (*inf*), and GDP changes (*GDP*), but negatively correlated to the market dividend yield (*DIV*) and default spread (*DEF*). Of interest, the abnormal returns of stock splits are only larger in expansions rather than contractions in the event windows that are less than a week, but the market reaction to stock splits is stronger in economic downturns one week and thereafter following the announcements. This finding indicates that firms having enough earnings and confidence to split shares in recessions are better performers. An increase in the consumer price index (*cpi*), *inf*, *DEF*, and *YLD* can increase excess returns of stock splits, whereas an increase in the unemployment rate (*UNEMP*) and *DIV* can decrease the returns of stock splits. These results show that the business cycle can explain firms' decisions to split shares and their associated returns in a more positive way, which is consistent with the Neoclassical Hypothesis.

Regarding special dividend distributions analyzed in Section 6.2, the likelihood of the announcements is statistically and positively correlated to the *Expansion* dummy only in the period 1926 to 1940. However, it is negatively correlated to the business cycle variables of *YLD*, *TERM*, *GDP*, *UNEMP*, and *cpi*, and positively correlated to *DIV* and *inf*. The short-term and long-term excess returns of special dividend announcements are consistently higher in contractions than in expansions. Also, the short-run returns are negatively correlated to the *Expansion* dummy and *DIV*, but positively correlated to *YLD*, *TERM*, *cpi*, and *inf*. These results provide strong evidence that the probability of firms initiating special dividends and associated returns can be driven by the business cycle factors, although there is an ambivalent relationship effect. Firms can reduce agency costs and enhance shareholders' loyalty by distributing cash back to investors during recessions, and they are usually better performers than their counterparts in expansions. The findings support the Free Cash Flow Theory (Jensen, 1986; Lie, 2000) and the Neoclassical Hypothesis, which argues that special dividends and stock splits are announced based on firms' cash flow levels and earnings performance.

CHAPTER SEVEN – RESULTS AND DISCUSSIONS OF MONTHLY PATTERNS

This chapter provides empirical evidence on whether the aggregate patterns and abnormal returns of stock split and special dividend announcements can be explained by the seasonal patterns of the January Effect and Halloween Effect. It first examines whether there is a January Effect or Halloween Effect in the likelihood and abnormal returns of stock splits, followed by an examination of the January Effect and Halloween Effect in special dividend announcements. The analysis begins with a count of how many splits or special dividends there are in each month to see if the number of these announcements is particularly high in January or in the Halloween period of November to April. Next, multivariate logistic models are run to examine whether the tendency of stock splits or special dividend announcements is statistically positive in relation to the *January* dummy or *Halloween* dummy. Event studies are then applied to calculate whether the returns are larger in January or in the Halloween period compared to other months of a year. This is followed by a multivariate regression analysis to further investigate whether there is a statistical and positive relationship between the returns of stock splits or special dividends and the dummy variables of the January or Halloween Effects. Finally, all the results are reassessed in different sub-periods, industry groups, and size quintiles as a robustness check.

7.1 Stock Split Announcements

7.1.1 The January Effect

7.1.1.1 The Frequency of Stock Splits in Each Month

The last two chapters have shown how stock splits and special dividends are partially driven by market conditions and business cycles. This chapter examines the patterns of these announcements in a different way. It shows whether and how the monthly patterns of January Effect and Halloween Effect affect the propensity of firms announcing splits and special dividends. The literature shows a January Effect (Dyl & Maberly, 1992; Friday & Peterson, 1997; Jones, Pearce, & Wilson, 1987; Roll, 1983; Rozeff & Kinney, 1976) and a Halloween Effect (Bouman & Jacobsen, 2002) in stock returns. To investigate if these effects translate into the stock split area, an analysis is made of the frequency of stock splits per month, the likelihood of stock splits per month, and the abnormal returns of stock splits per day. The number of stock splits each month is shown in Table 7.1 and Figure 7.1. The results indicate the number of splits per month over the period 1926 to 2008 ranges from 1,164 to 1,935. May is the month with the most frequent number of stock splits and September is the month with the least. The month of January lies mid-range in terms of frequency. No month stands out as having significantly high frequency. Sub-period analysis over the periods 1926 to 1960, 1961 to 1975, 1976 to 1995, and 1996 to 2008 provides no further insight into a monthly frequency effect existing within a particular month.

Table 7.1 Number of Stock Splits in each month between 1926 and 2008

This table shows the number of stock split announcements in each month from 1926 to 2008. Stock splits are identified from the Centre of Research in Security Prices (CRSP) files, using distribution codes 5523, 5543 and 5552 when the factor to adjust price is greater than 0, and code 5533 when distribution is greater than or equal to 25 percent. These numbers are also counted in four sub-periods to avoid noise.

Years	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1926-1960	67	42	168	92	53	149	69	45	133	77	33	167	1095
1961-1975	267	298	207	186	205	155	133	110	156	176	210	183	2286
1976-1995	761	902	713	1089	1103	738	723	766	618	742	691	636	9482
1996-2008	445	380	361	528	574	267	423	300	257	290	307	271	4403
Total	1540	1622	1449	1895	1935	1309	1348	1221	1164	1285	1241	1257	17266

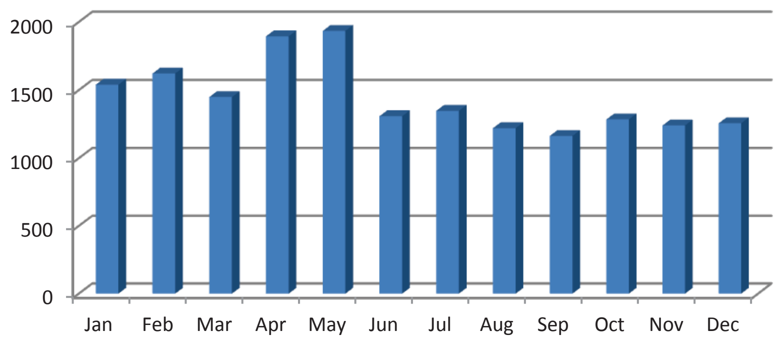

Figure 7.1 Numbers of Stock Splits in each month from 1926 to 2008

These findings are similar to the results of the t-test and non-parameter, Wilcoxon z test in Table 7.2. The *p_value* of these two tests for other months are not significant, except for April, May, and September. On average, there are 6 to 7 more stock split announcements in April or May compared to other months of a year, and 4 less in September in the period 1926 to 2008. The frequency of stock splits is about 1.33 higher in January than in other months of a year, which is not statistically or economically different. Hence, a January Effect is not observed in these simple comparison tests for stock split announcements.

7.1.1.2 The Likelihood of Stock Splits with the January Dummy

There is a possibility that an analysis of the raw frequency of stock splits per month is too crude a measure because of a number of factors, such as the varying number of firms in existence over time. To examine the likelihood that the number of splits in a particular month is higher than the normal, the logistic regression is employed. Table 7.3 reports the results of this analysis for the month of January and shows that January has significantly more stock splits than other months in the full sample period 1926 to 2008 and in the sub-sample periods 1961 to

Table 7.2 The Frequency of Stock Split Announcements in each month between 1926 and 2008 – The t-test and non-parameter, Wilcoxon z test

This table presents the results of the t-test and non-parameter, Wilcoxon z test. On average, *January* represents the number of stock splits in January; *February* represents the number of splits in February; *March* represents the number of stock splits in March; *April* represents the number of stock splits in April; *May* represents the number of stock splits in May; *June* represents the number of stock splits in June; *July* represents the number of stock splits in July; *August* represents the number of stock splits in August; *September* represents the number of stock splits in September; *October* represents the number of stock splits in October; *November* represents the number of stock splits in November; *December* represents the number of stock splits in December; and *Other Months* is the number of stock splits in the rest of month from 1926 to 2008.

Mean			The t-test	non-parameter Test
January	Other Months	Difference	P_Value	P_Value
18.55	17.22	1.33	0.5683	0.3659
February	Other Months	Difference	P_Value	P_Value
19.54	17.13	2.41	0.3408	0.4493
March	Other Months	Difference	P_Value	P_Value
17.46	17.32	0.14	0.9497	0.1592
April	Other Months	Difference	P_Value	P_Value
22.83	16.84	5.99	0.0592	0.0817
May	Other Months	Difference	P_Value	P_Value
23.31	16.79	6.52	0.0466	0.1981
June	Other Months	Difference	P_Value	P_Value
15.77	17.48	-1.71	0.4091	0.4672
July	Other Months	Difference	P_Value	P_Value
16.24	17.43	-1.19	0.5810	0.3031
August	Other Months	Difference	P_Value	P_Value
14.71	17.57	-2.86	0.1798	0.0596
September	Other Months	Difference	P_Value	P_Value
14.02	17.64	-3.62	0.0441	0.3714
October	Other Months	Difference	P_Value	P_Value
15.48	17.50	-2.02	0.3471	0.3588
November	Other Months	Difference	P_Value	P_Value
14.95	17.55	-2.60	0.2656	0.1183
December	Other Months	Difference	P_Value	P_Value
15.14	17.53	-2.39	0.1854	0.4384

1975 and 1996 to 2008. The probability of firms splitting shares is 7.26%[34] (*p_value:* 0.0098) higher in January than for other months of a year from 1926 to 2008. This percentage increases to 38.06%[35] in the 1961 to 1975 sub-period and 22.89%[36] from 1996 to 2008. The results are generally in agreement with the hypothesis that there is a January Effect in the likelihood of occurrence of stock split announcements, although the coefficient of *January* is statistically negative in the dormant period of splits (1926 to 1960), which may because the January Effect has not been realised in those earlier years.

Table 7.3 Logistic Regressions for the Likelihood of Stock Splits from 1926 to 2008

This table shows the likelihood of stock split announcements related to the *January* dummy from 1926 to 2008. The dependent variable is a binary variable that contains a value of one if a firm announces a stock split in the month; otherwise, zero. *Ln(Size)* is the natural logarithm of monthly market capitalization. *Ln(Price)* is the natural logarithm of monthly stock price. *January* is a dummy variable that takes a value of one for stock splits announced in January and a value of zero if announcements are in other months of a year. The logistic regressions run on the full sample period and on four sub-periods for a robustness check to avoid noise. *p-values* are in parentheses under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Full Sample	Sub-periods			
Variables	1926-2008	1926-1960	1961-1975	1976-1995	1996-2008
January	0.0701	-0.3509	0.3225	-0.0243	0.2061
	(0.0098)***	(0.0059)***	(<.0001)***	(0.5290)	(<.0001)***
Ln(Size)	-0.0641	0.0981	-0.4503	-0.2436	-0.0265
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(0.0031)***
Ln(Price)	1.0778	1.0717	2.0620	1.4775	1.0487
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Intercept	-7.7873	-10.6197	-7.0826	-6.3822	-8.4562
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***

34 $e^{\beta} - 1 = e^{(0.0701)} - 1 = 0.0726$

35 $e^{\beta} - 1 = e^{(0.3225)} - 1 = 0.3806$

36 $e^{\beta} - 1 = e^{(0.2061)} - 1 = 0.2289$

7.1.1.3 Abnormal Returns of Stock Splits in Each Month

To investigate if firms make greater abnormal returns when they announce stock splits in January, event study methodologies are employed to calculate and compare the returns of the announcements in each month. Table 7.4 shows that the highest short-term excess returns are in January for the event windows of one day surrounding stock splits and are around 3% on average using the value-weighted Market Model between 1926 and 2008. However, the highest returns are mostly in November in the event windows of one week and thereafter the announcements. This finding is consistent with the results using the Mean Adjusted Model in Appendix 8A and the value-weighted Market Adjusted Model in Appendix 8C. With the equal-weighted models in Appendices 8B and 8D, abnormal returns are the largest in June one day within split announcements, and in November for the windows that are less than one month. Following this, the largest excess returns are in September after two months, August after three months, and April after six months. These figures show that the January Effect only exists in the value-weighted abnormal returns one day surrounding stock split announcements.

In order to see whether there is any long-run price drift in a particular month, the long-term post-announcement abnormal returns for stock splits in each month from 1926 to 2008 are computed in Table 7.5. Using the value-weighted Fama-French three-factor (1993) and Carhart four-factor (1997) Calendar Time Portfolio methods, January has the highest two-year and three-year long-run abnormal returns compared to other months of a year. The largest one-year excess returns are mainly in September, and the highest five-year abnormal returns are mostly in July and August. The returns are nearly 2% one year after, around 1.5% two years after, 1.2% three years after and 0.8% five years after split announcements. These results are almost the same as using the equal-weighted Calendar Time Portfolio models as shown in Appendix 8E. The findings provide evidence that the January Effect slightly exists in long-run excess returns of stock split announcements for the two-year and three-year event windows, but the abnormal returns and difference in returns between months are economically small.

7.1.1.4 Multivariate Regression Results of Abnormal Returns on the January Dummy

In order to see if the abnormal returns of stock splits are statistically higher in January than in other months of a year, this section employs multivariate regression analysis to examine the relationship between the returns and the dummy variable of *January*. The variable contains the value of one for stock splits announced in January, otherwise zero. In Table 7.6, the short-run value-weighted abnormal returns of stock splits are positively correlated to the *January* dummy. This finding is the same as the event study results discussed in the last section. On average, the

Table 7.4 Value-Weighted Market Model Adjusted Returns for Stock Split Announcements in Each Month for the period 1926 to 2008

This table calculates excess returns for the firms announcing stock splits in each month from 1926 to 2008 using the Value-weighted Market Model, $AR_{it}=R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$. AR_{it} is abnormal returns for security i at time t, R_{it} is the actual returns for security i at time t, R_{mt} is proxied by the CRSP value-weighted market index. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the Market Model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. Short term event windows are examined one day surrounding an announcement date, one week after an announcement date, 10 days, 15 days, three weeks, one month, two months, three months and six months after an announcement date (0 represents the actual announcement day). All returns are in percentage with *t*-statistics underneath. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Stock splits												
Event window results												
(-30,-2)	2.96	4.82	4.48	3.08	3.51	3.14	2.76	1.70	2.03	2.12	1.59	2.77
	[6.30]***	[10.55]***	[9.86]***	[7.73]***	[9.57]***	[6.64]***	[6.49]***	[4.82]***	[3.97]***	[5.65]***	[3.50]***	[7.99]***
(-1,+1)	3.22	2.83	2.41	2.43	2.82	2.82	2.57	2.43	2.59	2.70	2.61	2.30
	[19.45]***	[20.38]***	[16.18]***	[17.90]***	[21.10]***	[9.87]***	[16.05]***	[17.00]***	[15.66]***	[16.15]***	[15.08]***	[13.21]***
(-1,0)	1.91	1.72	1.47	1.49	1.79	1.59	1.53	1.38	1.51	1.76	1.56	1.37
	[15.50]***	[15.50]***	[12.41]***	[14.05]***	[16.87]***	[12.70]***	[14.44]***	[12.90]***	[11.66]***	[13.08]***	[12.03]***	[9.14]***
(0,+1)	2.86	2.49	2.30	2.18	2.53	2.59	2.39	2.38	2.38	2.33	2.49	2.15
	[19.44]***	[20.31]***	[17.19]***	[18.86]***	[21.32]***	[9.48]***	[15.97]***	[18.01]***	[14.85]***	[15.61]***	[15.70]***	[13.70]***
(1.+7)	1.40	1.38	1.05	1.30	1.17	1.42	0.85	1.40	1.17	0.77	1.77	1.39
	[7.87]***	[7.88]***	[7.18]***	[8.30]***	[9.02]***	[5.47]***	[6.06]***	[7.68]***	[5.99]***	[4.65]***	[8.27]***	[7.10]***
(1,+10)	1.04	1.25	0.58	0.94	0.93	1.12	0.19	1.22	0.96	0.54	1.66	1.33
	[5.84]***	[6.54]***	[5.68]***	[5.31]***	[6.59]***	[4.52]***	[3.27]***	[6.13]***	[4.64]***	[3.12]***	[7.08]***	[5.75]***
(1,+15)	0.58	0.65	-0.16	0.16	0.52	0.61	-0.12	0.63	0.38	-0.14	1.20	0.90
	[3.46]***	[3.50]***	[3.35]***	[1.27]	[4.24]***	[2.86]***	[1.57]	[3.28]***	[2.70]***	[0.74]	[4.50]***	[3.34]***
(1,+21)	0.56	0.14	-0.55	0.07	-0.06	0.07	-0.93	0.14	-0.41	-0.76	0.92	0.61
	[2.76]***	[2.04]**	[2.74]***	[0.33]	[1.44]	[1.43]	[-1.12]	[1.60]	[0.29]	[-0.51]	[3.15]***	[2.15]**
After												
1month	0.52	-0.65	-1.32	-0.61	-0.49	-1.19	-1.34	-0.15	-1.20	-1.13	0.74	0.55
	[2.43]**	[0.18]	[1.81]*	[-0.72]	[0.51]	[-0.54]	[-1.90]*	[1.15]	[-1.46]	[-0.57]	[2.32]**	[1.58]
2months	-3.97	-3.63	-4.68	-3.20	-5.37	-7.08	-4.62	-4.63	-4.77	-2.63	-1.58	-2.24
	[-2.81]***	[-4.14]***	[-1.54]	[-5.07]***	[-7.97]***	[-8.32]***	[-5.67]***	[-5.11]***	[-4.06]***	[-1.90]*	[-0.54]	[-2.08]**
3months	-8.49	-7.23	-9.50	-7.87	-10.16	-12.34	-9.24	-8.99	-7.31	-6.24	-6.00	-6.11
	[-7.50]***	[-6.80]***	[-4.41]***	[-10.92]***	[-13.36]**	[-12.30]***	[-9.23]***	[-8.27]***	[-5.53]***	[-4.72]***	[-4.14]***	[-4.81]***
6months	-23.86	-21.18	-26.65	-18.29	-23.27	-23.95	-19.85	-19.88	-19.64	-19.59	-21.44	-20.60
	[15.93]***	[-15.46]***	[-13.15]***	[-18.31]***	[-18.56]***	[-14.64]***	[-13.25]***	[-12.71]***	[-10.68]***	[-11.84]***	[-12.24]***	[-12.00]***

Table 7.5 Long-Term Post-announcement Abnormal Returns Using Monthly Fama-French (1993) and Carhart (1997) Calendar Time Portfolio Regressions for Stock Split Announcements in Each Month from 1926 to 2008

This table calculates long term abnormal returns for the one-, two-, three-, and five-year post-announcement horizons, for the firms announcing stock splits in each month during the period 1926 to 2008. Panel A is value-weighted Three-factor Calendar Portfolio Abnormal Return and Panel B is value-weighted four-factor Calendar Portfolio Abnormal Return. Monthly rebalanced calendar time portfolio returns are calculated each month from all firms experience a stock split in the previous 12, 24, 36, or 60 calendar months. Monthly excess returns to calendar time portfolios are: $CTAR_t=R_{pt}-E(R_{pt})$, where R_{pt} is monthly return on portfolio of event firms at time t, and $E(R_{pt})$ is expected return on event portfolio at time t. The expected return on event portfolio, for each sample firm in month t, is measured by Fama-French (1993) three-factor model and Carhart (1997) four-factor model:

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + m_i PR1YR_t + \varepsilon_{it}$$

R_{it} is firm i's monthly return, R_{ft} is the one-month T-bills return, and R_{mt} is the market return on CRSP value-weighted portfolio of all NYSE, AMEX, and Nasdaq stocks. SMB_t is the difference in returns between portfolios of small and big stocks. HML_t is the difference in returns between portfolios of high and low book-to-market ratio stocks. $PR1YR_t$ is defined as in Carhart (1997) as an equally weighted portfolio return of stocks with highest returns less an equally weighted portfolio return of stocks with lowest returns in months *t-12* to *t-2*. Ordinary, Weighted Least Squares (White, 1980) and Generalized Method of Moment (GMM) are estimated. All abnormal returns are in percentage and *t*-statistics of intercepts are shown in brackets under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Value-weighted, three-factor Calendar Portfolio Abnormal Returns

		Intercept of the Fama-French Regression, three-factor without momentum (Fama-French, 1993)											
Portfolio post period	Model Estimated	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Horizon = 1 year	OLS	1.89	1.50	1.67	1.53	1.32	1.62	1.76	1.85	1.99	1.89	1.72	1.76
		[12.75]***	[10.60]***	[13.35]***	[12.61]***	[8.65]***	[11.89]***	[17.05]***	[8.90]***	[15.41]***	[13.05]***	[12.25]***	[15.75]***
	Hetero t	[12.10]***	[10.20]***	[13.54]***	[13.42]***	[8.61]***	[12.16]***	[17.19]***	[8.66]***	[15.24]***	[13.93]***	[12.03]***	[15.76]***
	WLS	2.41	2.08	2.11	1.91	1.96	2.13	2.28	2.15	2.22	2.29	2.28	2.07
		[25.90]***	[25.17]***	[21.27]***	[25.27]***	[22.11]***	[23.92]***	[27.31]***	[22.59]***	[22.91]***	[25.94]***	[24.28]***	[22.57]***
	GMM	1.89	1.50	1.67	1.53	1.32	1.62	1.76	1.85	1.99	1.89	1.72	1.76
		[11.95]***	[9.69]***	[11.68]***	[12.53]***	[7.37]***	[11.08]***	[15.08]***	[9.10]***	[13.93]***	[13.15]***	[12.00]***	[14.00]***
Horizon = 2 years	OLS	1.45	0.78	1.21	1.07	0.89	0.93	1.16	1.17	1.24	1.34	1.05	1.18
		[10.54]***	[5.50]***	[11.09]***	[8.26]***	[3.81]***	[7.84]***	[11.26]***	[6.33]***	[11.29]***	[9.95]***	[8.37]***	[12.31]***
	Hetero t	[10.11]***	[5.60]***	[12.13]***	[7.74]***	[5.33]***	[7.78]***	[11.08]***	[6.21]***	[11.74]***	[11.40]***	[8.39]***	[11.93]***
	WLS	1.58	1.32	1.35	1.23	1.21	1.34	1.49	1.41	1.41	1.48	1.46	1.31
		[20.95]***	[18.95]***	[17.94]***	[18.64]***	[15.29]***	[18.22]***	[22.29]***	[18.78]***	[18.57]***	[21.13]***	[20.33]***	[17.97]***
	GMM	1.45	0.78	1.21	1.07	0.89	0.93	1.16	1.17	1.24	1.34	1.05	1.18
		[10.04]***	[4.89]***	[11.65]***	[7.65]***	[5.14]***	[7.64]***	[10.83]***	[6.41]***	[10.88]***	[11.32]***	[8.69]***	[11.63]***
Horizon = 3 years	OLS	1.12	0.75	0.86	0.64	0.70	0.71	0.93	0.86	0.88	0.99	0.75	0.90
		[8.34]***	[4.72]***	[8.85]***	[5.61]***	[2.98]***	[6.11]***	[9.80]***	[6.00]***	[8.39]***	[10.45]***	[6.11]***	[9.22]***
	Hetero t	[8.33]***	[5.35]***	[9.07]***	[6.62]***	[4.57]***	[6.81]***	[10.27]***	[6.04]***	[8.94]***	[10.93]***	[6.15]***	[9.77]***
	WLS	1.16	0.96	0.97	0.85	0.88	0.97	1.16	1.04	1.03	1.09	1.04	0.93
		[17.14]***	[15.39]***	[15.34]***	[14.76]***	[12.20]***	[15.41]***	[18.49]***	[15.46]***	[15.14]***	[17.26]***	[16.20]***	[13.52]***
	GMM	1.12	0.75	0.86	0.64	0.70	0.71	0.93	0.86	0.88	0.99	0.75	0.90
		[8.42]***	[5.82]***	[9.12]***	[6.29]***	[4.36]***	[6.36]***	[10.13]***	[6.11]***	[8.59]***	[10.66]***	[6.13]***	[9.65]***
Horizon = 5 years	OLS	0.71	0.45	0.61	0.37	0.56	0.36	0.66	0.75	0.72	0.68	0.57	0.62
		[7.00]***	[3.65]***	[7.23]***	[4.20]***	[4.21]***	[4.25]***	[7.58]***	[6.03]***	[9.12]***	[8.36]***	[4.63]***	[7.58]***
	Hetero t	[7.40]***	[4.13]***	[7.86]***	[4.86]***	[4.70]***	[4.54]***	[8.52]***	[6.80]***	[9.72]***	[8.95]***	[4.96]***	[9.11]***
	WLS	0.80	0.61	0.64	0.55	0.60	0.59	0.82	0.73	0.71	0.73	0.65	0.57
		[13.54]***	[11.55]***	[11.84]***	[10.26]***	[10.17]***	[10.47]***	[15.28]***	[12.19]***	[12.03]***	[12.96]***	[11.51]***	[9.19]***
	GMM	0.71	0.45	0.61	0.37	0.56	0.36	0.66	0.75	0.72	0.68	0.57	0.62
		[7.52]***	[4.51]***	[7.42]***	[4.96]***	[4.76]***	[4.54]***	[8.98]***	[6.71]***	[9.36]***	[8.35]***	[4.84]***	[8.12]***

Panel B: Value-weighted, four-factor Calendar Portfolio Abnormal Returns

Portfolio post period	Model Estimated	Intercept of the Fama-French-Carhart Regression, four-factor with momentum (Carhart, 1997)											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Horizon = 1 year	OLS	1.71	1.41	1.45	1.43	1.29	1.51	1.65	1.61	1.78	1.60	1.57	1.52
		[11.15]***	[9.57]***	[11.49]***	[11.48]***	[8.11]***	[10.74]***	[15.67]***	[7.55]***	[13.70]***	[11.11]***	[11.23]***	[13.47]***
	Hetero t	[9.85]***	[8.51]***	[10.52]***	[9.65]***	[7.96]***	[10.05]***	[15.45]***	[7.38]***	[13.98]***	[11.38]***	[10.40]***	[13.16]***
	WLS	2.28	1.93	1.93	1.80	1.86	1.99	2.15	1.98	1.97	2.08	2.00	1.89
		[24.19]***	[23.17]***	[19.39]***	[23.49]***	[20.55]***	[21.97]***	[25.48]***	[20.97]***	[20.59]***	[23.79]***	[22.28]***	[20.33]***
	GMM	1.71	1.41	1.45	1.43	1.29	1.51	1.65	1.61	1.78	1.60	1.57	1.52
		[9.72]***	[8.32]***	[9.44]***	[9.35]***	[6.87]***	[9.17]***	[13.67]***	[8.26]***	[12.69]***	[10.94]***	[10.66]***	[12.45]***
Horizon = 2 years	OLS	1.37	0.95	1.19	0.98	0.90	0.97	1.15	1.10	1.14	1.22	0.99	1.07
		[9.61]***	[6.56]***	[10.57]***	[7.33]***	[3.70]***	[7.90]***	[10.77]***	[5.78]***	[10.15]***	[8.81]***	[7.82]***	[10.86]***
	Hetero t	[8.59]***	[6.06]***	[9.25]***	[6.99]***	[4.49]***	[7.43]***	[10.69]***	[5.60]***	[10.40]***	[9.25]***	[7.64]***	[9.10]***
	WLS	1.62	1.32	1.33	1.25	1.25	1.36	1.52	1.35	1.31	1.40	1.38	1.33
		[20.95]***	[18.26]***	[17.08]***	[18.30]***	[15.33]***	[17.82]***	[22.04]***	[17.60]***	[16.86]***	[19.48]***	[18.79]***	[17.54]***
	GMM	1.37	0.95	1.19	0.98	0.90	0.97	1.15	1.10	1.14	1.22	0.99	1.07
		[8.52]***	[5.80]***	[9.04]***	[6.92]***	[4.44]***	[7.00]***	[10.24]***	[6.12]***	[10.14]***	[9.93]***	[7.78]***	[8.37]***
Horizon = 3 years	OLS	1.22	0.87	0.94	0.73	0.68	0.86	1.05	0.90	0.90	0.92	0.76	0.82
		[8.72]***	[5.31]***	[9.44]***	[6.26]***	[2.80]***	[7.25]***	[10.86]***	[6.12]***	[8.41]***	[9.44]***	[6.14]***	[8.13]***
	Hetero t	[8.06]***	[5.67]***	[9.06]***	[6.59]***	[3.44]***	[7.15]***	[10.83]***	[6.05]***	[8.55]***	[9.72]***	[5.94]***	[7.36]***
	WLS	1.28	1.03	1.03	0.92	0.97	1.02	1.28	1.10	1.04	1.09	1.05	1.04
		[18.93]***	[16.08]***	[15.87]***	[15.68]***	[13.27]***	[15.66]***	[20.36]***	[15.84]***	[14.71]***	[16.67]***	[15.91]***	[14.86]***
	GMM	1.22	0.87	0.94	0.73	0.68	0.86	1.05	0.90	0.90	0.92	0.76	0.82
		[7.97]***	[6.38]***	[9.45]***	[6.68]***	[3.32]***	[6.56]***	[10.38]***	[6.17]***	[8.51]***	[9.84]***	[5.96]***	[7.20]***
Horizon = 5 years	OLS	0.75	0.56	0.71	0.49	0.60	0.43	0.76	0.76	0.74	0.73	0.72	0.63
		[7.16]***	[4.44]***	[8.41]***	[5.33]***	[4.33]***	[4.85]***	[8.57]***	[5.90]***	[9.28]***	[8.72]***	[5.80]***	[7.54]***
	Hetero t	[6.51]***	[4.68]***	[8.31]***	[5.84]***	[4.39]***	[5.00]***	[8.73]***	[6.76]***	[9.21]***	[9.25]***	[6.01]***	[7.27]***
	WLS	0.93	0.70	0.74	0.65	0.70	0.67	0.94	0.80	0.77	0.81	0.71	0.70
		[16.03]***	[13.33]***	[13.57]***	[12.06]***	[11.92]***	[11.70]***	[17.77]***	[13.26]***	[12.67]***	[14.12]***	[12.33]***	[11.20]***
	GMM	0.75	0.56	0.71	0.49	0.60	0.43	0.76	0.76	0.74	0.73	0.72	0.63
		[6.50]***	[5.01]***	[8.29]***	[5.84]***	[4.61]***	[4.90]***	[8.70]***	[6.82]***	[9.30]***	[8.68]***	[5.87]***	[7.11]***

Table 7.6 Regression Results between Abnormal Returns of Stock Splits and the January Dummy for the period 1926 to 2008

This table shows the relationship between abnormal returns of stock splits and the *January* dummy variable for the period 1926 to 2008. The dependent variable in Panel A is market adjusted abnormal returns (CAR) and the dependent variable in Panel B is market model adjusted abnormal returns for firms announcing stock splits. EW and VW stand for equal-weighted market index and value-weighted market index, respectively. (-1, +1), (-2, +2), (-1, 0), (0, +1), (-1, +9) and (-1, +30) represent event windows (in days) relative to stock split announcements (0 represents the actual announcement day). *SplFac* is the split ratio obtained from CRSP and defined as the number of additional shares per existing share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to stock split announcements. *Ln(Price)* is the natural logarithm of stock price one day before stock split announcements. *January* is a dummy variable that takes a value of one for stock splits announced in January and a value of zero if an announcement is in other months of a year. All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regression Results between Market Adjusted Cumulative Abnormal Returns and January Dummy for Stock Splits												
Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	8.9122	8.9938	12.5627	12.6778	5.1137	5.1829	8.0338	8.0712	15.6033	15.8888	18.8709	20.0429
	[19.20]***	[19.28]***	[22.39]***	[22.28]***	[16.13]***	[16.07]***	[19.10]***	[19.24]***	[22.33]***	[21.85]***	[16.04]***	[15.89]***
January	0.3634	0.7615	0.1396	0.8232	0.0975	0.3773	0.3735	0.6273	-0.2610	0.7971	0.4600	1.9555
	[1.55]	[2.98]***	[0.53]	[2.79]***	[0.57]	[2.01]**	[1.82]*	[2.86]***	[-0.85]	[2.26]**	[0.73]	[2.53]**
SplFac	1.0695	1.0547	1.2537	1.2474	0.4278	0.4158	1.0355	1.0283	1.6234	1.6136	2.4570	2.3867
	[4.56]***	[4.53]***	[4.69]***	[4.74]***	[3.97]***	[3.84]***	[4.67]***	[4.71]***	[4.75]***	[4.77]***	[4.87]***	[4.96]***
Ln(Size)	-0.0975	-0.0937	-0.1932	-0.1812	-0.0709	-0.0849	-0.0461	-0.0407	-0.2509	-0.2356	-0.2117	-0.1536
	[-2.35]**	[-2.27]**	[-3.93]***	[-3.69]***	[-2.48]**	[-2.63]***	[-1.24]	[-1.10]	[-4.20]***	[-3.92]***	[-2.26]**	[-1.59]
Ln(Price)	-1.8617	-1.8677	-2.4238	-2.4570	-0.8842	-0.8727	-1.8765	-1.8850	-3.1827	-3.2255	-4.3163	-4.5428
	[-9.81]***	[-9.80]***	[-11.34]***	[-11.41]***	[-8.16]***	[-7.97]***	[-10.28]***	[-10.35]***	[-12.51]***	[-12.48]***	[-10.96]***	[-11.15]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0462	0.0462	0.059	0.0589	0.0196	0.0196	0.0523	0.0521	0.0639	0.0628	0.0409	0.0418
N	16711	16711	16711	16711	16711	16711	16711	16711	16711	16711	16711	16711

Panel B: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and January Dummy for Stock Splits												
Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	8.7939	8.6551	12.3870	12.1144	4.9848	4.9169	8.0247	7.9134	15.1549	14.7225	16.2905	16.4659
	[19.81]***	[19.27]***	[22.75]***	[21.87]***	[16.40]***	[15.79]***	[19.72]***	[19.36]***	[21.61]***	[20.67]***	[13.94]***	[12.83]***
January	0.2445	0.7748	-0.0871	0.8638	0.0318	0.4171	0.2973	0.6280	-0.6652	0.8787	-0.7814	1.8663
	[1.10]	[3.06]***	[-0.34]	[2.92]***	[0.20]	[2.25]**	[1.50]	[2.89]***	[-2.07]**	[2.51]**	[-1.36]	[2.70]***
SplFac	1.0598	1.0502	1.2668	1.2554	0.4305	0.4287	1.0162	1.0112	1.5412	1.5263	2.1654	2.1456
	[4.72]***	[4.69]***	[4.89]***	[4.88]***	[4.23]***	[4.19]***	[4.77]***	[4.76]***	[4.96]***	[4.96]***	[5.10]***	[5.17]***
Ln(Size)	-0.0946	-0.0902	-0.1908	-0.1813	-0.0705	-0.0715	-0.0415	-0.0380	-0.2098	-0.2196	-0.0775	-0.1174
	[-2.39]**	[-2.30]**	[-4.08]***	[-3.91]***	[-2.64]***	[-2.67]***	[-1.15]	[-1.06]	[-3.59]***	[-3.86]***	[-0.79]	[-1.25]
Ln(Price)	-1.9459	-1.9255	-2.5738	-2.5417	-0.9269	-0.9126	-1.9544	-1.9365	-3.5410	-3.4283	-4.9941	-5.0464
	[-10.43]***	[-10.27]***	[-12.10]***	[-11.93]***	[-8.67]***	[-8.50]***	[-10.77]***	[-10.67]***	[-13.68]***	[-13.30]***	[-12.46]***	[-11.70]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0499	0.0489	0.0643	0.0625	0.0217	0.0214	0.0558	0.0547	0.0681	0.065	0.0389	0.0417
N	16705	16705	16705	16705	16705	16705	16705	16705	16705	16705	16705	16705

excess returns are 0.8%[37] higher within two days if firms split shares in January compared to the other months of a year. The abnormal returns are also higher in January by 0.63%[38] one day after the announcements and 0.84%[39] ten days after the announcements. In addition, the coefficients of *January* in the 30-day window are statistically significant and economically large, although *January* is not significant in most of the equal-weighted abnormal returns. These findings strongly support that the existence of the January Effect in the short-term excess returns of stock splits with the value-weighted market index.

7.1.1.5 Robustness Check

The robustness results show that the January Effect remains in the short-term abnormal returns of stock split announcements using the value-weighted market index in most sub-periods, industries, and size quintiles as illustrated in Appendix 8F. Abnormal returns are also higher in January than in the other months of a year (February-December) in the event window of one day within split announcements in most sub-samples. However, the equal-weighted abnormal returns are generally lower in January compared to February-December (Feb-Dec), especially for the sub-period 1961 to 1975. In addition, the firms in the first quintile usually have higher excess returns in January, whereas the companies in the third quintile have larger returns in Feb-Dec. Likewise, the coefficients of *January* are statistically positive in the value-weighted excess returns after 1960, but negative in the equal-weighted abnormal returns for the sub-periods 1961 to 1995 in the multivariate regressions listed in Appendix 8G. Although *January* is not statistically significant between 1926 and 1960, the robustness check generally supports the inference that the value-weighted short-term excess returns of stock splits are higher in January than in other months of a year, which implies that the split effect is partly behind the January Effect.

7.1.2 The Halloween Effect

7.1.2.1 The Frequency of Stock Splits in November-April and May-October

This section starts the investigation of the Halloween Effect in stock split announcements. The frequency of stock splits between the Halloween period, the six-months from November to April (Nov-Apr), and 'non-Halloween', the six-months from May to October (May-Oct), is listed and graphed in Table 7.7 and Figure 7.2. The table shows the number of split announcements is slightly higher in Nov-Apr than in May-Oct from 1926 to 2008. This finding

[37] Average of (0.7615, 0.8232, 0.7748, and 0.8636)
[38] Average of (0.6273 and 0.6280)
[39] Average of (0.7971 and 0.8787)

is confirmed in the four sub-periods 1926 to 1960, 1961 to 1975, 1976 to 1995, and 1996 to 2008. Overall, there are 9,004 splits in the Halloween period and 8,262 splits in the other half of a year. During 1926 to 1960, 43 more splits are in Nov-Apr compared to May-Oct, followed by a dramatic increase of 416 more splits in Nov-Apr from 1961 to 1975. Then, the difference in the number of stock splits between Nov-Apr and May-Oct decreases to 102 in 1976 to 1995 and 181 in 1996 to 2008. These results indicate that firms have reasonable preference to undertake share splits during the Halloween period.

Table 7.7 Number of Stock Splits between November-April and May-October from 1926 to 2008

This table shows the number of stock split announcements between May-October and November-April from 1926 to 2008. Stock splits are identified from the Centre of Research in Security Prices (CRSP) files, using distribution codes 5523, 5543 and 5552 when the factor to adjust price is greater than 0, and code 5533 when distribution is greater than or equal to 25 percent. These numbers are also counted in four sub-periods to avoid noise.

Number of stock splits	Nov-Apr	May-Oct	Difference	Total
Different periods of years				
1926-1960	569	526	43	1095
1961-1975	1351	935	416	2286
1976-1995	4792	4690	102	9482
1996-2008	2292	2111	181	4403
Total	9004	8262	742	17266

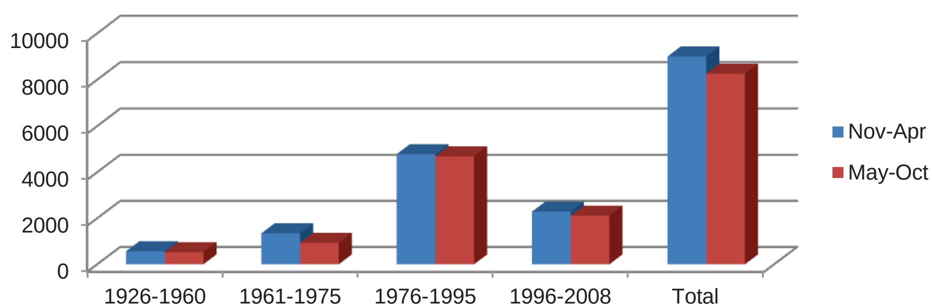

Figure 7.2 Numbers of Stock Splits between November-April and May-October from 1926 to 2008

However, when the t-test and non-parameter, Wilcoxon z test are applied to examine if the difference in the frequency between Nov-Apr and May-Oct is statistically significant, the *p_value* of these two tests are insignificant at 1%, 5%, and 10% significance levels as shown in Table 7.8. This means that there is no statistical difference in the number of stock splits in the Halloween period and in the other half a year, with 108.50 the average number of splits in Nov-Apr and 99.54 in May-Oct.

Table 7.8 The Frequency of Stock Split Announcements between November-April and May-October – The t-test and non-parameter, Wilcoxon z test

This table presents the results of the t-test and non-parameter, Wilcoxon z test. *Nov-Apr* represents the number of stock splits in November to April and *May-Oct* is the number of stock splits in May to October from 1926 to 2008.

Mean			The t-test	non-parameter Test
Nov-Apr	May-Oct	Difference	P_Value	P_Value
108.50	99.54	8.96	0.5961	0.2814

7.1.2.2 The Likelihood of Stock Splits with the Halloween Dummy

As the univariate frequency analysis may seem too crude to draw the inference, multivariate logistic models are employed to investigate the likelihood of stock splits in relation to the Halloween Effect from 1926 to 2008. In Panel A of Table 7.9, the *Halloween* dummy is statistically positive in the whole sample period and the three sub-periods after 1960. In particular, the propensity for firms to announce splits is higher by 8.5%[40] (*p_value:* <.0001) in Nov-Apr than in May-Oct between 1926 and 2008, 36.40%[41] in 1961 to 1975, 3.52%[42] in 1976 to 1995, and 7.69%[43] in 1996 to 2008. These figures show that the Halloween Effect is evident in the corporate decisions on stock split announcements with the multivariate tests.

Panel B examines whether this Halloween Effect is attributable to the January Effect by extracting January from the Halloween months. According to the results, the coefficient of the *January* dummy is statistically significant in the full sample, suggesting that some of the Halloween Effect is caused by the January Effect. The number of stock splits is significantly higher in January compared to the other months of a year. *HalnoJan* is also statistically significant, meaning that firms are more likely to announce splits in the months of November, December, February, March, and April than in the months of May to October. Similarly, some of the Halloween Effect is as a result of the January Effect as the coefficients of *January* and *HalnoJan* are both statistically positive in the period 1961 to 1975. However, there is no January Effect during 1976 to 1995 as the *January* dummy is not significant. Between 1996 and 2008, *HalnoJan* is also not significant, but *January* is, indicating that the Halloween Effect is mainly the result of the January Effect. Interestingly, the coefficient of *January* is statistically negative and *HalnoJan* is statistically positive from 1926 to 1940. This shows that the tendency of split announcements is lower in January but higher in November, December, and February to April compared to the other months of a year, which may be the reason of the *Halloween* dummy being insignificant in Panel A.

7.1.2.3 Abnormal Returns of Stock Splits in November-April and May-October

Table 7.10 calculates the short-term abnormal returns of stock split announcements using event study methodologies to investigate if the returns are particularly high in the Halloween period. As the results show, Nov-Apr has larger excess returns using the Mean Adjusted Model, but smaller ones using the equal-weighted Market Model and equal-weighted Market Adjusted

[40] $e^{\beta} - 1 = e^{(0.0816)} - 1 = 0.0850$
[41] $e^{\beta} - 1 = e^{(0.3104)} - 1 = 0.3640$
[42] $e^{\beta} - 1 = e^{(0.0346)} - 1 = 0.0352$
[43] $e^{\beta} - 1 = e^{(0.0741)} - 1 = 0.0769$

Table 7.9 Logistic Regressions for the Likelihood of Stock Splits from 1926 to 2008

This table shows the likelihood of stock split announcements related to the *Halloween* dummy from 1926 to 2008. Panel A runs logistic models only with the *Halloween* dummy, and Panel B runs logistic models with the *Halloween* and *January* dummies together. The dependent variable is a binary variable that contains a value of one if a firm announces a stock split in the month; otherwise, zero. *Ln(Size)* is the natural logarithm of monthly market capitalization. *Ln(Price)* is the natural logarithm of monthly stock price. *January* is a dummy variable, which has a value of one for stock splits announced in January, and zero otherwise. *Halloween* is another dummy variable that takes a value of one for stock splits announced in the months of November to April and a value of zero if announcements are in the months of May to October. *HalnoJan* is the dummy variable to separate the January Effect from the Halloween Effect, which takes a value of one for stock splits announced in the months of November to April, except January and a value of zero if the announcements are in the months of May to October. The logistic regressions run on the full sample period and on four sub-periods for a robustness check to avoid noise. *p-values* are in parentheses under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Variables	Full Sample 1926-2008	Sub-periods 1926-1960	1961-1975	1976-1995	1996-2008
Panel A: Likelihood of stock splits with the Halloween dummy					
Halloween	0.0816	0.0774	0.3104	0.0346	0.0741
	(<.0001)***	(0.2045)	(<.0001)***	(0.0999)*	(0.0165)**
Ln(Size)	-0.0640	0.0989	-0.4505	-0.2435	-0.0265
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(0.0031)***
Ln(Price)	1.0775	1.0702	2.0595	1.4775	1.0484
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Intercept	-7.8224	-10.6875	-7.2105	-6.4020	-8.4736
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Panel B: Likelihood of stock splits with the January and Halloween dummies					
HalnoJan	0.0767	0.1370	0.2762	0.0422	0.0407
	(<.0001)***	(0.0294)**	(<.0001)***	(0.0547)*	(0.2125)
January	0.1058	-0.2863	0.4616	-0.0050	0.2249
	(0.0002)***	(0.0291)**	(<.0001)***	(0.9002)	(<.0001)***
Ln(Size)	-0.0640	0.0984	-0.4502	-0.2435	-0.0265
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(0.0031)***
Ln(Price)	1.0775	1.0711	2.0590	1.4775	1.0486
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Intercept	-7.8225	-10.6849	-7.2118	-6.4017	-8.4746
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***

Model. On average, there are equal-weighted market adjusted returns of about 2% to 5% in May-Oct, which are 0.1% to 1.5% higher than in Nov-Apr. The equal-weighted market model adjusted returns are positive, around 1% to 3%, in May-Oct for the event windows less than a month. They are 0.1% to 2% larger than in Nov-Apr, although the returns become negative one month and thereafter the announcements. The value-weighted market adjusted and market model adjusted returns are also slightly higher in May-Oct by around 0.05% one day surrounding split announcements. However, the value-weighted returns are 0.1% to 2% greater in the Halloween period after a week. Additionally, the mean adjusted returns are 0.05% to 0.3% higher in Nov-Apr than in May-Oct[44]. These figures show that the Halloween Effect does not exist in the value-weighted adjusted returns for the event windows less than a week and in the equal-weighted adjusted excess returns. Nevertheless, it does exist in the value-weighted adjusted returns for the event windows being greater than ten days and in the mean adjusted excess returns.

On the other hand, Table 7.11 presents a more consistent result in the long-term abnormal returns of stock split announcements. The excess returns are slightly larger in May-Oct than in Nov-Apr using most models, except for the four-factor Carhart model in the event windows of

[44] These figures are the average of the market adjusted returns, market model adjusted returns and mean adjusted returns shown in Table 7.10.

Table 7.10 Short-Run Excess Returns of Stock Split Announcements between November-April and May-October from 1926 to 2008

This table calculates excess returns for the firms announcing stock splits between November-April and May-October from 1926 to 2008. Mean adjusted returns are calculated by $AR_{it}=R_{it}-E(R_{it})$, where AR_{it} is abnormal returns for security i at time t, R_{it} is the actual returns for security i at time t, $E(R_{it})$ is constant mean returns for security i at time t with estimation period of 255 trading days. Market adjusted returns are using $AR_{it}=R_{it}-R_{mt}$, where R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes. Market model adjusted returns are measured by $AR_{it}=R_{it}-\hat{\alpha}_i-\hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the Market Model of $R_{it}=\alpha_i+\beta_i * R_{mt}+\varepsilon_i$ with estimation period of 255 trading days. Short term event windows are examined one day surrounding an announcement date, one week after an announcement date, 10 days, 15 days, three weeks, one month, two months, three months and six months after an announcement date (0 represents the actual announcement day). All returns are in percentage with t-statistics underneath. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Excess returns for stock splits

May-Oct

	Raw Returns	Market Adjusted Returns		Market Model Adjusted Returns		Mean Adjusted Returns
		EW	VW	EW	VW	
Event windows						
(-30,-2)	9.30	6.73	7.66	2.80	2.64	2.56
	[51.75]***	[40.41]***	[46.56]***	[17.58]***	[15.52]***	[13.18]***
(-1,+1)	3.29	3.13	3.20	2.73	2.67	2.59
	[42.68]***	[44.86]***	[46.89]***	[37.71]***	[36.87]***	[34.50]***
(-1, 0)	2.03	1.92	1.96	1.66	1.61	1.56
	[39.84]***	[39.82]***	[40.44]***	[33.22]***	[33.52]***	[31.42]***
(0, +1)	2.85	2.74	2.80	2.48	2.44	2.39
	[40.14]***	[42.76]***	[44.90]***	[36.82]***	[36.08]***	[34.28]***
(1, +7)	2.51	2.20	2.36	1.38	1.13	0.88
	[27.49]***	[26.38]***	[28.29]***	[18.04]***	[15.54]***	[12.39]***
(1, +10)	2.82	2.38	2.56	1.22	0.82	0.49
	[26.92]***	[24.73]***	[26.62]***	[14.73]***	[11.40]***	[8.02]***
(1, +15)	3.30	2.68	2.95	0.92	0.32	-0.19
	[26.52]***	[23.30]***	[25.61]***	[10.71]***	[6.27]***	[2.33]**
(1, +21)	3.91	3.09	3.37	0.61	-0.31	-0.97
	[27.49]***	[22.97]***	[25.00]***	[7.44]***	[1.33]	[-2.77]***
After						
1month	5.12	4.07	4.39	0.51	-0.89	-1.85
	[28.99]***	[24.68]***	[26.78]***	[6.51]***	[-1.16]	[-5.82]***
2month	7.00	5.10	5.72	-1.96	-4.90	-6.94
	[28.86]***	[22.48]***	[25.39]***	[-2.42]**	[-13.72]***	[-19.73]***
3month	9.09	5.04	6.58	-5.59	-9.17	-11.82
	[32.08]***	[18.91]***	[25.06]***	[-10.95]***	[-22.07]***	[-27.31]***
6month	16.87	3.38	9.13	-18.31	-21.23	-24.83
	[42.63]***	[7.60]***	[24.19]***	[-28.47]***	[-33.70]***	[-36.68]***

Nov-Apr

	Raw Returns	Market Adjusted Returns		Market Model Adjusted Returns		Mean Adjusted Returns
		EW	VW	EW	VW	
Event windows						
(-30,-2)	10.68	6.20	8.12	1.91	3.35	4.05
	[57.96]***	[32.03]***	[47.36]***	[11.09]***	[18.94]***	[21.03]***
(-1,+1)	3.35	2.98	3.13	2.55	2.64	2.66
	[50.31]***	[46.59]***	[48.61]***	[41.10]***	[41.87]***	[40.77]***
(-1, 0)	2.08	1.83	1.91	1.54	1.59	1.62
	[39.59]***	[35.85]***	[37.18]***	[31.65]***	[32.07]***	[31.36]***
(0, +1)	2.88	2.63	2.74	2.34	2.41	2.42
	[49.28]***	[46.72]***	[48.51]***	[42.43]***	[43.09]***	[42.08]***
(1, +7)	2.92	2.10	2.48	1.16	1.37	1.32
	[34.62]***	[25.36]***	[30.15]***	[17.04]***	[18.92]***	[17.96]***
(1, +10)	3.32	2.17	2.72	0.82	1.11	1.03
	[35.18]***	[23.02]***	[29.23]***	[12.30]***	[14.68]***	[13.79]***
(1, +15)	3.81	2.11	2.94	0.12	0.52	0.38
	[32.19]***	[17.89]***	[26.28]***	[4.97]***	[7.77]***	[6.71]***
(1, +21)	4.81	2.49	3.66	-0.28	0.26	0.00
	[32.98]***	[17.25]***	[27.67]***	[2.08]**	[5.29]***	[3.74]***
After						
1month	6.33	2.99	4.63	-0.90	-0.19	-0.54
	[36.13]***	[16.88]***	[28.92]***	[-0.50]	[3.00]***	[1.47]
2month	9.67	3.61	6.44	-4.11	-3.29	-4.07
	[41.54]***	[15.28]***	[29.85]***	[-9.44]***	[-6.70]***	[-8.64]***
3month	11.66	3.84	7.14	-7.70	-7.62	-8.93
	[41.05]***	[14.27]***	[28.25]***	[-15.11]***	[-15.54]***	[-17.76]***
6month	15.25	4.06	8.35	-18.15	-21.86	-25.81
	[41.21]***	[12.63]***	[24.95]***	[-26.47]***	[-35.57]***	[-40.80]***

Table 7.11 Long-Term Post-announcement Abnormal Returns Using Monthly Fama-French (1993) and Carhart (1997) Calendar Time Portfolio Regressions for Stock Split Announcements between November-April and May-October from 1926 to 2008

This table calculates long term abnormal returns for the one-, two-, three-, and five-year post-announcement horizons, for the firms announcing stock splits between November-April and May-October during the period 1926 to 2008. Monthly rebalanced calendar time portfolio returns are calculated each month from all firms experience a stock split in the previous 12, 24, 36, or 60 calendar months. Monthly excess returns to calendar time portfolios are: $CTAR_t=R_{pt}-E(R_{pt})$, where R_{pt} is monthly return on portfolio of event firms at time *t*, and $E(R_{pt})$ is expected return on event portfolio at time *t*. The expected return on event portfolio, for each sample firm in month *t*, is measured by Fama-French (1993) three-factor model and Carhart (1997) four-factor model:

$$R_{it}-R_{ft}=\alpha_i+\beta_i(R_{mt}-R_{ft})+s_iSMB_t+h_iHML_t+\varepsilon_{it}$$

$$R_{it}-R_{ft}=\alpha_i+\beta_i(R_{mt}-R_{ft})+s_iSMB_t+h_iHML_t+m_iPR1YR_t+\varepsilon_{it}$$

R_{it} is firm i's monthly return, R_{ft} is the one-month T-bills return, and R_{mt} is the market return on both CRSP equal-weighted and value-weighted portfolio of all NYSE, AMEX, and Nasdaq stocks. SMB_t is the difference in returns between portfolios of small and big stocks. HML_t is the difference in returns between portfolios of high and low book-to-market ratio stocks. $PR1YR_t$ is defined as in Carhart (1997) as an equally weighted portfolio return of stocks with highest returns less an equally weighted portfolio return of stocks with lowest returns in months *t-12* to *t-2*. Ordinary, Weighted Least Squares (White, 1980) and Generalized Method of Moment (GMM) are estimated. All abnormal returns are in percentage and *t*-statistics of intercepts are shown in brackets under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Calendar Portfolio post period	Model Estimated	Intercept of the Fama-French Regression Three-factor without momentum (Fama-French, 1993)				Intercept of the Fama-French-Carhart Regression Four-factor with momentum (Carhart, 1997)			
		Equal-weighted		Value-weighted		Equal-weighted		Value-weighted	
		MayOct	NovApr	MayOct	NovApr	MayOct	NovApr	MayOct	NovApr
Horizon = 1		1.81	1.68	1.82	1.67	1.54	1.43	1.67	1.54
year	OLS	[13.48]***	[17.67]***	[13.91]***	[18.54]***	[11.40]***	[15.36]***	[12.51]***	[16.87]***
	Hetero t	[13.43]***	[18.91]***	[13.70]***	[20.19]***	[10.40]***	[12.86]***	[11.28]***	[14.01]***
		2.29	2.24	2.16	2.14	1.98	1.91	2.00	1.97
	WLS	[32.11]***	[32.29]***	[37.82]***	[36.54]***	[30.71]***	[31.29]***	[36.19]***	[34.83]***
		1.81	1.68	1.82	1.67	1.54	1.43	1.67	1.54
	GMM	[12.68]***	[17.69]***	[12.88]***	[18.10]***	[11.03]***	[12.43]***	[12.04]***	[13.40]***
Horizon = 2		1.15	1.13	1.15	1.13	0.95	0.98	1.08	1.10
years	OLS	[10.55]***	[14.56]***	[10.78]***	[15.75]***	[8.60]***	[12.56]***	[9.79]***	[14.86]***
	Hetero t	[13.05]***	[15.03]***	[13.36]***	[16.51]***	[9.09]***	[11.83]***	[10.78]***	[13.78]***
		1.50	1.47	1.38	1.37	1.33	1.31	1.36	1.37
	WLS	[24.83]***	[26.54]***	[28.62]***	[29.20]***	[22.35]***	[24.07]***	[27.36]***	[28.23]***
		1.15	1.13	1.15	1.13	0.95	0.98	1.08	1.10
	GMM	[12.94]***	[14.64]***	[13.63]***	[15.55]***	[9.07]***	[11.09]***	[11.03]***	[12.90]***
Horizon = 3		0.87	0.84	0.88	0.85	0.77	0.79	0.90	0.91
years	OLS	[12.49]***	[12.31]***	[13.20]***	[13.10]***	[10.82]***	[11.18]***	[13.11]***	[13.72]***
	Hetero t	[13.07]***	[13.29]***	[13.89]***	[14.59]***	[10.43]***	[10.80]***	[13.20]***	[13.72]***
		1.13	1.07	1.02	0.98	1.04	0.99	1.08	1.05
	WLS	[20.62]***	[21.99]***	[22.41]***	[22.99]***	[18.57]***	[19.88]***	[23.26]***	[24.58]***
		0.87	0.84	0.88	0.85	0.77	0.79	0.90	0.91
	GMM	[12.29]***	[12.55]***	[13.08]***	[13.47]***	[10.01]***	[10.09]***	[12.62]***	[12.71]***
Horizon = 5		0.64	0.54	0.64	0.55	0.56	0.50	0.69	0.63
years	OLS	[11.87]***	[10.67]***	[12.67]***	[11.10]***	[10.27]***	[9.60]***	[13.31]***	[12.64]***
	Hetero t	[12.45]***	[11.21]***	[13.61]***	[12.09]***	[9.60]***	[8.97]***	[13.25]***	[12.44]***
		0.79	0.72	0.69	0.63	0.72	0.67	0.78	0.74
	WLS	[15.92]***	[15.83]***	[16.38]***	[15.92]***	[14.24]***	[14.28]***	[18.63]***	[19.00]***
		0.64	0.54	0.64	0.55	0.56	0.50	0.69	0.63
	GMM	[11.63]***	[10.84]***	[12.46]***	[11.32]***	[9.07]***	[8.74]***	[12.07]***	[11.49]***

two and three years. Notably, the long-run returns and the differences in returns are economically small, which is in line with the Market Efficiency Hypothesis. In particular, the one-year abnormal returns are 1.5% to 2% and the five-year abnormal returns are 0.6% to 0.8% in May-Oct, which is around 0.1% to 0.2% higher than in the Halloween period. The two-year excess returns are 1.1% to 1.5% and the three-year excess returns are 0.8% to 1.2%, which are about 0.05% larger than in Nov-Apr. In contrast, there are approximately 1% two- and three-year abnormal returns in the four-factor model using Ordinary Least Square (OLS) and Generalized Method of Moment (GMM) estimates. The returns are only 0.01% or 0.02%

higher than in May-Oct[45]. These results indicate that the Halloween Effect is not present in the long-term post-announcement abnormal returns for stock splits.

7.1.2.4 Multivariate Regression Results of Abnormal Returns on the Halloween Dummy

Apart from the event study analysis, this section uses multivariate regressions to examine if there is a statistical relationship between the market reaction to stock split announcements and the Halloween period. In Table 7.12, the coefficients of the *Halloween* dummy are statistically significant in the event windows of ten days and 30 days after stock splits, but the rest are insignificant. Interestingly, the 30-day abnormal returns are, on average, 0.7% lower in Nov-Apr than in May-Oct using the equal-weighted market index as the coefficients are negative in the equal-weighted adjusted returns. However, the 30-day returns are about 1% higher in the Halloween period using the value-weighted market index as the coefficients are positive in the value-weighted models. Likewise, the coefficients of *Halloween* are also positive in the value-weighted abnormal returns, but negative in the equal-weighted abnormal returns for the event window of ten days after split announcements. These results are generally consistent with the findings in event studies; the Halloween Effect mainly exists in the short-term value-weighted excess returns for the event windows being greater than ten days. Additionally, the coefficients of *January* are statistically significant and have the same signs along with the *HalnoJan* dummy in the 30-day market model adjusted returns as shown in Panel D, meaning that the January Effect is responsible for some of the Halloween Effect.

7.1.2.5 Robustness Check

Appendix 9A presents the robustness check for the Halloween Effect in the short-term excess returns of stock splits in different sub-periods, industries, and size quintiles. According to the results, the equal-weighted abnormal returns are larger in May-Oct than in Nov-Apr in most sub-samples, especially for the sub-period 1961 to 1975. The excess returns are also higher in May-Oct in the event window of one day within stock splits. However, the value-weighted abnormal returns are mainly larger in the Halloween period than in the other half of a year, which is consistent with the overall findings in Table 7.10. Additionally, the coefficients of *Halloween* are statistically positive in the sub-period 1996 to 2008 and negative in the equal-weighted abnormal returns in the sub-period 1976 to 1995 in Appendix 9B. These results support the fact that the Halloween Effect is mostly in the short-run abnormal returns of stock split announcements using the value-weighted market index. Furthermore, *January* and

[45] These figures are the average returns of Fama-French Three-factor model and Carhart Four-factor model shown in Table 7.11.

Table 7.12 Regression Results between Abnormal Returns of Stock Splits and the Halloween Dummy for the period 1926 to 2008

This table shows the relationship between abnormal returns of stock splits and the *Halloween* dummy variable for the period 1926 to 2008. Panel A is the market adjusted abnormal returns (CAR), Panel B is market model adjusted abnormal returns with the *Halloween* dummy individually for firms announcing stock splits; Panel C is the market adjusted abnormal returns (CAR), and Panel D is market model adjusted abnormal returns with the *January* and *Halloween* dummies together for firms announcing stock splits. EW and VW stand for equal-weighted market index and value-weighted market index, respectively. (-1, +1), (-2, +2), (-1, 0), (0, +1), (-1, +9) and (-1, +30) represent event windows (in days) relative to stock split announcements (0 represents the actual announcement day). *SplFac* is the split ratio obtained from CRSP and defined as the number of additional shares per existing share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to stock split announcements. *Ln(Price)* is the natural logarithm of stock price one day before stock split announcements. *January* is a dummy variable that takes a value of one for stock splits announced in January and a value of zero if an announcement is in other months of a year. *Halloween* is another dummy variable that takes a value of one for stock splits announced in the months of November to April and a value of zero if announcements are in the months of May to October. *HalnoJan* is the dummy variable to separate the January Effect from the Halloween Effect, which takes a value of one for stock splits announced in the months of November to April, except January and a value of zero if the announcements are in the months of May to October. All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regression Results between Market Adjusted Cumulative Abnormal Returns and Halloween Dummy for Stock Splits

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	8.9622	9.0282	12.5771	12.6592	5.1420	5.2035	8.0668	8.0960	15.6462	15.8139	19.3651	19.9610
	[18.84]***	[18.78]***	[22.05]***	[21.74]***	[15.84]***	[15.70]***	[18.73]***	[18.78]***	[22.07]***	[21.24]***	[16.12]***	[15.26]***
Halloween	-0.0662	0.0091	-0.0154	0.1270	-0.0489	-0.0030	-0.0295	0.0173	-0.1180	0.2426	-0.9989	0.3808
	[-0.57]	[0.07]	[-0.11]	[0.87]	[-0.60]	[-0.03]	[-0.29]	[0.16]	[-0.67]	[1.27]	[-3.36]***	[1.15]
SplFac	1.0643	1.0462	1.2519	1.2402	0.4259	0.4115	1.0308	1.0215	1.6244	1.6086	2.4357	2.3708
	[4.55]***	[4.51]***	[4.69]***	[4.74]***	[3.95]***	[3.81]***	[4.66]***	[4.70]***	[4.75]***	[4.78]***	[4.83]***	[4.96]***
Ln(Size)	-0.0969	-0.0923	-0.1930	-0.1795	-0.0708	-0.0742	-0.0455	-0.0396	-0.2515	-0.2338	-0.2125	-0.1496
	[-2.34]**	[-2.23]**	[-3.92]***	[-3.64]***	[-2.48]**	[-2.60]***	[-1.22]	[-1.07]	[-4.21]***	[-3.89]***	[-2.27]**	[-1.55]
Ln(Price)	-1.8563	-1.8602	-2.4220	-2.4520	-0.8820	-0.8688	-1.8720	-1.8791	-3.1823	-3.2238	-4.2858	-4.5329
	[-9.78]***	[-9.76]***	[-11.35]***	[-11.41]***	[-8.12]***	[-7.91]***	[-10.26]***	[-10.32]***	[-12.53]***	[-12.51]***	[-10.89]***	[-11.13]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0460	0.0450	0.0590	0.0580	0.0196	0.0191	0.0519	0.0512	0.0639	0.0625	0.0418	0.0408
N	16711	16711	16711	16711	16711	16711	16711	16711	16711	16711	16711	16711

Panel B: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and Halloween Dummy for Stock Splits

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	8.8575	8.6709	12.4246	12.0552	5.0241	4.9275	8.0698	7.9249	15.2689	14.5792	16.8780	16.1338
	[19.64]***	[18.85]***	[22.64]***	[21.43]***	[16.24]***	[15.47]***	[19.45]***	[18.92]***	[21.57]***	[20.08]***	[14.26]***	[12.11]***
Halloween	-0.1073	0.0500	-0.0884	0.2169	-0.0792	0.0225	-0.0629	0.0433	-0.3108	0.3951	-1.3181	0.8976
	[-0.98]	[0.42]	[-0.68]	[1.53]	[-0.96]	[0.25]	[-0.63]	[0.42]	[-1.84]*	[2.14]**	[-4.49]***	[2.64]***
SplFac	1.0553	1.0423	1.2631	1.2492	0.4288	0.4244	1.0118	1.0049	1.5436	1.5229	2.1526	2.1392
	[4.71]***	[4.68]***	[4.89]***	[4.89]***	[4.21]***	[4.17]***	[4.76]***	[4.75]***	[4.95]***	[4.98]***	[5.06]***	[5.20]***
Ln(Size)	-0.0944	-0.0888	-0.1911	-0.1795	-0.0706	-0.0707	-0.0410	-0.0369	-0.2115	-0.2175	-0.0810	-0.1127
	[-2.38]**	[-2.26]**	[-4.09]***	[-3.86]***	[-2.64]***	[-2.63]***	[-1.13]	[-1.02]	[-3.61]***	[-3.82]***	[-0.82]	[-1.21]
Ln(Price)	-1.9407	-1.9189	-2.5724	-2.5386	-0.9245	-0.9089	-1.9498	-1.9312	-3.5397	-3.4296	-4.9678	-5.0508
	[-10.40]***	[-10.23]***	[-12.11]***	[-11.93]***	[-8.63]***	[-8.44]***	[-10.75]***	[-10.64]***	[-13.69]***	[-13.34]***	[-12.40]***	[-11.75]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0498	0.0478	0.0643	0.0617	0.0217	0.0208	0.0556	0.0537	0.0680	0.0648	0.0401	0.0414
N	16705	16705	16705	16705	16705	16705	16705	16705	16705	16705	16705	16705

Panel C: Regression Results between Market Adjusted Cumulative Abnormal Returns and January vs Halloween Dummies for Stock Splits

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	8.9751	9.0526	12.5819	12.6836	5.1459	5.2158	8.0794	8.1160	15.6398	15.8355	19.3968	20.0178
	[18.93]***	[18.94]***	[22.08]***	[21.86]***	[15.89]***	[15.81]***	[18.80]***	[18.90]***	[22.06]***	[21.28]***	[16.23]***	[15.44]***
HalnoJan	-0.1399	-0.1310	-0.0427	-0.0130	-0.0717	-0.0731	-0.1015	-0.0971	-0.0811	0.1186	-1.1702	0.0558
	[-1.16]	[-1.05]	[-0.30]	[-0.09]	[-0.79]	[-0.77]	[-0.95]	[-0.89]	[-0.44]	[0.60]	[-3.88]***	[0.17]
January	0.2969	0.6993	0.1193	0.8170	0.0634	0.3426	0.3253	0.5811	-0.2995	0.8534	-0.0957	1.9820
	[1.23]	[2.67]***	[0.44]	[2.69]***	[0.36]	[1.78]*	[1.54]	[2.58]***	[-0.94]	[2.32]**	[-0.15]	[2.51]**
SplFac	1.0681	1.0533	1.2533	1.2473	0.4271	0.4150	1.0344	1.0273	1.6225	1.6149	2.4449	2.3873
	[4.55]***	[4.52]***	[4.69]***	[4.74]***	[3.96]***	[3.83]***	[4.67]***	[4.70]***	[4.74]***	[4.78]***	[4.83]***	[4.97]***
Ln(Size)	-0.0978	-0.0940	-0.1933	-0.1812	-0.0711	-0.0750	-0.0464	-0.0409	-0.2511	-0.2353	-0.2147	-0.1535
	[-2.36]**	[-2.28]**	[-3.93]***	[-3.69]***	[-2.49]**	[-2.63]***	[-1.25]	[-1.11]	[-4.21]***	[-3.91]***	[-2.29]**	[-1.59]
Ln(Size)	-1.8588	-1.8650	-2.4229	-2.4568	-0.8827	-0.8712	-1.8744	-1.8830	-3.1811	-3.2280	-4.2920	-4.5440
	[-9.80]***	[-9.79]***	[-11.08]***	[-11.86]***	[-8.14]***	[-7.95]***	[-10.27]***	[-10.34]***	[-12.53]***	[-12.52]***	[-10.92]***	[-11.18]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0463	0.0462	0.0590	0.0589	0.0197	0.0197	0.0523	0.0522	0.0639	0.0629	0.0421	0.0418
N	16711	16711	16711	16711	16711	16711	16711	16711	16711	16711	16711	16711

Panel D: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and January vs Halloween Dummies for Stock Splits

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	8.8671	8.6950	12.4233	12.0793	5.0265	4.9405	8.0805	7.9443	15.2527	14.6008	16.8754	16.1787
	[19.70]***	[19.02]***	[22.66]***	[21.56]***	[16.27]***	[15.60]***	[19.50]***	[19.05]***	[21.58]***	[20.12]***	[14.27]***	[12.18]***
HalnoJan	-0.1631	-0.0886	-0.0809	0.0780	-0.0928	-0.0526	-0.1241	-0.0689	-0.2178	0.2708	-1.3016	0.6392
	[-1.44]	[-0.74]	[-0.60]	[0.54]	[-1.08]	[-0.58]	[-1.22]	[-0.66]	[-1.25]	[1.44]	[-4.28]***	[1.84]*
January	0.1670	0.7328	-0.1255	0.9008	-0.0122	0.3921	0.2383	0.5954	-0.7686	1.0073	-1.3994	2.1698
	[0.73]	[2.82]***	[-0.48]	[2.95]***	[-0.07]	[2.06]**	[1.16]	[2.66]***	[-2.31]**	[2.76]***	[-2.36]**	[3.05]***
SplFac	1.0581	1.0493	1.2659	1.2562	0.4295	0.4281	1.0149	1.0105	1.5389	1.5292	2.1517	2.1523
	[4.71]***	[4.69]***	[4.89]***	[4.89]***	[4.22]***	[4.18]***	[4.76]***	[4.76]***	[4.95]***	[4.97]***	[5.06]***	[5.20]***
Ln(Size)	-0.0950	-0.0904	-0.1910	-0.1811	-0.0707	-0.0716	-0.0418	-0.0382	-0.2104	-0.2189	-0.0808	-0.1158
	[-2.40]**	[-2.31]**	[-4.09]***	[-3.91]***	[-2.65]***	[-2.67]***	[-1.16]	[-1.07]	[-3.60]***	[-3.85]***	[-0.82]	[-1.24]
Ln(Price)	-1.9426	-1.9237	-2.5721	-2.5433	-0.9250	-0.9115	-1.9519	-1.9350	-3.5365	-3.4339	-4.9672	-5.0596
	[-10.41]***	[-10.26]***	[-12.10]***	[-11.95]***	[-8.64]***	[-8.48]***	[-10.75]***	[-10.66]***	[-13.69]***	[-13.35]***	[-12.40]***	[-11.77]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0500	0.0490	0.0643	0.0625	0.0217	0.0214	0.0559	0.0547	0.0682	0.0652	0.0401	0.0420
N	16705	16705	16705	16705	16705	16705	16705	16705	16705	16705	16705	16705

HalnoJan are both significant in the value-weighted market adjusted excess returns between 1996 and 2008 in Panel F of Appendix 9B. This means that the abnormal returns being higher in the Halloween period may be attributable to the significantly large returns in January during that period.

7.2 Special Dividend Announcements

7.2.1 The January Effect

7.2.1.1 The Frequency of Special Dividends in Each Month

The January Effect and Halloween Effect in stock returns are widely discussed in the literature. However, whether they can explain or partially explain the pattern of the corporate event, special dividend payments is still questioned. Section 7.2 addresses this issue by analysing the frequency, likelihood, and abnormal returns of special dividends in January and in the Halloween period, November to April, compared to other months of a year. Table 7.13 shows the frequency of special dividend announcements in each month. According to the results, special dividends are usually paid in the last quarter of a year, especially in November and December. Between 1926 and 2008, the number of special dividends in December is about one third of the total number of the announcements. This result is robust in the four sub-periods. January has reasonably higher numbers of special dividends than the months of February to August, but significantly lower numbers than the months of September to December. Figure 7.3 graphs the total number of special dividends in this pattern, which is different from the pattern of regular cash dividends in Figure 7.4. In order to determine that the high frequency of special dividends at the end of a year is not totally due to the year-end special dividends, the number of the announcements is also separately graphed for the normal extra dividends with a CRSP distribution code of 1272 in Figure 7.5 and year-end special dividends with a code of 1262 in Figure 7.6. As the diagrams show, the normal extra/special dividends have the same pattern as the total special dividends, which indicates the last quarter is the most popular time of a year for companies to pay special dividends. Thus, there is no January Effect in the frequency of special dividend payments, but a Year-End Effect.

Table 7.14 runs the t-test and non-parameter, Wilcoxon z test to compare and provide statistical evidence on the difference in the frequency for each month with the rest of the months of a year. The results are similar to the findings above; *p_value* for the months of October, November, and December are highly significant in these two tests. The difference in the average number of special dividends in these three months is economically larger than in the rest of the months of a year, especially for December. In contrast, the months of February to August have statistically and economically lower numbers of special dividends and the *p_value* for September the t-test for January are not significant. These results confirm that the months of October to December are more preferable for companies to pay special dividends as opposed to January.

Table 7.13 Number of Special Dividends in each month between 1926 and 2008

This table shows the number of special dividend announcements in each month from 1926 to 2008. Special dividends are classified from the Centre for Research in Security Prices (CRSP) files by the criteria that the distribution code is 1272 for special and extra dividends, and 1262 for year-end irregular extra dividends combined. These numbers are also counted in four sub-periods to avoid noise.

Years	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1926-1940	158	39	84	58	41	113	76	55	170	187	150	447	1578
1941-1960	506	97	289	139	134	344	199	152	723	465	384	2202	5634
1961-1985	337	299	173	174	234	218	193	284	286	774	1453	968	5393
1986-2008	256	275	227	200	199	196	231	249	223	304	760	1253	4373
Total	1257	710	773	571	608	871	699	740	1402	1730	2747	4870	16978

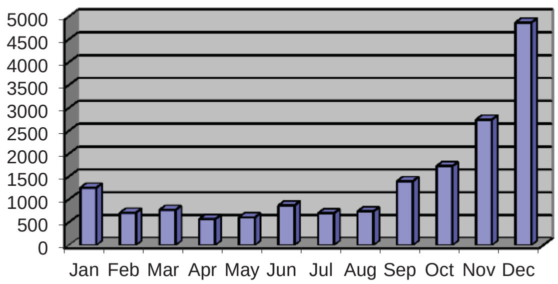

Figure 7.3 Numbers of Total Special Dividends (Code: 1262 & 1272) in each month from 1926 to 2008

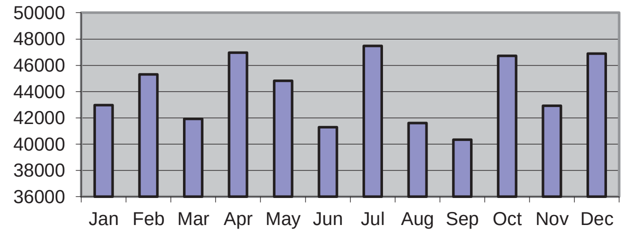

Figure 7.4 Numbers of Ordinary Cash Dividends in each month from 1926 to 2008

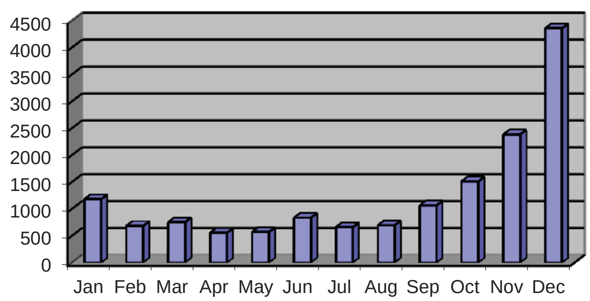

Figure 7.5 Numbers of Extra/Special Dividends with code 1272 in each month from 1926 to 2008

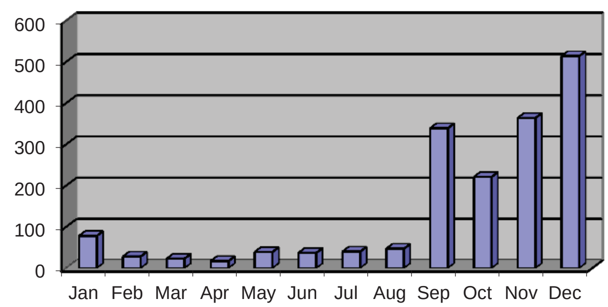

Figure 7.6 Numbers of Year-end Special Dividends with code 1262 in each month from 1926 to 2008

Table 7.14 The Frequency of Special Dividend Announcements in each month between 1926 and 2008 – The t-test and non-parameter, Wilcoxon z test

This table presents the results of the t-test and non-parameter, Wilcoxon z test. On average, *January* represents the number of special dividends in January; *February* represents the number of special dividends in February, and so on; *Other Months* is the number of special dividends in the rest of months from 1926 to 2008.

	Mean		The t-test	non-parameter Test
January	Other Months	Difference	P_Value	P_Value
15.14	17.22	-2.08	0.1232	0.0165
February	Other Months	Difference	P_Value	P_Value
8.55	17.82	-9.27	<.0001	<.0001
March	Other Months	Difference	P_Value	P_Value
9.31	17.75	-8.44	<.0001	0.0020
April	Other Months	Difference	P_Value	P_Value
6.88	17.97	-11.09	<.0001	<.0001
May	Other Months	Difference	P_Value	P_Value
7.33	17.93	-10.60	<.0001	<.0001
June	Other Months	Difference	P_Value	P_Value
10.49	17.64	-7.15	<.0001	0.0199
July	Other Months	Difference	P_Value	P_Value
8.42	17.83	-9.41	<.0001	<.0001
August	Other Months	Difference	P_Value	P_Value
8.92	17.79	-8.87	<.0001	0.0007
September	Other Months	Difference	P_Value	P_Value
16.89	17.06	-0.17	0.9329	0.1307
October	Other Months	Difference	P_Value	P_Value
20.84	16.70	4.14	0.0149	<.0001
November	Other Months	Difference	P_Value	P_Value
33.10	15.59	17.51	<.0001	<.0001
December	Other Months	Difference	P_Value	P_Value
58.67	13.26	45.41	<.0001	<.0001

7.2.1.2 The Likelihood of Special Dividends with the January Dummy

To examine if there is a January Effect in the statistical likelihood of special dividend announcements, Table 7.15 employs logit models with the *January* dummy, taking a value of one if firms pay special dividends in January, otherwise zero. As the table shows, the coefficients of *January* are statistically negative in the total sample of 1926 to 2008, and in the sub-samples of 1961 to 1985 and 1986 to 2008. This means that the propensity of firms initiating special dividends in January is significantly lower than in the other months of a year, particularly in these periods.

Table 7.15 Logistic Regressions for the Likelihood of Special Dividends from 1926 to 2008

This table shows the likelihood of special dividend announcements related to the *January* dummy from 1926 to 2008. The dependent variable is a binary variable that contains a value of one if a firm announces a special dividend in the month; otherwise, zero. *Ln(Size)* is the natural logarithm of monthly market capitalization. *Ln(Price)* is the natural logarithm of monthly stock price. *January* is a dummy variable that takes a value of one for special dividends announced in January and a value of zero if announcements are in other months of a year. The logistic regressions run on the full sample period and on four sub-periods for a robustness check to avoid noise. *p-values* are in parentheses under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Full Sample	Sub-periods			
Variables	1926-2008	1926-1940	1941-1960	1961-1985	1986-2008
January	-0.1471	0.1270	0.0713	-0.3333	-0.3777
	(0.0004)***	(0.1362)	(0.1303)	(<.0001)***	(<.0001)***
Ln(Size)	-0.3701	0.0808	-0.0949	-0.3413	-0.2393
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Ln(Price)	1.0153	0.6234	0.6791	1.0195	0.6654
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Intercept	-4.0287	-7.2142	-4.9367	-4.4419	-4.9799
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***

7.2.1.3 Abnormal Returns of Special Dividends in Each Month

In this section, event study methodologies are used to calculate and compare the abnormal returns of special dividend announcements in each month between 1926 and 2008. Table 7.16 shows the short-term market reaction to special dividends using the value-weighted Market Model. Interestingly, the largest abnormal returns are in April instead of January one day surrounding the announcements, and at seven days and at ten days after the announcements. On average, the returns are about 1.5%. For the event windows of one, two, three, and six months after special dividend declarations, the highest returns are in November and December. This result is almost identical to the mean adjusted returns in Appendix 10A and similar to the value-weighted market adjusted returns in Appendix 10C. The equal-weighted market adjusted returns in Appendix 10B and the equal-weighted market model adjusted returns in Appendix 10D confirm that the largest excess returns of special dividends are in April in most event windows. These results clearly show that there is no January Effect in short-run abnormal returns of special dividend distributions. The reason for the highest market reaction to the announcements being in April may be due to the low expectation or likelihood of special dividends being announced in April.

Table 7.16 Value-Weighted Market Model Adjusted Returns for Special Dividend Announcements in Each Month for the period 1926 to 2008

This table calculates excess returns for the firms announcing special dividends in each month from 1926 to 2008 using the Value-weighted Market Model, $AR_{it}=R_{it}-\hat{\alpha}_i-\hat{\beta}_i*R_{mt}$. AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, R_{mt} is proxied by the CRSP value-weighted market index. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the Market Model of $R_{it}=\alpha_i+\beta_i*R_{mt}+\varepsilon_i$ with estimation period of 255 trading days. Short term event windows are examined one day surrounding an announcement date, one week after an announcement date, 10 days, 15 days, three weeks, one month, two months, three months and six months after an announcement date (0 represents the actual announcement day). All returns are in percentage with *t*-statistics underneath. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Special Dividend												
Event window results												
(-30,-2)	0.63	2.79	0.00	0.03	0.24	-0.52	0.36	0.74	0.52	-0.65	-0.88	0.11
	[2.59]***	[6.86]***	[-0.40]	[0.38]	[0.02]	[-0.95]	[0.89]	[1.80]**	[2.50]***	[-2.17]**	[-3.48]***	[9.75]***
(-1,+1)	1.24	1.45	1.47	1.68	1.58	1.11	1.39	1.61	0.81	0.74	1.16	0.63
	[9.02]***	[7.31]***	[6.71]***	[6.07]***	[6.36]***	[6.53]***	[6.98]***	[8.69]***	[5.20]***	[7.19]***	[12.62]***	[2.03]**
(-1,0)	0.66	0.67	0.84	0.94	0.86	0.70	0.80	0.98	0.41	0.27	0.65	0.25
	[5.65]***	[3.58]***	[5.25]***	[3.76]***	[4.55]***	[4.59]***	[4.53]***	[6.55]***	[3.41]***	[4.22]***	[8.53]***	[0.22]
(0,+1)	0.97	1.39	1.37	1.59	1.50	1.07	1.44	1.49	0.76	0.77	1.05	0.64
	[8.16]***	[8.35]***	[6.86]***	[6.77]***	[6.42]***	[7.21]***	[8.51]***	[9.11]***	[5.69]***	[8.23]***	[12.55]***	[10.89]***
(1.+7)	0.92	1.30	1.02	1.46	1.46	0.98	1.08	1.16	0.63	0.56	0.57	0.86
	[6.27]***	[5.85]***	[5.41]***	[4.04]***	[4.91]***	[4.86]***	[5.20]***	[6.48]***	[4.27]***	[4.49]***	[4.87]***	[11.82]***
(1,+10)	0.91	1.28	0.68	1.36	1.07	1.02	0.95	0.99	0.61	0.62	0.46	0.92
	[5.43]***	[5.08]***	[3.59]***	[3.53]***	[3.12]***	[4.07]***	[3.51]***	[4.88]***	[3.72]***	[4.81]***	[3.18]***	[11.33]***
(1,+15)	0.87	1.33	0.52	1.10	0.41	0.61	0.61	0.88	0.52	0.12	0.21	1.09
	[4.36]***	[4.64]***	[2.80]***	[2.45]**	[0.68]	[1.81]*	[3.08]***	[3.37]***	[2.62]***	[1.64]	[1.82]*	[11.01]***
(1,+21)	0.91	1.53	0.32	1.05	-0.02	0.78	0.61	1.26	0.34	-0.11	0.14	1.43
	[3.91]***	[4.09]***	[1.75]*	[2.32]**	[-0.28]	[2.41]**	[2.84]***	[4.07]***	[1.98]**	[0.30]	[1.29]	[11.96]***
After												
1month	0.96	0.92	-0.23	0.90	-0.05	0.93	0.62	0.91	0.28	-0.59	0.49	1.74
	[3.64]***	[2.04]**	[0.47]	[2.15]**	[0.02]	[2.57]***	[2.01]**	[3.02]***	[1.46]*	[-1.05]	[3.22]***	[14.01]***
2months	0.86	0.55	-1.02	0.25	-0.98	0.38	-0.45	-0.81	-0.24	0.11	2.44	1.86
	[2.09]**	[0.62]	[-0.58]	[0.99]	[-1.23]	[0.82]	[0.01]	[-0.84]	[0.33]	[1.70]**	[10.29]***	[10.08]***
3months	-0.11	0.17	-1.35	-0.60	-1.80	-1.13	-1.88	-1.20	0.63	0.80	2.53	1.22
	[-0.03]	[-0.53]	[-1.18]	[-0.50]	[-1.96]**	[-1.01]	[-2.17]**	[-1.37]*	[2.81]***	[3.52]***	[8.90]***	[5.34]***
6months	-2.10	-4.65	-5.29	-6.00	-1.03	-2.12	-2.10	-0.94	-1.32	-1.68	-0.47	-1.25
	[-2.17]**	[-5.47]***	[-4.40]***	[-4.40]***	[0.03]	[-1.67]**	[-1.70]**	[0.06]	[-0.19]	[-1.00]	[1.91]**	[-2.77]***

The long-term abnormal returns of special dividend distributions in every month from 1926 to 2008 are calculated by the value-weighted three-factor (Fama & French, 1993) and four-factor (Carhart, 1997) Calendar Time Portfolio regressions in Table 7.17. According to the results, the largest abnormal returns mostly occur in August and September, which is consistent with the equal-weighted Calendar Time Portfolio methods as shown in Appendix 10E. The excess returns are also high in April and May in the value-weighted four-factor returns using the Weighted Least Square (WLS) estimations. On average, the largest abnormal returns are about 0.8% to 0.9% one year after special dividend announcements, 0.6% to 0.7% two years after the announcements, 0.5% to 0.6% three years after, and 0.4% to 0.5% five years after the announcements. The findings additionally confirm that the January Effect does not exist in abnormal returns of special dividend declarations in both the short run and long run. As the long-run post-announcement returns are economically small to negligible, the results are consistent with the Market Efficiency Hypothesis.

7.2.1.4 Multivariate Regression Results of Abnormal Returns on the January Dummy

In Table 7.18, the multivariate regression results also show that the short-term equal-weighted abnormal returns from special dividend distributions are statistically significant and negatively correlated to the *January* dummy. The abnormal returns are 0.6%[46] lower within one day if firms initiate special dividends in January in comparison to the other months of a year. The excess returns are also smaller in January by up to 0.6% two days within, more than 0.7% ten days after, and nearly 0.8% thirty days following the announcements. In contrast, the coefficients of *January* are relatively significant and positive in the value-weighted market model adjusted returns for the certain event windows: (-1, +1), (-2, +2), and (-1, +9), but they are insignificant in most of the value-weighted adjusted excess returns. These results suggest that the excess returns of special dividends are, in general, statistically lower in January than in the other months of a year, which is the same as the findings in the event studies.

7.2.1.5 Robustness Check

Appendix 10F further shows a robustness result that the months of February to December (Feb-Dec) have higher short-term returns from special dividend announcements than January in most sub-periods, industries, and size quintiles. In particular, the abnormal returns are larger in Feb-Dec either using the equal-weighted market index or during 1996 to 2008. However, the returns are mostly larger in January in the event windows of one day within and 30 days after

[46] The maximum of the coefficients in the event windows of (-1, +1), (-1, 0) and (0, +1) in Table 7.18

Table 7.17 Long-Term Post-announcement Abnormal Returns Using Monthly Fama-French (1993) and Carhart (1997) Calendar Time Portfolio Regressions for Special Dividend Announcements in Each Month from 1926 to 2008

This table calculates long term abnormal returns for the one-, two-, three-, and five-year post-announcement horizons, for the firms announcing special dividends in each month during the period 1926 to 2008. Panel A is value-weighted Three-factor Calendar Portfolio Abnormal Return and Panel B is value-weighted four-factor Calendar Portfolio Abnormal Return. Monthly rebalanced calendar time portfolio returns are calculated each month from all firms experience a special dividend in the previous 12, 24, 36, or 60 calendar months. Monthly excess returns to calendar time portfolios are: $CTAR_t=R_{pt}-E(R_{pt})$, where R_{pt} is monthly return on portfolio of event firms at time t, and $E(R_{pt})$ is expected return on event portfolio at time t. The expected return on event portfolio, for each sample firm in month t, is measured by Fama-French (1993) three-factor model and Carhart (1997) four-factor model:

$$R_{it} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

$$R_{it} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + m_i PR1YR_t + \varepsilon_{it}$$

R_{it} is firm i's monthly return, R_{ft} is the one-month T-bills return, and R_{mt} is the market return on CRSP value-weighted portfolio of all NYSE, AMEX, and Nasdaq stocks. SMB_t is the difference in returns between portfolios of small and big stocks. HML_t is the difference in returns between portfolios of high and low book-to-market ratio stocks. $PR1YR_t$ is defined as in Carhart (1997) as an equally weighted portfolio return of stocks with highest returns less an equally weighted portfolio return of stocks with lowest returns in months t-12 to t-2. Ordinary, Weighted Least Squares (White, 1980) and Generalized Method of Moment (GMM) are estimated. All abnormal returns are in percentage and t-statistics of intercepts are shown in brackets under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Value-weighted, three-factor Calendar Portfolio Abnormal Returns

		Intercept of the Fama-French Regression, three-factor without momentum (Fama-French, 1993)											
Portfolio post period	Model Estimated	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Horizon = 1 year	OLS	0.82	0.87	0.74	0.65	0.70	0.52	0.80	0.75	0.95	0.76	0.57	0.70
		[8.15]***	[6.92]***	[6.41]***	[4.95]***	[5.77]***	[4.55]***	[6.73]***	[7.29]***	[8.55]***	[8.30]***	[6.58]***	[7.63]***
	Hetero t	[7.98]***	[7.09]***	[6.53]***	[5.12]***	[5.87]***	[4.59]***	[6.70]***	[7.34]***	[8.22]***	[8.04]***	[6.76]***	[8.09]***
	WLS	0.58	0.69	0.67	0.72	0.72	0.60	0.77	0.84	0.64	0.69	0.48	0.45
		[7.33]***	[6.95]***	[7.75]***	[6.36]***	[7.02]***	[6.80]***	[8.00]***	[9.38]***	[8.79]***	[10.87]***	[8.18]***	[7.68]***
	GMM	0.82	0.87	0.74	0.65	0.70	0.52	0.80	0.75	0.95	0.76	0.57	0.70
		[7.27]***	[7.21]***	[6.49]***	[5.03]***	[5.64]***	[4.71]***	[6.69]***	[7.11]***	[7.92]***	[7.88]***	[6.17]***	[7.91]***
Horizon = 2 years	OLS	0.66	0.64	0.52	0.52	0.54	0.40	0.63	0.50	0.79	0.54	0.46	0.59
		[7.38]***	[5.37]***	[4.55]***	[4.76]***	[4.44]***	[3.80]***	[5.90]***	[4.43]***	[6.75]***	[6.87]***	[6.30]***	[7.65]***
	Hetero t	[7.55]***	[5.51]***	[4.67]***	[4.77]***	[4.65]***	[3.91]***	[5.79]***	[4.69]***	[6.86]***	[6.85]***	[6.35]***	[7.97]***
	WLS	0.43	0.53	0.50	0.56	0.58	0.45	0.54	0.62	0.45	0.51	0.36	0.35
		[5.88]***	[5.79]***	[6.09]***	[5.74]***	[6.03]***	[5.62]***	[6.41]***	[7.32]***	[6.62]***	[8.73]***	[6.66]***	[6.16]***
	GMM	0.66	0.64	0.52	0.52	0.54	0.40	0.63	0.50	0.79	0.54	0.46	0.59
		[7.23]***	[5.48]***	[4.59]***	[4.65]***	[4.45]***	[3.79]***	[5.82]***	[4.69]***	[6.54]***	[6.43]***	[5.86]***	[7.30]***
Horizon = 3 years	OLS	0.57	0.57	0.45	0.50	0.41	0.35	0.57	0.37	0.63	0.46	0.34	0.47
		[6.55]***	[4.91]***	[4.54]***	[4.72]***	[3.51]***	[3.63]***	[5.53]***	[3.73]***	[6.00]***	[6.36]***	[4.96]***	[6.33]***
	Hetero t	[6.75]***	[5.07]***	[4.78]***	[4.75]***	[3.68]***	[3.69]***	[5.46]***	[3.87]***	[6.13]***	[6.39]***	[5.00]***	[6.45]***
	WLS	0.37	0.48	0.42	0.51	0.48	0.40	0.46	0.50	0.35	0.41	0.28	0.30
		[5.41]***	[5.47]***	[5.49]***	[5.58]***	[5.17]***	[5.40]***	[5.98]***	[6.35]***	[5.50]***	[7.47]***	[5.39]***	[5.46]***
	GMM	0.57	0.57	0.45	0.50	0.41	0.35	0.57	0.37	0.63	0.46	0.34	0.47
		[6.45]***	[5.04]***	[4.61]***	[4.72]***	[3.51]***	[3.70]***	[5.65]***	[3.67]***	[5.99]***	[5.97]***	[4.45]***	[5.81]***
Horizon = 5 years	OLS	0.48	0.47	0.28	0.41	0.26	0.25	0.48	0.29	0.49	0.35	0.19	0.39
		[5.89]***	[4.12]***	[2.98]***	[4.26]***	[2.48]***	[2.73]***	[5.33]***	[3.04]***	[5.88]***	[5.33]***	[2.74]***	[5.49]***
	Hetero t	[6.06]***	[4.25]***	[3.14]***	[4.31]***	[2.60]***	[2.83]***	[5.57]***	[3.28]***	[5.92]***	[5.31]***	[2.92]***	[5.59]***
	WLS	0.32	0.42	0.33	0.39	0.38	0.34	0.39	0.41	0.28	0.30	0.19	0.26
		[7.27]***	[4.96]***	[4.53]***	[4.67]***	[4.42]***	[4.84]***	[5.61]***	[5.48]***	[5.01]***	[5.84]***	[3.66]***	[4.85]***
	GMM	0.48	0.47	0.28	0.41	0.26	0.25	0.48	0.29	0.49	0.35	0.19	0.39
		[5.93]***	[4.15]***	[3.00]***	[4.32]***	[2.50]***	[2.74]***	[5.28]***	[3.06]***	[5.80]***	[5.09]***	[2.62]***	[5.22]***

Panel B: Value-weighted, four-factor Calendar Portfolio Abnormal Returns

Portfolio post period	Model Estimated	Intercept of the Fama-French-Carhart Regression, four-factor with momentum (Carhart, 1997)											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Horizon = 1 year	OLS	0.74	0.81	0.77	0.79	0.75	0.48	0.70	0.68	0.91	0.73	0.60	0.66
		[7.25]***	[6.28]***	[6.37]***	[5.87]***	[5.97]***	[4.02]***	[5.72]***	[6.44]***	[7.98]***	[7.65]***	[6.64]***	[7.04]***
	Hetero t	[6.57]***	[6.00]***	[6.19]***	[5.95]***	[6.19]***	[4.11]***	[5.47]***	[6.52]***	[7.52]***	[7.66]***	[6.51]***	[6.64]***
	WLS	0.57	0.67	0.67	0.81	0.77	0.58	0.75	0.79	0.59	0.64	0.50	0.44
		[7.08]***	[6.52]***	[7.48]***	[6.92]***	[7.26]***	[6.38]***	[7.51]***	[8.57]***	[7.91]***	[9.86]***	[8.24]***	[7.19]***
	GMM	0.74	0.81	0.77	0.79	0.75	0.48	0.70	0.68	0.91	0.73	0.60	0.66
		[6.33]***	[6.01]***	[6.17]***	[5.98]***	[6.14]***	[4.35]***	[6.01]***	[6.20]***	[7.28]***	[7.33]***	[6.73]***	[7.12]***
Horizon = 2 years	OLS	0.59	0.63	0.57	0.62	0.68	0.43	0.53	0.56	0.68	0.59	0.48	0.53
		[6.48]***	[5.17]***	[4.87]***	[5.50]***	[5.44]***	[4.02]***	[4.83]***	[4.86]***	[5.69]***	[7.33]***	[6.45]***	[6.74]***
	Hetero t	[6.22]***	[4.95]***	[4.40]***	[5.68]***	[5.42]***	[4.18]***	[4.64]***	[4.88]***	[5.19]***	[7.09]***	[6.59]***	[6.63]***
	WLS	0.43	0.54	0.54	0.63	0.66	0.46	0.52	0.63	0.44	0.50	0.39	0.37
		[5.74]***	[5.80]***	[6.38]***	[6.27]***	[6.66]***	[5.59]***	[6.04]***	[7.23]***	[6.26]***	[8.31]***	[6.98]***	[6.23]***
	GMM	0.59	0.63	0.57	0.62	0.68	0.43	0.53	0.56	0.68	0.59	0.48	0.53
		[6.01]***	[4.82]***	[4.48]***	[5.63]***	[5.38]***	[4.25]***	[5.15]***	[4.69]***	[4.96]***	[6.59]***	[6.31]***	[6.39]***
Horizon = 3 years	OLS	0.51	0.57	0.49	0.59	0.55	0.38	0.49	0.48	0.66	0.53	0.39	0.43
		[5.81]***	[4.84]***	[4.89]***	[5.47]***	[4.62]***	[3.81]***	[4.67]***	[4.67]***	[6.05]***	[7.11]***	[5.63]***	[5.62]***
	Hetero t	[5.68]***	[4.69]***	[4.64]***	[5.66]***	[4.53]***	[4.00]***	[4.38]***	[4.50]***	[5.42]***	[6.83]***	[5.74]***	[5.43]***
	WLS	0.38	0.49	0.45	0.58	0.56	0.40	0.45	0.53	0.35	0.43	0.32	0.33
		[5.40]***	[5.48]***	[5.67]***	[6.11]***	[5.79]***	[5.18]***	[5.80]***	[6.51]***	[5.38]***	[7.56]***	[5.81]***	[5.72]***
	GMM	0.51	0.57	0.49	0.59	0.55	0.38	0.49	0.48	0.66	0.53	0.39	0.43
		[5.50]***	[4.55]***	[4.64]***	[5.72]***	[4.56]***	[4.19]***	[5.06]***	[4.40]***	[5.31]***	[6.27]***	[5.38]***	[5.14]***
Horizon = 5 years	OLS	0.43	0.46	0.39	0.49	0.40	0.33	0.47	0.38	0.50	0.39	0.26	0.37
		[5.14]***	[3.96]***	[4.03]***	[4.94]***	[3.76]***	[3.49]***	[5.12]***	[3.93]***	[5.81]***	[5.80]***	[3.61]***	[5.10]***
	Hetero t	[4.99]***	[3.87]***	[3.86]***	[5.05]***	[3.47]***	[3.46]***	[5.25]***	[3.76]***	[5.42]***	[5.32]***	[3.68]***	[4.90]***
	WLS	0.33	0.42	0.36	0.45	0.45	0.35	0.41	0.45	0.28	0.32	0.23	0.29
		[5.02]***	[4.84]***	[4.83]***	[5.14]***	[5.07]***	[4.78]***	[5.69]***	[5.71]***	[4.84]***	[6.00]***	[4.36]***	[5.26]***
	GMM	0.43	0.46	0.39	0.49	0.40	0.33	0.47	0.38	0.50	0.39	0.26	0.37
		[5.05]***	[3.66]***	[3.87]***	[5.15]***	[3.57]***	[3.56]***	[5.40]***	[3.86]***	[5.22]***	[4.94]***	[3.64]***	[4.68]***

Table 7.18 Regression Results between Abnormal Returns of Special Dividends and the January Dummy for the period 1926 to 2008

This table shows the relationship between abnormal returns of special dividends and the *January* dummy variable for the period 1926 to 2008. The dependent variable in Panel A is market adjusted abnormal returns (CAR) and the dependent variable in Panel B is market model adjusted abnormal returns for firms announcing special dividends. EW and VW stand for equal-weighted market index and value-weighted market index, respectively. (-1, +1), (-2, +2), (-1, 0), (0, +1), (-1, +9) and (-1, +30) represent event windows (in days) relative to special dividend announcements (0 represents the actual announcement day). *Divamt* is an amount of special dividend paid per share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to special dividend announcements. *Ln(Price)* is the natural logarithm of stock price one day before special dividend announcements. *January* is a dummy variable that takes a value of one for special dividends announced in January and a value of zero if an announcement is in other months of a year. All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regression Results between Market Adjusted Cumulative Abnormal Returns and January Dummy for Special Dividends

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	3.8503	3.9671	4.7804	5.1115	1.8276	1.9074	3.8320	3.8849	5.9488	6.7008	6.9585	9.6702
	[11.40]***	[11.58]***	[11.20]***	[11.85]***	[7.36]***	[7.50]***	[12.17]***	[12.24]***	[12.37]***	[13.80]***	[10.34]***	[13.99]***
January	-0.6052	0.1432	-0.9495	0.1297	-0.4618	0.0733	-0.5839	-0.0486	-1.4215	0.1879	-1.4853	-0.0237
	[-3.63]***	[0.88]	[-4.62]***	[0.65]	[-3.70]***	[0.60]	[-3.88]***	[-0.34]	[-5.52]***	[0.77]	[-3.62]***	[-0.07]
Divamt	0.3016	0.2950	0.3683	0.3687	0.1730	0.1695	0.2962	0.2935	0.3629	0.3566	0.4249	0.4050
	[4.74]***	[4.69]***	[5.56]***	[5.62]***	[4.60]***	[4.37]***	[4.86]***	[4.88]***	[5.41]***	[5.22]***	[5.79]***	[5.39]***
Ln(Size)	0.1268	0.1056	0.1371	0.0988	0.0672	0.0532	0.1022	0.0887	0.1322	0.0731	0.1136	0.0601
	[4.85]***	[4.00]***	[3.61]***	[2.59]***	[3.01]***	[2.34]**	[4.60]***	[4.02]***	[3.25]***	[1.88]*	[1.77]*	[1.02]
Ln(Price)	-1.3548	-1.3110	-1.6091	-1.5662	-0.6466	-0.6186	-1.2864	-1.2514	-1.9356	-1.8838	-2.3890	-2.5592
	[-14.89]***	[-14.07]***	[-14.42]***	[-13.60]***	[-10.36]***	[-9.62]***	[-15.71]***	[-15.04]***	[-15.98]***	[-15.20]***	[-13.56]***	[-14.48]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0524	0.0482	0.0487	0.0455	0.0214	0.0188	0.0592	0.0552	0.0512	0.0479	0.0367	0.0426
N	16472	16472	16472	16472	16472	16472	16472	16472	16472	16472	16472	16472

Panel B: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and January Dummy for Special Dividends

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	3.7619	3.7371	4.7330	4.7688	1.7636	1.7428	3.7422	3.7222	5.8485	6.1088	7.0039	7.9881
	[11.01]***	[10.78]***	[10.96]***	[10.88]***	[7.01]***	[6.82]***	[11.89]***	[11.74]***	[11.93]***	[12.24]***	[9.70]***	[10.58]***
January	-0.2079	0.3140	-0.3263	0.4203	-0.2068	0.1683	-0.3102	0.0674	-0.7653	0.4204	-0.7435	0.4983
	[-1.36]	[1.88]*	[-1.80]*	[2.04]**	[-1.77]*	[1.35]	[-2.27]**	[0.47]	[-3.30]***	[1.55]*	[-2.24]**	[1.31]
Divamt	0.2897	0.2871	0.3473	0.3503	0.1689	0.1674	0.2835	0.2818	0.3160	0.3224	0.3180	0.3097
	[4.53]***	[4.54]***	[5.11]***	[5.17]***	[4.58]***	[4.52]***	[4.63]***	[4.66]***	[4.67]***	[4.76]***	[4.33]***	[3.92]***
Ln(Size)	0.1199	0.1096	0.1255	0.1079	0.0632	0.0550	0.0990	0.0932	0.1627	0.1210	0.1962	0.1887
	[4.63]***	[4.23]***	[3.37]***	[2.86]***	[2.84]***	[2.46]**	[4.45]***	[4.31]***	[4.17]***	[3.16]***	[3.16]***	[3.15]***
Ln(Price)	-1.3167	-1.2933	-1.5739	-1.5545	-0.6237	-0.6030	-1.2557	-1.2413	-2.0292	-1.9892	-2.6868	-2.8394
	[-14.46]***	[-13.88]***	[-14.19]***	[-13.47]***	[-10.00]***	[-9.42]***	[-15.44]***	[-15.07]***	[-17.22]***	[-16.06]***	[-15.64]***	[-15.19]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0492	0.0474	0.0454	0.0442	0.0197	0.0185	0.0560	0.0544	0.0522	0.0503	0.0387	0.0429
N	16467	16467	16467	16467	16467	16467	16467	16467	16467	16467	16467	16467

special dividend declarations using the value-weighted market model, which is similar to the findings in Table 7.18. The firms in the first quintile also have higher excess returns in January compared to the other months of a year.

Moreover, Appendix 10G illustrates the robustness results for the *January* dummy in relation to the abnormal returns of special dividends in different sub-periods. *January* remains statistically negative in all sub-samples using the equal-weighted market adjusted model. It is also negatively correlated to the ten-day excess returns with the equal-weighted market model in the sub-periods 1926 to 1940 and 1986 to 2008. Nevertheless, the coefficients of *January* are statistically positive in the value-weighted market adjusted returns from 1961 to 1985 and in the value-weighted market model adjusted returns from 1941 to 1985. These results provide additional evidence of the fact that the January Effect does not normally exist in the abnormal returns of special dividends, but may appear in certain event windows when the value-weighted market model is applied.

7.2.2 The Halloween Effect

7.2.2.1 The Frequency of Special Dividends in November-April and May-October

This section examines whether there is a Halloween Effect in special dividend announcements. In Table 7.19 and Figure 7.7, the number of special dividends is counted and graphed in the Halloween period, November to April (Nov-Apr), and in the months of May to October (May-Oct) from the beginning of 1926 to the end of 2008. As the results show, the frequency of the announcements is substantially larger in Nov-Apr than in May-Oct. In total, there are 10,928 special dividends in the Halloween period, but only 6,050 in the other half of a year. In the sub-sample periods, 294 more special dividends are announced in Nov-Apr compared to May-Oct in 1926 to 1940, and the difference increases to 1,500 after 1940. These findings strongly support Hypothesis 4 in Section 3.1.3; there are larger numbers of special dividends in the Halloween period than in May to October.

Table 7.19 Number of Special Dividends between November-April and May-October from 1926 to 2008

This table shows the number of special dividend announcements between May-October and November-April from 1926 to 2008. Special dividends are classified from the Centre for Research in Security Prices (CRSP) files by the criteria that the distribution code is 1272 for special and extra dividends, and 1262 for year-end irregular extra dividends combined. These numbers are also counted in four sub-periods to avoid noise.

Number of special dividends	Nov-Apr	May-Oct	Difference	Total
Different periods of years				
1926-1940	936	642	294	1578
1941-1960	3617	2017	1600	5634
1961-1985	3404	1989	1415	5393
1986-2008	2971	1402	1569	4373
Total	10928	6050	4878	16978

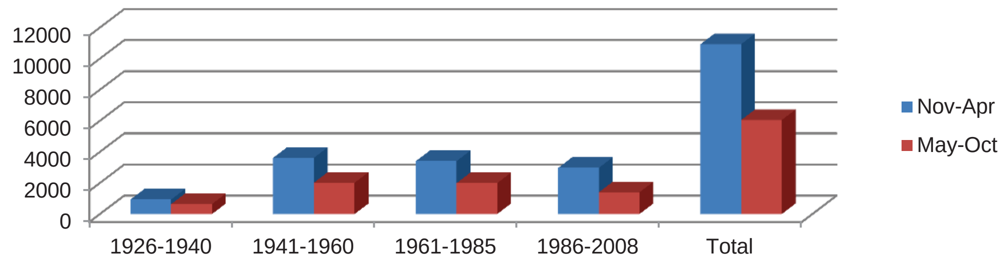

Figure 7.7 Numbers of Special Dividends between November-April and May-October from 1926 to 2008

This result is confirmed statistically by the t-test and non-parameter, Wilcoxon z test in Table 7.20. The average numbers of special dividends is 131.70 in Nov-Apr, which is significantly higher than 72.89 in May-Oct between 1926 and 2008. The *p_value* of these two tests are statistically significant at 10%, 5%, and 1% significance levels, indicating the popular months for firms to pay extra cash dividends in a year.

Table 7.20 The Frequency of Special Dividend Announcements between November-April and May-October – The t-test and non-parameter, Wilcoxon z test

This table presents the results of the t-test and non-parameter, Wilcoxon z test. *Nov-Apr* represents the number of special dividends in November to April and *May-Oct* is the number of special dividends in May to October from 1926 to 2008.

Mean			The t-test	non-parameter Test
Nov-Apr	May-Oct	Difference	P_Value	P_Value
131.70	72.89	58.81	<.0001	<.0001

7.2.2.2 The Likelihood of Special Dividends with the Halloween Dummy

Table 7.21 investigates the relationship between the likelihood of special dividend declarations and the Halloween period using more sophisticated statistical tools, logistic regressions with a dummy variable of *Halloween*. The variable takes a value of one if special dividends are announced in Nov-Apr, otherwise zero. In Panel A of the table, the coefficients of the *Halloween* are not only statistically correlated to the probability of special dividend payments, but also economically large in the overall sample and in the four sub-samples. In particular, the propensity of firms announcing special dividends in the months of November to April is 79.46%[47] higher than in the months of May to October between 1926 and 2008. Likewise, the propensity is higher by 46.45%[48] in 1926 to 1940, 82.89%[49] in 1941 to 1960, 68.49%[50] in 1961 to 1985, and 111%[51] in 1986 to 2008. These results are robust in Panel B when January is

[47] $e^{\beta} - 1 = e^{(0.5848)} - 1 = 0.7946$
[48] $e^{\beta} - 1 = e^{(0.3815)} - 1 = 0.4645$
[49] $e^{\beta} - 1 = e^{(0.6037)} - 1 = 0.8289$
[50] $e^{\beta} - 1 = e^{(0.5217)} - 1 = 0.6849$
[51] $e^{\beta} - 1 = e^{(0.7460)} - 1 = 1.1085$

Table 7.21 Logistic Regressions for the Likelihood of Special Dividends from 1926 to 2008

This table shows the likelihood of special dividend announcements related to the *Halloween* dummy from 1926 to 2008. Panel A runs logistic models only with the *Halloween* dummy, and Panel B runs logistic models with the *Halloween* and *January* dummies together. The dependent variable is a binary variable that contains a value of one if a firm announces a special dividend in the month; otherwise, zero. *Ln(Size)* is the natural logarithm of monthly market capitalization. *Ln(Price)* is the natural logarithm of monthly stock price. *January* is a dummy variable, which has a value of one for special dividends announced in January, and zero otherwise. *Halloween* is another dummy variable that takes a value of one for special dividends announced in the months of November to April and a value of zero if announcements are in the months of May to October. *HalnoJan* is the dummy variable to separate the January Effect from the Halloween Effect, which takes a value of one for special dividends announced in the months of November to April, except January and a value of zero if the announcements are in the months of May to October. The logistic regressions run on the full sample period and on four sub-periods for a robustness check to avoid noise. *p-values* are in parentheses under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Variables	Full Sample 1926-2008	Sub-periods 1926-1940	1941-1960	1961-1985	1986-2008
Panel A: Likelihood of special dividends with the Halloween dummy					
Halloween	0.5848	0.3815	0.6037	0.5217	0.7460
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Ln(Size)	-0.3704	0.0817	-0.0943	-0.3394	-0.2392
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Ln(Price)	1.0156	0.6221	0.6790	1.0131	0.6659
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Intercept	-4.3737	-7.4160	-5.2801	-4.7632	-5.4532
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Panel B: Likelihood of special dividends with the January and Halloween dummies					
HalnoJan	0.6470	0.3928	0.6385	0.6026	0.8358
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
January	-0.2000	-0.0124	0.0925	-0.3238	-0.4091
	(<.0001)***	(0.8350)	(0.1873)	(0.0003)***	(<.0001)***
Ln(Size)	-0.3708	0.0816	-0.0947	-0.3402	-0.2396
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Ln(Price)	1.0164	0.6224	0.6795	1.0149	0.6663
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Intercept	-4.3717	-7.4161	-5.2779	-4.7601	-5.4489
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***

extracted from the Halloween period. In fact, the coefficients of *HalnoJan* are larger compared to the coefficients of *Halloween* as *January* is statistically negative in the full sample period and in the sub-periods after 1960. The findings are consistent with Hypothesis 5 in Section 3.1.3 and strongly approve that special dividends are most likely to be announced at the end of a year, which may be due to the Christmas holiday in November and December.

7.2.2.3 Abnormal Returns of Special Dividends in November-April and May-October

The market reaction to special dividend announcements is examined in this section using event study methodologies. In Table 7.22, the short-term abnormal returns of special dividends are higher in the months of November to April (Nov-Apr) than in the months of May to October (May-Oct) with the Mean Adjusted Model. The returns are between 1% and 2% in the Halloween period, which is about 0.2% to 0.5% higher than in the other half of a year. The returns are also higher using the value-weighted Market Model and Market Adjusted Model for the event windows of ten days and thereafter the announcements; for example, there are market adjusted returns of 1% to 4% and market model adjusted returns of 0.8% to 1.5% in Nov-Apr, which are about 0.2% to 1% larger than in May-Oct. However, the equal-weighted models produce lower excess returns in the Halloween months. There are equal-weighted market adjusted returns of around 1% and market model adjusted returns of about 0.8%, which are 0.2% to 0.9% lower than in the other half of a year. In addition, the value-weighted abnormal

Table 7.22 Short-Run Excess Returns of Special Dividend Announcements between November-April and May-October from 1926 to 2008

This table calculates excess returns for the firms announcing special dividends between November-April and May-October from 1926 to 2008. Mean adjusted returns are calculated by $AR_{it}=R_{it}-E(R_{it})$, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, $E(R_{it})$ is constant mean returns for security *i* at time *t* with estimation period of 255 trading days. Market adjusted returns are using $AR_{it}=R_{it}-R_{mt}$, where R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes. Market model adjusted returns are measured by $AR_{it}=R_{it}-\hat{\alpha}_i-\hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the Market Model of $R_{it}=\alpha_i+\beta_i * R_{mt}+\varepsilon_i$ with estimation period of 255 trading days. Short term event windows are examined one day surrounding an announcement date, one week after an announcement date, 10 days, 15 days, three weeks, one month, two months, three months and six months after an announcement date (0 represents the actual announcement day). All returns are in percentage with *t*-statistics underneath. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Excess returns for special dividends

May-Oct	Raw Returns	Market Adjusted Returns		Market Model Adjusted Returns		Mean Adjusted Returns
		EW	VW	EW	VW	
Event windows						
(-30,-2)	2.07	1.07	1.56	0.45	0.01	-0.50
	[14.83]***	[7.52]***	[11.98]***	[4.30]***	[0.61]	[-3.62]***
(-1,+1)	1.35	1.23	1.25	1.16	1.08	1.08
	[19.94]***	[18.37]***	[18.42]***	[17.80]***	[16.12]***	[15.50]***
(-1, 0)	0.73	0.69	0.70	0.63	0.57	0.55
	[13.90]***	[13.27]***	[13.43]***	[12.54]***	[11.06]***	[10.02]***
(0, +1)	1.26	1.15	1.16	1.10	1.05	1.08
	[21.02]***	[19.29]***	[19.20]***	[18.95]***	[17.78]***	[17.70]***
(1, +7)	1.48	1.11	1.20	0.99	0.86	0.86
	[18.66]***	[13.99]***	[14.98]***	[13.66]***	[11.61]***	[10.69]***
(1, +10)	1.66	1.17	1.29	0.99	0.81	0.77
	[17.91]***	[12.85]***	[14.14]***	[12.00]***	[9.70]***	[8.11]***
(1, +15)	1.74	1.02	1.21	0.75	0.46	0.42
	[16.08]***	[9.39]***	[11.22]***	[8.23]***	[5.16]***	[3.83]***
(1, +21)	2.10	1.07	1.41	0.73	0.38	0.25
	[17.15]***	[8.45]***	[11.56]***	[7.31]***	[4.21]***	[2.26]**
After						
1month	2.62	1.23	1.69	0.70	0.20	0.00
	[18.77]***	[8.48]***	[12.11]***	[6.67]***	[2.92]***	[0.92]
2month	4.79	1.20	2.65	0.33	-0.22	-0.42
	[24.91]***	[4.80]***	[13.57]***	[3.52]***	[0.83]	[-0.40]
3month	7.37	0.62	3.78	-0.38	-0.33	-0.40
	[31.12]***	[-0.08]	[15.57]***	[0.55]	[1.07]	[0.69]
6month	13.55	-0.85	5.95	-2.46	-1.55	-1.82
	[36.99]***	[-5.66]***	[16.07]***	[-3.17]***	[-1.06]	[-1.82]*

Nov-Apr	Raw Returns	Market Adjusted Returns		Market Model Adjusted Returns		Mean Adjusted Returns
		EW	VW	EW	VW	
Event windows						
(-30,-2)	2.73	0.57	1.11	0.03	0.08	0.37
	[7.64]***	[3.96]***	[9.73]***	[2.19]**	[-1.61]	[2.32]**
(-1,+1)	1.35	0.99	1.09	0.99	1.00	1.11
	[11.96]***	[19.31]***	[22.25]***	[8.49]***	[8.60]***	[9.45]***
(-1, 0)	0.73	0.50	0.57	0.50	0.50	0.57
	[6.19]***	[11.36]***	[13.62]***	[3.88]***	[3.94]***	[4.49]***
(0, +1)	1.17	0.92	0.99	0.92	0.93	1.01
	[28.07]***	[20.55]***	[22.98]***	[21.49]***	[21.96]***	[23.71]***
(1, +7)	1.61	0.73	1.06	0.77	0.86	1.04
	[29.09]***	[11.14]***	[18.00]***	[13.89]***	[16.02]***	[18.79]***
(1, +10)	1.83	0.57	1.11	0.64	0.83	1.01
	[27.13]***	[6.11]***	[15.50]***	[9.94]***	[13.16]***	[15.30]***
(1, +15)	2.34	0.29	1.26	0.44	0.81	1.11
	[31.39]***	[0.50]	[15.71]***	[6.36]***	[11.92]***	[15.50]***
(1, +21)	2.97	0.13	1.59	0.32	0.95	1.26
	[33.81]***	[-2.63]***	[17.31]***	[4.23]***	[11.90]***	[14.79]***
After						
1month	3.99	-0.32	1.95	0.02	1.10	1.53
	[39.77]***	[-8.22]**	[18.82]***	[1.50]	[12.43]***	[16.00]***
2month	6.83	-0.83	3.25	-0.38	1.52	1.94
	[47.79]***	[-12.27]***	[22.00]***	[-0.89]	[11.67]***	[13.26]***
3month	8.72	-0.86	3.90	-0.72	1.06	1.40
	[49.59]***	[-11.94]***	[20.90]***	[-2.27]**	[6.68]***	[7.91]***
6month	12.40	-1.50	4.60	-2.40	-1.90	-2.12
	[46.87]***	[-10.96]***	[16.75]***	[-4.28]***	[-3.17]***	[-3.61]***

returns are 0.1% higher in May-Oct one day surrounding the announcements, indicating that the Halloween Effect does not exist in the equal-weighted adjusted excess returns of special dividend declarations, but is present in the value-weighted adjusted returns when the event windows are greater than ten days[52].

Table 7.23 Long-Term Post-announcement Abnormal Returns Using Monthly Fama-French (1993) and Carhart (1997) Calendar Time Portfolio Regressions for Special Dividend Announcements between November-April and May-October from 1926 to 2008

This table calculates long term abnormal returns for the one-, two-, three-, and five-year post-announcement horizons, for the firms announcing special dividends between November-April and May-October during the period 1926 to 2008. Monthly rebalanced calendar time portfolio returns are calculated each month from all firms experience a special dividend in the previous 12, 24, 36, or 60 calendar months. Monthly excess returns to calendar time portfolios are: $CTAR_t=R_{pt}-E(R_{pt})$, where R_{pt} is monthly return on portfolio of event firms at time *t*, and $E(R_{pt})$ is expected return on event portfolio at time *t*. The expected return on event portfolio, for each sample firm in month *t*, is measured by Fama-French (1993) three-factor model and Carhart (1997) four-factor model:

$$R_{it} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

$$R_{it} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + m_i PR1YR_t + \varepsilon_{it}$$

R_{it} is firm i's monthly return, R_{ft} is the one-month T-bills return, and R_{mt} is the market return on both CRSP equal-weighted and value-weighted portfolio of all NYSE, AMEX, and Nasdaq stocks. SMB_t is the difference in returns between portfolios of small and big stocks. HML_t is the difference in returns between portfolios of high and low book-to-market ratio stocks. $PR1YR_t$ is defined as in Carhart (1997) as an equally weighted portfolio return of stocks with highest returns less an equally weighted portfolio return of stocks with lowest returns in months *t-12* to *t-2*. Ordinary, Weighted Least Squares (White, 1980) and Generalized Method of Moment (GMM) are estimated. All abnormal returns are in percentage and *t*-statistics of intercepts are shown in brackets under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Calendar Portfolio post period	Model Estimated	Intercept of the Fama-French Regression				Intercept of the Fama-French-Carhart Regression			
		Three-factor without momentum (Fama-French, 1993)				Four-factor with momentum (Carhart, 1997)			
		Equal-weighted		Value-weighted		Equal-weighted		Value-weighted	
		MayOct	NovApr	MayOct	NovApr	MayOct	NovApr	MayOct	NovApr
Horizon = 1 year		0.79	0.64	0.80	0.65	0.64	0.57	0.75	0.67
	OLS	[10.24]***	[10.54]***	[10.38]***	[10.57]***	[8.30]***	[9.14]***	[9.45]***	[10.63]***
	Hetero t	[10.27]***	[10.66]***	[10.31]***	[10.55]***	[8.25]***	[8.58]***	[9.79]***	[10.01]***
		0.70	0.54	0.70	0.53	0.60	0.46	0.67	0.53
	WLS	[13.27]***	[10.77]***	[13.21]***	[10.40]***	[11.26]***	[9.07]***	[12.23]***	[10.06]***
		0.79	0.64	0.80	0.65	0.64	0.57	0.75	0.67
	GMM	[9.83]***	[9.60]***	[9.62]***	[9.30]***	[7.90]***	[8.14]***	[9.27]***	[9.24]***
Horizon = 2 years		0.57	0.52	0.57	0.53	0.51	0.44	0.61	0.54
	OLS	[8.86]***	[9.00]***	[8.82]***	[9.04]***	[7.73]***	[7.48]***	[9.11]***	[9.03]***
	Hetero t	[8.93]***	[9.17]***	[8.84]***	[9.09]***	[7.51]***	[6.96]***	[8.95]***	[8.54]***
		0.51	0.41	0.52	0.41	0.43	0.35	0.52	0.43
	WLS	[10.23]***	[8.51]***	[10.22]***	[8.26]***	[8.72]***	[7.18]***	[9.95]***	[8.43]***
		0.57	0.52	0.57	0.53	0.51	0.44	0.61	0.54
	GMM	[8.19]***	[8.11]***	[7.88]***	[7.92]***	[6.79]***	[6.42]***	[7.93]***	[7.72]***
Horizon = 3 years		0.46	0.42	0.47	0.43	0.43	0.36	0.53	0.46
	OLS	[7.82]***	[7.65]***	[7.82]***	[7.67]***	[6.99]***	[6.36]***	[8.57]***	[8.02]***
	Hetero t	[8.03]***	[7.70]***	[8.02]***	[7.66]***	[6.80]***	[5.92]***	[8.36]***	[7.69]***
		0.41	0.35	0.43	0.35	0.36	0.30	0.44	0.37
	WLS	[8.89]***	[7.37]***	[8.81]***	[7.20]***	[7.45]***	[6.12]***	[8.82]***	[7.52]***
		0.46	0.42	0.47	0.43	0.43	0.36	0.53	0.46
	GMM	[7.17]***	[6.78]***	[6.95]***	[6.70]***	[6.15]***	[5.40]***	[7.46]***	[6.94]***
Horizon = 5 years		0.35	0.32	0.36	0.33	0.31	0.26	0.41	0.37
	OLS	[6.59]***	[6.02]***	[6.50]***	[5.95]***	[5.66]***	[4.84]***	[7.33]***	[6.52]***
	Hetero t	[6.77]***	[6.12]***	[6.72]***	[6.01]***	[5.45]***	[4.54]***	[7.23]***	[6.36]***
		0.33	0.28	0.34	0.28	0.27	0.23	0.36	0.31
	WLS	[7.52]***	[6.20]***	[7.45]***	[6.03]***	[6.08]***	[4.96]***	[7.59]***	[6.47]***
		0.35	0.32	0.36	0.33	0.31	0.26	0.41	0.37
	GMM	[6.09]***	[5.33]***	[6.03]***	[5.28]***	[5.02]***	[4.14]***	[6.73]***	[5.82]***

On the other hand, the long-run abnormal returns from initiating special dividends are consistently larger in May-Oct than in Nov-Apr, but the returns and the difference in returns are economically small as shown in Table 7.23. For example, there are approximately 0.7% to

[52] These figures described in this paragraph are the average of the market adjusted returns, market model adjusted returns and mean adjusted returns shown in Table 7.22.

0.8% excess returns one year after special dividends, 0.5% to 0.6% two years after, 0.4% to 0.5% three years after, and 0.3% to 0.4% five years after the announcements. The abnormal returns are higher in May-Oct than in the Halloween period by about 0.1% to 0.2% in the one-year window, 0.05% to 0.1% in the two-year window, 0.04% to 0.07% in the three-year window, and 0.03% to 0.05% in the five-year window using the Fama-French three-factor and Carhart four-factor Calendar Time Portfolio regressions[53]. These findings support the Efficient Market Hypothesis and indicate that there is no Halloween Effect in the long-term market reaction to special dividend announcements.

7.2.2.4 Multivariate Regression Results of Abnormal Returns on the Halloween Dummy

In order to investigate whether there is a statistical relationship between the short-term abnormal returns of special dividends and the *Halloween* dummy, multivariate regression analysis is applied in Table 7.24. The coefficients of the *Halloween* are statistically positive in the 30-day abnormal returns using the value-weighted market model, but negative in most equal-weighted and three- and 10-day value-weighted abnormal returns. In particular, the equal-weighted excess returns are up to 0.2% lower within one or two days if firms initiate special dividends in Nov-Apr than in May-Oct. Similarly, the equal-weighted ten- day excess returns are up to 0.5% smaller and the 30-day excess returns are about 0.8% lower in the Halloween period compared to the rest of the year. These findings are the same as the outcomes in the event studies: the Halloween Effect appears in the short-run value-weighted abnormal returns after ten days. In addition, the coefficients of *January* are also significant and have the same signs along with the *HalnoJan* dummy in the 30-day abnormal returns, the equal-weighted ten-day abnormal returns, and the equal-weighted abnormal returns one day surrounding special dividend distributions in Panel D. This result indicates that the excess returns being lower (higher) in Nov-Apr is somehow due to the significant lower (higher) returns in January.

7.2.2.5 Robustness Check

The robustness check examines the abnormal returns of special dividend announcements between May-Oct and Nov-Apr in four sub-periods, six industries, and five size quintiles as shown in Appendix 11A. According to the results, the excess returns of one day within special dividend declarations are larger in May-Oct than in Nov-Apr in most sub-samples. The returns are also higher in May-Oct in the event windows of one, two, and three months after special

[53] These figures are the average returns of Fama-French Three-factor model and Carhart Four-factor model shown in Table 7.23.

Table 7.24 Regression Results between Abnormal Returns of Special Dividends and the Halloween Dummy for the period 1926 to 2008

This table shows the relationship between abnormal returns of special dividends and the *Halloween* dummy variable for the period 1926 to 2008. Panel A is the market adjusted abnormal returns (CAR), Panel B is market model adjusted abnormal returns with the *Halloween* dummy individually for firms announcing special dividends; Panel C is the market adjusted abnormal returns (CAR), and Panel D is market model adjusted abnormal returns with the *January* and *Halloween* dummies together for firms announcing special dividends. EW and VW stand for equal-weighted market index and value-weighted market index, respectively. (-1, +1), (-2, +2), (-1, 0), (0, +1), (-1, +9) and (-1, +30) represent event windows (in days) relative to special dividend announcements (0 represents the actual announcement day). *Divamt* is an amount of special dividend paid per share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to special dividend announcements. *Ln(Price)* is the natural logarithm of stock price one day before special dividend announcements. *January* is a dummy variable that takes a value of one for special dividends announced in January and a value of zero if an announcement is in other months of a year. *Halloween* is another dummy variable that takes a value of one for special dividends announced in the months of November to April and a value of zero if announcements are in the months of May to October. *HalnoJan* is the dummy variable to separate the January Effect from the Halloween Effect, which takes a value of one for special dividends announced in the months of November to April, except January and a value of zero if the announcements are in the months of May to October. All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regression Results between Market Adjusted Cumulative Abnormal Returns and Halloween Dummy for Special Dividends

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	3.9469	4.0692	4.8419	5.1807	1.8877	1.9753	3.9226	3.9776	6.2659	6.8996	7.8272	9.6059
	[11.55]***	[11.73]***	[11.38]***	[12.03]***	[7.59]***	[7.73]***	[12.31]***	[12.38]***	[12.91]***	[14.04]***	[11.54]***	[13.80]***
Halloween	-0.2513	-0.1621	-0.2345	-0.1056	-0.1677	-0.1109	-0.2378	-0.1709	-0.7501	-0.3279	-1.7371	0.1109
	[-2.81]***	[-1.79]*	[-2.04]**	[-0.91]	[-2.29]**	[-1.49]	[-2.95]***	[-2.11]**	[-5.27]***	[-2.36]**	[-7.68]***	[0.54]
Divamt	0.3010	0.2943	0.3680	0.3682	0.1726	0.1690	0.2956	0.2929	0.3608	0.3552	0.4189	0.4055
	[4.74]***	[4.69]***	[5.56]***	[5.61]***	[4.60]***	[4.37]***	[4.85]***	[4.88]***	[5.39]***	[5.21]***	[5.70]***	[5.40]***
Ln(Size)	0.1318	0.1073	0.1429	0.0999	0.0707	0.0544	0.1070	0.0910	0.1460	0.0768	0.1404	0.0587
	[5.02]***	[4.06]***	[3.74]***	[2.61]***	[3.15]***	[2.39]**	[4.81]***	[4.13]***	[3.58]***	[1.98]**	[2.20]**	[1.00]
Ln(Price)	-1.3651	-1.3126	-1.6224	-1.5669	-0.6541	-0.6200	-1.2963	-1.2550	-1.9629	-1.8880	-2.4350	-2.5574
	[-15.02]***	[-14.12]***	[-14.51]***	[-13.63]***	[-10.47]***	[-9.65]***	[-15.85]***	[-15.13]***	[-16.18]***	[-15.29]***	[-13.80]***	[-14.49]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0519	0.0484	0.0474	0.0455	0.0209	0.0190	0.0587	0.0555	0.0510	0.0483	0.0415	0.0427
N	16472	16472	16472	16472	16472	16472	16472	16472	16472	16472	16472	16472

Panel B: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and Halloween Dummy for Special Dividends

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	3.8499	3.8122	4.7936	4.8032	1.8150	1.7874	3.8286	3.8009	6.0756	6.2026	7.4528	7.6059
	[11.15]***	[10.86]***	[11.13]***	[10.97]***	[7.18]***	[6.95]***	[12.03]***	[11.83]***	[12.29]***	[12.32]***	[10.32]***	[10.07]***
Halloween	-0.1839	-0.0919	-0.1508	-0.0054	-0.1187	-0.0569	-0.1946	-0.1309	-0.5047	-0.1110	-0.8961	0.7450
	[-2.13]**	[-1.02]	[-1.39]	[-0.05]	[-1.66]*	[-0.78]	[-2.50]**	[-1.64]	[-3.95]***	[-0.80]	[-4.47]***	[3.29]***
Divamt	0.2891	0.2865	0.3469	0.3499	0.1686	0.1671	0.2829	0.2813	0.3145	0.3217	0.3149	0.3124
	[4.52]***	[4.54]***	[5.11]***	[5.17]***	[4.58]***	[4.52]***	[4.63]***	[4.66]***	[4.66]***	[4.75]***	[4.29]***	[3.96]***
Ln(Size)	0.1229	0.1100	0.1284	0.1068	0.0653	0.0553	0.1024	0.0947	0.1715	0.1213	0.2101	0.1775
	[4.75]***	[4.24]***	[3.43]***	[2.82]***	[2.92]***	[2.45]**	[4.70]***	[4.39]***	[4.39]***	[3.17]***	[3.39]***	[2.96]***
Ln(Price)	-1.3221	-1.2921	-1.5798	-1.5507	-0.6278	-0.6025	-1.2622	-1.2430	-2.0457	-1.9873	-2.7103	-2.8210
	[-14.56]***	[-13.91]***	[-14.26]***	[-13.45]***	[-10.07]***	[-9.41]***	[-15.56]***	[-15.13]***	[-17.42]***	[-16.11]***	[-15.78]***	[-15.19]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0494	0.0472	0.0453	0.0439	0.0197	0.0184	0.0562	0.0546	0.0525	0.0501	0.0399	0.0438
N	16467	16467	16467	16467	16467	16467	16467	16467	16467	16467	16467	16467

Panel C: Regression Results between Market Adjusted Cumulative Abnormal Returns and January vs Halloween Dummies for Special Dividends

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	3.9523	4.0670	4.8510	5.1789	1.8920	1.97411	3.9278	3.9774	6.2779	6.8963	7.8359	9.6066
	[11.56]***	[11.74]***	[11.38]***	[12.04]***	[7.60]***	[7.73]***	[12.31]***	[12.38]***	[12.94]***	[14.05]***	[11.54]***	[13.80]***
HalnoJan	-0.1906	-0.1866	-0.1319	-0.1259	-0.1203	-0.1247	-0.1790	-0.1729	-0.6149	-0.3654	-1.6394	0.1188
	[-2.09]**	[-2.00]**	[-1.12]	[-1.04]	[-1.59]	[-1.61]	[-2.17]**	[-2.07]**	[-4.24]***	[-2.56]***	[-7.08]***	[0.56]
January	-0.7226	0.0282	-1.0307	0.0522	-0.5359	-0.0036	-0.6942	-0.1551	-1.8004	-0.0372	-2.4953	0.0495
	[-4.12]***	[0.17]	[-4.80]***	[0.25]	[-4.09]***	[-0.03]	[-4.40]***	[-1.04]	[-6.62]***	[-0.14]	[-5.76]***	[0.14]
Divamt	0.3009	0.2943	0.3678	0.3682	0.1725	0.1690	0.2955	0.2929	0.3605	0.3553	0.4187	0.4055
	[4.74]***	[4.68]***	[5.56]***	[5.61]***	[4.60]***	[4.37]***	[4.85]***	[4.88]***	[5.39]***	[5.21]***	[5.70]***	[5.40]***
Ln(Size)	0.1295	0.1082	0.1390	0.1006	0.0689	0.0550	0.1048	0.0911	0.1409	0.0783	0.1367	0.0584
	[4.96]***	[4.11]***	[3.64]***	[2.62]***	[3.07]***	[2.41]**	[4.73]***	[4.15]***	[3.48]***	[2.01]**	[2.15]**	[1.00]
Ln(Price)	-1.3590	-1.3152	-1.6120	-1.5690	-0.6493	-0.6214	-1.2904	-1.2552	-1.9491	-1.8918	-2.4251	-2.5566
	[-14.96]***	[-14.13]***	[-14.44]***	[-13.62]***	[-10.37]***	[-9.63]***	[-15.79]***	[-15.11]***	[-16.15]***	[-15.29]***	[-13.81]***	[-14.50]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0527	0.0485	0.0488	0.0456	0.0216	0.0190	0.0595	0.0555	0.0527	0.0484	0.0419	0.0427
N	16472	16472	16472	16472	16472	16472	16472	16472	16472	16472	16472	16472

Panel D: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and January vs Halloween Dummies for Special Dividends

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	3.8514	3.8084	4.7964	4.7986	1.8167	1.7854	3.8311	3.7996	6.0817	6.1976	7.4571	7.6036
	[11.15]***	[10.88]***	[11.13]***	[10.98]***	[7.19]***	[6.95]***	[12.03]***	[11.84]***	[12.31]***	[12.33]***	[10.32]***	[10.07]***
HalnoJan	-0.1675	-0.1336	-0.1188	-0.0558	-0.0995	-0.0796	-0.1665	-0.1449	-0.4365	-0.1662	-0.8484	0.7197
	[-1.88]*	[-1.44]	[-1.05]	[-0.46]	[-1.34]	[-1.04]	[-2.07]**	[-1.76]*	[-3.32]***	[-1.17]	[-4.11]***	[3.11]***
January	-0.3111	0.2317	-0.3994	0.3859	-0.2680	0.1192	-0.4128	-0.0219	-1.0342	0.3180	-1.2662	0.9417
	[-1.93]*	[1.33]	[-2.12]**	[1.81]*	[-2.19]**	[0.91]	[-2.88]***	[-0.15]	[-4.24]***	[1.12]	[-3.59]***	[2.30]**
Divamt	0.2891	0.2866	0.3468	0.3501	0.1685	0.1671	0.2828	0.2813	0.3143	0.3218	0.3148	0.3124
	[4.52]***	[4.54]***	[5.11]***	[5.17]***	[4.58]***	[4.52]***	[4.63]***	[4.65]***	[4.66]***	[4.75]***	[4.29]***	[3.96]***
Ln(Size)	0.1223	0.1115	0.1272	0.1087	0.0646	0.0561	0.1013	0.0953	0.1689	0.1234	0.2083	0.1784
	[4.74]***	[4.31]***	[3.40]***	[2.87]***	[2.88]***	[2.49]**	[4.66]***	[4.43]***	[4.33]***	[3.22]***	[3.36]***	[2.98]***
Ln(Price)	-1.3204	-1.2962	-1.5765	-1.5558	-0.6259	-0.6048	-1.2594	-1.2445	-2.0388	-1.9929	-2.7055	-2.8234
	[-14.51]***	[-13.92]***	[-14.20]***	[-13.46]***	[-10.00]***	[-9.41]***	[-15.52]***	[-15.12]***	[-17.34]***	[-16.10]***	[-15.76]***	[-15.18]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0494	0.0476	0.0455	0.0442	0.0199	0.0186	0.0564	0.0547	0.0530	0.0504	0.0400	0.0438
N	16467	16467	16467	16467	16467	16467	16467	16467	16467	16467	16467	16467

dividends using the equal-weighted market index. However, the returns are generally larger in Nov-Apr using the value-weighted market index. These results offer more evidence that the Halloween Effect exists in the value-weighted short-term abnormal returns of special dividends, particularly when the event windows are greater than ten days. In addition, the first industry group of Agriculture, Forestry, Fishing, Mining, and Construction and the third industry group of Wholesale and Retail Trade appear to have higher excess returns in the Halloween period than in May-Oct.

Moreover, Appendix 11B presents a robust result of the *Halloween* dummy being negative using the equal-weighted market index in all sub-periods in Panels A and C. The coefficients of *Halloween* are also negative in the ten-day value-weighted market adjusted returns during 1961 to 2008 in Panel B. However, *Halloween* is positively correlated to the 30-day value-weighted market model adjusted returns from 1961 to 2008 in Panel D. These regression results are almost identical to the robustness findings in the event studies. Furthermore, the coefficients of *January* are significant and have the same signs along with the *HalnoJan* dummy in the sub-period from 1941 to 2008 in Panel E, and from 1941 to 1985 in Panels G and H. This means that some significant low excess returns in the Halloween period being caused by the significant low returns in January is robust in these sub-periods. The results show a negative signal for firms to pay extra cash back to their shareholders in January because the announcements indicate that firms face limited investment opportunities at the start of a year.

7.3 Summary

In conclusion, this chapter investigates whether there is a monthly pattern of the January Effect or Halloween Effect in the likelihood and abnormal returns of stock split and special dividend announcements. For stock splits, the frequency is not particularly high in January, but slightly higher in the Halloween period than in May-Oct. The *Halloween* dummy is statistically positive in the overall sample and in most sub-samples in relation to the likelihood of the announcements. The *January* dummy is also positive in the whole sample, but only significant in two out of four sub-samples. This result indicates that firms are more likely to announce stock splits in Nov-Apr, but not in January during 1926 to 1960 and 1976 to 1995. Additionally, there is no January Effect or Halloween Effect in the equal-weighted adjusted abnormal returns, but the excess returns of stock splits are larger in Nov-Apr using the value-weighted models for the event windows that are greater than ten days and using the Mean Adjusted Model. This finding is robust in the sub-periods 1961 to 1975, 1976 to 1995, and 1996 to 2008. Thus, whether the January Effect or Halloween Effect exists in the abnormal returns of stock split announcements depends on which model is applied.

Similarly, the excess returns of special dividend distributions are higher in the Halloween period with the Mean Adjusted Model and the value-weighted models when the event windows are ten days and thereafter the announcements, as shown in the sub-periods from 1961 to 2008. Moreover, the frequency of special dividends is substantially larger in Nov-Apr than in May-Oct. The *Halloween* dummy is also significantly positive in the overall sample and in all sub-samples using the logistic regressions. This evidence strongly suggests that the Halloween Effect exists in the likelihood of the occurrence of special dividend announcements. Firms are most likely to pay special dividends at the end of a year. However, there is no January Effect in both likelihood and abnormal returns of special dividend distributions. In fact, the frequency, likelihood, and the excess returns are normally lower in January than in the other months of a year, as most coefficients of *January* are statistically negative in the logistic models and multivariate regressions.

CHAPTER EIGHT – RESULTS AND DISCUSSION OF THE DOMINANT MACRO-DETERMINANTS

This chapter examines the dominant effect of macro-determinants on stock splits and special dividend announcements. It first compares the effects of dummy variables of *Bull*, *Expansion*, *January*, and *Halloween* on the firms' decisions to split shares or initiate special dividends. Instead of using the dummy variables, this analysis additionally employs investor sentiment variables and business cycle factors to examine the dominant effect on the likelihood of these announcements. Then, this chapter presents the results of the dominant factors on the abnormal returns of stock splits and special dividend announcements, by using the comparisons between *Bull* and *Expansion*, and between investor sentiment and business cycle variables along with the monthly effects of *January* and *Halloween* dummies.

8.1 The Predominant Effect of Macro-Determinants on Corporate Decision to Split Shares or Pay Special Dividends

8.1.1 Stock Splits

Chapters 5, 6 and 7 have examined whether market conditions, business cycles, and monthly patterns of the January Effect and Halloween Effect can affect firms' decisions and abnormal returns of stock splits and special dividend announcements. The findings strongly support that the Market Driven Theory, Economic Efficiency Hypothesis, the January Effect and the Halloween Effect are important explanations for the aggregate activities of these two types of announcements. However, given the debate of whether the traditional efficiency hypothesis or the modern market-timing theory is the primary motive for companies to undertake corporate events in the literature, this chapter assesses the explanatory power of all the variables together to investigate which one of the explanations plays the most important or dominant part in stock splits and special dividend announcements. The analysis consists of the examination of the predominant effect of macro-determinants on the likelihood and abnormal returns of stock splits and special dividends.

As Table 8.1 shows, the dummy variables of *Bull*, *Expansion*, and *January* are all statistically significant and positive in the period between 1926 and 2008, with *Expansion* has the largest coefficients. This result is robust in the sub-periods 1926 to 1960, 1961 to 1975, and 1976 to 1995. From 1926 to 1960, *Bull* is not significant, *January* is statistically negative, and *Expansion* and *Halloween* are economically positive. This result means that firms are more likely to split shares during economic expansions or in the months of November, December, February, March, and April. In the period 1961 to 1975, *Expansion*, *January*, and *Halloween* are all economically positive, but *Bull* is statistically negative, representing the probability that firms announcing splits is higher in expansions and in the Halloween period than in bull markets. During 1976 to 1995, not only is *Expansion* economically positive, but *Bull* and *Halloween* are also statistically positive. This shows that the tendency of stock splits is higher in good times, such as in bull markets and in expansions, as well as during the Halloween period. However, in the most recent period between 1996 and 2008, only *Bull* and *January* are significantly positive, signifying that stock splits become more popular in bull markets and in January. These results indicate that the dominant macro-determinant for the likelihood of the occurrence of stock split announcements is *Expansion*. Firms are most likely to split shares during economic expansionary periods, followed by the good market condition of *Bull* markets, which is more consistent with the Neoclassical Efficiency Hypothesis.

Table 8.1 The Dominant Dummy Variable for the Likelihood of Stock Splits from 1926 to 2008

This table shows the dominant dummy variable for the likelihood of the occurrence of stock split announcements from 1926 to 2008. The dependent variable is a binary variable that contains a value of one if a firm announces a stock split in the month; otherwise, zero. *Ln(Size)* is the natural logarithm of monthly market capitalization. *Ln(Price)* is the natural logarithm of monthly stock price. *Bull* is a dummy variable that takes a value of one for a split announced in bull markets and a value of zero for an announcement in bear markets. Bull and bear markets are defined from Ohn, Taylor and Pagan (2004)'s turning points. *Expansion* is a dummy variable that takes a value of one for a stock split announced in economic expansion periods and a value of zero for an announcement in contraction periods. Economic expansion and contraction periods are determined by the NBER (www.nber.org/cycles/cyclesmain.html). *January* is a dummy variable that takes a value of one for stock splits announced in January and a value of zero if announcements are in other months of a year. *Halloween* is another dummy variable that takes a value of one for stock splits announced in the months of November to April and a value of zero if announcements are in the months of May to October. The logistic regressions run on the full sample period and on four sub-periods for a robustness check to avoid noise. *p-values* are in parentheses under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Full Sample	Sub-periods			
Variables	1926-2008	1926-1960	1961-1975	1976-1995	1996-2008
Bull	0.1645	-0.0597	-0.1693	0.0780	0.3267
	(<.0001)***	(0.3592)	(0.0002)***	(0.0019)***	(<.0001)***
Expansion	0.4370	0.4915	0.3449	0.1847	-0.0267
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(0.7889)
January	0.0379	-0.4477	0.2034	-0.0526	0.2210
	(<.0001)***	(0.0007)***	(0.0038)***	(0.1938)	(<.0001)***
Halloween	0.0729	0.1303	0.2861	0.0415	0.0527
	(0.1852)	(0.0373)**	(<.0001)***	(0.0597)*	(0.1169)
Ln(Size)	-0.0643	0.0897	-0.4446	-0.2432	-0.0274
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(0.0033)***
Ln(Price)	1.0894	1.0852	2.0374	1.4722	1.0949
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Intercept	-8.3440	-10.9801	-7.4025	-6.6143	-8.7611
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***

Instead of using the dummy variables of *Bull* and *Expansion*, Table 8.2 runs the likelihood of stock splits on investor sentiment and business cycle variables along with the monthly dummies. All the variables are statistically significant in the overall sample period 1960 to 2008. The coefficient of *es* is the most economically significant, followed by *turn*, *DEF*, and *UNEMP*. In the first sub-period 1960 to 1975, *DEF* has the largest coefficients in absolute value, ahead of *UNEMP* and *turn*. The business cycle variables of *DIV* and *inf* are also highly significant in the forecasting model. However, the sentiment variables are less significant than the monthly dummies and the business cycle factors, which is the same in the next ten year

Table 8.2 The Dominant Macro-Determinant for the Likelihood of Stock Splits from 1960 to 2008

This table shows the dominant macro-determinant for the likelihood of the occurrence of stock split announcements from 1960 to 2008. The dependent variable is a binary variable that contains a value of one if a firm announces a stock split in the month; otherwise, zero. *Ln(Size)* is the natural logarithm of monthly market capitalization. *Ln(Price)* is the natural logarithm of monthly stock price. *January* is a dummy variable that takes a value of one for stock splits announced in January and a value of zero if announcements are in other months of a year. *Halloween* is another dummy variable that takes a value of one for stock splits announced in the months of November to April and a value of zero if announcements are in the months of May to October. *pdnd* is the difference in returns on dividend- and non-dividend- paying stocks in a month; *nipo* is the number of initial public offerings (IPOs); *ripo* is the first-day returns on IPOs; *turn* is the NYSE share turnovers; *cefd* is the close-end fund discount; and *es* is the level of equity over the level of debt issuance in a month. *DIV* is the market dividend yield, defined as the total dividend payments on the market over the current level of the index. *DEF* is the default spread, defined as the difference between the average yield of bonds rated BAA by Moodys and the average yield of bonds with a Moodys rating of AAA. *TERM* is the term spread, measured as the difference between the average yield of long term Treasury bonds (more than 10 years) and the average yield of T-bills that mature in three months. *YLD* is the three-month T-bills yield. *GDP* is the change in nominal GDP; *UNEMP* is the unemployment rate; *cpi* is the consumer price index; and *inf* is the inflation rate in the US. The logistic regressions run on the full sample period and on four sub-periods for a robustness check to avoid noise. *p-values* are in parentheses under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Full Sample		Sub-periods							
Variables	1960-2008		1960-1975		1976-1985		1986-1995		1996-2008	
Intercept	-8.8078***	-8.6322***	-9.9227***	-8.9667***	-4.9161***	-3.6939***	-7.4243***	-6.5015***	-10.053***	-10.456***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Ln(Size)	-0.1746***	-0.1742***	-0.6184***	-0.6169***	-0.3696***	-0.3702***	-0.1369***	-0.1366***	-0.0160*	-0.0159*
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.0936)	(0.0950)
Ln(Price)	1.3838***	1.3834***	2.5662***	2.5637***	1.7093***	1.7129***	1.2896***	1.2897***	1.1259***	1.1288***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
January	0.0675***	0.1110***	0.2383**	0.2384**	-0.0564*	0.1875***	-0.2869***	0.0750	0.1433**	0.3467***
	(0.0467)	(0.0005)	(0.0442)	(0.0122)	(0.3710)	(0.0024)	(0.0002)	(0.2655)	(0.0318)	(<.0001)
Halloween	0.1093***	0.0986***	0.2185***	0.2720***	-0.0329	-0.0431*	0.0921**	-0.0295	0.0317	-0.0249
	(<.0001)	(<.0001)	(0.0003)	(<.0001)	(0.3583)	(0.2375)	(0.0129)	(0.4436)	(0.3974)	(0.5185)
pdnd	-0.0034***		-0.0105**		-0.0173***		-0.0338***		0.0075***	
	(0.0018)		(0.0109)		(<.0001)		(<.0001)		(0.0070)	
nipo	0.0070***		0.0031*		-0.0026*		-0.0009		0.0040***	
	(<.0001)		(0.0946)		(0.0730)		(0.3779)		(0.0042)	
ripo	0.0051***		-0.0004		0.0054***		-0.0015		0.0037***	
	(<.0001)		(0.8409)		(<.0001)		(0.6267)		(0.0003)	
turn	-0.2689***		0.3590***		0.3130		0.6055***		-0.3677***	
	(<.0001)		(0.0048)		(0.3135)		(0.0085)		(0.0042)	
cefd	0.0145***		-0.0053		0.0047		0.0040		0.0286***	
	(<.0001)		(0.4434)		(0.4476)		(0.6628)		(0.0040)	
es	-0.3448***		0.2518		0.1519*		0.6773**		-0.3339	
	(<.0001)		(0.1451)		(0.0592)		(0.0369)		(0.2982)	
DIV	-0.0398*		-0.0554		-0.2251		-0.5024***		-0.6736***	
	(0.0825)		(0.7314)		(<.0001)		(<.0001)		(<.0001)	
DEF	-0.2040***		-1.2169***		-0.1380**		-0.3534*		-0.7383***	
	(<.0001)		(<.0001)		(0.0348)		(0.0671)		(<.0001)	
YLD	0.0485***		-0.0959		-0.0436**		0.1114***		0.1265**	
	(<.0001)		(0.4256)		(0.0269)		(0.0054)		(0.0273)	
TERM	0.0505***		0.0135		-0.0474*		-0.0638*		0.0444	
	(<.0001)		(0.9126)		(0.067)		(0.0598)		(0.3528)	
GDP	0.0484***		0.0081		0.0283**		0.1554***		0.0954***	
	(<.0001)		(0.7705)		(0.0195)		(<.0001)		(0.0002)	
UNEMP	0.2038***		0.3219***		0.0676**		0.4925***		0.5323***	
	(<.0001)		(0.0045)		(0.0141)		(<.0001)		(<.0001)	
cpi	-0.0008		0.0596**		0.0001		-0.0179***		-0.0017	
	(0.1219)		(0.0289)		(0.9904)		(<.0001)		(0.6755)	
inf	0.1500***		0.2059		0.0628		-0.0016		0.2942***	
	(<.0001)		(0.1679)		(0.4113)		(0.9851)		(<.0001)	
$pdnd_{t-1}$		-0.0079***		-0.0117***		-0.0339***		-0.0405***		0.0056**
		(<.0001)		(0.0021)		(<.0001)		(<.0001)		(0.0491)
$nipo_{t-1}$		0.0045***		0.0041**		-0.0075***		-0.0021**		-0.0005
		(<.0001)		(0.0297)		(<.0001)		(0.0354)		(0.7149)
$ripo_{t-1}$		0.0044***		0.0026		0.0020**		0.0099***		0.0039***
		(<.0001)		(0.1613)		(0.0190)		(0.0007)		(<.0001)
$turn_{t-1}$		-0.3006***		0.8753		0.9638***		0.3379		-0.3521***
		(<.0001)		(0.4627)		(0.0028)		(0.1803)		(0.0090)
$cefd_{t-1}$		0.0136***		0.0016		0.0045		-0.0165*		0.0160
		(<.0001)		(0.8246)		(0.4457)		(0.0642)		(0.1210)
es_{t-1}		-0.6391***		-0.1299		-0.0762		0.3167		0.5766*
		(<.0001)		(0.4907)		(0.3945)		(0.3263)		(0.0643)
DIV_{t-1}		-0.0887***		-0.3910**		-0.3242***		-0.5304***		-0.8967***
		(0.0001)		(0.0190)		(<.0001)		(<.0001)		(<.0001)
DEF_{t-1}		-0.1797***		-0.7948***		-0.1979***		0.0859		-0.6451***
		(<.0001)		(0.0036)		(0.0025)		(0.6379)		(<.0001)
YLD_{t-1}		0.0438***		0.0717		-0.0469**		0.0747*		0.1493**
		(<.0001)		(0.9586)		(0.0221)		(0.0561)		(0.0107)
$TERM_{t-1}$		0.0314**		0.0060		-0.0422		-0.0948***		-0.0409
		(0.0109)		(0.9586)		(0.1124)		(0.0006)		(0.3807)
GDP_{t-1}		0.0740***		0.0916***		0.0421***		0.1425***		0.0958***
		(<.0001)		(<.0001)		(0.0002)		(<.0001)		(<.0001)
$UNEMP_{t-1}$		0.2535***		0.3981***		0.0838***		0.3670***		0.8229***
		(<.0001)		(0.0004)		(0.0027)		(<.0001)		(<.0001)
cpi_{t-1}		-0.0021***		0.0365		-0.0102**		-0.0176***		-0.0054
		(0.0002)		(0.1834)		(0.0187)		(<.0001)		(0.1875)
inf_{t-1}		0.0952***		-0.3142**		-0.0267		-0.0791		0.4198***
		(0.0049)		(0.0282)		(0.7358)		(0.3297)		(<.0001)

period. During 1976 to 1985, *DEF* is strongly correlated to the likelihood of stock splits, along with the one-month lagged variables of *es* and *DIV*. Between 1986 and 1995, most variables are statistically significant, and *turn*, *es*, *DIV*, *DEF*, *GDP*, and *UNEMP* are economically large in relation to the propensity of firms splitting shares. In the last thirteen years 1996 to 2008, the majority of the variables are also significant, especially for *turn*, *DIV*, *DEF*, *YLD*, *UNEMP*, and *inf*. These results show that all these macroeconomic variables can affect firms' decisions on stock splits, and the business cycle effect is more dominant than the monthly effects and market-timing effect.

8.1.2 Special Dividends

Similarly, in order to investigate the dominant macro-determinant that affects firms' decisions to pay special dividends, Table 8.3 regresses the likelihood of special dividend distributions on the dummy variables of *Bull*, *Expansion*, *January*, and *Halloween*. As the results show, *Halloween* is not only statistically significant, but also economically large compared to most of the dummy variables in the full sample and in all sub-samples. This result indicates that *Halloween* has the dominant effect on the likelihood of the occurrence of special dividend announcements. *Expansion* is also significantly positive in the whole sample period 1926 to 2008, whereas *January* and *Bull* are statistically negative. The finding shows that firms are more likely to initiate special dividends in economic expansions and at the end of a year, but

Table 8.3 The Dominant Dummy Variable for the Likelihood of Special Dividends from 1926 to 2008

This table shows the dominant dummy variable for the likelihood of the occurrence of special dividend announcements from 1926 to 2008. The dependent variable is a binary variable that contains a value of one if a firm announces a special dividend in the month; otherwise, zero. *Ln(Size)* is the natural logarithm of monthly market capitalization. *Ln(Price)* is the natural logarithm of monthly stock price. *Bull* is a dummy variable that takes a value of one for a special dividend announced in bull markets and a value of zero for an announcement in bear markets. Bull and bear markets are defined from Ohn, Taylor and Pagan (2004)'s turning points. *Expansion* is a dummy variable that takes a value of one for a special dividend announced in economic expansion periods and a value of zero for an announcement in contraction periods. Economic expansion and contraction periods are determined by the NBER (www.nber.org/cycles/cyclesmain.html). *January* is a dummy variable that takes a value of one for special dividends announced in January and a value of zero if announcements are in other months of a year. *Halloween* is another dummy variable that takes a value of one for special dividends announced in the months of November to April and a value of zero if announcements are in the months of May to October. *Tax1986* is a dummy variable, taking a value of one if a special dividend is announced after the Tax Regime Act of 1986. The logistic regressions run on the full sample period and on four sub-periods for a robustness check to avoid noise. *p-values* are in parentheses under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Full Sample	Sub-periods			
Variables	1926-2008	1926-1940	1941-1960	1961-1985	1986-2008
Bull	-0.0956	-0.7380	-0.1134	0.2795	-0.0689
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(0.0610)**
Expansion	0.2699	1.0717	-0.0077	-0.0276	0.1299
	(<.0001)***	(<.0001)***	(0.8234)	(0.4716)	(0.0988)*
January	-0.3893	-0.0096	-0.2341	-0.5981	-0.7398
	(<.0001)***	(0.9142)	(<.0001)***	(<.0001)***	(<.0001)***
Halloween	0.6595	0.3194	0.6433	0.6078	0.8337
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(0.0007)***
Tax1986	-0.9534				
	(<.0001)***				
Ln(Size)	-0.2707	0.0604	-0.0963	-0.3364	-0.2412
	(<.0001)***	(0.0019)***	(<.0001)***	(<.0001)***	(<.0001)***
Ln(Price)	0.8967	0.7040	0.6847	1.0023	0.6663
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Intercept	-4.8926	-7.8015	-5.2162	-4.9290	-5.5010
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***

less likely to distribute extra cash in bull markets and in January. *Tax1986* is added in the regressions to investigate whether the change in Tax Regime, such as the 1986 Tax Reform and the 2003 Tax Cuts can affect the overall propensity of firms distributing special dividends. Since the coefficient of *Tax1986* is highly significant and negative, the likelihood of special dividend announcements is in fact lower (instead of higher) after the Tax cuts. This result is compatible with the study of Brav et al. (2008), suggesting that a change in tax rate is not the main factor to alter the level of cash dividends paid.

In addition, the signs and significance of *January*, *Bull*, and *Expansion* are varied in the sub-periods. From 1926 to 1940, *Bull* is significantly negative while *Expansion* and *Halloween* are economically positive, demonstrating that the likelihood of special dividend announcements is substantially higher in expansions and in the Halloween period but considerably lower in bull markets. During 1941 to 1960, *January* becomes significantly negative, meaning that the possibility for firms to pay special dividends is smaller in January, but *Expansion* becomes insignificant. Between 1961 and 1985, *Bull* turns out to be statistically positive and shows a higher tendency of special dividend payments in bull markets. In the latest period 1986 to 2008, *Bull* changes back to be negative and *Expansion* changes back to be significantly positive, which indicates that special dividend declarations are more likely to occur during expansions. Along with the mixed effect of *January*, *Bull*, and *Expansions* on the likelihood of special dividend distributions, *Halloween* is consistently positive and economically significant. This finding means that firms are most likely to initiate special dividends at the end of a year, especially in November and December.

In Table 8.4, the likelihood of special dividend distributions is also regressed on investor sentiment variables, business cycle factors, and the *January* and *Halloween* dummies. According to the results, nearly all the macroeconomic variables are statistically significant in the full sample from 1960 to 2008, except for *es*. The *Halloween* dummy is the most significant and positive, followed by *DIV*, whereas *inf* is the most negative variable, followed by *January*, *Tax1986*, and *TERM*. In the sub-period 1960 to 1975, the monthly dummies of *January* and *Halloween* are economically significant, along with the variables of *YLD*, *TERM*, *turn*, and *GDP*. From 1976 to 1985, the coefficients of *January* and *Halloween* are also substantially large, but *inf* is the most significant factor affecting firms' decision on special dividend distributions. The coefficient of *TERM* is economically large and statistically significant in this sub-period, but not in the next ten years. During 1986 to 1995, the variables having significant coefficients are *Halloween*, *January*, *inf*, *turn*, *YLD*, and *UNEMP*. This finding is similar to the

Table 8.4 The Dominant Macro-Determinant for the Likelihood of Special Dividends from 1960 to 2008

This table shows the dominant macro-determinant for the likelihood of the occurrence of special dividend announcements from 1960 to 2008. The dependent variable is a binary variable that contains a value of one if a firm announces a special dividend in the month; otherwise, zero. *Ln(Size)* is the natural logarithm of monthly market capitalization. *Ln(Price)* is the natural logarithm of monthly stock price. *January* is a dummy variable that takes a value of one for special dividends announced in January and a value of zero if announcements are in other months of a year. *Halloween* is another dummy variable that takes a value of one for special dividends announced in the months of November to April and a value of zero if announcements are in the months of May to October. *Tax1986* is another dummy variable, taking a value of one if a special dividend is announced after the Tax Regime Act of 1986. *pdnd* is the difference in returns on dividend- and non-dividend- paying stocks in a month; *nipo* is the number of initial public offerings (IPOs); *ripo* is the first-day returns on IPOs; *turn* is the NYSE share turnovers; *cefd* is the close-end fund discount; and *es* is the level of equity over the level of debt issuance in a month. *DIV* is the market dividend yield, defined as the total dividend payments on the market over the current level of the index. *DEF* is the default spread, defined as the difference between the average yield of bonds rated BAA by Moodys and the average yield of bonds with a Moodys rating of AAA. *TERM* is the term spread, measured as the difference between the average yield of long term Treasury bonds (more than 10 years) and the average yield of T-bills that mature in three months. *YLD* is the three-month T-bills yield. *GDP* is the change in nominal GDP; *UNEMP* is the unemployment rate; *cpi* is the consumer price index; and *inf* is the inflation rate in the US. The logistic regressions run on the full sample period and on four sub-periods for a robustness check to avoid noise. *p-values* are in parentheses under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Full Sample		Sub-periods							
Variables	1960-2008		1960-1975		1976-1985		1986-1995		1996-2008	
Intercept	-5.6660***	-5.9223***	-7.7636***	-5.4365***	-6.2197***	-8.2420***	0.6473	-3.4202***	-11.438***	-12.104***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.6309)	(0.0045)	(<.0001)	(<.0001)
Ln(Size)	-0.2643***	-0.2631***	-0.2470***	-0.2473***	-0.4511***	-0.4502***	-0.2860***	-0.2860***	-0.2012***	-0.2004***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Ln(Price)	0.7873***	0.7846***	1.0857***	1.0842***	1.1662***	1.1627***	0.8124***	0.8118***	0.5198***	0.5169***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
January	-0.4979***	-0.7547***	1.2068***	-0.8996***	-0.3036***	-0.5320***	-0.1443	-0.7845***	-0.1581	-1.3701***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.0011)	(<.0001)	(0.2004)	(<.0001)	(0.2132)	(<.0001)
Halloween	0.6989***	0.6912***	0.8701***	0.6439***	0.5350***	0.4779***	0.6430***	0.8634***	0.8656***	0.9389***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Tax1986	-0.1908***	-0.1596***								
	(0.0014)	(0.0067)								
pdnd	0.0158***		-0.0140***		0.0607***		0.0099		-0.0020	
	(<.0001)		(0.0006)		(<.0001)		(0.2440)		(0.8474)	
nipo	0.0007		0.0002		0.0077***		0.0004		0.0139***	
	(0.3268)		(0.9137)		(0.0011)		(0.7913)		(<.0001)	
ripo	-0.0024***		-0.0025		0.0032**		-0.0213***		0.0013	
	(<.0001)		(0.2525)		(0.0200)		(<.0001)		(0.4341)	
turn	-0.2174***		-0.2301***		-0.0499		-1.5814***		-0.9533**	
	(0.0022)		(<.0001)		(0.9202)		(<.0001)		(<.0001)	
cefd	0.0262***		0.0476***		0.0607***		-0.0070***		0.0326**	
	(<.0001)		(<.0001)		(<.0001)		(0.6218)		(0.0110)	
es	0.0392		-0.0014		0.3229**		-0.3450		-0.0017	
	(0.6231)		(0.9934)		(0.0140)		(0.5308)		(0.9971)	
DIV	0.4082***		0.1740		0.1887***		0.1497		0.7061***	
	(<.0001)		(0.2166)		(0.0032)		(0.3715)		(0.0024)	
DEF	0.0898*		-0.0523		-0.0674		0.5812**		0.2990*	
	(0.0880)		(0.7999)		(0.5285)		(0.0256)		(0.0908)	
YLD	-0.1063***		-0.3128***		-0.0347		-0.2149***		-0.3183***	
	(<.0001)		(0.0053)		(0.2804)		(0.0007)		(0.0002)	
TERM	-0.1630***		-0.7742***		-0.2714***		-0.0839		-0.2005**	
	(<.0001)		(<.0001)		(<.0001)		(0.1395)		(0.0123)	
GDP	-0.0209***		0.0994***		0.0213		-0.0955**		-0.2146***	
	(0.1143)		(0.0002)		(0.2919)		(0.0115)		(<.0001)	
UNEMP	-0.0619***		0.1051		-0.0960**		-0.6142***		-0.1736	
	(0.0052)		(0.3201)		(0.0418)		(<.0001)		(0.2984)	
cpi	0.0061***		0.0934***		0.0361***		0.0018		0.0402***	
	(<.0001)		(0.0002)		(<.0001)		(0.9691)		(<.0001)	
inf	-0.8559***		-0.4675***		-1.5899***		-0.8781***		-0.8557***	
	(<.0001)		(<.0001)		(<.0001)		(<.0001)		(<.0001)	
$pdnd_{t-1}$		0.0170***		-0.0268***		0.0605***		0.0444***		0.0133***
		(<.0001)		(<.0001)		(<.0001)		(<.0001)		(0.0086)
$nipo_{t-1}$		0.0028***		-0.0038*		0.0050**		0.0076***		0.0158***
		(<.0001)		(0.0750)		(0.0376)		(0.0052)		(<.0001)
$ripo_{t-1}$		-0.0044***		-0.0155***		0.0048***		-0.0084**		-0.0002
		(<.0001)		(<.0001)		(0.0003)		(0.0298)		(0.9197)
$turn_{t-1}$		0.0373		-0.9801***		-0.9882*		-1.0345***		-0.8066***
		(0.5797)		(<.0001)		(0.0515)		(0.0019)		(<.0001)
$cefd_{t-1}$		0.0294***		0.0445***		0.0872***		0.0406***		0.0800***
		(<.0001)		(<.0001)		(<.0001)		(0.0021)		(<.0001)
es_{t-1}		-0.0647		-0.3551*		0.1480		1.3866***		1.5196***
		(0.4105)		(0.0579)		(0.2446)		(0.0051)		(0.0020)
DIV_{t-1}		0.3725***		-0.3712***		0.1050		0.6861***		0.3956*
		(<.0001)		(0.0090)		(0.1027)		(<.0001)		(0.0985)
DEF_{t-1}		0.0620		0.4844**		-0.2794***		-0.3218		0.4086**
		(0.2468)		(0.0390)		(0.0087)		(0.1709)		(0.0203)
YLD_{t-1}		-0.0860***		-0.4256***		0.0113		-0.2062***		-0.4062***
		(<.0001)		(<.0001)		(0.7314)		(0.0008)		(<.0001)
$TERM_{t-1}$		-0.1140***		-0.8979***		-0.1436***		-0.0564		-0.2722***
		(<.0001)		(<.0001)		(0.0009)		(0.3103)		(0.0006)
GDP_{t-1}		0.0759***		0.1787***		0.0734***		0.0372		0.0069
		(<.0001)		(<.0001)		(<.0001)		(0.2459)		(0.8318)
$UNEMP_{t-1}$		-0.0642***		0.1358		-0.0088		-0.4103***		-0.1977
		(0.0036)		(0.1538)		(0.8539)		(<.0001)		(0.2341)
cpi_{t-1}		0.0051***		0.0980***		0.0528***		0.0049		0.0464***
		(<.0001)		(0.0001)		(<.0001)		(0.2712)		(<.0001)
inf_{t-1}		-0.5906***		-0.0474		-1.3112***		-0.4149***		-0.8481***
		(<.0001)		(0.6400)		(<.0001)		(0.0008)		(<.0001)

last period, 1996 to 2008, except that *DIV* and *DEF* are also highly correlated to the probability of firms initiating special dividends. These results signify that the monthly dummies, especially *Halloween* and the business cycle variables, have the dominant effect on the likelihood of the occurrence of special dividend announcements.

8.2 The Dominant Effect of Macro-Determinant on Abnormal Returns

8.2.1 Stock Splits

This section investigates the dominant effect of macro-determinants on the abnormal returns of stock split announcements. In Table 8.5, the multivariate regressions of abnormal returns are regressed on the dummy variables of *Bull*, *Expansion*, *January*, and *Halloween*. *Bull* is consistently positive and economically significant in all event windows using all models, except for the 30-day window using the value-weighted market model. *Expansion* is significantly positive in the market adjusted returns and in the equal-weighted market model adjusted returns, but not so in the 30-day window or using the value-weighted Market Model. *January* is mainly significant in the value-weighted adjusted returns, but not in the equal-weighted adjusted returns. *Halloween* is not significant in most models, but only in the 30-day event window. These results indicate that *Bull* is the dominant dummy variable affecting the abnormal returns of stock splits, followed by *Expansion* and *January*. Firms undoubtedly have larger abnormal returns if they announce stock splits in good market or economic conditions.

Next, investor sentiment and business cycle variables are used in the regressions to evaluate the dominant effect on the excess returns of stock splits in Table 8.6. Panel A calculates the abnormal returns using the Market Adjusted Model and Panel B computes the returns using the Market Model. According to the results, the sentiment variables are more statistically significant and the business cycle variables are more economically significant in relation to the excess returns. In particular, the variables of *DIV*, *DEF*, *YLD*, *TERM*, *turn*, and *es* are highly correlated to the returns of two days within stock split announcements. *GDP* and *UNEMP* are also economically large in the value-weighted adjusted returns. For the ten-day window, seven out of the eight business cycle variables have significant and substantially large coefficients. They are *DIV*, *DEF*, *YLD*, *TERM*, *GDP*, *UNEMP*, and *inf*. Two out of six sentiment variables, *turn* and *es*, are strongly correlated to the abnormal returns. These results are the same as those in the 30-day window. Additionally, *January* is more significant in the 30-day window compared to the five-day and ten-day windows, whereas *Halloween* is only significant in the 30-day window. Therefore, these business cycle variables have the dominant effect on the

Table 8.5 The Dominant Dummy Variable for the Abnormal Returns of Stock Splits between 1926 and 2008

This table shows the dominant dummy variable for the abnormal returns of stock split announcements between 1926 and 2008. The dependent variable in Panel A is market adjusted abnormal returns (CAR) and the dependent variable in Panel B is market model adjusted abnormal returns for firms announcing stock splits. EW and VW stand for equal-weighted market index and value-weighted market index, respectively. (-1, +1), (-2, +2), (-1, 0), (0, +1), (-1, +9) and (-1, +30) represent event windows (in days) relative to stock split announcements (0 represents the actual announcement day). *SplFac* is the split ratio obtained from CRSP and defined as the number of additional shares per existing share. *Ln(Size)* is the natural logarithm of monthly market capitalization. *Ln(Price)* is the natural logarithm of monthly stock price. *Bull* is a dummy variable that takes a value of one for a split announced in bull markets and a value of zero for an announcement in bear markets. Bull and bear markets are defined from Ohn, Taylor and Pagan (2004)'s turning points. *Expansion* is a dummy variable that takes a value of one for a stock split announced in economic expansion periods and a value of zero for an announcement in contraction periods. Economic expansion and contraction periods are determined by the NBER (www.nber.org/cycles/cyclesmain.html). *January* is a dummy variable that takes a value of one for stock splits announced in January and a value of zero if announcements are in other months of a year. *Halloween* is another dummy variable that takes a value of one for stock splits announced in the months of November to April and a value of zero if announcements are in the months of May to October. All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regression Results of the dominant macro-effect on stock splits by the Market Adjusted Returns

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	8.2960	8.3446	11.7720	11.8685	4.6475	4.7041	7.4907	7.5122	14.9841	15.1833	18.1795	18.5283
	[16.07]***	[16.12]***	[18.92]***	[18.87]***	[12.91]***	[12.92]***	[16.19]***	[16.33]***	[19.21]***	[18.41]***	[13.79]***	[12.74]***
SplFac	1.0859	1.0726	1.2811	1.2756	0.4404	0.4295	1.0490	1.0416	1.6584	1.6474	2.5278	2.4770
	[4.44]***	[4.41]***	[4.57]***	[4.15]***	[3.90]***	[3.78]***	[4.55]***	[4.58]***	[4.63]***	[4.66]***	[4.73]***	[4.85]***
Ln(Size)	-0.1176	-0.1120	-0.2194	-0.2046	-0.0863	-0.0893	-0.0600	-0.0535	-0.2686	-0.2504	-0.2368	-0.1781
	[-2.84]***	[-2.70]***	[-4.47]***	[-4.15]***	[-3.04]***	[-3.13]***	[-1.61]	[-1.45]	[-4.49]***	[-4.15]***	[-2.51]**	[-1.83]*
Ln(Price)	-1.8572	-1.8654	-2.4126	-2.4491	-0.8702	-0.8609	-1.8765	-1.8868	-3.1867	-3.2369	-4.2896	-4.5313
	[-9.68]***	[-9.68]***	[-11.15]***	[-11.24]***	[-7.93]***	[-7.75]***	[-10.18]***	[-10.27]***	[-12.38]***	[-12.40]***	[-10.68]***	[-10.89]***
Bull	0.6011	0.6704	0.5854	0.6929	0.4284	0.4725	0.5670	0.6156	0.3580	0.6537	1.0610	1.9170
	[4.95]***	[5.41]***	[3.96]***	[4.52]***	[4.81]***	[5.15]***	[5.23]***	[5.63]***	[1.89]*	[3.22]***	[3.43]***	[5.56]***
Expansion	0.4623	0.4205	0.6464	0.5390	0.3232	0.2950	0.3263	0.2959	0.5919	0.3337	0.6318	0.2152
	[2.30]**	[2.09]**	[2.66]***	[2.19]**	[2.07]**	[1.89]*	[1.93]*	[1.74]*	[1.92]*	[0.99]	[1.21]	[0.35]
January	0.4460	0.8419	0.2086	0.8829	0.1334	0.4157	0.4244	0.6778	-0.1787	0.7747	1.1397	2.0027
	[1.84]*	[3.20]***	[0.76]	[2.90]***	[0.75]	[2.15]**	[2.00]**	[3.01]***	[-0.56]	[2.12]**	[1.76]*	[2.55]**
Halloween	-0.0013	-0.1192	-0.0269	0.0000	-0.0709	-0.0716	-0.0865	-0.0801	-0.0723	0.1360	-1.2232	0.0118
	[-1.07]	[-0.96]	[-0.19]	[0.02]	[-0.78]	[-0.76]	[-0.82]	[-0.74]	[-0.40]	[0.69]	[-4.05]***	[0.04]
p-value of *F*-Stats	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0494	0.0497	0.0614	0.0616	0.0219	0.0222	0.0553	0.0554	0.0652	0.0647	0.0436	0.0449
N	16626	16626	16626	16626	16626	16626	16626	16626	16626	16626	16626	16626

Panel B: Regression Results of the dominant macro-effect on stock splits by the Market Model Adjusted Returns

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	8.2486	8.0403	11.6974	11.3204	4.5640	4.4509	7.5409	7.3968	14.6814	14.0409	15.3325	14.6499
	[17.08]***	[16.19]***	[19.71]***	[18.41]***	[13.53]***	[12.77]***	[17.05]***	[16.51]***	[19.06]***	[17.26]***	[11.98]***	[9.77]***
SplFac	1.0699	1.0657	1.2849	1.2797	0.4290	0.4303	1.0351	1.0341	1.5756	1.5609	2.2492	2.2388
	[4.59]***	[4.57]***	[4.76]***	[4.76]***	[4.09]***	[4.06]***	[4.65]***	[4.65]***	[4.84]***	[4.85]***	[4.98]***	[5.06]***
Ln(Size)	-0.1135	-0.1074	-0.2155	-0.2033	-0.0834	-0.0835	-0.0563	-0.5190	-0.2257	-0.2348	-0.1039	-0.1444
	[-2.86]***	[-2.73]***	[-4.61]***	[-4.38]***	[-3.12]***	[-3.11]***	[-1.56]	[-1.45]	[-3.85]***	[-4.12]***	[-1.05]	[-1.53]
Ln(Price)	-1.9451	-1.9245	-2.5717	-2.5406	-0.9156	-0.9023	-1.9561	-1.9386	-3.5507	-3.4378	-4.9637	-5.0191
	[-10.33]***	[-10.16]***	[-11.97]***	[-11.80]***	[-8.49]***	[-8.32]**	[-10.67]***	[-10.57]***	[-13.61]***	[-13.25]***	[-12.17]***	[-11.49]***
Bull	0.5222	0.7443	0.4379	0.8301	0.3637	0.5066	0.5168	0.6661	0.0235	0.9049	0.3636	-2.7283
	[4.41]***	[6.04]***	[3.08]***	[5.44]***	[4.17]***	[5.59]***	[4.86]***	[6.12]***	[0.12]	[4.36]***	[1.14]	[-7.26]***
Expansion	0.4680	0.2946	0.7036	0.3766	0.3383	0.2363	0.3237	0.1918	0.7791	0.0235	1.5356	-0.4494
	[2.46]**	[1.44]	[2.95]***	[1.46]	[2.27]**	[1.54]	[1.96]**	[1.02]	[2.30]**	[0.07]	[2.71]***	[-0.68]
January	0.3319	0.8307	-0.0000	0.8728	0.0717	0.4408	0.3559	0.6640	-0.5293	0.7745	-0.0773	1.6133
	[1.45]	[3.21]***	[-0.04]	[2.89]***	[0.44]	[2.32]**	[1.74]*	[2.99]***	[-1.59]	[2.16]**	[-0.13]	[2.31]**
Halloween	-0.0015	-0.0772	-0.0006	0.0965	-0.0880	-0.0473	-0.1103	-0.0553	-0.2127	0.2836	-1.3526	0.5886
	[-1.34]	[-0.65]	[-0.45]	[0.67]	[-1.03]	[-0.53]	[-1.09]	[-0.53]	[-1.22]	[1.52]	[-4.46]***	[1.71]*
p-value of *F*-Stats	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0528	0.0527	0.0644	0.0659	0.0235	0.0240	0.0588	0.0581	0.0692	0.0676	0.0409	0.0466
N	16620	16620	16620	16620	16620	16620	16620	16620	16620	16620	16620	16620

Table 8.6 The Dominant Macro-Determinant for the Abnormal Returns of Stock Splits between 1960 and 2008

This table shows the dominant macro-determinant for the abnormal returns of stock split announcements between 1960 and 2008. The dependent variable in Panel A is market adjusted abnormal returns (CAR) and the dependent variable in Panel B is market model adjusted abnormal returns for firms announcing stock splits. Both equal-weighted and value-weighted market indexes are employed. (-2, +2), (-1, +9) and (-1, +30) represent event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). *SplFac* is the split ratio obtained from CRSP and defined as the number of additional shares per existing share. *Ln(Size)* is the natural logarithm of monthly market capitalization. *Ln(Price)* is the natural logarithm of monthly stock price. *January* is a dummy variable that takes a value of one for stock splits announced in January and a value of zero if announcements are in other months of a year. *Halloween* is another dummy variable that takes a value of one for stock splits announced in the months of November to April and a value of zero if announcements are in the months of May to October. *pdnd* is the difference in returns on dividend- and non-dividend-paying stocks; *nipo* is the number of initial public offerings (IPOs); *ripo* is the first-day returns on IPOs; *turn* is the NYSE share turnovers; *cefd* is the close-end fund discounts; and *es* is the level of equity over the level of debt issuance. *DIV* is the market dividend yield, defined as the total dividend payments on the market over the current level of the index. *DEF* is the default spread, defined as the difference between the average yield of bonds rated BAA by Moodys and the average yield of bonds with a Moodys rating of AAA. *TERM* is the term spread, measured as the difference between the average yield of long term Treasury bonds (more than 10 years) and the average yield of T-bills that mature in three months. *YLD* is the three-month T-bills yield. *GDP* is the change in nominal GDP; *UNEMP* is the unemployment rate; *cpi* is the consumer price index; and *inf* is the inflation rate in the US. All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regression Results between Market Adjusted Cumulative Abnormal Returns and the dominant macro-variable for stock splits

	(-2,+2)				(-1,+9)				(-1,+30)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
Control Variables												
Intercept	16.9101	16.5207	17.2241	16.9880	20.5454	20.1148	21.1295	20.6128	24.3523	24.0979	25.9482	23.5819
	[18.03]***	[17.24]***	[18.03]***	[17.23]***	[16.91]***	[16.14]***	[17.00]***	[16.02]***	[12.87]***	[12.32]***	[12.86]***	[11.21]***
SplFac	1.6620	1.6550	1.6497	1.6433	2.0079	2.0020	1.9991	1.9903	2.9389	2.9205	2.8717	2.8440
	[3.83]***	[3.79]***	[3.85]***	[3.79]***	[3.76]***	[3.72]***	[3.74]***	[3.68]***	[3.75]***	[3.70]***	[3.72]***	[3.68]***
Ln(Size)	-0.5328	-0.5457	-0.5340	-0.5475	-0.7560	-0.7734	-0.7652	-0.7852	-1.0479	-1.0705	-1.0716	-1.1012
	[-7.65]***	[-7.89]***	[-7.67]***	[-7.90]***	[-9.24]***	[-9.47]***	[-9.39]***	[-9.62]***	[-8.03]***	[-8.18]***	[-8.19]***	[-8.35]***
Ln(Size)	-2.1427	-2.0336	-2.1567	-2.0388	-2.6857	-2.5704	-2.6836	-2.5294	-3.0645	-2.9517	-3.0880	-2.8677
	[-7.16]***	[-6.83]***	[-7.20]***	[-6.83]***	[-7.72]***	[-7.37]***	[-7.65]***	[-7.19]***	[-5.63]***	[-5.39]***	[-5.58]***	[-5.13]***
January	-0.1310	0.0945	0.4588	0.7895	-0.2654	-0.1903	0.5221	0.7197	-1.5408	1.1871	2.0678	1.3882
	[-0.47]	[0.33]	[1.52]	[2.61]***	[-0.77]	[-0.56]	[1.37]	[1.96]*	[-2.18]**	[1.77]*	[2.48]**	[1.71]*
Halloween	-0.0442	0.0469	-0.0475	0.0633	-0.1308	-0.0621	0.0193	0.1286	-1.3163	-1.2477	-0.2189	0.0000
	[-0.32]	[0.33]	[-0.33]	[0.42]	[-0.69]	[-0.33]	[0.09]	[0.63]	[-3.94]***	[-3.73]***	[-0.58]	[0.01]
Macro-Variables												
pdnd	-0.0375		-0.0521		-0.0321		-0.0603		-0.0158		-0.0906	
	[-3.61]***		[-4.73]***		[-2.26]**		[-3.72]***		[-0.52]		[-2.41]**	
nipo	-0.0000		-0.0114		-0.0000		-0.0209		-0.0000		-0.0376	
	[-1.50]		[-3.05]***		[-1.92]*		[-4.23]***		[-0.29]		[-4.22]***	
ripo	0.0241		0.0304		0.0209		0.0326		0.0264		0.0482	
	[4.95]***		[6.26]***		[2.98]***		[4.45]***		[2.22]**		[3.51]***	
turn	0.8387		0.4833		0.4190		-0.3699		-0.5998		-3.8059	
	[1.86]*		[1.05]		[0.66]		[-0.56]		[-0.56]		[-3.23]***	
cefd	0.0914		0.1020		0.0872		0.1082		0.1041		0.1474	
	[6.13]***		[6.31]***		[4.44]***		[4.88]***		[2.61]***		[3.06]***	
es	1.2033		0.9240		2.6241		1.6777		3.1506		0.5559	
	[2.37]**		[1.75]*		[4.34]***		[2.67]***		[2.56]**		[0.43]	
DIV	-0.8590		-0.9724		-0.4610		-0.6455		-0.2620		-0.4567	
	[-4.78]***		[-5.06]***		[-1.88]*		[-2.34]**		[-0.60]		[-0.93]	
DEF	0.5000		0.3918		0.9570		0.7420		2.4317		2.0249	
	[1.70]*		[1.28]		[2.46]**		[1.79]*		[3.62]***		[2.63]***	
YLD	-0.1284		-0.1972		-0.2701		-0.4309		0.1132		-0.4729	
	[-1.83]*		[-2.68]***		[-2.89]***		[-4.34]***		[0.69]		[-2.66]***	
TERM	-0.0305		-0.0117		-0.1690		-0.1999		0.5194		0.0762	
	[-0.31]		[-0.12]		[-1.34]		[-1.48]		[2.14]**		[0.28]	
GDP	0.0465		0.0253		-0.0241		-0.0587		-0.1182		-0.2358	
	[0.64]		[0.34]		[-0.28]		[-0.62]		[-0.78]		[-1.39]	
UNEMP	0.0556		0.2319		-0.2092		0.1885		-1.1994		-0.0267	
	[0.50]		[1.99]**		[-1.36]		[1.16]		[-4.26]***		[-0.09]	
cpi	-0.0119		-0.0137		0.0000		0.0000		0.0260		0.0270	
	[-2.86]***		[-3.14]***		[1.22]		[0.52]		[2.50]**		[2.24]**	
inf	-0.1145		-0.0851		-0.7078		-0.8171		-1.9244		-3.0646	
	[-0.41]		[-0.30]		[-1.89]*		[-2.02]**		[-2.81]***		[-3.96]***	

$pdnd_{t-1}$		-0.0345		-0.0469		-0.0241		-0.0426		-0.0000		-0.0310
		[-2.97]***		[-3.91]***		[-1.46]		[-2.42]**		[-0.01]		[-0.97]
$nipo_{t-1}$		-0.0000		-0.0122		-0.0000		-0.0215		-0.0000		-0.0260
		[-1.04]		[-3.16]***		[-1.66]*		[-3.90]***		[-0.32]		[-2.76]***
$ripo_{t-1}$		0.0175		0.0203		0.0149		0.0199		0.0203		0.0410
		[2.94]***		[3.18]***		[1.84]*		[2.19]**		[1.57]		[2.50]**
$turn_{t-1}$		0.1922		-0.3912		0.2284		-1.2612		-0.6434		-5.6835
		[0.40]		[-0.80]		[0.33]		[-1.83]*		[-0.59]		[-5.11]***
$cefd_{t-1}$		0.0902		0.0941		0.0789		0.0827		0.0672		0.0794
		[5.85]***		[5.66]***		[4.09]***		[3.84]***		[1.74]*		[1.73]*
es_{t-1}		0.7246		0.2365		2.1712		1.0101		1.8782		0.1052
		[1.54]		[0.50]		[3.49]***		[1.57]		[1.81]*		[0.08]
DIV_{t-1}		-0.6800		-0.8780		-0.3450		-0.4906		-0.4900		0.2301
		[-3.61]***		[-4.46]***		[-1.36]		[-1.77]*		[-1.24]		[0.51]
DEF_{t-1}		0.8668		0.8163		1.4481		1.5138		2.7163		3.4441
		[2.79]***		[2.47]**		[3.43]***		[3.18]***		[3.82]***		[4.16]***
YLD_{t-1}		-0.1575		-0.2233		-0.2476		-0.4411		0.2260		-0.5457
		[-2.24]**		[-3.03]***		[-2.65]***		[-4.28]***		[1.39]		[-2.97]***
$TERM_{t-1}$		-0.0000		-0.0673		-0.0152		-0.2203		0.6253		-0.0675
		[-0.08]		[-0.64]		[-0.11]		[-1.53]		[2.50]**		[-0.23]
GDP_{t-1}		-0.0456		0.0000		0.0467		0.1573		0.2348		0.3003
		[-0.77]		[0.05]		[0.57]		[1.75]*		[1.62]		[1.93]*
$UNEMP_{t-1}$		-0.0546		0.1900		-0.4059		0.0181		-1.1854		-0.4826
		[-0.42]		[1.40]		[-2.39]**		[0.10]		[-4.25]***		[-1.52]
cpi_{t-1}		-0.0000		-0.0000		0.0000		0.0124		0.0261		0.0549
		[-1.42]		[-1.59]		[1.57]		[1.90]*		[2.71]***		[5.13]***
inf_{t-1}		0.0399		0.0443		-0.1649		-0.3662		-0.7155		-2.1041
		[0.15]		[0.15]		[-0.44]		[-0.92]		[-1.21]		[-3.16]***
p-value of F-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0831	0.0764	0.0889	0.0798	0.0830	0.0789	0.0896	0.0821	0.0543	0.0524	0.0635	0.0577
N	14892	14892	14892	14892	14892	14892	14892	14892	14892	14892	14892	14892

Panel B: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and the dominant macro-variable for stock splits

	(-2,+2)				(-1,+9)				(-1,+30)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
Control Variables												
Intercept	16.3901	16.3979	16.2989	15.9974	18.9915	19.4269	18.8142	18.1887	19.5995	20.8692	18.2461	15.7682
	[17.72]***	[17.49]***	[17.29]***	[16.53]***	[15.56]***	[15.76]***	[15.38]***	[14.44]***	[10.02]***	[10.34]***	[8.94]***	[7.51]***
SplFac	1.6691	1.6630	1.6560	1.6467	1.9451	1.9412	1.9161	1.9008	2.6561	2.6512	2.6131	2.5679
	[4.01]***	[3.98]***	[4.01]***	[3.95]***	[4.03]***	[4.00]***	[4.00]***	[3.93]***	[4.14]***	[4.12]***	[4.13]***	[4.07]***
Ln(Size)	-0.3981	-0.4080	-0.4089	-0.4223	-0.4319	-0.4447	-0.4821	-0.5020	-0.2073	-0.2162	-0.2797	-0.3086
	[-5.62]***	[-5.81]***	[-5.93]***	[-6.15]***	[-5.01]***	[-5.19]***	[-5.78]***	[-6.02]***	[-1.39]	[-1.47]	[-1.95]*	[-2.15]**
Ln(Price)	-2.5435	-2.4606	-2.4898	-2.3565	-3.5686	-3.5041	-3.3902	-3.2090	-5.0670	-5.0526	-4.9254	-4.6800
	[-8.43]***	[-8.23]***	[-8.35]***	[-7.95]***	[-9.97]***	[-9.82]***	[-9.60]***	[-9.12]***	[-8.91]***	[-8.96]***	[-8.43]***	[-8.00]***
January	-0.5162	-0.0938	0.4385	0.7811	-0.9493	-0.4433	0.5155	0.7505	-0.4801	0.4433	1.5637	1.0558
	[-1.76]*	[-0.32]	[1.39]	[2.46]**	[-2.48]**	[-1.20]	[1.27]	[1.92]*	[-0.67]	[0.66]	[1.86]*	[1.30]
Halloween	-0.0734	-0.0281	0.0172	0.1083	-0.2481	-0.2549	0.0966	0.1774	-1.3059	-1.4549	-0.1973	0.2977
	[-0.54]	[-0.21]	[0.11]	[0.73]	[-1.33]	[-1.35]	[0.48]	[0.88]	[-3.97]***	[-4.40]***	[0.49]	[0.77]
Macro-Variables												
pdnd	-0.0272		-0.0344		-0.0173		-0.0236		-0.0251		0.0000	
	[-2.77]***		[-3.19]***		[-1.20]		[-1.47]		[-0.93]		[0.08]	
nipo	-0.0000		-0.0002		-0.0002		-0.0184		-0.0000		-0.0331	
	[-1.26]		[-2.49]**		[-1.94]*		[-3.57]***		[-0.32]		[-3.31]***	
ripo	0.0129		0.0259		-0.0000		0.0242		-0.0355		0.0212	
	[2.78]***		[5.64]***		[-0.16]		[3.79]***		[-3.18]***		[1.89]*	
turn	0.6078		0.8232		0.2671		0.1959		-0.4147		-1.9393	
	[1.41]		[1.74]*		[0.42]		[0.28]		[-0.39]		[-1.56]	
cefd	0.0588		0.0802		0.0359		0.0639		0.0111		0.0246	
	[4.03]***		[4.92]***		[1.79]*		[2.75]***		[0.29]		[0.47]	
es	1.3612		0.4541		3.0458		0.8460		3.1525		-1.6983	
	[2.72]***		[0.88]		[4.95]***		[1.36]		[2.76]***		[-1.29]	
DIV	-0.5877		-0.8952		0.1890		-0.3380		1.1779		0.7768	
	[-3.32]***		[-4.59]***		[0.77]		[-1.21]		[2.59]***		[1.43]	
DEF	0.2058		0.4400		0.3057		0.8245		-0.0000		1.9729	

	[0.70]		[1.37]		[0.77]		[1.91]*		[-0.00]		[2.34]**	
YLD	-0.2381		-0.1873		-0.5059		-0.4353		-0.5989		-0.5328	
	[-3.42]***		[-2.48]**		[-5.32]***		[-4.28]***		[-3.52]***		[-2.80]***	
TERM	-0.2763		-0.1212		-0.6098		-0.4506		-0.5928		-0.5847	
	[-2.88]***		[-1.16]		[-4.69]***		[-3.22]***		[-2.48]**		[-2.08]**	
GDP	0.1719		0.0542		0.2173		-0.0000		0.3571		-0.0276	
	[2.41]**		[0.72]		[2.54]**		[-0.03]		[2.17]**		[-0.14]	
UNEMP	0.1383		0.2619		-0.0916		0.2257		-0.5933		0.0000	
	[1.26]		[2.23]**		[-0.58]		[1.37]		[-2.13]**		[0.01]	
cpi	-0.0002		-0.0164		0.0002		-0.0000		0.0224		0.0192	
	[-2.36]**		[-3.71]***		[1.79]*		[-0.05]		[2.35]**		[1.54]	
inf	0.0586		-0.1691		-0.2258		-1.0460		0.2648		-3.8903	
	[0.22]		[-0.60]		[-0.62]		[-2.65]***		[0.42]		[-4.94]***	
$pdnd_{t-1}$		-0.0314		-0.0316		-0.0257		-0.0118		-0.0416		0.0578
		[-2.92]***		[-2.75]***		[-1.72]*		[-0.71]		[-1.65]*		[1.74]*
$nipo_{t-1}$		-0.0000		-0.0110		-0.0002		-0.0196		-0.0000		-0.0202
		[-1.37]		[-2.81]***		[-1.96]*		[-3.63]***		[-0.78]		[-2.00]**
$ripo_{t-1}$		0.0000		0.0142		-0.0000		0.0000		-0.0433		0.0011
		[1.04]		[2.34]**		[-1.19]		[0.99]		[-3.60]***		[0.77]
$turn_{t-1}$		0.3979		0.1434		0.7063		-0.1984		0.5214		-3.0663
		[0.88]		[0.30]		[1.08]		[-0.30]		[0.45]		[-2.62]***
$cefd_{t-1}$		0.0649		0.0709		0.0476		0.0379		0.0000		-0.0532
		[4.35]***		[4.24]***		[2.39]**		[1.66]*		[0.22]		[-1.05]
es_{t-1}		0.8869		-0.1486		2.4512		0.3019		2.1526		-1.4552
		[1.94]*		[-0.31]		[4.17]***		[0.47]		[2.07]**		[-1.25]
DIV_{t-1}		-0.5287		-0.7025		0.0171		-0.0261		0.5199		1.7172
		[-2.84]***		[-3.49]***		[0.07]		[-0.09]		[1.21]		[3.47]***
DEF_{t-1}		0.4151		0.8294		0.4979		1.4413		-0.4801		3.1648
		[1.40]		[2.48]**		[1.23]		[3.08]***		[-0.70]		[3.62]***
YLD_{t-1}		-0.2631		-0.2186		-0.4723		-0.4407		-0.4777		-0.6289
		[-3.84]***		[-2.87]***		[-5.05]***		[-4.17]***		[-2.89]***		[-3.23]***
$TERM_{t-1}$		-0.2304		-0.1451		-0.4070		-0.3838		-0.4053		-0.6146
		[-2.39]**		[-1.35]		[-3.15]***		[-2.59]***		[-1.66]*		[-2.07]**
GDP_{t-1}		-0.0817		-0.0000		-0.0368		0.1431		0.1432		0.2450
		[-1.47]		[-0.11]		[-0.46]		[1.62]		[0.98]		[1.53]
$UNEMP_{t-1}$		0.0982		0.1662		-0.1317		-0.0404		-0.3127		-0.6194
		[0.78]		[1.25]		[-0.81]		[-0.23]		[-1.18]		[-1.98]**
cpi_{t-1}		-0.0002		-0.0106		0.0000		0.0000		0.0000		0.0461
		[-2.04]**		[-2.21]**		[0.53]		[1.22]		[0.66]		[4.25]***
inf_{t-1}		0.3533		-0.0331		0.5640		-0.4978		1.5769		-2.3597
		[1.32]		[-0.11]		[1.56]		[-1.29]		[2.64]***		[-3.49]***
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0782	0.0747	0.0830	0.0752	0.0777	0.0762	0.0787	0.0750	0.0443	0.0443	0.0504	0.0511
N	14887	14887	14887	14887	14887	14887	14887	14887	14887	14887	14887	14887

abnormal returns of stock splits, but investor sentiment variables and January dummy have more statistically positive effects on the returns of the announcements.

8.2.2 Special Dividends

Likewise, in order to investigate the dominant factor that affects the excess returns of special dividends, the abnormal returns are run on the dummy variables of *Bull*, *Expansion*, *January*, and *Halloween* in Table 8.7. As the Table shows, *Expansion* is consistently negative and economically large in most event windows using all models. *Halloween* is also negative, but mainly significant in the excess returns of one day within and ten days after special dividend announcements. *January* is statistically negative in the equal-weighted market adjusted returns and positive in the value-weighted market model adjusted returns. However, it is not significant in the value-weighted market adjusted returns or in the equal-weighted market model adjusted returns. *Bull* is only significant when the Market Model is applied, and its coefficients are statistically positive. These results show that *Expansion* has the dominant effect on the excess returns of special dividend distributions. This is also due to the fact that *Expansion* has the largest coefficients amongst the four dummies in most event windows, especially using the Market Model. The abnormal returns generated from special dividend declarations are substantially low in expansions, followed by the Halloween period. Additionally, the coefficients of *Tax1986* are constantly positive and significant, representing that the excess returns of special dividends are higher after the 1986 Tax Reform.

Table 8.8 further examines the dominant effect of macro-determinants on the excess returns of special dividend distributions using investor sentiment and business cycle variables. The dependent variables in Panel A are the market adjusted abnormal returns and the dependent variables in Panel B are the market model adjusted abnormal returns. In the five-day event window of (-2, +2), *TERM* is the most significant variable, followed by *GDP*, *UNEMP*, *DIV*, and *YLD*. In the ten-day window, *es* and *DIV* are economically large and more statistically significant than *TERM*, *GDP*, and *YLD*. The variable of *es* is also highly correlated to the 30-day abnormal returns of special dividend announcements, along with *turn*, *TERM*, *UNEMP*, *GDP*, and *inf*. *January* is significantly negative in the equal-weighted abnormal returns, whereas *Halloween* and *Tax1986* are mainly significant in the 30-day abnormal returns. These results show a dominant effect of the business cycle variables on the abnormal returns of special dividend declarations.

Table 8.7 The Dominant Dummy Variable for the Abnormal Returns of Special Dividends between 1926 and 2008

This table shows the dominant dummy variable for the abnormal returns of special dividend announcements between 1926 and 2008. The dependent variable in Panel A is market adjusted abnormal returns (CAR) and the dependent variable in Panel B is market model adjusted abnormal returns for firms announcing special dividends. EW and VW stand for equal-weighted market index and value-weighted market index, respectively. (-1, +1), (-2, +2), (-1, 0), (0, +1), (-1, +9) and (-1, +30) represent event windows (in days) relative to special dividend announcements (0 represents the actual announcement day. *Divamt* is the amount of the special dividend paid per share. *Ln(Size)* is the natural logarithm of monthly market capitalization. *Ln(Price)* is the natural logarithm of monthly stock price. *Bull* is a dummy variable that takes a value of one for a special dividend announced in bull markets and a value of zero for an announcement in bear markets. Bull and bear markets are defined from Ohn, Taylor and Pagan (2004)'s turning points. *Expansion* is a dummy variable that takes a value of one for a special dividend announced in economic expansion periods and a value of zero for an announcement in contraction periods. Economic expansion and contraction periods are determined by the NBER (www.nber.org/cycles/cyclesmain.html). *January* is a dummy variable that takes a value of one for special dividends announced in January and a value of zero if announcements are in other months of a year. *Halloween* is another dummy variable that takes a value of one for special dividends announced in the months of November to April and a value of zero if announcements are in the months of May to October. *Tax1986* is a dummy variable, taking a value of one if a special dividend is announced after the Tax Regime Act of 1986. All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regression Results of the dominant macro-effect on special dividends by the Market Adjusted Returns

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	4.4942	4.5133	5.4906	5.6536	2.1771	2.2224	4.3992	4.3816	7.5101	7.7704	9.6952	1.1062
	[11.75]***	[11.39]***	[12.10]***	[12.17]***	[7.42]***	[7.34]***	[12.48]***	[12.12]***	[14.10]***	[14.17]***	[12.89]***	[14.59]***
Divamt	0.2768	0.2712	0.3485	0.3497	0.1615	0.1572	0.2732	0.2717	0.3226	0.3192	0.3784	0.3698
	[4.42]***	[4.37]***	[5.26]***	[5.32]***	[4.26]***	[4.03]***	[4.55]***	[4.58]***	[5.02]***	[4.84]***	[5.25]***	[4.99]***
Ln(Size)	0.0584	0.0343	0.0817	0.0410	0.0274	0.0137	0.0523	0.0386	0.0164	-0.0614	0.0000	-0.0780
	[1.98]*	[1.27]	[2.28]**	[1.17]	[1.21]	[0.56]	[2.06]**	[1.53]	[0.38]	[-1.47]	[0.05]	[-1.24]
Ln(Price)	-1.2265	-1.1826	-1.4817	-1.4376	-0.5801	-0.5515	-1.1964	-1.1632	-1.7263	-1.6433	-2.2345	-2.3647
	[-12.72]***	[-12.06]***	[-13.50]***	[-12.75]***	[-8.39]***	[-7.78]***	[-13.65]***	[-13.13]***	[-14.08]***	[-12.93]***	[-11.65]***	[-12.23]***
Tax1986	0.4680	0.4403	0.5093	0.4818	0.2521	0.2317	0.4099	0.3934	0.8156	0.8581	0.5754	0.5676
	[3.31]***	[3.04]***	[3.19]***	[2.87]***	[2.15]**	[1.93]*	[3.19]***	[3.02]***	[4.20]***	[4.22]***	[1.84]*	[1.89]*
Bull	0.0626	0.0921	-0.0594	-0.0000	0.1020	0.1098	0.0451	0.0605	-0.0964	0.1102	-0.7825	-0.1322
	[0.65]	[0.95]	[-0.50]	[-0.00]	[1.33]	[1.41]	[0.54]	[0.72]	[-0.64]	[0.75]	[-3.24]***	[-0.60]
Expansion	-0.3844	-0.2944	-0.5545	-0.3997	-0.2079	-0.1710	-0.3594	-0.2849	-0.8030	-0.4715	-0.7335	-0.7239
	[-2.36]**	[-1.72]*	[-2.91]***	[-2.05]**	[-1.28]	[-1.04]	[-2.49]**	[-1.90]*	[-3.24]***	[-1.86]*	[-1.98]**	[-2.08]**
January	-0.4853	0.2638	-0.8219	0.2623	-0.4048	0.1341	-0.4768	0.0574	-1.1081	0.4167	-0.7847	0.0415
	[-2.89]***	[1.59]	[-3.95]***	[1.29]	[-3.16]***	[1.05]	[-3.13]***	[0.39]	[-4.29]***	[1.69]*	[-1.88]*	[0.13]
Halloween	-0.1940	-0.1908	-0.1852	-0.1831	-0.1059	-0.1133	-0.1884	-0.1810	-0.6238	-0.3746	-1.6717	0.0859
	[-2.13]**	[-2.04]**	[-1.67]*	[-1.62]	[-1.41]	[-1.48]	[-2.29]**	[-2.17]**	[-4.35]***	[-2.65]***	[-7.24]***	[0.40]
p-value of *F*-Stats	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0542	0.0495	0.0574	0.0528	0.0230	0.0200	0.0617	0.0574	0.0563	0.0514	0.0445	0.0441
N	16160	16160	16160	16160	16160	16160	16160	16160	16160	16160	16160	16160

Panel B: Regression Results of the dominant macro-effect on special dividends by the Market Model Adjusted Returns

Variables/CAR	(-1,+1)		(-2,+2)		(-1,0)		(0,+1)		(-1,+9)		(-1,+30)	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Intercept	4.3098	4.2543	5.2454	5.2371	2.0511	2.0278	4.2444	4.2050	6.9766	7.0202	8.6370	8.9518
	[11.22]***	[10.66]***	[11.49]***	[11.05]***	[6.93]***	[6.69]***	[12.03]***	[11.62]***	[13.25]***	[12.57]***	[11.34]***	[10.76]***
Divamt	0.2649	0.2613	0.3283	0.3304	0.1587	0.1551	0.2599	0.2585	0.2752	0.2838	0.2618	0.2741
	[4.21]***	[4.21]***	[4.84]***	[4.89]***	[4.28]***	[4.18]***	[4.32]***	[4.34]***	[4.26]***	[4.35]***	[3.69]***	[3.55]***
Ln(Size)	0.0537	0.0366	0.0760	0.0480	0.0271	0.0121	0.0480	0.0383	0.0365	-0.0301	0.0231	0.0301
	[1.86]*	[1.26]	[2.17]**	[1.36]	[1.12]	[0.49]	[1.92]*	[1.53]	[0.87]	[-0.72]	[0.34]	[0.45]
Ln(Price)	-1.1929	-1.1551	-1.4616	-1.4171	-0.5669	-0.5323	-1.1613	-1.1387	-1.7989	-1.7085	-2.4165	-2.5962
	[-12.40]***	[-11.75]***	[-13.24]***	[-12.41]***	[-8.24]***	[-4.52]***	[-13.38]***	[-12.93]***	[-14.71]***	[-13.21]***	[-12.74]***	[-12.57]***
Tax1986	0.4353	0.4571	0.4356	0.4637	0.2081	0.2348	0.4133	0.4269	0.8249	0.9039	0.8503	0.5062
	[3.17]***	[3.20]***	[2.89]***	[2.77]***	[1.82]*	[1.99]**	[3.25]***	[3.28]***	[4.60]***	[4.60]***	[3.14]***	[1.61]
Bull	0.1708	0.2272	0.1280	0.2196	0.1772	0.2082	0.1140	0.1437	0.3484	0.5695	0.3815	1.1131
	[1.88]*	[2.42]**	[1.14]	[1.84]*	[2.40]**	[2.74]***	[1.43]	[1.76]*	[2.59]***	[3.88]***	[1.89]*	[4.78]***
Expansion	-0.3801	-0.3849	-0.5011	-0.5346	-0.2109	-0.2179	-0.3525	-0.3542	-0.7175	-0.7321	-0.6439	-1.5271
	[-2.36]**	[-2.22]**	[-2.67]***	[-2.62]***	[-1.31]	[-1.33]	[-2.48]**	[-2.37]**	[-3.17]***	[-2.78]***	[-1.91]*	[-3.69]***
January	-0.0919	0.4230	-0.1907	0.5443	-0.1561	0.2163	-0.2064	0.1658	-0.4856	0.6182	-0.2636	0.4339
	[-0.59]	[2.52]**	[-1.04]	[2.61]***	[-1.29]	[1.68]*	[-1.49]	[1.14]	[-2.11]**	[2.32]**	[-0.77]	[1.18]
Halloween	-0.1648	-0.1330	-0.1737	-0.1165	-0.0080	-0.0640	-0.1714	-0.1498	-0.4529	-0.1875	-0.8621	0.6800
	[-1.86]*	[-1.44]	[-1.64]	[-1.03]	[-1.09]	[-0.85]	[-2.15]**	[-1.82]*	[-3.50]***	[-1.34]	[-4.29]***	[2.97]***
p-value of *F*-Stats	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0511	0.0492	0.0532	0.0516	0.0214	0.0201	0.0585	0.0568	0.0566	0.0542	0.0414	0.0477
N	16155	16155	16155	16155	16155	16155	16155	16155	16155	16155	16155	16155

Table 8.8 The Dominant Macro-Determinant for the Abnormal Returns of Special Dividends between 1960 and 2008

This table shows the dominant macro-determinant for the abnormal returns of special dividend announcements between 1960 and 2008. The dependent variable in Panel A is market adjusted abnormal returns (CAR) and the dependent variable in Panel B is market model adjusted abnormal returns for firms announcing special dividends. Both equal-weighted and value-weighted market indexes are employed. (-2, +2), (-1, +9) and (-1, +30) represent event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). *Divamt* is the amount of the special dividend paid per share. *Ln(Size)* is the natural logarithm of monthly market capitalization. *Ln(Price)* is the natural logarithm of monthly stock price. *January* is a dummy variable that takes a value of one for special dividends announced in January and a value of zero if announcements are in other months of a year. *Halloween* is another dummy variable that takes a value of one for special dividends announced in the months of November to April and a value of zero if announcements are in the months of May to October. *Tax1986* is a dummy variable, taking a value of one if a special dividend is announced after the Tax Regime Act of 1986. *pdnd* is the difference in returns on dividend- and non-dividend-paying stocks; *nipo* is the number of initial public offerings (IPOs); *ripo* is the first-day returns on IPOs; *turn* is the NYSE share turnovers; *cefd* is the close-end fund discounts; and *es* is the level of equity over the level of debt issuance. *DIV* is the market dividend yield, defined as the total dividend payments on the market over the current level of the index. *DEF* is the default spread, defined as the difference between the average yield of bonds rated BAA by Moodys and the average yield of bonds with a Moodys rating of AAA. *TERM* is the term spread, measured as the difference between the average yield of long term Treasury bonds (more than 10 years) and the average yield of T-bills that mature in three months. *YLD* is the three-month T-bills yield. *GDP* is the change in nominal GDP; *UNEMP* is the unemployment rate; *cpi* is the consumer price index; and *inf* is the inflation rate in the US. All CARs are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regression Results between Market Adjusted Cumulative Abnormal Returns and the dominant macro-variable for special dividends

	(-2,+2)				(-1,+9)				(-1,+30)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
Control Variables												
Intercept	10.8418	11.2626	11.3376	11.4886	12.4892	13.1989	13.7906	13.7955	14.0978	15.4570	18.5825	18.1408
	[11.35]***	[11.74]***	[11.73]***	[11.90]***	[10.94]***	[11.85]***	[11.94]***	[11.95]***	[8.33]***	[9.56]***	[10.66]***	[10.55]***
Divamt	0.4780	0.4823	0.4805	0.4840	0.4204	0.4266	0.4178	0.4227	0.4564	0.4661	0.4574	0.4573
	[5.32]***	[5.38]***	[5.33]***	[5.38]***	[5.07]***	[5.17]***	[5.09]***	[5.19]***	[5.24]***	[5.36]***	[5.05]***	[5.09]***
Ln(Size)	-0.2274	-0.2285	-0.2385	-0.2426	-0.4014	-0.4045	-0.4036	-0.4110	-0.4839	-0.4900	-0.4527	-0.4618
	[-4.06]***	[-4.05]***	[-4.29]***	[-4.34]***	[-5.90]***	[-5.93]***	[-5.98]***	[-6.08]***	[-4.65]***	[-4.71]***	[-4.41]***	[-4.51]***
Ln(Price)	-1.3795	-1.3880	-1.3979	-1.4037	-1.3801	-1.3739	-1.4568	-1.4391	-1.9317	-1.9267	-2.2496	-2.2039
	[-7.56]***	[-7.54]***	[-7.59]***	[-7.55]***	[-6.90]***	[-6.83]***	[-7.19]***	[-7.07]***	[-6.39]***	[-6.41]***	[-7.33]***	[-7.26]***
January	-0.7105	-0.8298	0.1039	-0.0122	-1.7042	-1.3654	-0.5940	-0.2668	-1.2389	-0.6568	-0.5286	-0.9096
	[-1.95]*	[-2.78]***	[0.27]	[-0.03]	[-3.50]***	[-3.56]***	[-1.19]	[-0.70]	[-1.55]	[-0.95]	[-0.71]	[-1.46]
Halloween	-0.1461	-0.0933	-0.1336	-0.0181	-0.5270	-0.5470	-0.2599	-0.1483	-1.4266	-1.7357	0.3853	0.8055
	[-0.73]	[-0.51]	[-0.64]	[-0.09]	[-2.09]**	[-2.39]**	[-0.99]	[-0.62]	[-3.78]***	[-4.91]***	[1.02]	[2.32]**
Tax1986	-0.0516	-0.2525	0.0586	-0.1422	0.0454	-0.3769	0.1028	-0.2878	-1.2696	-1.7652	-1.0075	-1.7592
	[-0.12]	[-0.56]	[0.12]	[-0.29]	[0.09]	[-0.74]	[0.18]	[-0.53]	[-1.63]	[-2.31]**	[-1.28]	[-2.26]**
Macro-Variables												
pdnd	-0.0000		-0.0172		-0.0000		-0.0042		0.0103		-0.0890	
	-[0.22]		[-1.55]		[-0.70]		[-2.92]***		[0.44]		[-3.99]***	
nipo	-0.0000		-0.0160		-0.0101		-0.0024		0.0000		-0.0397	
	-[1.99]**		[-3.20]***		[-1.67]*		[-3.86]***		[0.29]		[-3.88]***	
ripo	-0.0181		-0.0128		-0.0251		-0.0013		-0.0607		-0.0372	
	-[3.25]***		[-2.28]**		[-3.43]***		[-1.83]*		[-4.58]***		[-3.31]***	
turn	0.0537		-0.0711		1.1053		0.6246		3.9718		1.6664	
	[0.11]		[-0.13]		[1.63]		[0.88]		[3.81]***		[1.67]*	
cefd	-0.0228		-0.0291		-0.0430		-0.0473		-0.0605		-0.0374	
	-[1.28]		[-1.53]		[-1.95]*		[-2.03]**		[-1.76]*		[-1.08]	
es	0.3279		-0.0692		-0.6446		-1.7047		2.1348		-0.8967	
	[0.55]		[-0.11]		[-0.80]		[-1.92]*		[1.74]*		[-0.67]	
DIV	-0.2593		-0.2521		-0.5082		-0.0054		-0.2721		-0.4470	
	-[1.27]		[-1.20]		[-2.13]**		[-2.10]**		[-0.73]		[-1.12]	
DEF	0.3516		-0.0278		-0.3991		-0.2257		0.5593		-0.4921	
	[0.92]		[-0.07]		[0.88]		[-0.47]		[0.74]		[-0.64]	
YLD	0.1656		0.0574		0.3132		0.0069		0.6370		-0.1819	
	[1.91]***		[0.64]		[3.06]***		[0.65]		[3.96]***		[-1.15]	
TERM	0.3563		0.2744		0.4234		0.2257		0.8820		0.0462	
	[2.54]**		[1.78]*		[2.62]***		[1.25]		[3.77]***		[0.19]	
GDP	-0.0452		-0.1152		0.0748		0.0269		0.0182		-0.1794	
	-[0.48]		[-1.14]		[0.62]		[0.20]		[0.09]		[-0.92]	
UNEMP	-0.3657		-0.1180		-0.2170		0.2713		-0.9584		0.5186	
	-[2.33]**		[-0.70]		[-1.09]		[1.26]		[-3.13]***		[1.60]	
cpi	-0.0000		-0.0000		-0.0000		-0.0016		-0.0000		-0.0208	
	-[0.91]		[-1.37]		[-1.30]		[-2.07]**		[-0.27]		[-1.80]*	
inf	0.3630		0.3524		0.9407		0.6487		1.3635		-0.2822	
	[1.22]		[1.13]		[2.36]**		[1.58]		[2.21]**		[-0.46]	

$pdnd_{t-1}$		-0.0125		-0.0024		-0.0230		-0.0415		-0.0148		-0.0795
		-[1.25]		[-2.42]**		[-1.86]*		[-3.35]***		[-0.65]		[-3.78]***
$nipo_{t-1}$		-0.0000		-0.0010		-0.0000		-0.0118		0.0000		-0.0181
		-[0.88]		[-1.18]**		[-0.30]		[-2.19]**		[0.85]		[-2.05]**
$ripo_{t-1}$		-0.0250		-0.0227		-0.0291		-0.0206		-0.0573		-0.0437
		-[4.65]***		[-4.15]***		[-4.49]***		[-3.09]***		[-4.36]***		[-3.78]***
$turn_{t-1}$		-0.0644		-0.1391		0.9146		0.2867		4.3620		1.7065
		-[0.15]		[-0.31]		[1.48]		[0.43]		[5.84]***		[2.12]**
$cefd_{t-1}$		0.0000		-0.0000		-0.0000		-0.0148		-0.0179		0.0182
		[0.13]		[-0.30]		[-0.35]		[-0.67]		[-0.51]		[0.54]
es_{t-1}		-0.2671		-0.7389		-1.5189		-2.6520		-0.0611		-2.3180
		-[0.51]		[-1.34]		[-2.31]**		[-3.76]***		[-0.05]		[-2.04]**
DIV_{t-1}		-0.3685		-0.3196		-0.6895		-0.4934		-0.0930		-0.3290
		-[1.86]*		[-1.53]		[-2.90]***		[-1.99]**		[-2.34]**		[-0.84]
DEF_{t-1}		0.1969		-0.1662		0.3200		-0.0817		-0.0000		-0.2678
		[0.51]		[-0.42]		[0.67]		[-0.17]		[-0.00]		[-0.34]
YLD_{t-1}		0.1821		0.0550		0.3234		0.0236		0.7771		-0.1679
		[2.16]**		[0.60]		[3.21]***		[0.21]		[4.73]***		[-1.07]
$TERM_{t-1}$		0.3236		0.1737		0.3956		0.0951		0.9319		0.1610
		[2.47]**		[1.19]		[2.57]**		[0.55]		[3.91]***		[0.70]
GDP_{t-1}		-0.1791		-0.1387		-0.2922		-0.2934		-0.1639		-0.0600
		-[2.47]**		[-1.82]*		[-3.15]***		[-2.94]***		[-1.07]		[-4.02]***
$UNEMP_{t-1}$		-0.3111		-0.0245		-0.1496		0.2898		-0.6260		0.2996
		-[1.96]*		[-0.14]		[-0.76]		[1.44]		[-2.03]**		[1.02]
cpi_{t-1}		-0.0000		-0.0000		-0.0115		-0.0126		-0.0161		-0.0160
		-[1.07]		[-1.48]		[-1.72]*		[-1.77]*		[-1.57]		[-1.58]
inf_{t-1}		0.0238		-0.0304		0.6834		0.3507		1.2183		-0.0549
		[0.08]		[-0.10]		[1.79]*		[0.95]		[2.25]**		[-0.10]
p-value of F-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0582	0.0590	0.0579	0.0583	0.0544	0.0552	0.0531	0.0535	0.0571	0.0561	0.0483	0.0503
N	7967	7967	7967	7967	7967	7967	7967	7967	7967	7967	7967	7967

Panel B: Regression Results between Market Model Adjusted Cumulative Abnormal Returns and the dominant macroeconomic variable for special dividends

	(-2,+2)				(-1,+9)				(-1,+30)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
Control Variables												
Intercept	10.6704	10.5834	11.1580	10.6405	12.4862	12.2518	13.6960	12.6218	14.4416	14.3275	16.6233	14.7204
	[11.47]***	[11.33]***	[11.78]***	[11.21]***	[11.30]***	[11.15]***	[11.89]***	[10.74]***	[8.38]***	[8.43]***	[9.22]***	[8.13]***
Divamt	0.4717	0.4760	0.4747	0.4780	0.3803	0.3847	0.3889	0.3906	0.3353	0.3403	0.3471	0.3410
	[5.27]***	[5.33]***	[5.36]***	[5.41]***	[4.75]***	[4.85]***	[4.92]***	[4.99]***	[3.60]***	[3.67]***	[3.36]***	[3.32]***
Ln(Size)	-0.1596	-0.1633	-0.1861	-0.1919	-0.2441	-0.2496	-0.2962	-0.3038	-0.1784	-0.1882	-0.1588	-0.1664
	[-2.84]***	[-2.89]***	[-3.32]***	[-3.42]***	[-3.53]***	[-3.60]***	[-4.33]***	[-4.44]***	[-1.60]	[-1.69]*	[-1.46]	[-1.53]
Ln(Price)	-1.5144	-1.5237	-1.4779	-1.4877	-1.7514	-1.7379	-1.6982	-1.6803	-2.7359	-2.7342	-2.8501	-2.8302
	[-8.23]***	[-8.21]***	[-8.03]***	[-7.99]***	[-8.49]***	[-8.36]***	[-8.28]***	[-8.10]***	[-8.46]***	[-8.49]***	[-8.82]***	[-8.78]***
January	-0.3052	-0.4448	0.5160	0.1983	-1.3836	-1.2218	-0.1003	-0.3465	-1.3400	-1.2773	0.1774	-1.1295
	[-0.84]	[-1.53]	[1.36]	[0.66]	[-2.81]***	[-3.12]***	[-0.19]	[-0.88]	[-1.81]*	[-1.98]**	[0.22]	[-1.71]*
Halloween	-0.1077	-0.0310	-0.0798	0.1038	-0.2810	-0.1752	-0.1450	0.1960	-0.3102	-0.3212	0.9138	1.6544
	[-0.55]	[-0.17]	[-0.39]	[0.54]	[-1.16]	[-0.80]	[-0.55]	[0.83]	[-0.88]	[-0.97]	[1.26]**	[4.36]***
Tax1986	-0.0119	-0.2130	-0.1127	-0.2395	0.0633	-0.3284	-0.0103	-0.4031	-0.8916	-1.3000	-0.7498	-1.4292
	[-0.02]	[-0.49]	[-0.23]	[-0.52]	[0.12]	[-0.67]	[-0.01]	[-0.76]	[-1.23]	[-1.80]*	[-0.86]	[-1.71]*
Macro-Variables												
pdnd	-0.0156		-0.0128		-0.0446		-0.0410		-0.0662		-0.0559	
	[-1.47]		[-1.15]		[-3.36]***		[-2.85]***		[-3.15]***		[-2.30]**	
nipo	-0.0108		-0.0014		-0.0015		-0.0220		-0.0011		-0.0288	
	[-2.33]**		[-2.91]***		[-2.64]***		[-3.59]***		[-1.11]		[-2.65]***	
ripo	-0.0129		-0.0000		-0.0016		-0.0000		-0.0380		-0.0177	
	[-2.46]**		[-1.34]		[-2.46]**		[-0.59]		[-3.69]***		[-1.65]*	
turn	-0.1812		-0.1801		0.5329		0.3249		1.7872		0.7389	
	[-0.36]		[-0.32]***		[0.78]		[0.44]		[1.69]*		[0.69]	
cefd	-0.0110		-0.0218		-0.0000		-0.0246		0.0122		-0.0000	
	[-0.61]		[-1.12]		[-0.38]		[-1.04]		[0.36]		[-0.23]	
es	-0.0806		-0.8669		-1.3776		-3.2839		-0.0601		-4.8215	
	[-0.14]		[-1.44]		[-1.69]*		[-3.43]***		[-0.05]		[-3.38]***	
DIV	-0.2631		-0.4454		-0.5811		-0.9370		-0.2119		-0.8281	

	[-1.37]		[-2.18]**		[-2.59]***		[-3.59]***		[-0.58]		[-1.81]*	
DEF	0.3486		0.3107		0.2602		0.3274		0.2003		1.1063	
	[0.96]		[0.83]		[0.60]		[0.72]		[0.29]		[1.47]	
YLD	0.0759		0.1264		0.1435		0.2137		0.1292		0.1138	
	[0.91]		[1.43]		[1.45]		[1.94]*		[0.87]		[0.61]	
TERM	0.3272		0.3321		0.3318		0.2716		0.4152		0.0184	
	[2.35]**		[2.16]**		[2.10]**		[1.51]		[1.89]*		[0.06]	
GDP	-0.1015		-0.2224		0.0000		-0.1622		-0.0507		-0.4246	
	[-1.06]		[-2.05]**		[0.07]		[-1.11]		[-0.27]		[-1.86]*	
UNEMP	-0.2947		-0.1792		-0.0359		0.2140		-0.4788		0.1564	
	[-1.89]*		[-1.08]		[-0.18]		[1.01]		[-1.63]		[0.47]	
cpi	-0.0000		-0.0000		-0.0138		-0.0194		-0.0000		-0.0221	
	[-1.18]		[-1.44]		[-1.95]*		[-2.44]**		[-0.62]		[-1.74]*	
inf	0.4126		0.1813		0.5997		-0.0595		0.2113		-1.7902	
	[1.38]		[0.58]		[1.53]		[-0.14]		[0.35]		[-2.55]**	
$pdnd_{t-1}$		-0.0151		-0.0000		-0.0347		-0.0208		-0.0554		-0.0177
		[-1.58]		[-0.86]		[-3.01]***		[-1.63]		[-2.74]***		[-0.74]
$nipo_{t-1}$		-0.0000		-0.0000		-0.0000		-0.0000		0.0000		-0.0000
		[-1.02]		[-1.38]		[-0.68]		[-1.03]		[0.25]		[-0.18]
$ripo_{t-1}$		-0.0019		-0.0178		-0.0186		-0.0136		-0.0393		-0.0304
		[-3.95]***		[-3.44]***		[-3.41]***		[-2.17]**		[-3.82]***		[-2.58]***
$turn_{t-1}$		-0.3611		-0.4058		0.1304		-0.3188		1.5870		0.2605
		[-0.85]		[-0.92]		[0.21]		[-0.48]		[2.11]**		[0.28]
$cefd_{t-1}$		0.0000		-0.0128		0.0000		-0.0148		0.0211		0.0000
		[0.04]		[-0.69]		[0.19]		[-0.65]		[0.62]		[0.12]**
es_{t-1}		-0.2773		-0.9960		-1.6031		-3.2991		-0.1996		-4.2778
		[-0.53]		[-1.77]*		[-2.57]**		[-4.86]***		[-0.18]		[-3.56]***
DIV_{t-1}		-0.1010		-1.0720		-0.2645		-0.2192		0.0498		0.2194
		[-0.54]		[-0.52]		[-1.19]		[-0.85]		[0.14]		[0.50]
DEF_{t-1}		0.3245		0.4168		0.4978		0.9160		0.4116		2.0541
		[0.88]		[1.07]		[1.09]		[1.89]*		[0.60]		[2.59]***
YLD_{t-1}		0.0503		0.0574		0.0920		0.0798		0.1098		-0.0000
		[0.60]		[0.62]		[0.92]		[0.70]		[0.76]		[-0.04]
$TERM_{t-1}$		0.2766		0.2453		0.3313		0.2481		0.5188		0.2994
		[2.08]**		[1.62]		[2.21]**		[1.45]		[2.36]**		[1.15]
GDP_{t-1}		-0.1199		-0.0888		-0.2878		-0.3118		-0.1928		-0.5145
		[-1.68]*		[-1.15]		[-3.26]***		[-3.17]***		[-1.36]		[-3.26]***
$UNEMP_{t-1}$		-0.3549		-0.3046		-0.2502		-0.2136		-0.7553		-0.7421
		[-2.30]**		[-1.84]*		[-1.34]		[-1.10]		[-2.70]***		[-2.37]**
cpi_{t-1}		-0.0000		-0.0000		-0.0000		-0.0000		-0.0000		0.0000
		[-0.59]		[-0.50]		[-0.95]		[-0.51]		[-0.05]		[0.15]
inf_{t-1}		0.0458		-0.1035		0.5004		0.0238		0.5175		-0.6949
		[0.16]		[-0.34]		[1.40]		[0.06]		[1.05]		[-1.16]
p-value of *F*-statistics	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0577	0.0580	0.0589	0.0584	0.0522	0.0528	0.0566	0.0557	0.0406	0.0419	0.0510	0.0503
N	7963	7963	7963	7963	7963	7963	7963	7963	7963	7963	7963	7963

8.3 Summary

This chapter examines the dominant effect of macro-determinants on the likelihood and abnormal returns of stock split and special dividend announcements. Most of the market sentiment and business cycle variables are statistically significant for stock splits and special dividend payments. This means that the aggregate effect is an important factor to influence firms' decisions to split shares or initiate special divdiends. The business cycle effect is the dominant macro-determinant for the probability of firms splitting shares, while the Halloween period dominates the likelihood of the occurrence of special dividend announcements. Companies are most likely to announce stock splits during economic expansions and initiate special dividends in the months of November and December. Additionally, both abnormal returns of these two types of corporate announcements are dominated by the business cycle variables. When there is a change in *DIV*, *TERM*, *YLD*, *UNEMP*, or *GDP*, the abnormal returns change substantially. The excess returns of stock splits also increase significantly if firms announce splits in bull markets or when there is a rise in the NYSE share turnovers (*turn*) or ratios of equity to debt issuances (*es*). In contrast, the market reaction to special dividend announcements is low in expansions, but high in contractions. This is most likely due to the positive effect of special dividends in the reduction of agency costs in economic downturns. Interestingly, some of the abnormal returns produced by special dividends are significantly low in the Halloween period, which may be owing to the high frequency and regularity of these announcements occurring in the months of November and December. Investors are less surprised (more expected) to receive extra cash dividends at the end of a year. In brief, the overall evidence indicates that firms' market-timing opportunities, business cycle stage, and monthly patterns in stock returns exert statistically and economically significant influences on the probability that they announce stock splits and special dividends, with the business cycle effect empirically the strongest. This result is similar to the findings of DeAngelo, DeAngelo, and Stulz (2010) on the waves of seasoned equity offerings. The additional analysis is conducted with the composite sentiment index (Baker & Wurgler, 2006, 2007) and extra accounting variables for the period 1960 to 2008. The results are shown in Appendix 12A, 12B, 13A and 13B with additional tests of the fixed effect, random effect and clustering effect. The evidence is consistent with all the findings of this research and further confirms the validation of the macro hypotheses and explanations for stock split and special dividend announcements.

CHAPTER NINE – CONCLUSION

This chapter concludes the dissertation. It revisits the research questions and summarizes the key findings presented in Chapters 4 to 8. It then discusses the limitations of the study, followed by suggestions for future research topics.

9.1 Summary and Conclusion

The aim of this dissertation is to provide a long-term, up-to-date, and comprehensive macro examination on corporate events of stock splits and special dividend announcements. To achieve this, three research questions, driven by the existing research gaps and inconsistencies, are considered: 1. Can market conditions affect firms' decisions to announce stock splits or initiate special dividends? 2. Does the business cycle drive firms' abilities and intentions to split shares or pay special dividends? 3. Can the monthly patterns of the January Effect and Halloween Effect in stock returns explain the likelihood of the occurrence of stock splits and special dividend announcements? Finally, this research investigates and identifies which one of these macro-determinants is the primary motive for firms to conduct such actions.

This study contributes to the literature on the corporate events of stock splits and special dividend announcements. Stock splits are mostly analysed at the firm-specific level; little research has studied why firms split shares at the aggregate level. This research certainly fills the gap to examine the aggregate patterns of stock splits and provides the significant macro explanations of the overall firms' splitting activities. Special dividend announcements are recognized as the substitutes of share repurchases for companies to distribute extra cash. More importantly, special dividends are flexible alternatives of regular dividend payments for firms to reward their shareholders (Lie, 2000). Since there is a decreasing trend in regular dividends (Fama & French, 2001), and special dividends are found to be paid as frequently as regular dividends with an increasing trend of large size special dividends and a decreasing trend of small size special dividends (DeAngelo, DeAngelo, & Skinner, 2000), the examination on the patterns of special dividend announcements would be more appropriate and interesting. This aspect has been overlooked in the existing literature. The results of this research offer empirical evidence that good market and economic conditions trigger firms to split shares, whereas tough conditions and the Christmas period drive companies to pay special dividends. This sheds light on why corporate announcements are observed to be clustered or occur in waves. The findings also complement the Market Driven Theory, Behavioural Hypothesis, and Neoclassical Efficiency Hypothesis in relation to stock splits and special dividend announcements. The study further links the monthly patterns of the January Effect and Halloween Effect with corporate practice, which is a new way to examine event studies.

Using a large sample of firms that announce stock splits or special dividends between 1926 and 2008 in the US, this research finds that stock split announcements are highly clustered from 1980 to 1990, dormant before 1960, and are relatively stable after 1990 as shown in Chapter 4. In contrast, the aggregate special dividend activities are seen to have wave patterns. The first peak of special dividend announcements happens in 1936, followed by the second one in 1950. During the 1970s, the tendency for special dividends reaches another peak and then starts to reduce and become comparatively steady after 1980. In order to find the explanations as to why many firms choose to engage in stock splits or special dividend distributions in some periods but not in others, the three research questions and final comparison among these macro-determinants are examined in Chapters 5 to 8.

First, Chapter 5 provides the results of the first research question whether market conditions play an important role in firms' decisions to split shares or initiate special dividends. In Section 5.1, it is shown that firms are more likely to carry out stock splits in bull markets than in bear markets by more than 25%. The abnormal returns of stock split announcements are higher in bull markets, and they increase with investor sentiment variables, especially for the number of IPO and SEO issuances, NYSE share turnovers, and the first-day returns on IPOs. These findings are consistent with the hypotheses of stock splits with respect to market conditions in Section 3.1.1, suggesting that an overvalued market with high investor sentiment provides a market-timing opportunity for firms to split shares and increase excess returns from the announcements. Unlike other corporate events, the long-term abnormal returns of stock splits in bull markets are positive, although they are slightly smaller than the abnormal returns in bear markets. This implies that there is no long-term negative effect when firms choose to announce stock splits to ride on the wave of market optimism in bullish times.

On the other hand, companies prefer to pay special dividends in bear markets rather than in bull markets as shown in Section 5.2. Both short-term and long-term abnormal returns of these announcements are larger in market downturns than in upturns. Opposite to stock splits, the probability and excess returns of firms initiating special dividends increase when investor sentiment variables decrease. These results indicate a counter-cyclical effect in special dividend distributions; companies are more likely to pay extra cash dividends to reduce agency costs in market declines in comparison to using them as defensive tactics for hostile takeovers in the overvalued markets. The findings are consistent with the Free Cash Flow Hypothesis. The positive effect of special dividend announcements outweighs the negative effect of the lack of investment opportunities for firms in bear markets. Companies that have excess funds to pay their shareholders in tough times are better performers than their counterparts in good times.

Second, Chapter 6 examines the second research question and presents the findings of whether the business cycle is one of the keys to affect corporate decisions to undertake stock splits or initiate special dividends. In Section 6.1, it is shown that the probability that firms split shares is larger in economic expansions than in contractions. It increases with many business cycle variables, such as GDP changes, inflation, consumer price index, unemployment rate, short-term T-bill yield, and term spread, but decreases with the market dividend yield and default spread. Interestingly, the market reaction to stock split announcements is greater in expansions only for the event windows that are less than 10 days, suggesting that the signalling effect of these announcements is stronger in contractions. Firms experiencing earnings increases and having sufficient confidence in their future performance to split shares in economic downturns usually perform better and can make larger abnormal returns than the companies with split announcements in expansions.

Likewise, this research finds that the propensity and abnormal returns of firms paying special dividends are both higher in contractions than in expansions as shown in Section 6.2. Firms are more likely to distribute extra cash dividends when there is a decrease in GDP, consumer price index, term spread, default spread, or short-term T-bill yield. These results suggest that corporations tend to keep additional cash and use it for business growth in expansions, but disburse it as special dividends to shareholders in recessions. The market reacts more positively to these announcements as they can mitigate agency problems, prevent managers' waste from daily unnecessary expenses and negative NPV projects, as well as increase investors' protections in contractions. Similar to the situation in bear markets, firms with special dividend payments appear to be more successful in terms of making short-run and long-run abnormal returns in economic downturns than in upturns.

Third, Chapter 7 explores the third research question of whether the well-known January Effect and Halloween Effect in stock returns can explain firms' decisions and the aggregate patterns of stock split and special dividend announcements. The results show that the market reaction to stock splits is normally stronger in January compared to the rest of the months in a year. However, firms do not appear to have a higher tendency to split shares in January. Instead, they are more likely to announce stock splits in the Halloween period than in May to October, even though the excess returns of these announcements are not particularly high in November to April. Hence, there is a January Effect in returns of stock splits and a Halloween Effect in the likelihood of stock split announcements. In contrast, the probability of firms paying special dividends and their associated returns are significantly lower in January. Nevertheless, the number of special dividends announced in November to April is twice as much as in May to October, indicating that the Halloween Effect strongly exists in the tendency for special dividend announcements. Firms are more inclined to disburse extra cash dividends to shareholders at the end of a year, especially in November and December.

Finally, Chapter 8 investigates which one of the macro-determinants, market conditions, business cycles, and monthly patterns has the dominant effect on corporate decisions to split shares or initiate special dividends. The study finds that the aggregate stock split activities are predominantly determined by the business cycle effect, although market condition and investor sentiment play important parts in explaining the clustered patterns of these announcements. The abnormal returns of stock splits also change substantially with business cycle variables of GDP, unemployment rate, the market dividend yield, term spread, and short-term T-bill yield. The explanatory power of these business cycle variables for the abnormal returns is stronger than the investor sentiment variables and monthly effect dummies. These results indicate that the primary motive for firms to announce stock splits is the economic environment or business cycle variations, which is consistent with the Neoclassical Efficiency Hypothesis. On the other hand, the likelihood of the occurrence of special dividend distributions is dominated by the Halloween Effect. Firms seem to have a commonality to pay extra cash dividends in the months of November and December. Similar to stock splits, the market reaction to special dividend announcements is mostly affected by business cycle variables. These findings suggest that stock splits and special dividend decisions reflect market-timing motives, the business cycle stage, and monthly patterns of the January Effect and Halloween Effect, with the business cycle effect the strongest of these three motivations.

9.2 Limitation of the Research

This dissertation explores a prolonged period to examine the aggregate level effect, namely market condition, business cycle, and monthly pattern on the decisions of stock splits and special dividend announcements. The period starts in 1926, the earliest year that these two types of corporate events are accessible in the CRSP database. However, most accounting data was not available until post 1960. Many event firms and their accounting variables could not be obtained and included in the regressions. Fortunately, this study focuses on macro-determinants, and most coefficients of these macro-variables are highly significant. Hence, the main results and conclusions in this research should not change considerably if additional accounting variables are included as control variables.

9.3 Suggestions for Future Research

This study has examined whether market conditions, business cycles, or monthly patterns can affect corporate decisions to announce stock splits or special dividends. It would be interesting to investigate if industry factors can drive these two events and their associated abnormal returns. Massa, Rehman and Vermaelen (2007) report that share repurchases generate positive effects to repurchasing firms, but negative ones to non-repurchasing firms in the same industry. They indicate that as the industry becomes more concentrated, the negative effects are more pronounced. Similar to share repurchases, in order to reduce the negative effects, it can be argued that firms have to follow their competitors to split shares or distribute special dividends themselves, especially in highly concentrated industries. Tawatnuntachai and D'Mello (2002) refer to this negative intra-industry effect as the 'competitive effect'. However, as the results in Chapter 4 show, stock splits and special dividends create positive effects in the matched non-event firms, which Tawatnuntachai and D'Mello call an intra-industry 'contagion effect'. In this case, if firms still follow their rivals to undertake stock splits or special dividend announcements, there would be another aggregate level effect or industry effect affecting corporate decisions on such events. The results can also explain why these announcements tend to cluster together or happen in waves.

Moreover, business cycle variations and market conditions are important factors for corporate operations, and many studies need to be developed and researched from this dimension. For example:

- How does the business cycle affect information disclosure? Do firms tend to disclose more and good information in economic upturns but less information in recessions? Is this one of the reasons for a financial crisis?

- How does the business cycle affect informed trading, the pricing of financial derivatives, and bond markets?
- Can the business cycle change corporate governance of board structures? Are firms less monitored in economic contractions or in expansions?
- Is there a link between CEO compensation programmes and economic conditions? If there is, how does this link affect firms' agency costs?
- Good market conditions enhance the probability of IPOs and SEOs, so is there a relationship between public companies going private and market conditions or public companies going private and the business cycle?
- Are investors and firms overconfident during economic expansions as in bull markets? Are they noise traders in terms of investments?

These questions are interesting topics which can be addressed in the future. The results would contribute to the literature and enrich the understanding of macro-determinants in corporate finance.

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APPENDICES

Appendix 1A Number of Stock Splits from 1926 to 2008

This table shows the number of stock splits in the period 1926 to 2008 in Panel A, and the percentage (%) of total number of splits in total number of firms listed in the US every year in Panel B. Stock splits are identified from the Centre for Research in Security Prices (CRSP) files, using distribution codes 5523, 5543 and 5552 when the factor to adjust price is greater than 0, and code 5533 when distribution is greater than or equal to 25 percent.

Panel A: Number of stock splits per year from 1926 to 2008

Year	Splits	Year	Splits	Year	Splits	Year	Splits	Year	Splits	Year	Splits	Year	Splits	Year	Splits	Year	Splits
1921	-	1931	4	1941	3	1951	53	1961	73	1971	159	1981	573	1991	311	2001	202
1922	-	1932	1	1942	0	1952	36	1962	75	1972	221	1982	371	1992	483	2002	223
1923	-	1933	1	1943	4	1953	26	1963	87	1973	210	1983	863	1993	550	2003	268
1924	-	1934	6	1944	15	1954	57	1964	142	1974	97	1984	383	1994	388	2004	323
1925	-	1935	6	1945	45	1955	90	1965	164	1975	177	1985	609	1995	507	2005	350
1926	21	1936	13	1946	70	1956	98	1966	149	1976	324	1986	825	1996	580	2006	270
1927	23	1937	22	1947	53	1957	34	1967	173	1977	338	1987	626	1997	582	2007	169
1928	33	1938	5	1948	21	1958	24	1968	278	1978	456	1988	267	1998	501	2008	75
1929	54	1939	4	1949	23	1959	111	1969	211	1979	359	1989	405	1999	464	2009	-
1930	13	1940	3	1950	57	1960	66	1970	70	1980	613	1990	231	2000	396	Total	17266

Panel B: percentage (%) of total number of splits in total number of firms every year from 1926 to 2008

Year	Splits	Year	Splits	Year	Splits	Year	Splits	Year	Splits	Year	Splits	Year	Splits	Year	Splits	Year	Splits
1921	-	1931	1%	1941	0.4%	1951	5%	1961	6%	1971	6%	1981	10%	1991	5%	2001	3%
1922	-	1932	0.1%	1942	0.1%	1952	3%	1962	4%	1972	4%	1982	7%	1992	7%	2002	3%
1923	-	1933	0.1%	1943	0.4%	1953	2%	1963	4%	1973	4%	1983	14%	1993	7%	2003	4%
1924	-	1934	1%	1944	2%	1954	5%	1964	7%	1974	2%	1984	6%	1994	5%	2004	5%
1925	-	1935	1%	1945	5%	1955	9%	1965	8%	1975	3%	1985	10%	1995	6%	2005	5%
1926	4%	1936	2%	1946	8%	1956	9%	1966	7%	1976	6%	1986	12%	1996	6%	2006	4%
1927	4%	1937	3%	1947	6%	1957	3%	1967	8%	1977	7%	1987	9%	1997	6%	2007	3%
1928	5%	1938	1%	1948	2%	1958	2%	1968	13%	1978	9%	1988	4%	1998	6%	2008	1%
1929	7%	1939	1%	1949	2%	1959	10%	1969	9%	1979	7%	1989	6%	1999	6%	2009	-
1930	2%	1940	0.4%	1950	6%	1960	6%	1970	3%	1980	12%	1990	3%	2000	5%		

Appendix 1B Number of Special Dividends from 1926 to 2008

This table shows the number of special dividends in the period 1926 to 2008 in Panel A, and the percentage (%) of total number of special dividends in total number of firms listed in the US every year in Panel B. Special dividends (SDD) are classified from the Centre for Research in Security Prices (CRSP) files by the criteria that the distribution code is 1272 for special and extra dividends, and 1262 for year-end irregular extra dividends combined.

Panel A: Number of special dividends per year from 1926 to 2008

Year	SDD	Year	SDD	Year	SDD	Year	SDD	Year	SDD	Year	SDD	Year	SDD	Year	SDD	Year	SDD
1921	-	1931	9	1941	216	1951	419	1961	119	1971	71	1981	196	1991	167	2001	80
1922	-	1932	5	1942	143	1952	311	1962	207	1972	164	1982	138	1992	165	2002	118
1923	-	1933	31	1943	153	1953	314	1963	218	1973	401	1983	149	1993	213	2003	195
1924	-	1934	105	1944	199	1954	291	1964	218	1974	395	1984	165	1994	195	2004	258
1925	-	1935	176	1945	196	1955	325	1965	250	1975	354	1985	168	1995	219	2005	260
1926	26	1936	381	1946	333	1956	280	1966	219	1976	404	1986	165	1996	200	2006	256
1927	22	1937	282	1947	408	1957	225	1967	158	1977	334	1987	232	1997	167	2007	244
1928	35	1938	101	1948	435	1958	142	1968	127	1978	308	1988	253	1998	104	2008	213
1929	42	1939	150	1949	392	1959	174	1969	89	1979	250	1989	258	1999	132	2009	-
1930	26	1940	187	1950	542	1960	136	1970	72	1980	219	1990	185	2000	94	Total	16978

Panel B: percentage (%) of total number of special dividends in total number of firms every year from 1926 to 2008

Year	SDD	Year	SDD	Year	SDD	Year	SDD	Year	SDD	Year	SDD	Year	SDD	Year	SDD	Year	SDD
1921	-	1931	1%	1941	27%	1951	41%	1961	10%	1971	3%	1981	4%	1991	2%	2001	1%
1922	-	1932	1%	1942	18%	1952	30%	1962	10%	1972	3%	1982	2%	1992	2%	2002	2%
1923	-	1933	4%	1943	19%	1953	30%	1963	11%	1973	7%	1983	2%	1993	3%	2003	3%
1924	-	1934	15%	1944	24%	1954	28%	1964	10%	1974	8%	1984	3%	1994	2%	2004	4%
1925	-	1935	24%	1945	23%	1955	31%	1965	12%	1975	7%	1985	3%	1995	3%	2005	4%
1926	5%	1936	51%	1946	37%	1956	26%	1966	10%	1976	8%	1986	2%	1996	2%	2006	4%
1927	4%	1937	36%	1947	43%	1957	21%	1967	7%	1977	6%	1987	3%	1997	2%	2007	4%
1928	6%	1938	13%	1948	45%	1958	13%	1968	6%	1978	6%	1988	4%	1998	1%	2008	4%
1929	6%	1939	19%	1949	40%	1959	16%	1969	4%	1979	5%	1989	4%	1999	2%	2009	-
1930	3%	1940	24%	1950	54%	1960	12%	1970	3%	1980	4%	1990	3%	2000	1%		

Appendix 1C Number of Stock Splits in Different Split Ratios between 1926 and 2008

This table shows the number of stock splits in different split ratios between 1926 and 2008. Stock splits are identified from the Centre for Research in Security Prices (CRSP) files, using distribution codes 5523, 5543 and 5552 when the factor to adjust price is greater than 0, and code 5533 when distribution is greater than or equal to 25 percent. Split ratios are calculated by the number of additional shares per old share, *Factor to Adjust Price* +1.

Ratios	Total	Bull	Bear	Exp	Con	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
10:1	23	15	6	18	3	1	2	3	2	3	0	2	2	2	1	1	4
5:1	93	60	29	77	12	5	5	5	13	9	14	9	7	7	8	5	6
4:1	181	128	52	155	25	12	13	16	15	25	17	18	10	16	17	7	15
3:1	844	580	250	755	55	64	81	106	95	94	75	62	49	50	53	52	63
5:2	124	95	29	112	12	12	6	16	13	14	17	8	2	10	9	2	15
2:1	7752	5695	2009	7211	502	685	739	682	883	875	584	627	514	536	573	503	551
3:2	5386	4060	1316	4976	402	514	524	404	565	592	405	430	408	358	403	413	370
5:4	1684	1241	439	1494	187	142	137	132	191	201	125	104	132	106	136	152	126
Other	1179	838	335	1054	141	105	115	85	118	122	72	88	97	79	85	106	107
Total	**17266**	**12712**	**4465**	**15852**	**1339**	**1540**	**1622**	**1449**	**1895**	**1935**	**1309**	**1348**	**1221**	**1164**	**1285**	**1241**	**1257**

Appendix 2A Intra-Industry Effects of Stock Split Announcements from 1926 to 2008

This table shows the intra-industry effect of stock split announcements from 1926 to 2008. Industries are grouped by two-digit SIC code in CRSP and the description of SIC code is on the United States Department of Labour website (www.osha.gov/pls/imis/sic_manual.html). AFFMC is the abbreviation for the industry of Agriculture, Forestry, Fishing, Mining and Construction; TCE stands for Transportation, Communication and Electric industry; FIRE represents Finance, Insurance and Real Estate industry; and SPA is Services and Public Administration industry. Event windows used to calculate abnormal returns include one day surrounding an announcement date, one week after an announcement date, two weeks, three weeks, one month, two months, three months, and six months after an announcement date (0 represents the actual announcement day). Panel A is raw returns. Panel B is mean adjusted returns, calculated by $AR_{it}=R_{it}-E(R_{it})$, where AR_{it} is abnormal returns for security i at time t, R_{it} is the actual returns for security i at time t, $E(R_{it})$ is constant mean returns for security i at time t with estimation period of 255 trading days. Panel C is equal-weighted market adjusted returns, and Panel D is value-weighted market adjusted returns, computed with the formula of $AR_{it}=R_{it}-R_{mt}$, where R_{mt} is equal-weighted and value-weighted market index returns in CRSP at time t, respectively. Panel E is market model adjusted returns with equal-weighted market index, and Panel F is market model adjusted returns with value-weighted market index, measured by $AR_{it}=R_{it}-\hat{\alpha}_i-\hat{\beta}_i * R_{mt}$. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it}=\alpha_i+\beta_i * R_{mt}+\varepsilon_i$ with estimation period of 255 trading days. All returns are in percentage with t-statistics underneath. Matching firms are selected from the firms that have not had splits within three years before or after a split announcement month within the same industry. The matching firm for each firm splitting shares is chosen when the absolute difference in firm size between non-event firm and given event firm is minimized. *, ** and *** denote statistical significance at the 10%, 5% and 1%, respectively.

Industry	AFFMC		Manufacturing		TCE		Wholesale and Retail		FIRE		SPA	
SIC	0100-1700		2000-3900		4000-4900		5000-5900		6000-6700		7000-9900	
Obs (N)	746		7163		1229		1969		3562		1928	
Window	Split	Match	Split	Match	Split	Match	Split	Match	Split	Match	Split	Match
Panel A: Raw Returns												
(-30,-2)	9.50	5.24	10.07	3.48	8.10	2.80	11.48	3.56	6.48	2.29	15.35	5.04
	[16.91]***	[6.82]***	[52.78]***	[14.95]***	[21.08]***	[6.36]***	[30.50]***	[7.92]***	[26.41]***	[8.67]***	[31.55]***	[7.11]***
(-1,+1)	2.99	0.09	3.38	0.24	2.27	0.02	3.47	0.27	2.82	0.14	4.26	0.54
	[12.28]***	[1.56]	[46.02]***	[3.03]***	[16.28]***	[0.34]	[24.78]***	[1.82]*	[32.81]***	[1.39]	[21.20]***	[1.45]
(-1,0)	1.97	0.07	2.10	0.15	1.29	-0.26	2.22	0.15	1.72	0.11	2.61	0.42
	[10.29]***	[1.44]	[37.71]***	[2.44]**	[12.19]***	[-1.20]	[20.21]***	[1.13]	[25.11]***	[1.40]	[17.84]***	[1.01]
(0,+1)	2.59	-0.01	2.95	0.13	1.98	0.13	2.96	0.05	2.47	0.15	3.59	0.35
	[11.97]***	[1.09]	[44.82]***	[2.23]**	[15.77]***	[0.98]	[23.73]***	[0.83]	[32.50]***	[1.70]*	[20.48]***	[1.08]
(1.+7)	2.24	0.26	2.48	0.38	2.17	0.68	2.74	0.19	3.00	0.28	2.99	0.57
	[7.76]***	[1.20]	[25.37]***	[3.25]***	[12.79]***	[2.66]***	[15.53]***	[1.63]	[26.25]***	[2.53]**	[13.26]***	[1.87]*
(1,+15)	3.41	1.52	3.13	1.01	2.57	0.90	3.49	1.69	3.93	1.01	4.20	2.41
	[8.29]***	[2.74]***	[23.40]***	[5.76]***	[10.85]***	[2.89]***	[14.11]***	[4.79]***	[23.21]***	[5.98]***	[13.68]***	[3.75]***
(1,+21)	4.29	2.16	3.81	1.52	3.05	1.50	4.50	2.16	4.76	1.32	5.57	2.76
	[8.51]***	[3.19]***	[24.43]***	[7.32]***	[10.96]***	[4.38]***	[15.80]***	[5.38]***	[22.05]***	[7.27]***	[15.00]***	[4.16]***
1month	5.39	2.57	5.26	2.17	3.82	1.99	5.82	2.81	6.01	1.99	7.39	3.58
	[8.46]***	[3.82]***	[27.90]***	[8.98]***	[11.88]***	[5.08]***	[16.33]***	[5.80]***	[23.07]***	[8.51]***	[16.64]***	[4.69]***
2month	8.75	4.38	7.71	3.60	5.88	2.92	8.36	3.93	8.50	3.29	10.87	6.83
	[9.87]***	[4.62]***	[30.64]***	[10.79]***	[12.57]***	[5.22]***	[15.84]***	[5.62]***	[25.26]***	[9.58]***	[17.29]***	[5.93]***
3month	10.74	6.70	9.79	5.50	8.30	4.40	10.29	5.39	10.25	4.82	12.93	9.07
	[10.82]***	[5.69]***	[33.14]***	[13.73]***	[14.46]***	[6.97]***	[17.05]***	[6.67]***	[23.75]***	[11.09]***	[18.39]***	[6.79]***
6month	16.29	10.94	14.99	10.95	14.09	9.98	15.34	8.81	16.70	10.14	18.10	13.79
	[12.19]***	[6.45]***	[36.89]***	[19.33]***	[17.47]***	[10.56]***	[18.94]***	[7.76]***	[28.98]***	[15.84]***	[19.79]***	[7.82]***
Panel B: Event returns with Mean Adjusted Model												
(-30,-2)	2.14	1.63	3.41	0.63	2.77	0.66	4.73	0.72	1.37	-0.25	5.54	1.26
	[4.81]***	[2.29]**	[16.60]***	[2.62]***	[5.67]***	[-0.06]	[12.11]***	[1.52]	[4.99]***	[-1.73]*	[11.61]***	[2.08]**
(-1,+1)	2.23	-0.29	2.69	-0.06	1.72	-0.20	2.77	-0.02	2.29	-0.12	3.24	0.15
	[9.38]***	[0.06]	[37.20]***	[-0.80]	[12.51]***	[-1.58]	[20.23]***	[-0.29]	[27.14]***	[-1.81]*	[16.72]***	[-0.12]
(-1,0)	1.46	-0.18	1.64	-0.04	0.92	-0.41	1.75	-0.05	1.36	-0.06	1.93	0.16
	[7.79]***	[0.21]	[29.94]***	[-0.59]	[8.70]***	[-2.67]***	[16.31]***	[-0.63]	[20.13]***	[-1.07]	[13.81]***	[-0.29]
(0,+1)	2.08	-0.26	2.49	-0.06	1.61	-0.01	2.50	-0.15	2.11	-0.03	2.91	0.09
	[9.63]***	[-0.09]	[38.25]***	[-0.97]	[13.01]***	[-0.62]	[20.41]***	[-0.92]	[28.26]***	[-0.88]	[17.02]***	[-0.17]
(1.+7)	0.46	-0.61	0.87	-0.31	0.89	0.16	1.11	-0.50	1.77	-0.34	0.62	-0.35
	[2.10]**	[-0.71]	[10.043]***	[-2.35]**	[6.36]***	[-0.25]	[7.44]***	[-1.58]	[16.63]***	[-2.85]***	[4.24]***	[-0.58]
(1,+15)	-0.40	-0.35	-0.31	-0.46	-0.18	-0.20	0.00	0.23	1.28	-0.30	-0.87	0.46
	[0.23]	[0.41]	[-0.60]	[-2.70]***	[0.58]	[-1.33]	[1.55]	[0.34]	[9.17]***	[-1.98]**	[-0.62]	[0.36]
(1,+21)	-1.04	-0.45	-1.01	-0.54	-0.80	-0.05	-0.39	0.11	1.06	-0.51	-1.53	0.02
	[-0.99]	[0.11]	[-4.71]***	[-2.71]***	[-1.43]	[-0.71]	[0.66]	[0.19]	[6.58]***	[-2.24]**	[-2.01]**	[-0.04]
1month	-2.23	1.15	-1.62	-0.78	-1.69	-0.22	-1.16	-0.12	0.72	-0.62	-2.76	-0.32
	[-2.47]**	[-0.17]	[-6.24]***	[-3.01]***	[-2.78]***	[-1.18]	[-1.25]	[-0.45]	[5.01]***	[-2.45]**	[-3.35]***	[-0.50]
2month	-6.48	-3.00	-6.06	-2.30	-5.13	-1.49	-5.60	-1.92	-2.07	-1.91	-9.42	-0.93
	[-4.91]***	[-1.41]	[-16.91]***	[-5.92]***	[-7.87]***	[-3.04]***	[-7.48]***	[-3.04]***	[-2.77]***	[-5.25]***	[-8.51]***	[-1.32]
3month	-12.09	-4.35	-10.85	-3.31	-8.22	-2.20	-10.65	-3.38	-5.60	-2.96	-17.48	-2.51
	[-7.58]***	[-1.58]	[-24.39]***	[-6.27]***	[-10.62]***	[-3.38]***	[-12.52]***	[-4.04]***	[-7.59]***	[-6.30]***	[-13.83]***	[-1.97]**
6month	-29.17	-10.95	-26.18	-6.54	-18.76	-3.17	-26.43	-8.74	-14.94	-5.33	-42.53	-8.95
	[-13.66]***	[-3.28]***	[-39.46]***	[-8.19]***	[-15.88]***	[-3.71]***	[-20.47]***	[-6.45]***	[-16.66]***	[-7.25]***	[-23.00]***	[-3.81]***
Panel C: Event returns with Equal-Weighted Market Adjusted Model												
(-30,-2)	6.02	1.62	6.59	-0.20	4.71	-0.85	7.58	-0.52	3.34	-0.89	10.87	0.61
	[11.26]***	[2.18]**	[35.17]***	[-3.65]***	[10.25]***	[-3.86]***	[20.85]***	[-2.14]**	[14.16]***	[-5.02]***	[22.40]***	[-0.27]
(-1,+1)	2.68	-0.30	3.11	0.00	2.02	-0.19	3.18	-0.05	2.56	-0.11	3.93	0.22
	[11.63]***	[-0.15]	[44.41]***	[-0.59]	[15.34]***	[-1.32]	[23.72]***	[-0.57]	[31.70]***	[-1.64]	[21.09]***	[-0.17]
(-1,0)	1.72	-0.24	1.93	0.00	1.12	-0.41	2.02	-0.06	1.54	-0.06	2.39	0.20
	[9.52]***	[-0.40]	[36.20]***	[-0.26]	[10.91]***	[-2.60]***	[19.19]***	[-0.92]	[23.36]***	[-1.05]	[16.97]***	[-0.38]
(0,+1)	2.40	-0.25	2.75	-0.03	1.80	-0.02	2.78	-0.14	2.30	-0.03	3.38	0.13
	[11.32]***	[-0.06]	[43.52]***	[-0.97]	[15.323]***	[-0.61]	[23.35]***	[-0.94]	[32.04]***	[-0.49]	[20.78]***	[-0.26]
(1.+7)	1.75	-0.16	1.99	-0.06	1.57	0.04	2.11	-0.49	2.36	-0.41	2.26	-0.19
	[6.04]***	[0.06]	[21.38]***	[-1.00]	[9.43]***	[-0.85]	[12.77]***	[-1.81]*	[21.05]***	[-3.89]***	[10.58]***	[-0.85]
(1,+15)	2.29	0.44	2.09	-0.03	1.38	-0.32	2.25	0.30	2.59	-0.44	2.74	0.85
	[5.88]***	[1.12]	[15.94]***	[-1.01]	[5.29]***	[-1.55]	[9.97]***	[0.42]	[16.73]***	[-3.17]***	[8.90]***	[0.18]
(1,+21)	2.80	0.62	2.38	0.04	1.51	-0.10	2.73	0.21	3.03	-0.54	3.63	0.71
	[5.91]***	[0.95]	[15.27]***	[-1.00]	[4.88]***	[-0.47]	[10.65]***	[0.32]	[15.49]***	[-2.78]***	[9.60]***	[0.12]
1month	3.50	0.71	3.18	-0.01	1.95	0.05	3.40	0.20	3.55	-0.66	4.75	0.91
	[5.77]***	[1.58]	[16.74]***	[-1.65]*	[5.53]***	[-0.17]	[10.66]***	[0.19]	[15.17]***	[-3.15]***	[10.71]***	[0.05]
2month	5.40	1.68	3.85	-0.31	2.32	-0.83	4.16	-0.55	4.08	-1.22	6.41	2.23
	[6.53]***	[2.35]**	[15.42]***	[-2.77]***	[3.90]***	[-1.26]	[8.98]***	[-1.33]	[12.98]***	[-4.64]***	[10.96]***	[0.30]
3month	5.87	2.34	4.03	-0.35	2.74	-1.40	4.29	-1.05	3.86	-1.58	6.26	2.21
	[6.48]***	[2.50]**	[14.07]***	[-2.72]***	[3.19]***	[-1.68]*	[7.90]***	[-2.06]**	[10.49]***	[-4.80]***	[9.62]***	[-0.10]
6month	6.55	1.30	3.39	-1.05	2.29	-1.92	2.72	-4.55	3.40	-3.69	4.68	0.46
	[5.47]***	[1.42]	[8.68]***	[-4.37]***	[0.80]	[-2.99]***	[3.99]***	[-5.31]***	[6.87]***	[-8.50]***	[5.92]***	[-2.04]**

Panel D: Event returns with Value-Weighted Market Adjusted Model												
(-30,-2)	7.51	3.21	7.99	1.27	6.05	0.57	9.21	1.29	4.55	0.33	12.75	2.55
	[14.53]***	[4.39]***	[45.05]***	[4.06]***	[15.75]***	[-0.57]	[26.63]***	[2.29]**	[20.78]***	[-0.16]	[27.44]***	[2.81]***
(-1,+1)	2.76	-0.16	3.21	0.10	2.16	-0.01	3.33	0.12	2.64	-0.01	4.10	0.37
	[11.99]***	[0.39]	[45.65]***	[0.79]	[16.37]***	[0.26]	[24.81]***	[0.67]	[32.43]***	[-0.57]	[21.80]***	[0.67]
(-1,0)	1.76	-0.20	1.99	0.05	1.21	-0.31	2.11	0.02	1.58	-0.01	2.50	0.28
	[9.91]***	[-0.23]	[36.98]***	[0.60]	[11.51]***	[-1.54]	[19.89]***	[-0.23]	[23.62]***	[-0.43]	[17.49]***	[0.31]
(0,+1)	2.48	-0.14	2.83	0.05	1.91	0.11	2.89	-0.02	2.37	0.06	3.49	0.23
	[11.75]***	[0.52]	[44.71]***	[0.29]	[16.16]***	[0.87]	[24.34]***	[0.31]	[32.86]***	[0.80]	[21.30]***	[0.31]
(1,+7)	1.97	0.07	2.24	0.21	1.83	0.28	2.41	-0.13	2.64	-0.10	2.57	0.15
	[6.76]***	[0.47]	[24.03]***	[1.54]	[10.92]***	[0.41]	[14.63]***	[0.11]	[23.85]***	[-1.22]	[11.95]***	[0.41]
(1,+15)	2.77	0.85	2.60	0.47	1.96	0.18	2.87	1.03	3.16	0.21	3.47	1.57
	[7.03]***	[1.59]	[20.16]***	[2.58]***	[7.98]***	[0.25]	[12.83]***	[2.75]***	[21.49]***	[0.57]	[11.50]***	[1.91]*
(1,+21)	3.50	1.26	3.08	0.76	2.28	0.58	3.53	1.14	3.75	0.28	4.57	1.69
	[7.41]***	[1.74]*	[20.52]***	[3.31]***	[8.00]***	[1.65]*	[13.76]***	[2.83]***	[20.69]***	[1.08]	[12.54]***	[2.12]**
1month	4.46	1.63	4.13	0.97	2.95	0.97	4.50	1.49	4.51	0.49	6.01	2.20
	[7.50]***	[2.74]***	[22.84]***	[3.25]***	[9.02]***	[2.13]**	[14.22]***	[3.08]***	[20.50]***	[1.31]	[13.87]***	[2.21]**
2month	6.89	2.96	5.53	1.45	4.00	0.96	6.02	1.62	5.84	0.79	8.45	4.44
	[8.37]***	[3.48]***	[23.27]***	[3.55]***	[8.32]***	[1.57]	[12.76]***	[2.03]**	[19.61]***	[0.77]	[14.48]***	[2.80]***
3month	8.14	4.42	6.33	2.08	5.08	0.98	6.80	1.91	6.26	1.16	9.22	5.49
	[8.89]***	[4.05]***	[22.95]***	[4.26]***	[8.12]***	[1.39]	[12.41]***	[1.80]*	[17.73]***	[0.92]	[13.90]***	[2.89]***
6month	10.90	5.55	8.18	4.09	7.33	3.17	7.94	1.42	8.13	1.72	10.38	6.82
	[8.66]***	[3.58]***	[21.60]***	[5.73]***	[8.03]***	[2.40]**	[10.76]***	[-0.12]	[16.30]***	[-0.10]	[11.90]***	[2.27]**
Panel E: Event returns with Equal-Weighted Market Model												
(-30,-2)	1.37	0.53	2.48	-0.30	1.58	-0.11	3.40	-0.41	1.11	-0.41	3.15	-0.28
	[3.69]***	[1.18]	[13.94]***	[-0.60]	[3.48]***	[-0.97]	[9.07]***	[-0.84]	[5.06]***	[-1.47]	[7.19]***	[-0.08]
(-1,+1)	2.16	-0.31	2.71	0.01	1.70	-0.12	2.78	-0.05	2.30	-0.08	3.17	0.18
	[9.77]***	[0.01]	[39.64]***	[0.41]	[13.43]***	[-0.50]	[21.31]***	[-0.51]	[29.16]***	[-0.93]	[17.91]***	[0.14]
(-1,0)	1.34	-0.26	1.66	0.01	0.90	-0.36	1.77	-0.08	1.38	-0.04	1.89	0.15
	[7.73]***	[-0.32]	[32.01]***	[0.66]	[9.44]***	[-2.05]**	[17.28]***	[-0.97]	[21.68]***	[-0.41]	[14.31]***	[-0.29]
(0,+1)	2.18	-0.24	2.49	-0.02	1.60	0.03	2.50	-0.15	2.12	-0.01	2.86	0.13
	[10.16]***	[0.13]	[39.95]***	[-0.31]	[13.81]***	[0.26]	[21.49]***	[-0.94]	[29.93]***	[-0.05]	[18.37]***	[0.16]
(1,+7)	0.87	-0.20	1.13	-0.02	0.90	0.23	1.19	-0.43	1.81	-0.33	0.60	-0.30
	[3.03]***	[0.20]	[13.46]***	[0.50]	[6.62]***	[0.31]	[8.09]***	[-1.30]	[17.17]***	[-2.46]**	[4.65]***	[-0.31]
(1,+15)	0.13	0.25	0.29	0.00	0.01	-0.09	0.30	0.36	1.44	-0.23	-0.80	0.79
	[1.07]	[1.25]	[3.69]***	[0.99]	[1.21]	[-0.38]	[2.80]***	[0.93]	[10.50]***	[-0.86]	[-0.41]	[1.10]
(1,+21)	-0.47	0.15	-0.13	0.11	-0.42	0.22	0.10	0.34	1.37	-0.26	-1.18	0.71
	[-0.16]	[0.97]	[0.36]	[1.55]	[-0.34]	[0.77]	[2.21]**	[0.99]	[8.15]***	[-0.28]	[-1.23]	[1.20]
1month	-1.09	0.12	-0.45	0.12	-0.72	0.38	-0.33	0.40	1.20	-0.24	-1.92	1.15
	[-0.96]	[1.53]	[-0.86]	[1.58]	[-0.58]	[1.14]	[0.72]	[1.04]	[6.60]***	[-0.30]	[-1.91]*	[1.46]
2month	-3.20	0.19	-3.39	0.05	-2.66	-0.13	-3.28	-0.11	-0.68	-0.48	-6.77	2.83
	[-1.74]*	[1.60]	[-9.11]***	[1.93]*	[-3.94]***	[0.44]	[-4.23]***	[0.06]	[0.31]	[-0.91]	[-5.40]***	[2.03]**
3month	-6.88	0.32	-6.83	0.35	-4.83	-0.37	-7.05	-0.29	-3.17	-0.53	-13.46	2.59
	[-3.81]***	[1.63]	[-15.44]***	[2.95]***	[-6.34]***	[0.59]	[-8.53]***	[-0.17]	[-4.06]***	[-0.48]	[-9.59]***	[1.76]*
6month	-18.41	1.70	-18.08	0.66	-12.77	0.54	-19.91	-2.69	-10.62	-1.18	-33.67	1.70
	[-8.01]***	[0.77]	[-27.76]***	[3.47]***	[-10.53]***	[1.04]	[-16.17]***	[-1.71]*	[-12.51]***	[-1.30]	[-16.53]***	[0.85]
Panel F: Event returns with Value-Weighted Market Model												
(-30,-2)	1.89	1.20	3.13	0.29	2.46	0.34	4.28	0.33	1.24	-0.34	4.67	0.88
	[4.54]***	[2.08]**	[17.08]***	[1.60]	[5.70]***	[-0.50]	[11.91]***	[0.68]	[5.02]***	[-1.82]*	[10.08]***	[1.31]
(-1,+1)	2.24	-0.24	2.72	0.01	1.78	-0.13	2.79	-0.01	2.29	-0.10	3.25	0.18
	[9.80]***	[0.23]	[39.30]***	[0.04]	[13.84]***	[-0.61]	[21.47]***	[-0.26]	[29.12]***	[-1.46]	[17.96]***	[0.13]
(-1,0)	1.37	-0.23	1.65	-0.01	0.95	-0.36	1.76	-0.07	1.37	-0.07	1.94	0.14
	[7.84]***	[-0.24]	[31.41]***	[0.01]	[9.65]***	[-2.08]**	[17.14]***	[-0.99]	[21.50]***	[-0.96]	[14.20]***	[-0.21]
(0,+1)	2.21	-0.17	2.50	-0.02	1.65	0.03	2.51	-0.12	2.12	0.00	2.90	0.13
	[10.26]***	[0.45]	[40.04]***	[-0.42]	[14.07]***	[0.20]	[21.80]***	[-0.60]	[30.15]***	[-0.26]	[18.41]***	[0.05]
(1,+7)	0.77	-0.34	1.10	-0.06	0.96	0.16	1.17	-0.42	1.80	-0.30	0.72	-0.32
	[2.70]***	[-0.26]	[12.64]***	[-0.09]	[6.53]***	[-0.06]	[8.04]***	[-1.18]	[17.23]***	[-2.67]***	[4.69]***	[-0.41]
(1,+15)	0.01	-0.07	0.14	-0.10	0.06	-0.16	0.24	0.40	1.41	-0.21	-0.64	0.72
	[0.59]	[0.61]	[2.15]**	[-0.04]	[1.05]	[-0.70]	[2.53]**	[0.96]	[10.32]***	[-1.32]	[-0.47]	[0.98]
(1,+21)	-0.58	-0.21	-0.38	-0.03	-0.40	0.10	-0.06	0.34	1.24	-0.30	-1.12	0.49
	[-0.58]	[0.29]	[-1.57]	[0.34]	[-0.66]	[-0.37]	[1.59]	[0.86]	[7.48]***	[-1.20]	[-1.62]	[0.78]
1month	-1.16	-0.42	-0.84	-0.15	-0.88	0.14	-0.68	0.31	0.98	-0.35	-2.08	0.53
	[-1.42]	[0.71]	[-3.34]***	[-0.14]	[-1.36]	[0.45]	[-0.32]	[0.57]	[5.28]***	[-1.41]	[-2.81]***	[0.62]
2month	-4.05	-1.45	-4.46	-0.89	-3.59	-0.83	-4.39	-0.77	-1.35	-1.13	-7.88	1.03
	[-3.08]***	[-0.10]	[-13.55]***	[-1.41]	[-5.99]***	[-1.01]	[-6.43]***	[-1.31]	[-2.68]***	[-3.30]***	[-7.73]***	[0.31]
3month	-8.56	-2.01	-8.67	-1.38	-6.32	-1.45	-8.92	-1.55	-4.40	-1.73	-15.24	0.14
	[-5.72]***	[-0.08]	[-21.42]***	[-1.59]	[-8.87]***	[-1.24]	[-11.50]***	[-1.95]*	[-8.57]***	[-3.89]***	[-12.40]***	[-0.27]
6month	-22.39	-6.55	-21.72	-2.68	-14.97	-1.73	-23.36	-5.54	-13.01	-3.57	-38.2	-3.55
	[-10.99]***	[-1.48]	[-35.52]***	[2.00]**	[-13.03]***	[-1.04]	[-19.66]***	[-4.15]***	[-17.66]***	[-5.02]***	[-20.08]***	[-1.78]*

Appendix 2B Intra-Industry Effect of Special Dividend Announcements from 1926 to 2008

This table shows the intra-industry effect of special dividend announcements from 1926 to 2008. Industries are grouped by two-digit SIC code in CRSP and the description of SIC code is on the United States Department of Labour website (www.osha.gov/pls/imis/sic_manual.html). AFFMC is the abbreviation for the industry of Agriculture, Forestry, Fishing, Mining and Construction; TCE stands for Transportation, Communication and Electric industry; FIRE represents Finance, Insurance and Real Estate industry; and SPA is Services and Public Administration industry. Event windows used to calculate abnormal returns include one day surrounding an announcement date, one week after an announcement date, two weeks, three weeks, one month, two months, three months, and six months after an announcement date (0 represents the actual announcement day). Panel A is raw returns. Panel B is mean adjusted returns, calculated by $AR_{it}=R_{it}-E(R_{it})$, where AR_{it} is abnormal returns for security i at time t, R_{it} is the actual returns for security i at time t, $E(R_{it})$ is constant mean returns for security i at time t with estimation period of 255 trading days. Panel C is equal-weighted market adjusted returns, and Panel D is value-weighted market adjusted returns, computed with the formula of $AR_{it}=R_{it}-R_{mt}$, where R_{mt} is equal-weighted and value-weighted market index returns in CRSP at time t, respectively. Panel E is market model adjusted returns with equal-weighted market index, and Panel F is market model adjusted returns with value-weighted market index, measured by $AR_{it}=R_{it}-\hat{\alpha}_i-\hat{\beta}_i * R_{mt}$. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it}=\alpha_i+\beta_i*R_{mt}+\varepsilon_i$ with estimation period of 255 trading days. All returns are in percentage with t-statistics underneath. Matching firms are selected from the firms that have not paid special dividends within three years before or after a special dividend announcement month within the same industry. The matching firm for each firm initiating special dividends is chosen when the absolute difference in firm size between non-event firm and given event firm is minimized. *, ** and *** denote statistical significance at the 10%, 5% and 1%, respectively.

Industry	AFFMC		Manufacturing		TCE		Wholesale and Retail		FIRE		SPA	
SIC	0100-1700		2000-3900		4000-4900		5000-5900		6000-6700		7000-9900	
Obs (N)	732		9306		747		1307		3839		458	
Window	SDD	Match	SDD	Match	SDD	Match	SDD	Match	SDD	Match	SDD	Match
Panel A: Raw Returns												
(-30,-2)	3.08	2.55	2.64	1.49	2.98	3.13	2.50	2.74	2.00	1.66	2.23	3.05
	[6.87]***	[1.61]	[25.26]***	[4.38]***	[8.20]***	[3.03]***	[9.13]***	[2.68]***	[2.86]***	[5.92]***	[4.05]***	[2.68]***
(-1,+1)	1.54	0.12	1.11	0.08	1.34	0.05	1.58	0.38	1.46	0.03	3.21	-0.58
	[8.15]***	[0.76]	[22.81]***	[1.75]*	[8.06]***	[-0.09]	[10.43]***	[2.10]**	[4.94]***	[0.90]	[9.07]***	[-0.93]
(-1,0)	0.99	0.20	0.63	0.05	0.69	0.14	0.91	0.39	0.70	0.03	1.78	-0.56
	[6.56]***	[0.59]	[15.07]***	[1.95]*	[6.19]***	[0.65]	[7.68]***	[1.99]**	[1.91]*	[1.09]	[6.03]***	[-1.26]
(0,+1)	1.35	-0.06	0.99	0.05	1.11	-0.12	1.37	0.12	1.32	0.02	2.98	-0.11
	[8.27]***	[0.33]	[23.17]***	[0.98]	[7.22]***	[-0.70]	[9.50]***	[1.23]	[19.35]***	[0.53]	[8.93]***	[-0.47]
(1.+7)	1.35	1.47	1.22	0.42	1.46	0.23	1.64	1.27	2.11	0.52	2.64	1.45
	[5.10]***	[1.78]*	[20.15]***	[2.71]***	[7.41]***	[0.44]	[9.38]***	[2.92]***	[24.15]***	[3.67]***	[7.06]***	[1.45]
(1,+15)	2.30	1.41	1.69	1.21	2.25	1.18	2.16	1.90	2.88	1.43	2.77	2.31
	[5.93]***	[1.42]	[20.23]***	[5.05]***	[8.61]***	[1.90]*	[8.67]***	[2.83]***	[25.55]***	[6.31]***	[5.61]***	[2.03]**
(1,+21)	3.25	1.42	2.18	1.88	2.88	2.42	2.54	2.62	3.49	1.74	3.19	2.94
	[7.59]***	[1.68]*	[21.95]***	[6.46]***	[9.71]***	[3.84]***	[9.15]***	[3.37]***	[27.05]***	[6.34]***	[5.76]***	[1.67]*
1month	4.20	1.98	3.03	3.15	3.43	3.20	3.52	3.91	4.24	2.86	4.39	4.09
	[9.24]***	[1.53]	[26.76]***	[9.10]***	[10.17]***	[4.39]***	[10.71]***	[4.69]***	[29.11]***	[8.51]***	[6.97]***	[2.90]***
2month	7.79	7.33	5.92	6.59	5.67	5.02	5.87	9.56	5.90	5.47	8.39	7.86
	[12.27]***	[4.18]***	[37.62]***	[12.61]***	[12.12]***	[6.00]***	[12.61]***	[7.90]***	[29.37]***	[12.51]***	[9.41]***	[3.93]***
3month	9.74	10.08	8.16	8.72	7.42	7.49	8.30	10.39	7.74	7.86	10.44	10.79
	[13.31]***	[4.29]***	[42.40]***	[14.61]***	[13.14]***	[6.48]***	[14.36]***	[7.08]***	[30.87]***	[14.51]***	[9.24]***	[4.20]***
6month	16.58	18.53	12.53	14.67	11.29	12.35	12.68	16.97	12.11	14.48	17.45	15.37
	[14.97]***	[5.21]***	[43.74]***	[17.51]***	[12.65]***	[7.15]***	[15.31]***	[8.07]***	[31.26]***	[17.42]***	[10.23]***	[3.59]***
Panel B: Event returns with Mean Adjusted Model												
(-30,-2)	0.01	-0.39	0.15	-0.47	0.49	0.80	0.03	0.80	-0.17	-0.32	-0.47	0.25
	[0.16]	[-0.92]	[2.98]***	[-1.46]	[1.29]	[-0.07]	[1.67]*	[0.48]	[0.87]	[-0.70]	[-0.06]	[0.42]
(-1,+1)	1.22	-0.18	0.85	-0.12	1.08	-0.19	1.32	0.18	1.24	-0.18	2.93	-0.87
	[6.27]***	[-0.10]	[17.08]***	[-0.30]	[6.48]***	[-1.19]	[8.51]***	[1.29]	[3.96]***	[-1.34]	[8.16]***	[-1.35]
(-1,0)	0.78	0.00	0.46	-0.09	0.51	-0.02	0.74	0.25	0.55	-0.10	1.60	-0.75
	[4.98]***	[-0.09]	[10.61]***	[0.35]	[4.79]***	[-0.22]	[5.98]***	[1.37]	[1.25]	[-0.70]	[5.31]***	[-1.74]*
(0,+1)	1.14	-0.26	0.82	-0.09	0.94	-0.28	1.20	-0.01	1.17	-0.11	2.80	-0.30
	[6.89]***	[-0.37]	[18.79]***	[-0.67]	[6.07]***	[-1.58]	[8.09]***	[0.56]	[16.94]***	[-1.24]	[8.27]***	[-0.82]
(1.+7)	0.62	0.76	0.62	-0.05	0.86	-0.30	1.08	0.80	1.58	0.04	1.99	0.78
	[1.94]*	[0.65]	[10.04]***	[-0.27]	[4.25]***	[-1.20]	[5.87]***	[1.88]*	[18.38]***	[0.16]	[5.09]***	[0.67]
(1,+15)	0.73	-0.11	0.40	0.20	0.97	-0.02	0.88	0.87	1.74	0.40	1.38	0.87
	[1.39]	[-0.50]	[4.99]***	[0.80]	[3.51]***	[-0.54]	[3.26]***	[1.23]	[16.06]***	[1.23]	[2.86]***	[0.74]
(1,+21)	1.05	-0.71	0.38	0.46	1.10	0.74	0.76	1.18	1.90	0.29	1.24	0.93
	[2.02]**	[-0.70]	[3.82]***	[1.52]	[3.52]***	[0.76]	[2.42]**	[1.31]	[15.53]***	[0.24]	[2.48]**	[0.42]
1month	1.06	-1.06	0.46	1.18	0.90	0.79	0.97	1.84	1.98	0.80	1.60	1.23
	[2.22]**	[-1.11]	[4.63]***	[3.15]***	[2.72]***	[0.73]	[2.69]***	[2.06]**	[14.56]***	[1.27]	[3.02]***	[1.24]
2month	1.53	1.27	0.80	2.59	0.63	0.20	0.79	5.40	1.42	1.36	2.83	2.15
	[2.49]**	[0.44]	[5.83]***	[3.85]***	[1.81]*	[0.67]	[1.63]	[3.85]***	[8.00]***	[1.89]*	[3.21]***	[1.61]
3month	0.36	1.02	0.50	2.72	-0.12	0.26	0.69	4.11	1.08	1.70	2.16	2.23
	[0.78]	[-0.09]	[3.39]***	[3.44]***	[0.73]	[0.10]	[1.53]	[2.68]***	[5.24]***	[1.53]	[2.19]**	[1.49]
6month	-2.02	0.54	-2.71	2.83	-3.68	-2.06	-2.42	4.61	-0.96	2.20	1.19	-1.83
	[-0.79]	[-0.43]	[-5.42]***	[2.30]**	[-2.27]**	[-1.52]	[-1.05]	[1.71]*	[-0.16]	[0.47]	[0.94]	[0.06]
Panel C: Event returns with Equal-Weighted Market Adjusted Model												
(-30,-2)	1.54	1.51	0.90	0.09	1.12	0.77	0.56	0.80	0.24	-0.17	0.02	0.48
	[3.09]***	[0.88]	[8.25]***	[-0.64]	[2.91]***	[-0.80]	[1.03]	[0.11]	[-0.17]	[-2.09]**	[0.20]	[0.68]
(-1,+1)	1.38	0.12	0.77	-0.10	1.10	-0.23	1.20	0.00	1.31	-0.07	2.97	-0.78
	[7.00]***	[0.68]	[14.84]***	[-0.66]	[6.26]***	[-1.33]	[7.07]***	[0.44]	[16.79]***	[-0.63]	[7.58]***	[-1.26]
(-1,0)	0.88	0.27	0.43	-0.04	0.55	-0.05	0.68	0.18	0.60	-0.04	1.69	-0.63
	[5.32]***	[0.75]	[9.21]***	[0.58]	[4.52]***	[-0.25]	[4.91]***	[0.93]	[10.20]***	[-0.47]	[5.27]***	[-1.33]
(0,+1)	1.23	-0.11	0.74	-0.08	0.92	-0.27	1.11	-0.13	1.21	-0.04	2.76	-0.29
	[7.21]***	[0.15]	[16.39]***	[-1.21]	[5.79]***	[-1.63]	[6.89]***	[-0.30]	[17.78]***	[-0.75]	[7.64]***	[-0.89]
(1.+7)	0.73	1.07	0.52	-0.04	0.74	-0.26	0.76	0.13	1.44	-0.17	1.83	0.76
	[2.06]**	[1.04]	[7.64]***	[-0.70]	[3.33]***	[-1.82]*	[3.16]***	[0.38]	[15.65]***	[-2.07]**	[3.62]***	[0.60]
(1,+15)	0.83	0.39	0.20	0.04	0.27	-0.14	0.26	-0.23	1.18	-0.34	1.34	1.11
	[1.34]	[0.08]	[0.57]	[-0.43]	[-0.20]	[-1.47]	[-0.82]	[-0.75]	[8.57]***	[-3.95]***	[1.51]	[1.03]
(1,+21)	1.15	-0.01	0.07	0.12	0.24	0.23	-0.06	-0.32	1.16	-0.74	1.54	1.70
	[1.72]*	[0.03]	[-1.87]*	[-0.35]	[-0.28]	[-0.83]	[-2.34]**	[-1.15]	[6.58]***	[-5.65]***	[1.66]*	[1.08]
1month	1.04	-0.57	-0.13	0.25	0.03	0.09	-0.14	-0.34	0.77	-0.82	2.00	1.91
	[1.44]	[-1.10]	[-4.26]***	[-0.46]	[-1.03]	[-0.93]	[-2.87]***	[-1.05]	[2.51]**	[-6.65]***	[2.40]**	[1.80]*
2month	0.90	1.30	-0.12	0.08	-0.40	-1.16	-0.42	1.92	-0.61	-1.20	2.79	1.90
	[0.55]	[0.46]	[-4.21]***	[-2.68]***	[-2.51]**	[-1.40]	[-3.62]***	[0.50]	[-6.30]***	[-6.89]***	[1.84]*	[1.42]
3month	0.11	1.59	-0.22	-0.31	-0.61	-1.29	-0.27	0.52	-1.20	-1.13	2.47	2.00
	[-1.33]	[0.00]	[-5.25]***	[-3.12]***	[-2.66]***	[-2.00]**	[-3.18]***	[-0.29]	[-8.66]***	[-6.70]***	[1.01]	[1.27]
6month	0.24	3.77	-1.17	0.24	-1.91	-2.29	-1.12	1.31	-2.55	-0.47	4.45	2.28
	[-1.28]	[0.25]	[-7.53]***	[-2.04]**	[-3.61]***	[-2.73]***	[-3.70]***	[-0.32]	[-9.51]***	[-5.18]***	[1.82]*	[0.64]

Panel D: Event returns with Value-Weighted Market Adjusted Model												
(-30,-2)	2.07	1.99	1.40	0.40	1.52	1.23	1.29	1.58	0.76	0.34	0.91	1.52
	[4.59]***	[1.39]	[14.03]***	[0.51]	[4.12]***	[-0.45]	[4.08]***	[1.29]	[2.26]**	[-0.38]	[2.01]**	[1.70]*
(-1,+1)	1.42	0.23	0.87	-0.06	1.15	-0.15	1.27	0.10	1.35	-0.06	3.04	-0.75
	[7.26]***	[1.08]	[17.46]***	[-0.26]	[6.87]***	[-0.78]	[7.69]***	[0.85]	[17.30]***	[-0.64]	[7.93]***	[-1.23]
(-1,0)	0.90	0.33	0.50	-0.01	0.58	-0.03	0.72	0.22	0.62	-0.03	1.73	-0.60
	[5.65]***	[0.96]	[11.37]***	[0.98]	[4.87]***	[0.12]	[5.39]***	[1.14]	[10.66]***	[-0.53]	[5.44]***	[-1.29]
(0,+1)	1.24	-0.08	0.81	-0.06	0.98	-0.21	1.17	-0.06	1.23	-0.03	2.80	-0.26
	[7.10]***	[0.35]	[18.59]***	[-0.84]	[6.44]***	[-1.18]	[7.47]***	[0.05]	[17.90]***	[-0.66]	[7.87]***	[-0.86]
(1.+7)	0.88	1.09	0.76	0.07	0.97	-0.10	1.14	0.60	1.68	0.08	2.03	0.73
	[2.70]***	[1.18]	[12.25]***	[0.23]	[4.64]***	[-1.32]	[5.74]***	[1.47]	[18.90]***	[0.05]	[4.46]***	[0.53]
(1,+15)	1.36	0.65	0.81	0.46	0.90	0.27	1.21	0.64	2.02	0.56	1.92	1.30
	[3.08]***	[0.49]	[9.35]***	[1.95]*	[2.64]***	[-0.58]	[4.00]***	[0.83]	[17.91]***	[1.47]	[3.04]***	[1.11]
(1,+21)	2.07	0.61	1.04	0.83	1.34	1.07	1.31	1.09	2.40	0.56	2.39	2.19
	[4.56]***	[0.80]	[10.22]***	[2.99]***	[4.25]***	[1.05]	[3.82]***	[1.04]	[18.36]***	[0.74]	[3.56]***	[1.32]
1month	2.54	0.50	1.32	1.55	1.61	1.41	1.81	1.86	2.67	1.17	3.31	2.78
	[5.16]***	[0.05]	[11.65]***	[4.61]***	[4.53]***	[1.51]	[4.47]***	[2.13]**	[18.13]***	[1.69]*	[4.95]***	[2.29]**
2month	4.27	4.20	2.82	3.34	2.50	1.63	2.89	6.00	2.89	2.31	5.57	4.32
	[6.38]***	[2.50]**	[18.62]***	[5.85]***	[4.67]***	[1.88]*	[5.19]***	[4.77]***	[13.013]***	[2.95]***	[5.54]***	[2.47]**
3month	4.85	5.81	3.72	4.14	3.09	2.50	4.03	5.74	3.38	3.35	6.45	5.75
	[5.67]***	[2.28]**	[19.53]***	[6.32]***	[4.52]***	[1.09]	[6.08]***	[4.03]***	[11.75]***	[3.34]***	[5.38]***	[2.54]**
6month	7.60	10.53	4.66	6.94	3.74	3.81	5.29	9.18	4.48	6.45	10.95	8.27
	[5.92]***	[2.73]***	[16.67]***	[7.61]***	[3.50]***	[0.62]	[5.38]***	[4.12]***	[10.54]***	[5.04]***	[6.91]***	[1.95]*
Panel E: Event returns with Equal-Weighted Market Model												
(-30,-2)	0.24	0.44	0.55	0.28	0.32	0.75	-0.02	1.21	0.20	0.56	-0.71	-0.61
	[0.81]	[0.34]	[6.80]***	[0.84]	[1.02]	[-0.08]	[0.95]	[1.04]	[1.72]*	[1.68]*	[-0.21]	[0.33]
(-1,+1)	1.25	-0.06	0.78	-0.03	1.06	-0.34	1.22	0.05	1.26	-0.06	2.89	-0.80
	[6.53]***	[0.37]	[15.87]***	[0.28]	[6.48]***	[-1.63]	[7.92]***	[0.70]	[17.00]***	[-0.19]	[7.74]***	[-1.14]
(-1,0)	0.78	0.10	0.42	0.01	0.54	-0.14	0.68	0.22	0.56	-0.03	1.65	-0.65
	[5.29]***	[0.45]	[9.83]***	[1.35]	[4.83]***	[-0.65]	[5.49]***	[1.10]	[10.09]***	[-0.08]	[5.35]***	[-1.21]
(0,+1)	1.12	-0.19	0.74	-0.05	0.90	-0.33	1.12	-0.12	1.17	-0.02	2.68	-0.26
	[6.72]***	[-0.03]	[17.40]***	[-0.48]	[6.01]***	[-1.73]*	[7.67]***	[-0.09]	[17.97]***	[-0.23]	[7.61]***	[-0.73]
(1.+7)	0.47	0.63	0.48	0.00	0.60	-0.24	0.80	0.27	1.54	-0.05	1.87	0.61
	[1.32]	[0.39]	[7.83]***	[0.20]	[2.96]***	[-1.38]	[4.30]***	[1.07]	[19.05]***	[-0.02]	[4.32]***	[0.57]
(1,+15)	0.34	-0.24	0.08	0.10	0.23	-0.05	0.41	0.22	1.51	0.08	1.32	0.59
	[0.38]	[-0.51]	[0.42]	[0.66]	[0.51]	[-0.64]	[1.18]	[0.56]	[14.90]***	[-0.20]	[2.19]**	[0.66]
(1,+21)	0.52	-0.67	-0.09	0.17	0.13	0.30	0.09	0.35	1.65	-0.12	1.51	1.26
	[0.79]	[-0.42]	[-1.99]**	[0.88]	[0.33]	[0.14]	[0.03]	[0.51]	[14.10]***	[-1.29]	[2.38]**	[0.97]
1month	0.26	-1.35	-0.36	0.28	-0.19	0.12	-0.06	0.31	1.56	0.07	1.73	1.13
	[0.57]	[-1.41]	[-3.77]***	[1.07]	[-0.36]	[-0.02]	[-0.37]	[0.64]	[12.17]***	[-1.31]	[2.87]***	[1.48]
2month	-0.08	-0.64	-0.56	-0.13	-0.78	-1.14	-0.81	2.49	0.87	0.39	1.81	-0.80
	[0.30]	[-0.28]	[-3.08]***	[-0.81]	[-1.22]	[-0.66]	[-1.37]	[1.92]*	[5.56]***	[-0.08]	[2.06]**	[0.67]
3month	-1.34	-1.51	-1.00	-0.60	-1.47	-1.34	-1.12	1.17	0.41	0.92	1.23	-2.11
	[-1.40]	[-0.86]	[-4.58]***	[-0.97]	[-1.76]*	[-1.12]	[-1.10]	[1.11]	[2.99]***	[0.55]	[1.36]	[0.37]
6month	-3.52	-3.11	-3.08	-0.16	-3.85	-3.19	-3.21	3.02	-0.70	2.80	1.00	-4.57
	[-2.10]**	[-0.92]	[-7.71]***	[0.55]	[-3.09]***	[-1.80]*	[-1.82]*	[1.34]	[1.04]	[2.56]**	[0.92]	[-0.00]
Panel F: Event returns with Value-Weighted Market Model												
(-30,-2)	-0.16	0.13	0.22	-0.42	0.03	0.45	-0.15	0.94	-0.12	-0.17	-0.76	-0.09
	[-0.22]	[-0.17]	[3.52]***	[-1.43]	[0.08]	[-0.86]	[0.63]	[0.61]	[-0.75]	[-0.95]	[-0.27]	[0.44]
(-1,+1)	1.20	-0.04	0.76	-0.10	1.02	-0.28	1.19	0.05	1.22	-0.14	2.88	-0.86
	[6.20]***	[0.41]	[15.53]***	[-0.55]	[6.43]***	[-1.41]	[7.72]***	[0.79]	[16.48]***	[-1.20]	[7.72]***	[-1.26]
(-1,0)	0.75	0.11	0.41	-0.04	0.51	-0.10	0.65	0.20	0.53	-0.09	1.62	-0.69
	[4.92]***	[0.41]	[9.63]***	[0.57]	[4.71]***	[-0.41]	[5.24]***	[1.05]	[9.70]***	[-1.03]	[5.17]***	[-1.37]
(0,+1)	1.09	-0.16	0.73	-0.09	0.89	-0.28	1.12	-0.12	1.16	-0.07	2.67	-0.31
	[6.53]***	[0.05]	[17.31]***	[-0.99]	[6.07]***	[-1.58]	[7.63]***	[-0.03]	[17.57]***	[-0.96]	[7.64]***	[-0.84]
(1.+7)	0.42	0.59	0.48	-0.14	0.64	-0.21	0.92	0.49	1.55	-0.02	1.90	0.44
	[1.09]	[0.30]	[8.00]***	[-0.68]	[3.37]***	[-1.31]	[4.98]***	[1.47]	[18.87]***	[0.20]	[4.62]***	[0.26]
(1,+15)	0.38	-0.17	0.19	0.05	0.47	0.02	0.70	0.57	1.69	0.36	1.36	0.38
	[0.50]	[-0.60]	[2.14]**	[0.53]	[1.63]	[-0.50]	[2.43]**	[0.99]	[16.31]***	[1.23]	[2.35]**	[0.35]
(1,+21)	0.70	-0.53	0.19	0.27	0.63	0.64	0.53	0.91	1.92	0.27	1.45	0.95
	[1.29]	[-0.52]	[1.58]	[1.35]	[2.33]**	[0.78]	[1.70]*	[1.15]	[15.97]***	[0.44]	[2.34]**	[0.60]
1month	0.69	-0.98	0.17	0.86	0.55	0.64	0.68	1.35	2.02	0.74	1.72	0.96
	[1.48]	[-1.29]	[1.68]*	[2.94]***	[2.03]**	[0.84]	[1.74]*	[1.81]*	[15.20]***	[1.20]	[2.88]***	[1.18]
2month	0.86	1.19	0.57	1.98	0.35	0.04	0.41	4.46	1.59	1.52	2.36	0.38
	[1.66]*	[0.48]	[4.53]***	[3.42]***	[1.17]	[0.62]	[0.84]	[3.46]***	[8.66]***	[2.32]**	[2.59]***	[0.98]
3month	-0.26	0.87	0.29	2.02	-0.39	0.15	0.22	3.37	1.21	1.91	1.85	0.06
	[-0.12]	[-0.14]	[2.06]**	[3.05]***	[-0.01]	[-0.09]	[0.64]	[2.49]**	[5.44]***	[1.95]*	[1.86]*	[0.83]
6month	-3.03	-0.18	-2.39	2.41	-3.42	-1.76	-2.52	4.92	-0.35	2.90	1.24	-2.63
	[-1.91]*	[-0.54]	[-6.03]***	[2.70]***	[-2.72]***	[-1.49]	[-1.51]	[1.97]**	[1.01]	[1.91]*	[0.96]	[0.03]

Appendix 3 Correlation Matrix between Variables

Correlation matrices between variables in multiple regressions used for stock splits and special dividend announcements are tabulated below. Regression models are demonstrated above each correlation matrix. $AR_{i,t}/Split_{i,t}$ or $AR_{i,t}/SpecialDiv_{i,t}$ means the dependent variable is either abnormal returns $AR_{i,t}$ or the likelihood of stock splits, $Split_{i,t}$ or special dividends $SpecialDiv_{i,t}$. *p_values* are shown in the brackets underneath. *, **, and *** denote statistical significance at the 10%, 5% and 1% significant level, respectively.

$$AR_{i,t}/Split_{i,t} = \alpha_{i,t} + \beta_{i,1}Bull_{i,t} + \beta_{i,2}Expansion + \beta_{i,3}January_{i,t} + \beta_{i,4}Halloween_{i,t} + \beta_{i,5}SplFac_{i,t} + \beta_{i,6}Ln(Size)_{i,t} + \beta_{i,7}Ln(Price)_{i,t} + e_{i,t}$$

Variable	SplitFac	LnPrc	LnSize	Bull	Exp	January	Halloween
SplitFac	1.00000						
LnPrc	0.39348 (<.0001)	1.00000					
LnSize	0.11995 (<.0001)	0.66362 (<.0001)	1.00000				
Bull	-0.01580 (0.0389)	0.00013 (0.9862)	0.03714 (<.0001)	1.00000			
Exp	0.01010 (0.1868)	0.06624 (<.0001)	0.09606 (<.0001)	0.17133 (<.0001)	1.00000		
January	-0.01859 (0.0149)	0.02153 (0.0048)	0.02339 (0.0022)	-0.01130 (0.1398)	0.02485 (0.0012)	1.00000	
Halloween	-0.00937 (0.2197)	0.02331 (0.0023)	0.01396 (0.0674)	-0.00609 (0.4260)	-0.00917 (0.2305)	0.29989 (<.0001)	1.00000

$$AR_{i,t}/SpecialDiv_{i,t} = \alpha_{i,t} + \beta_{i,1}Bull_{i,t} + \beta_{i,2}Expansion + \beta_{i,3}January_{i,t} + \beta_{i,4}Halloween_{i,t} + \beta_{i,5}Ln(Size)_{i,t} + \beta_{i,6}Ln(Price)_{i,t} + \beta_{i,7}Tax1986_{i,t} + \beta_{i,8}Divamt_{i,t} + e_{i,t}$$

Variable	Divamt	LnPrc	LnSize	Bull	Exp	January	Halloween	Tax1986
Divamt	1.00000							
LnPrc	0.17490 (<.0001)	1.00000						
LnSize	0.12936 (<.0001)	0.47632 (<.0001)	1.00000					
Bull	0.00371 (0.6336)	-0.00297 (0.7026)	0.05968 (<.0001)	1.00000				
Exp	0.01534 (0.0477)	0.03990 (<.0001)	0.06597 (<.0001)	0.12340 (<.0001)	1.00000			
January	-0.00202 (0.7931)	0.02369 (0.0021)	-0.00148 (0.8477)	-0.03788 (<.0001)	-0.00242 (0.7548)	1.00000		
Halloween	-0.01461 (0.0577)	-0.01602 (0.0374)	0.03198 (<.0001)	0.01200 (0.1226)	0.00301 (0.6980)	0.21055 (<.0001)	1.00000	
Tax1986	0.09728 (<.0001)	-0.25494 (<.0001)	0.29970 (<.0001)	0.11860 (<.0001)	0.13742 (<.0001)	-0.03481 (<.0001)	0.04543 (<.0001)	1.00000

$$AR_{i,t}/Split_{i,t} = \alpha_{i,t} + \beta_{i,1}pdnd_{i,t} + \beta_{i,2}nipo_{i,t} + \beta_{i,3}ripo_{i,t} + \beta_{i,4}turn_{i,t} + \beta_{i,5}cefd_{i,t} + \beta_{i,6}es_{i,t} + \beta_{i,7}Ln(Size)_{i,t} + \beta_{i,8}Ln(Price)_{i,t} + \beta_{i,9}SplFac_{i,t} + e_{i,t}$$

Variable	SplitFac	LnPrc	LnSize	pdnd	nipo	ripo	turn	cefd	es
SplitFac	1.00000								
LnPrc	0.36126 (<.0001)	1.00000							
LnSize	0.16242 (<.0001)	0.74161 (<.0001)	1.00000						
pdnd	-0.04859 (<.0001)	-0.11592 (<.0001)	-0.17055 (<.0001)	1.00000					
nipo	0.04590 (<.0001)	0.05906 (<.0001)	0.06509 (<.0001)	-0.39230 (<.0001)	1.00000				
ripo	0.03457 (<.0001)	0.13693 (<.0001)	0.08335 (<.0001)	-0.45506 (<.0001)	-0.05746 (<.0001)	1.00000			
turn	0.04716 (<.0001)	0.17660 (<.0001)	0.39683 (<.0001)	-0.26393 (<.0001)	0.03177 (<.0001)	0.00880 (0.2752)	1.00000		
cefd	-0.03481 (<.0001)	-0.10540 (<.0001)	-0.16171 (<.0001)	0.22678 (<.0001)	-0.34043 (<.0001)	0.15835 (<.0001)	-0.30306 (<.0001)	1.00000	
es	0.00312 (0.6991)	-0.07123 (<.0001)	-0.21070 (<.0001)	-0.21698 (<.0001)	0.23916 (<.0001)	0.15164 (<.0001)	-0.36885 (<.0001)	0.21012 (<.0001)	1.00000

$$AR_{i,t}/SpecialDiv_{i,t} = \alpha_{i,t} + \beta_{i,1}pdnd_{i,t} + \beta_{i,2}nipo_{i,t} + \beta_{i,3}ripo_{i,t} + \beta_{i,4}turn_{i,t} + \beta_{i,5}cefd_{i,t} + \beta_{i,6}es_{i,t} + \beta_{i,7}Ln(Size)_{i,t} + \beta_{i,8}Ln(Price)_{i,t} + \beta_{i,9}Divamt_{i,t} + e_{i,t}$$

Variable	Divamt	LnPrc	LnSize	pdnd	nipo	ripo	turn	cefd	es
Divamt	1.00000								
LnPrc	0.15712	1.00000							
	(<.0001)								
LnSize	0.15115	0.60720	1.00000						
	(<.0001)	(<.0001)							
pdnd	-0.06394	-0.05797	-0.18465	1.00000					
	(<.0001)	(<.0001)	(<.0001)						
nipo	0.00729	0.08461	0.10284	-0.51102	1.00000				
	(0.5078)	(<.0001)	(<.0001)	(<.0001)					
ripo	0.00499	0.02745	0.04612	-0.52132	0.11746	1.00000			
	(0.6505)	(0.0127)	(<.0001)	(<.0001)	(<.0001)				
turn	0.14066	0.04074	0.35954	-0.40703	0.11986	0.09677	1.00000		
	(<.0001)	(0.0002)	(<.0001)	(<.0001)	(<.0001)	(<.0001)			
cefd	-0.06812	-0.13400	-0.24842	0.51085	-0.52141	-0.13111	-0.41382	1.00000	
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)		
es	-0.08472	0.02867	-0.17826	0.01322	0.13977	0.12416	-0.36298	0.23730	1.00000
	(<.0001)	(0.0092)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	

$$AR_{i,t}/Split_{i,t} = \alpha_{i,t} + \beta_{i,1}DIV_{i,t} + \beta_{i,2}DEF_{i,t} + \beta_{i,3}YLD_{i,t} + \beta_{i,4}TERM_{i,t} + \beta_{i,5}Ln(Size)_{i,t} + \beta_{i,6}Ln(Price)_{i,t} + \beta_{i,7}SplFac_{i,t} + e_{i,t}$$

Variable	Splitfac	LnPrc	LnSize	DIV	DEF	YLD	TERM
Splitfac	1.00000						
LnPrc	0.39348	1.00000					
	(<.0001)						
LnSize	0.11995	0.66362	1.00000				
	(<.0001)	(<.0001)					
DIV	-0.01674	-0.22299	-0.44677	1.00000			
	(0.0283)	(<.0001)	(<.0001)				
DEF	-0.05830	-0.22417	-0.18433	0.52505	1.00000		
	(<.0001)	(<.0001)	(<.0001)	(<.0001)			
YLD	-0.09940	-0.23919	-0.17399	0.54342	0.58267	1.00000	
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)		
TERM	-0.05222	-0.11402	0.05249	-0.15561	0.05344	-0.48137	1.00000
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	

$$AR_{i,t}/SpecialDiv_{i,t} = \alpha_{i,t} + \beta_{i,1}DIV_{i,t} + \beta_{i,2}DEF_{i,t} + \beta_{i,3}YLD_{i,t} + \beta_{i,4}TERM_{i,t} + \beta_{i,5}Ln(Size)_{i,t} + \beta_{i,6}Ln(Price)_{i,t} + \beta_{i,7}Divamt_{i,t} + e_{i,t}$$

Variable	Divamt	LnPrc	LnSize	DIV	DEF	YLD	TERM
Divamt	1.00000						
LnPrc	0.17490	1.00000					
	(<.0001)						
LnSize	0.12936	0.47632	1.00000				
	(<.0001)	(<.0001)					
DIV	-0.03917	0.12167	-0.32902	1.00000			
	(<.0001)	(<.0001)	(<.0001)				
DEF	0.0372	-0.08769	-0.07150	0.15854	1.00000		
	(0.6291)	(<.0001)	(<.0001)	(<.0001)			
YLD	-0.04232	-0.30059	0.03915	-0.21569	0.10283	1.00000	
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)		
TERM	0.01370	-0.09475	0.00300	-0.11115	0.31376	-0.37536	1.00000
	(0.0752)	(<.0001)	(0.6966)	(<.0001)	(<.0001)	(<.0001)	

$$AR_{i,t}/Split_{i,t} = \alpha_{i,t} + \beta_{i,1}GDP_{i,t} + \beta_{i,2}UNEMP_{i,t} + \beta_{i,3}cpi_{i,t} + \beta_{i,4}inf_{i,t} + \beta_{i,5}Ln(Size)_{i,t} + \beta_{i,6}Ln(Price)_{i,t} + \beta_{i,7}SplFac_{i,t} + e_{i,t}$$

Variable	Splitfac	LnPrc	LnSize	GDP	UNEMP	cpi	inf
Splitfac	1.00000						
LnPrc	0.39348 (<.0001)	1.00000					
LnSize	0.11995 (<.0001)	0.66362 (<.0001)	1.00000				
GDP	-0.02520 (0.0010)	-0.01644 (0.0312)	-0.03719 (<.0001)	1.00000			
UNEMP	-0.07923 (<.0001)	-0.27468 (<.0001)	-0.19119 (<.0001)	0.04746 (<.0001)	1.00000		
cpi	-0.07576 (<.0001)	-0.01206 (0.1141)	0.44214 (<.0001)	-0.09133 (<.0001)	-0.07586 (<.0001)	1.00000	
inf	-0.02471 (0.0012)	-0.10775 (<.0001)	-0.13519 (<.0001)	0.17632 (<.0001)	0.02535 (0.0009)	-0.20719 (<.0001)	1.00000

$$AR_{i,t}/SpecialDiv_{i,t} = \alpha_{i,t} + \beta_{i,1}GDP_{i,t} + \beta_{i,2}UNEMP_{i,t} + \beta_{i,3}cpi_{i,t} + \beta_{i,4}inf_{i,t} + \beta_{i,5}Ln(Size)_{i,t} + \beta_{i,6}Ln(Price)_{i,t} + \beta_{i,7}Divamt_{i,t} + e_{i,t}$$

Variable	Divamt	LnPrc	LnSize	GDP	UNEMP	cpi	inf
Divamt	1.00000						
LnPrc	0.17490 (<.0001)	1.00000					
LnSize	0.12936 (<.0001)	0.47632 (<.0001)	1.00000				
GDP	-0.00496 (0.5191)	0.01677 (0.0294)	-0.02509 (0.0011)	1.00000			
UNEMP	-0.00278 (0.7180)	0.03892 (<.0001)	-0.08666 (<.0001)	0.02974 (0.0001)	1.00000		
cpi	0.07841 (<.0001)	-0.31631 (<.0001)	0.32372 (<.0001)	-0.05580 (<.0001)	-0.10433 (<.0001)	1.00000	
inf	-0.01715 (0.0259)	-0.05487 (<.0001)	-0.10606 (<.0001)	0.17377 (<.0001)	-0.11699 (<.0001)	-0.14265 (<.0001)	1.00000

$$AR_{i,t}/Split_{i,t} = \alpha_{i,t} + \beta_{i,1}pdnd_{i,t} + \beta_{i,2}nipo_{i,t} + \beta_{i,3}ripo_{i,t} + \beta_{i,4}turn_{i,t} + \beta_{i,5}cefd_{i,t} + \beta_{i,6}es_{i,t} + \beta_{i,7}DIV_{i,t} + \beta_{i,8}DEF_{i,t} + \beta_{i,9}YLD_{i,t} + \beta_{i,10}TERM_{i,t} + \beta_{i,11}GDP_{i,t}$$
$$+ \beta_{i,12}UNEMP_{i,t} + \beta_{i,13}cpi_{i,t} + \beta_{i,14}inf_{i,t} + \beta_{i,15}Ln(Size)_{i,t} + \beta_{i,16}Ln(Price)_{i,t} + \beta_{i,17}SplFac_{i,t} + \beta_{i,18}January_{i,t} + \beta_{i,19}Halloween_{i,t} + e_{i,t}$$

Variable	Splitfac	LnPrc	LnSize	DIV	DEF	YLD	TERM	GDP	UNEMP	cpi	inf	pdnd	nipo	ripo	turn	cefd	es	Jan	Hal
Splitfac	1																		
LnPrc	0.36***	1																	
LnSize	0.16***	0.74***	1																
DIV	-0.07***	-0.30***	-0.45***	1															
DEF	-0.04***	-0.20***	-0.23***	0.64***	1														
YLD	-0.03***	-0.18***	-0.26***	0.74***	0.60***	1													
TERM	-0.03***	-0.08***	0.04***	-0.14***	-0.00	-0.57***	1												
GDP	-0.02	0.00	-0.05***	0.12***	0.04***	0.08***	-0.03***	1											
UNEMP	-0.05***	-0.26***	-0.25***	0.65***	0.75***	0.39***	0.37***	0.05***	1										
cpi	0.03***	0.13***	0.44***	-0.71***	-0.31***	-0.44***	0.24***	-0.14***	-0.24***	1									
inf	-0.02*	-0.09***	-0.17***	0.44***	0.16***	0.48***	-0.38***	0.16***	0.05***	-0.35***	1								
pdnd	-0.05***	-0.12***	-0.17***	0.05***	-0.15***	-0.34***	0.21***	0.07***	-0.07***	-0.30***	0.03***	1							
nipo	0.05***	0.06***	0.06***	-0.11***	0.01	0.04***	0.15***	-0.09***	0.19***	0.06***	-0.30***	-0.39***	1						
ripo	0.03***	0.14***	0.08***	-0.04***	0.03***	0.16***	-0.26***	0.06***	-0.13***	-0.02***	0.21***	-0.46***	-0.06***	1					
turn	0.05***	0.18***	0.40***	-0.61***	-0.16***	-0.38***	0.13***	-0.09***	-0.25***	0.82***	-0.26***	-0.26***	0.03***	0.00	1				
cefd	-0.03***	-0.11***	-0.16***	0.33***	0.09***	0.38***	-0.43***	0.11***	0.04***	-0.31***	0.46***	0.23***	-0.34***	0.16***	-0.30***	1			
es	0.00	-0.07***	-0.21***	0.51***	0.50***	0.59***	-0.21***	0.05***	0.52***	-0.44***	0.24***	-0.22***	0.24***	0.15***	-0.37***	0.21***	1		
January	-0.01	0.02***	0.02**	-0.02**	0.00	0.00	-0.04***	0.38***	-0.04***	-0.02**	0.08***	-0.03***	-0.18***	0.08***	0.03***	-0.04***	-0.03***	1	
Halloween	-0.00	0.02***	0.02**	-0.02**	0.03***	-0.01	-0.04***	0.06***	-0.02**	-0.02***	-0.01*	-0.00	-0.12***	0.12***	0.03***	-0.12***	-0.00	0.30***	1

*, **, and *** denote statistical significance at the 10%, 5%, and 1% significant level, respectively. The p-values are omitted due to the number of variables and limited space.

$$AR_{i,t}/SpecialDiv_{i,t} = \alpha_{i,t} + \beta_{i,1}pdnd_{i,t} + \beta_{i,2}nipo_{i,t} + \beta_{i,3}ripo_{i,t} + \beta_{i,4}turn_{i,t} + \beta_{i,5}cefd_{i,t} + \beta_{i,6}es_{i,t} + \beta_{i,7}DIV_{i,t} + \beta_{i,8}DEF_{i,t} + \beta_{i,9}YLD_{i,t} + \beta_{i,10}TERM_{i,t} + \beta_{i,11}GDP_{i,t}$$
$$+ \beta_{i,12}UNEMP_{i,t} + \beta_{i,13}cpi_{i,t} + \beta_{i,14}inf_{i,t} + \beta_{i,15}Ln(Size)_{i,t} + \beta_{i,16}Ln(Price)_{i,t} + \beta_{i,17}Tax1986_{i,t} + \beta_{i,18}Divamt_{i,t} + \beta_{i,19}January_{i,t} + \beta_{i,20}Halloween_{i,t} + e_{i,t}$$

Variable	Divamt	LnPrc	LnSize	DIV	DEF	YLD	TERM	GDP	UNEMP	cpi	inf	pdnd	nipo	ripo	turn	cefd	es	Tax86	Jan	Hal
Divamt	1																			
LnPrc	0.16***	1																		
LnSize	0.15***	0.61***	1																	
DIV	-0.11***	-0.07***	-0.35***	1																
DEF	-0.04***	-0.10***	-0.15***	0.49***	1															
YLD	-0.06***	-0.04***	-0.23***	0.73***	0.46***	1														
TERM	0.01	-0.12***	-0.00	-0.16***	0.12***	-0.56***	1													
GDP	-0.01	0.02*	-0.06***	0.15***	0.06***	0.10***	-0.16	1												
UNEMP	-0.07***	-0.18***	-0.24***	0.57***	0.72***	0.29***	0.47***	0.08***	1											
cpi	0.14***	-0.06***	0.34***	-0.67***	-0.12***	-0.40***	0.28***	-0.17***	-0.14***	1										
inf	-0.00	-0.04***	-0.21***	0.50***	0.16***	0.50***	-0.35***	0.20***	0.11***	-0.44***	1									
pdnd	-0.06***	-0.06***	-0.18***	0.17***	-0.10***	-0.18***	0.02**	0.10***	0.04***	-0.52***	0.20***	1								
nipo	0.00	0.08***	0.10***	-0.22***	-0.07***	-0.00	0.17***	-0.06***	0.06***	0.24***	-0.27***	-0.51***	1							
ripo	0.00	0.03**	0.05***	-0.10***	0.04***	0.13***	-0.15***	0.00	-0.13***	0.12***	0.07***	-0.52***	0.12***	1						
turn	0.14***	0.04***	0.36***	-0.61***	-0.06***	-0.37***	0.12***	-0.10***	-0.25***	0.85***	-0.31***	-0.41***	0.12***	0.10***	1					
cefd	-0.07***	-0.13***	-0.25***	0.46***	0.10***	0.35***	-0.33***	0.12***	0.15***	-0.47***	0.43***	0.51***	-0.52***	-0.13***	-0.41***	1				
es	-0.08***	0.03***	-0.18***	0.48***	0.36***	0.56***	-0.26***	0.10***	0.36***	-0.44***	0.36***	0.01	0.14***	0.12***	-0.36***	0.24***	1			
Tax86	0.13***	-0.06***	0.30***	-0.72***	-0.28***	-0.47***	0.30***	-0.17***	-0.28***	0.87***	-0.46***	-0.40***	0.29***	0.06***	0.67***	-0.47***	-0.56***	1		
January	-0.01	-0.01	-0.00	0.05***	0.09***	0.04***	0.03**	0.39***	0.07***	-0.02*	0.11***	-0.03**	-0.07***	0.06***	0.01	-0.04***	0.00	-0.01	1	
Halloween	-0.02**	-0.00	0.03***	-0.04***	0.04***	-0.02**	-0.00	-0.28***	-0.00	0.07***	-0.17***	-0.08***	0.02	0.07***	0.05***	-0.09***	0.00	0.07***	0.19***	1

*, **, and *** denote statistical significance at the 10%, 5%, and 1% significant level, respectively. The p-values are omitted due to the number of variables and limited space.

Appendix 4A Abnormal Returns of Stock Splits between Bull and Bear Markets in different Sub-periods, Industries and Sizes

This table shows a robustness check for abnormal returns of stock splits between bull and bear markets in four sub-periods, six groups of industries and five size quintiles for the period 1926 to 2008. Abnormal returns are calculated by the market adjusted model $AR_{it} = R_{it}-R_{mt}$ in Panel A, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes. Market model adjusted returns measured by $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, are in Panel B. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. (-1, +1), (1, +30), (1, +60) and (1, +90) are event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). Industry classifications are based on the two-digit SIC code of the Coding Scheme on the US Department of Labour website (http://www.osha.gov/oshstats/sicser.html). All abnormal returns are in percentage. *, **, and *** denote statistical significance at the 10%, 5%, and 1% significant level, respectively.

	(-1,+1)				(1,+30)				(1,+60)				(1,+90)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
	Bull	Bear	Bull	Bear	Bull	Bear	Bull	Bear	Bull	Bear	Bull	Bear	Bull	Bear	Bull	Bear
Panel A: Market Adjusted Returns																
Abnormal returns in different sub-periods																
1926-1960	0.35***	0.21	0.34***	0.29**	0.54	0.98	0.93**	1.54**	1.39***	1.72*	2.02***	1.95**	1.30	1.17	2.24***	2.05**
1961-1975	3.29***	3.19***	3.43***	3.12***	1.52***	3.52***	3.10***	2.26***	2.31***	4.81***	5.50***	2.41***	2.66***	5.71***	6.95***	2.94***
1976-1995	3.20***	3.03***	3.33***	3.11***	4.19***	2.99***	5.53***	3.49***	4.74***	4.08***	7.17***	4.88***	4.67***	4.06***	7.89***	5.52***
1996-2008	3.74***	2.12***	3.89***	2.25***	4.14***	3.72***	5.08***	5.16***	5.35***	4.54***	6.75***	7.23***	5.86***	4.21***	7.58***	8.68***
Abnormal returns in different industries																
Agriculture, Forestry, Fishing, Mining and Construction	2.91***	2.18***	3.04***	2.19***	4.24***	1.83***	5.40***	2.50***	6.54***	3.22***	8.33***	4.23***	8.43***	1.82*	10.96***	3.79***
Manufacturing	3.21***	2.81***	3.33***	2.87***	3.33***	2.82***	4.55***	3.04***	4.00***	3.52***	6.23***	3.73***	4.14***	3.82***	7.03***	4.56***
Wholesale and Retail trade	3.33***	2.74***	3.51***	2.83***	3.64***	2.71***	4.98***	3.10***	4.42***	3.54***	6.73***	4.03***	4.24***	4.57***	7.21***	5.71***
Finance, Insurance, and Real Estate	2.68***	2.16***	2.76***	2.24***	3.50***	3.90***	4.57***	4.52***	3.82***	5.16***	5.78***	6.27***	3.53***	5.03***	6.06***	7.07***
Services and Public Administration	4.08***	3.41***	4.26***	3.51***	4.96***	4.08***	6.36***	4.85***	6.38***	6.57***	8.65***	7.82***	6.60***	5.39***	9.72***	7.88***
Transportation, Communication, Electric, Gas, and Sanitary Services	2.22***	1.36***	2.40***	1.40***	1.97***	1.94***	3.13***	2.45***	2.42***	2.03***	4.35***	2.97***	2.97**	1.99**	5.50***	3.79***
Abnormal returns in different size																
1st Quintile	5.03***	4.23***	5.15***	4.29***	6.79***	6.48***	8.03***	7.03***	7.47***	6.66***	9.86***	7.52***	7.71***	6.09***	10.98***	7.78***
2nd Quintile	3.65***	3.19***	3.79***	3.26***	4.32***	3.28***	5.54***	3.57***	5.17***	4.54***	7.30***	4.89***	4.68***	4.30***	7.47***	5.30***
3rd Quintile	2.88***	2.47***	3.02***	2.53***	3.64***	2.42***	4.80***	2.63***	4.58***	3.53***	6.71***	3.87***	4.74***	4.22***	7.50***	4.96***
4th Quintile	2.45***	1.91***	2.57***	1.97***	2.29***	2.17***	3.55***	2.53***	2.92***	3.77***	5.06***	4.28***	3.29***	4.57***	6.06***	5.86***
5th quintile	2.06***	1.33***	2.21***	1.43***	1.50***	1.29***	2.68***	2.06***	2.27***	2.25***	4.28***	3.52***	2.62***	1.67***	5.21***	4.05***
Panel B: Market Model Adjusted Returns																
Abnormal returns in different sub-periods																
1926-1960	0.22**	0.01	0.14	-0.02	-0.85**	-1.77**	-1.17***	-1.69***	-1.57***	-4.05***	-2.29***	-4.46***	-3.37***	-6.85***	-4.42***	-7.32***
1961-1975	2.98***	2.86***	3.00***	2.78***	-1.35***	-0.12	-0.94	-1.61***	-3.86***	-2.49***	-2.74***	-5.27***	-6.62***	-5.32***	-5.36***	-8.89***
1976-1995	2.78***	2.65***	2.87***	2.45***	0.43***	-0.10	0.88***	-2.72***	-2.73***	-2.23***	-2.44***	-7.22***	-6.46***	-5.37***	-6.69***	-12.07***
1996-2008	3.16***	1.74***	3.25***	1.67***	-0.85	-0.12*	-1.17	-1.03	-4.12***	-3.44***	-5.65***	-5.00***	-8.24***	-8.62***	-11.04***	-9.69***
Abnormal returns in different industries																
Agriculture, Forestry, Fishing, Mining and Construction	2.28***	1.86***	2.48***	1.73***	-0.34	-2.56**	0.15	-3.75***	-1.94	-5.27***	-2.02	-7.77***	-4.34	-10.67***	-5.04*	-14.26***
Manufacturing	2.80***	2.45***	2.85***	2.34***	-0.55	-0.09	-0.34	-2.10***	-3.56***	-2.78***	-3.61***	-6.60***	-6.97***	-6.23***	-7.76***	-10.90***
Wholesale and Retail trade	2.93***	2.33***	3.01***	2.14***	-0.08	-1.12	0.22*	-3.43***	-3.00***	-4.03***	-3.04***	-8.46***	-6.85***	-7.60***	-7.57***	-13.11***
Finance, Insurance, and Real Estate	2.42***	1.88***	2.43***	1.79***	1.42***	0.79*	1.44***	-0.36	-0.60	-0.78	-0.81	-3.05***	-3.24***	-2.90***	-3.96***	-5.91***
Services and Public Administration	3.22***	2.98***	3.39***	2.74***	-2.43**	0.08	-1.92*	-2.61***	-8.07***	-1.89	-8.16***	-6.79***	-14.88***	-7.74***	-15.53***	-13.81***
Transportation, Communication, Electric, Gas, and Sanitary Services	1.92***	1.00***	2.05***	0.91***	-0.53	-1.26	-0.44	-2.22***	-2.29**	-3.79***	-2.91***	-5.73***	-4.40***	-6.23***	-5.59***	-8.69***
Abnormal returns in different size																
1st Quintile	4.66***	3.84***	4.69***	3.72***	3.34***	2.25***	3.50***	0.96***	0.16***	-1.99	0.48***	-4.34***	-3.50	-6.72***	-3.38	-9.62***
2nd Quintile	3.24***	2.75***	3.32***	2.65***	0.29***	-0.92	0.74***	-2.73***	-3.07**	-3.94***	-2.72*	-7.45***	-7.67***	-8.34***	-7.69***	-13.05***
3rd Quintile	2.48***	2.07***	2.55***	1.91***	0.11**	-0.97	0.47***	-2.96***	-2.38***	-2.90***	-2.15***	-6.89***	-5.57***	-5.08***	-5.95***	-10.83***
4th Quintile	2.04***	1.62***	2.10***	1.43***	-1.34***	-0.76	-1.24***	-2.89***	-4.11***	-2.06*	-4.67***	-6.20***	-7.13***	-4.33***	-8.54***	-9.50***
5th quintile	1.50***	1.07***	1.61***	0.97***	-3.14***	-0.69	-3.18***	-2.47***	-6.27***	-2.64***	-7.28***	-5.75***	-9.98***	-6.86***	-12.09***	-9.89***

Appendix 4B Regressions for Event Returns of Stock Splits on Bull Dummy in Sub-periods

This table shows a robustness check for abnormal returns of stock splits on the *Bull* dummy in four sub-periods: 1926 to 1960, dormant period of stock splits; growth period 1961 to 1975; peak period 1976 to 1995; and decline period 1996 to 2008. The dependent variable is abnormal returns (CARs) calculated by the market adjusted model $AR_{it} = R_{it}\text{-}R_{mt}$, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes; and by the market model $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, where estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. Event windows used for abnormal returns are five days window of (-2, +2) and one month window of (-1, +30) (in days) relative to announcements (0 represents the actual announcement day). The dependent variable in all CARs is regressed in percentage. Panel A is the equal-weighted market adjusted abnormal returns; Panel B is the value-weighted market adjusted abnormal returns; Panel C is the equal-weighted market model adjusted abnormal returns; and Panel D is the value-weighted market model adjusted abnormal returns in stock split announcements. *Bull* is a dummy variable that takes a value of one for a split announced in bull markets and a value of zero for an announcement in bear markets. Bull and bear markets are defined from Ohn, Taylor and Pagan (2004)'s turning points. *SplFac* is the split ratio obtained from CRSP and defined as the number of additional shares per existing share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to stock split announcements. *Ln(Price)* is the natural logarithm of stock price one day before stock split announcements. *, **, and *** denote statistical significance at the 10%, 5%, and 1% significant level, respectively.

Variables/CAR	1926-1960		1961-1975		1976-1995		1996-2008	
	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)
Panel A: Market Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	0.2908	2.5550	17.1951***	18.4135***	14.8566***	24.8377***	12.1222***	18.3650***
Bull	0.1800	-0.1292	0.0776	-1.7838***	0.4705***	1.7145***	1.3861***	1.6269**
SplFac	-0.4017**	0.2422	1.1846***	1.5780***	1.4526***	2.6207***	2.2080***	4.3380***
Ln(Size)	0.0171	-0.0731	-0.3470***	-0.2232	-0.5852***	-1.1056***	-0.6752***	-0.9675***
Ln(Price)	0.2283	-0.3094	-2.9987***	-3.5477***	-2.0238***	-3.5191***	-1.0581***	-2.1981***
p-value of *F*-statistic	0.1444	0.9109	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0070	0.0010	0.1211	0.0438	0.0487	0.0927	0.0461	0.0294
N	982	982	2136	2136	9251	9251	4253	4253
Panel B: Market Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	1.1871	5.7741**	16.8603***	18.1888***	15.0781***	25.5205***	12.3259***	20.0658***
Bull	-0.1086	-0.2471	0.4434	1.1256**	0.5565***	2.5724***	1.3693***	1.1406
SplFac	-0.3482**	0.4106	1.1433***	1.2588**	1.4483***	2.5702***	2.1016***	4.0227***
Ln(Size)	-0.0418	-0.2274	-0.3489***	-0.4382*	-0.5824***	-1.0652***	-0.7021***	-1.0219***
Ln(Price)	0.1705	-0.6300	-2.9150***	-3.0161***	-2.0582***	-3.6707***	-0.8954**	-1.9046**
p-value of F-statistic	0.2599	0.3005	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0054	0.0050	0.1158	0.0395	0.0887	0.0728	0.0439	0.0259
N	982	982	2136	2136	9251	9251	4253	4253
Panel C: Market Model Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	0.7922	2.8788	16.7213***	13.7358***	13.3724***	15.8074***	13.4534***	21.4801***
Bull	0.1823	1.4521**	0.1621	-0.8841	0.3517**	0.8404**	1.0806***	0.5693
SplFac	-0.3546**	0.3905	1.1472***	1.1921*	1.4250***	2.2656***	2.4558***	4.7189***
Ln(Size)	-0.0358	-0.0038	-0.2355*	0.3932	-0.4604***	-0.2712*	-0.4718***	0.0163
Ln(Price)	0.1359	-1.3642**	-3.3446***	-5.0246***	-2.1763***	-4.5407***	-2.4358***	-7.8511***
p-value of F-statistic	0.2137	0.0667	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0059	0.0089	0.1224	0.0354	0.0796	0.0409	0.0589	0.0460
N	982	982	2134	2134	9248	9248	4252	4252
Panel D: Market Model Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	1.0542	3.6966	16.0803***	11.4256***	13.1471***	14.2795***	12.7850***	21.1260***
Bull	0.0631	1.1069*	0.3722	1.1240*	0.8601***	4.1185***	1.3251***	1.2512*
SplFac	-0.3170**	0.6191*	1.1491***	1.0382*	1.4201***	2.1279***	2.2833***	4.6677***
Ln(Size)	-0.0505	-0.0062	-0.1770	0.7085**	-0.4627***	-0.3317**	-0.5589***	-0.1404
Ln(Price)	0.0908	-1.6771***	-3.3915***	-5.7067***	-2.2144***	-4.6288***	-1.8854***	-7.4244***
p-value of F-statistic	0.3246	0.0253	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0047	0.0113	0.1172	0.0412	0.0824	0.0523	0.0539	0.0487
N	982	982	2134	2134	9248	9248	4253	4253

Appendix 4C Regressions for Event Returns of Stock Splits on Sentiment Variables in Sub-periods

This table shows a robustness check for abnormal returns of stock splits on investor sentiment variables in four sub-periods. The dependent variable is abnormal returns (CARs) calculated by the market adjusted model $AR_{it} = R_{it}-R_{mt}$, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes; and by the market model $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, where estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. Event windows used for abnormal returns are five days window of (-2, +2) and one month window of (-1, +30) (in days) relative to announcements (0 represents the actual announcement day). The dependent variable in all CARs is regressed in percentage. Panel A is the equal-weighted market adjusted abnormal returns; Panel B is the value-weighted market adjusted abnormal returns; Panel C is the equal-weighted market model adjusted abnormal returns; and Panel D is the value-weighted market model adjusted abnormal returns in stock split announcements. *SplFac* is the split ratio obtained from CRSP and defined as the number of additional shares per existing share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to stock split announcements. *Ln(Price)* is the natural logarithm of stock price one day before stock split announcements. *pdnd* is the difference in returns on dividend- and non-dividend-paying stocks; *nipo* is the number of initial public offerings (IPOs); *ripo* is the first-day returns on IPOs; *turn* is the NYSE share turnovers; *cefd* is the close-end fund discount; and *es* is the level of equity over the level of debt issuance. *, ** and *** denote statistical significance at the 10%, 5%, and 1%, respectively.

Variables/CAR	1960-1975		1976-1985		1986-1995		1996-2008	
	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)
Panel A: Market Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	16.7918***	11.8454***	10.5910***	20.4555***	10.7417***	24.1069***	12.4619***	20.5327***
SplFac	2.1252***	2.5498***	2.3683***	3.6069***	1.0001***	2.0110***	2.2811***	4.3363***
Ln(Size)	-0.5161***	-0.9838***	-0.5552***	-1.1319***	-0.3959***	-1.2064***	-0.6815***	-0.9602***
Ln(Price)	-2.9852***	-1.7131**	-2.6334***	-4.1898***	-1.9214***	-2.7032***	-1.6700***	-2.7824***
pdnd	-0.0171	-0.0058	0.0335***	-0.0525**	-0.0029	-0.0566	-0.0221	-0.0449
nipo	-0.0051	0.0182	0.0095	-0.0225	-0.0018	-0.0064	-0.0026	-0.0327
ripo	-0.0060	-0.0271	0.0120**	-0.0231**	0.0406**	0.0116	0.0483***	0.0539***
turn	0.0542	0.1650	6.1765***	0.1236***	1.0845	-0.9485	0.8945	-0.3404
cefd	0.0252	0.0564	0.1453***	0.1950***	0.0230	0.1298**	0.0194	-0.3620**
es	-0.6825	6.2244***	1.1774**	-0.7695	6.2694***	5.1501	3.4138	23.9334***
p-value of *F*-statistic	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.1268	0.0452	0.1197	0.0825	0.0663	0.0628	0.0704	0.0442
N	1584	1584	4735	4735	4480	4480	4219	4219
Panel B: Market Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	16.5190***	16.9856***	10.2626***	19.8238***	11.2036***	28.6984***	12.9959***	24.6519***
SplFac	2.1177***	2.0521***	2.3741***	3.6439***	1.0092***	1.9824***	2.1874***	4.1006***
Ln(Size)	-0.4708***	-1.0834***	-0.5773***	-1.1900***	-0.3730***	-1.1980***	-0.7088***	-1.0109***
Ln(Price)	-3.0671***	-1.2954	-2.6087***	-4.0171***	-2.0249***	-2.9537***	-1.5589***	-2.6023***
pdnd	-0.0135	-0.0058	0.0397***	-0.0198	-0.0368	-0.1452***	-0.0188	-0.0287
nipo	-0.0086	-0.0041	0.0069	-0.0473***	-0.0108**	-0.0388***	-0.0116	-0.0899***
ripo	0.0014	0.0084	0.0169***	-0.0152	0.0663***	0.1776***	0.0561***	0.0842***
turn	0.0868	0.1031	7.5668***	0.1775***	0.9865	-3.7831*	0.6507	-2.4428**
cefd	0.0244	0.0615	0.1610***	0.2403***	-0.0426	-0.2049***	-0.0022	-0.4740***
es	-2.1732**	-2.6171	1.2279***	-0.3576	6.0844***	3..8239	5.9632**	34.9106***
p-value of F-statistic	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.1313	0.0351	0.1224	0.0848	0.0697	0.0777	0.076	0.0585
N	1584	1584	4735	4735	4480	4480	4219	4219
Panel C: Market Model Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	17.0381***	7.7648*	8.9656***	9.4984***	9.9300***	16.9456***	13.1675***	19.4749***
SplFac	2.1749***	2.4633***	2.3295***	3.1508***	0.9920***	1.7489***	2.4827***	4.5442***
Ln(Size)	-0.2667	0.3332	-0.3974***	0.0473	-0.2793***	-0.4866**	-0.4826***	0.0078
Ln(Price)	-3.7425***	-5.1535***	-2.7974***	-5.8550***	-2.0883***	-3.3270***	-2.7441***	-7.2752***
pdnd	-0.0112	-0.0061	0.0476***	0.0309	-0.0342	-0.2324***	-0.0078	-0.0358
nipo	-0.0097	0.0219	0.0117*	-0.0046	-0.0016	-0.0180	0.0026	0.0180
ripo	-0.0053	-0.0207	0.0113**	-0.0203*	0.0133	-0.1229***	0.0237***	-0.0749***
turn	0.0495	0.2258	5.4382***	0.0906**	-0.0465	-4.8718**	0.9491*	1.2512
cefd	-0.0150	-0.0480	0.1488***	0.2708***	0.0306	0.1143*	0.0790	0.0423
es	-1.7002*	-0.0885	1.4406***	0.4078	6.0860***	5.6014	0.3452	0.4040
p-value of F-statistic	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.1309	0.0293	0.1095	0.0584	0.0605	0.0345	0.0639	0.0518
N	1583	1583	4733	4733	4479	4479	4218	4218
Panel D: Market Model Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	15.8694***	8.1425*	7.7519***	9.1394***	9.6933***	19.3173***	12.5955***	20.1447***
SplFac	2.1787***	1.9052**	2.3385***	3.0885***	0.9906***	1.6170***	2.3434***	4.6185***
Ln(Size)	-0.2083	0.5843	-0.3798***	0.0295	-0.3038***	-0.7115***	-0.5707***	-0.1867
Ln(Price)	-3.7618***	-5.0779***	-2.8447***	-5.7068***	-2.0960***	-3.0685***	-2.3540***	-6.9753***
pdnd	0.0063	0.0718	0.0452***	-0.0149	-0.0184	-0.0257	0.0078	0.1370***
nipo	-0.0098	0.0136	-0.0034	-0.1031***	-0.0106**	-0.0544***	-0.0057	-0.0683***
ripo	0.0006	0.0043	0.0165***	-0.0189*	0.0629***	0.1444***	0.0455***	0.0197
turn	0.0939	0.1952	9.3540***	0.2115***	1.1360	-1.4581	1.0322*	0.2725
cefd	-0.0206	-0.0783	0.1576***	0.1555***	-0.012	-0.1247*	0.0884	0.2239
es	-3.0442***	-7.4130***	1.1383**	-1.3526	6.6686***	3.2785	3.4214	19.5923***
p-value of F-statistic	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.1313	0.0315	0.112	0.0691	0.065	0.0446	0.0704	0.0536
N	1583	1583	4733	4733	4479	4479	4218	4218

Appendix 5A Abnormal Returns of Special Dividends between Bull and Bear Markets in different Sub-periods, Industries and Sizes

This table shows a robustness check for abnormal returns of special dividends between bull and bear markets in four sub-periods, six groups of industries and five size quintiles for the period 1926 to 2008. Abnormal returns are calculated by the market adjusted model $AR_{it} = R_{it}\text{-}R_{mt}$ in Panel A, where AR_{it} is abnormal returns for security i at time t, R_{it} is the actual returns for security i at time t, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes. Market model adjusted returns measured by $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, are in Panel B. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. (-1, +1), (1, +30), (1, +60) and (1, +90) are event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). Industry classifications are based on the two-digit SIC code of the Coding Scheme on the US Department of Labour website (http://www.osha.gov/oshstats/sicser.html). All abnormal returns are in percentage. *, **, and *** denote statistical significance at the 10%, 5%, and 1% significant level, respectively.

Panel A: Market Adjusted Returns																
	(-1,+1)				(1,+30)				(1,+60)				(1,+90)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
	Bull	Bear	Bull	Bear	Bull	Bear	Bull	Bear	Bull	Bear	Bull	Bear	Bull	Bear	Bull	Bear
Abnormal returns in different sub-periods																
1926-1940	-0.37***	-0.01	-0.03	0.15	-3.27***	-0.80***	0.45	1.53***	-4.89***	0.14	1.43	3.37***	-6.74***	-0.76*	1.32	4.20***
1941-1960	-0.08**	0.11	0.02	0.23***	-0.54***	-0.64***	0.79***	0.48***	-0.29***	-0.03	1.75***	1.24***	-0.40***	-0.51**	2.06***	1.37***
1961-1985	1.80***	1.78***	1.85***	1.78***	0.42	2.40***	2.38***	2.98***	-0.37***	3.33***	4.53***	5.34***	-0.55***	4.46***	5.89***	7.50***
1986-2008	1.87***	2.28***	1.89***	2.28***	0.47	2.17***	2.26***	3.88***	-1.36***	2.37***	2.07***	5.71***	-1.81***	2.12	2.63***	7.26***
Abnormal returns in different industries																
Agriculture, Forestry, Fishing, Mining and Construction	1.24***	1.81***	1.34***	1.70***	0.53	2.09**	2.39***	2.79***	-0.59*	4.65***	3.61***	6.21***	-1.75***	4.78***	3.91***	7.61***
Manufacturing	0.82***	0.64***	0.93***	0.72***	-0.36***	0.15	1.41***	1.15***	-0.66***	0.87***	2.96***	2.56***	-0.81***	0.83**	3.81***	3.51***
Wholesale and Retail trade	1.32***	0.98***	1.40***	1.03***	-0.66***	0.71	1.52**	2.31***	-1.37***	1.22	2.48**	3.66***	-1.40***	1.60	3.44***	5.03***
Finance, Insurance, and Real Estate	1.24***	1.43***	1.27***	1.48***	0.10**	1.79***	2.09***	3.58***	-2.01***	2.08***	1.79***	5.34***	-2.79***	1.71	2.06***	6.48***
Services and Public Administration	2.80***	3.13***	2.85***	3.25***	1.32	3.52***	2.96***	4.26***	1.64	5.07***	4.94***	7.00***	0.74	5.72***	5.42***	8.81***
Transportation, Communication, Electric, Gas, and Sanitary Services	0.96***	1.08***	1.03***	1.14***	-0.11	0.28	1.43***	1.96***	-0.95***	0.78	2.26***	2.98***	-1.15***	0.86	2.96***	3.73***
Abnormal returns in different size																
1st Quintile	1.79***	1.25***	1.88***	1.32***	1.55***	1.40***	3.55***	2.79***	1.87***	2.80***	5.93***	5.29***	2.55***	3.19***	7.83***	6.93***
2nd Quintile	1.25***	1.05***	1.35***	1.17***	0.13	0.65*	2.03***	1.93***	-0.10**	1.82***	3.69***	3.70***	-0.16***	2.15***	4.77***	5.17***
3rd Quintile	0.87***	0.94***	0.94***	1.05***	-0.55***	1.18***	1.35***	2.36***	-1.50***	2.07***	2.25***	4.00***	-2.01***	2.21***	2.90***	5.39***
4th Quintile	0.82***	0.94***	0.90***	1.00***	-0.85***	0.72**	1.01***	1.86***	-2.51***	0.86*	1.15***	3.03***	-3.37***	0.59	1.28***	3.83***
5th quintile	0.71***	0.78***	0.77***	0.76***	-0.95***	-0.19*	0.67***	0.89***	-2.60***	-0.40**	0.76**	1.71***	-3.67***	-0.95***	0.49	1.98***
Panel B: Market Model Adjusted Returns																
Abnormal returns in different sub-periods																
1926-1940	-0.13	0.16	-0.11	0.11	-0.81***	-0.52*	-0.29	-0.08	-1.20***	0.21	-0.59	0.20	-2.63***	-0.48	-2.28***	-0.47
1941-1960	-0.05	0.12**	-0.03	0.13**	-0.43***	-1.20***	0.19**	-0.63***	-0.17	-1.24***	0.58***	-0.75***	-0.26	-2.26***	0.25**	-1.76***
1961-1985	1.75***	1.57***	1.71***	1.47***	0.36***	0.82***	1.29***	0.51*	-0.39	0.51	2.45***	0.47	-1.02	0.79*	2.48***	1.10***
1986-2008	1.87***	2.00***	1.86***	1.87***	1.19***	1.72***	1.82***	1.30***	-0.13	1.97***	0.93***	1.47***	-0.81***	2.24***	0.17	2.12***
Abnormal returns in different industries																
Agriculture, Forestry, Fishing, Mining and Construction	1.20***	1.49***	1.18***	1.37***	0.45	-0.13	1.31**	-0.79	-0.47	1.32	1.44*	-0.06	-1.73	0.33	0.34	-0.96
Manufacturing	0.84***	0.61***	0.83***	0.57***	-0.23*	-0.64***	0.48***	-0.45***	-0.53*	-0.67***	1.07***	-0.41*	-0.89***	-1.27***	0.82***	-0.79**
Wholesale and Retail trade	1.34***	0.98***	1.34***	0.92***	-0.19	0.16	0.75	0.52	-1.09	-0.28	0.65	0.01	-1.59	-0.34	0.27	0.04
Finance, Insurance, and Real Estate	1.26***	1.21***	1.25***	1.10***	1.30***	1.66***	1.95***	1.58***	0.20*	1.99***	1.33***	1.77***	-0.59	2.19***	0.60*	2.14***
Services and Public Administration	2.80***	2.88***	2.81***	2.84***	1.44**	2.57**	1.82***	1.68	1.17	3.41**	2.34**	2.53**	0.06	4.13**	1.25	3.64*
Transportation, Communication, Electric, Gas, and Sanitary Services	0.92***	1.07***	0.89***	1.04***	-0.11	-0.50	0.72*	0.06	-0.72	-0.98	0.86**	-0.92	-1.27	-1.81	0.33	-1.91
Abnormal returns in different size																
1st Quintile	1.78***	1.18***	1.76***	1.13***	1.90***	0.81***	2.65***	1.07***	2.64***	1.70***	4.09***	2.18***	3.17***	1.91***	4.68***	2.66***
2nd Quintile	1.25***	0.96***	1.25***	0.95***	0.52***	-0.37	1.30***	-0.14	0.45***	-0.14	2.03***	-0.15	0.18**	-0.55	1.96***	-0.33
3rd Quintile	0.89***	0.91***	0.87***	0.85***	-0.13	0.09	0.59***	0.10	-0.78	0.24	0.79***	0.06	-1.64*	0.15	0.12*	0.10
4th Quintile	0.84***	0.85***	0.85***	0.79***	-0.29	0.10	0.52***	0.13	-1.52***	-0.42	0.10	-0.35	-2.39***	-1.00	-0.70	-0.73
5th quintile	0.74***	0.62***	0.70***	0.52***	-0.65***	-0.59**	-0.11	-0.59*	-2.33***	-1.24***	-0.93**	-1.18**	-3.57***	-2.05***	-2.16***	-1.91***

Appendix 5B Regressions for Event Returns of Special Dividends on Bull Dummy in Sub-periods

This table shows a robustness check for abnormal returns of special dividends on the *Bull* dummy in four sub-periods: 1926 to 1940, before the US joined World War II; 1941 to 1960, before the Organization of the Petroleum Exporting Countries (OPEC) was formed; 1961 to 1985, before the US Tax Reform of 1986; and 1986 to 2008, after the Tax Reform. The dependent variable is abnormal returns (CARs) calculated by the market adjusted model $AR_{it} = R_{it}\text{-}R_{mt}$, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes; and by the market model $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i{*}\ R_{mt}$ with both equal-weighted and value-weighted market indexes, where estimator $\hat{\alpha}_i$and $\hat{\beta}_i$are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. Event windows used for abnormal returns are five days window of (-2, +2) and one month window of (-1, +30) (in days) relative to announcements (0 represents the actual announcement day). The dependent variable in all CARs is regressed in percentage. Panel A is the equal-weighted market adjusted abnormal returns; Panel B is the value-weighted market adjusted abnormal returns; Panel C is the equal-weighted market model adjusted abnormal returns; and Panel D is the value-weighted market model adjusted abnormal returns in special dividend announcements. *Bull* is a dummy variable that takes a value of one for a split announced in bull markets and a value of zero for an announcement in bear markets. Bull and bear markets are defined from Ohn, Taylor and Pagan (2004)'s turning points. *Divamt* is an amount of special dividend paid per share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to special dividend announcements. *Ln(Price)* is the natural logarithm of stock price one day before special dividend announcements. *, **, and *** denote statistical significance at the 10%, 5%, and 1% significant level, respectively.

Variables/CAR	1926-1960		1961-1975		1976-1995		1996-2008	
	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)
Panel A: Market Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	-0.4627	1.4987	0.0698	2.8977***	6.0863***	10.8962***	12.7521***	15.4149***
Bull	-0.6975***	-2.7527***	-0.2526***	0.0734	0.0028	-1.4626***	-0.6831**	-1.8675***
Divamt	0.0476	0.0588	0.1577*	0.1149	1.5211***	1.7243***	0.4353***	0.4708***
Ln(Size)	0.0631	-0.1162	0.0065	-0.2156**	0.0277	-0.1403	-0.4607***	-0.5823***
Ln(Price)	-0.0646	-0.3346	-0.0043	-0.3754*	-1.5419***	-2.3018***	-1.7314***	-2.0105***
p-value of *F*-statistic	0.0202	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0073	0.0227	0.0193	0.0050	0.0480	0.0392	0.0711	0.0400
N	1593	1593	5344	5344	5185	5185	4022	4022
Panel B: Market Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	0.1632	5.1772***	0.3998	4.5463***	6.3113***	13.1471***	12.8408***	17.6119***
Bull	-0.3736*	-1.0480**	-0.2548***	0.2842	0.0874	0.0402	-0.6209**	-1.7962***
Divamt	0.0281	0.0844	0.1795**	0.2581	1.5569***	1.9352***	0.4348***	0.4124***
Ln(Size)	0.0029	-0.0933	-0.0105	-0.1677**	0.0178	-0.2026	-0.4609***	-0.4606***
Ln(Price)	0.0162	-0.7429**	-0.0052	-0.6717***	-1.5892***	-2.6901***	-1.7587***	-2.6783***
p-value of F-statistic	0.4245	0.0015	0.0106	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0024	0.0110	0.0025	0.0080	0.0501	0.0476	0.0705	0.0486
N	1593	1593	5344	5344	5185	5185	4022	4022
Panel C: Market Model Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	-0.2582	0.5656	0.1836	3.1134***	5.3012***	8.6119***	11.9549***	14.1612***
Bull	-0.5087**	-0.5332	-0.2241**	0.7446***	0.2996*	0.2201	-0.2125	-0.3934
Divamt	-0.0052	-0.0086	0.1030	0.0486	1.4424***	1.2483***	0.4208***	0.3276***
Ln(Size)	0.0390	0.1704	0.0035	-0.1113	0.1285*	0.1321	-0.4097***	-0.3128**
Ln(Price)	0.0311	-0.7772**	-0.0173	-0.9039***	-1.7601***	-3.0785***	-1.8177***	-2.9170***
p-value of F-statistic	0.1843	0.1025	0.1028	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0039	0.0048	0.0014	0.0111	0.0503	0.0383	0.0700	0.0412
N	1593	1593	5343	5343	5182	5182	4021	4021
Panel D: Market Model Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	-0.2449	2.0165	0.2651	3.1261***	5.3515***	9.0707***	11.8611***	13.9600***
Bull	-0.4053*	-0.2218	-0.1890**	0.8068***	0.3574*	1.5604***	-0.0149	0.6619
Divamt	-0.0084	0.0503	0.1393*	0.2111	1.4589***	1.5025***	0.4211***	0.3034***
Ln(Size)	0.0130	0.2167	0.0020	0.0425	0.1005	0.1438	-0.4235***	-0.2544*
Ln(Price)	0.0842	-1.1998***	-0.0429	-1.2323***	-1.7225***	-3.4472***	-1.8027***	-3.2475***
p-value of F-statistic	0.3977	0.0063	0.1206	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0026	0.0090	0.0014	0.0125	0.0490	0.0477	0.0693	0.0474
N	1593	1593	5343	5343	5182	5182	4021	4021

Appendix 5C Regressions for Returns of Special Dividends on Sentiment Variables in Sub-periods

This table shows a robustness check for abnormal returns of special dividends on investor sentiment variables in four sub-periods. The dependent variable is abnormal returns (CARs) calculated by the market adjusted model $AR_{it} = R_{it}-R_{mt}$, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes; and by the market model $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, where estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. Event windows used for abnormal returns are five days window of (-1, +9) and one month window of (-1, +30) (in days) relative to announcements (0 represents the actual announcement day). The dependent variable in all CARs is regressed in percentage. Panel A is the equal-weighted market adjusted abnormal returns; Panel B is the value-weighted market adjusted abnormal returns; Panel C is the equal-weighted market model adjusted abnormal returns; and Panel D is the value-weighted market model adjusted abnormal returns in special dividend announcements. *Divamt* is an amount of special dividend paid per share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to special dividend announcements. *Ln(Price)* is the natural logarithm of stock price one day before special dividend announcements. *pdnd* is the difference in returns on dividend- and non-dividend-paying stocks; *nipo* is the number of initial public offerings (IPOs); *ripo* is the first-day returns on IPOs; *turn* is the NYSE share turnovers; *cefd* is the close-end fund discount; and *es* is the level of equity over the level of debt issuance. *, **, and *** denote statistical significance at the 10%, 5%, and 1%, respectively.

Variables/CAR	1960-1975		1976-1985		1986-1995		1996-2008	
	(-1,+9)	(-1,+30)	(-1,+9)	(-1,+30)	(-1,+9)	(-1,+30)	(-1,+9)	(-1,+30)
Panel A: Market Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	5.2342***	4.8461*	9.6798***	13.4652***	13.8606***	9.5008***	13.2368***	10.5153***
Divamt	1.0211**	1.6975**	0.9127***	1.4039***	0.3455***	0.4381***	0.4785***	0.4427***
Ln(Size)	-0.0699	-0.4086*	-0.3044**	-0.3372	-0.6592***	-0.6219***	-0.6099***	-0.5738***
Ln(Price)	-1.5263***	-1.8900***	-1.3921***	-2.3710***	-2.0967***	-2.8822***	-1.5108***	-1.7364***
pdnd	0.0122	0.0090	-0.0155	-0.0794***	-0.0031	0.0712	-0.0024	0.0183
nipo	-0.0120	-0.0370*	0.0040	0.0222	-0.0213*	-0.0227	0.0007	0.0557***
ripo	-0.0237*	-0.0372*	-0.0084	-0.0358***	-0.0342	-0.0670	-0.0366***	-0.0816***
turn	0.1749**	0.3491***	0.0058	-0.0185	0.0548***	0.1334***	0.09645*	0.0390***
cefd	-0.0605	-0.0742	-0.0037	-0.0394	-0.0255	0.1317	0.0889	-0.0042
es	-0.0161	6.8985***	-1.1428	-1.1324	2.0998	8.4439	-3.2158	-4.4425
p-value of *F*-statistic	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0381	0.0596	0.0375	0.0449	0.0701	0.0681	0.0673	0.0644
N	1722	1722	2252	2252	2056	2056	2053	2053
Panel B: Market Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	8.7291***	14.3307***	10.7500***	18.2230***	16.0239***	16.4127***	14.9463***	15.6540***
Divamt	1.0427**	1.8409***	0.9489***	1.5631***	0.3390***	0.4010***	0.4459***	0.3897***
Ln(Size)	-0.0615	-0.3026	-0.3122**	-0.4438*	-0.6709***	-0.5527**	-0.5814***	-0.4274**
Ln(Price)	-1.6379***	-2.2718***	-1.5268***	-2.4543***	-2.0913***	-3.0445***	-1.6506***	-2.4617***
pdnd	0.0301	0.0100	0.0127	0.0015	-0.0695	-0.1083	-0.0136	-0.0002
nipo	-0.0024	-0.0322	-0.0115	-0.0070	-0.0332***	-0.0549***	-0.0220	-0.0276
ripo	0.0023	0.0150	0.0020	-0.0272**	0.0100	0.0197	-0.0337***	-0.0659***
turn	0.0995	0.1332	0.0141	-0.0244	0.0362*	0.0627**	0.0021	0.0116
cefd	-0.0874**	-0.0888	-0.0303	-0.0989	-0.1396**	-0.1671**	0.0124	0.0675
es	-6.0657***	-7.2251***	-0.4975	0.3619	-1.6347	1.8026	0.2422	3.9442
p-value of F-statistic	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0460	0.0558	0.0451	0.0475	0.0692	0.0585	0.0655	0.0521
N	1722	1722	2252	2252	2056	2056	2053	2053
Panel C: Market Model Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	5.8885***	7.1389***	6.8667***	8.5820***	14.7879***	14.0142***	12.7817***	10.2323***
Divamt	1.2088**	1.8654***	0.6719**	0.8028*	0.2957***	0.2790***	0.4163***	0.3462***
Ln(Size)	0.2013	-0.0318	-0.0847	0.0932	-0.5808***	-0.4349*	-0.5013***	-0.3069
Ln(Price)	-2.2603***	-2.7925***	-1.8443***	-3.4070***	-2.2692***	-3.2335***	-1.7910***	-2.6563***
pdnd	0.0177	0.0170	-0.0066	-0.0664**	-0.0644	-0.0786	-0.0093	-0.0120
nipo	-0.0013	-0.0215	-0.0154	-0.0203	-0.0214*	-0.0144	-0.0085	0.0073
ripo	-0.0084	-0.0150	-0.0087	-0.0431***	-0.0181	-0.0180	-0.0204*	-0.0424**
turn	0.1415*	0.2777**	0.0489*	0.0601	0.0242	0.0290	0.0567	0.0232***
cefd	-0.0837*	-0.1253*	0.0390	0.0525	-0.0253	0.0883	0.0748	0.1844
es	-3.8277***	-2.1201	-0.9288	-0.9097	-1.1777	-3.3680	0.3781	0.9641
p-value of F-statistic	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0439	0.0421	0.0421	0.0417	0.0673	0.0483	0.0632	0.0461
N	1721	1721	2250	2250	2056	2056	2052	2052
Panel D: Market Model Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	8.6842***	14.9681***	7.7073***	10.6029***	15.9376***	17.3022***	13.6474***	11.1631***
Divamt	1.1311**	2.1148***	0.7886***	1.0701**	0.3023***	0.2475***	0.4003***	0.3259***
Ln(Size)	0.1644	0.1207	-0.1329	0.1228	-0.6163***	-0.3485	-0.5151***	-0.2131
Ln(Price)	-2.2343***	-3.3964***	-1.8831***	-3.4641***	-2.1572***	-3.2643***	-1.8535***	-3.0643***
pdnd	0.0764***	0.1209***	0.0050	-0.0390	-0.0653	-0.0398	-0.0094	-0.0080
nipo	0.0060	-0.0189	-0.0354***	-0.0722***	-0.0302**	-0.0380**	-0.0132	-0.0155
ripo	0.0175	0.0349	-0.0017	-0.0503***	0.0165	0.0622	-0.0130	-0.0184
turn	0.0898	0.0773	0.0730***	0.0992**	0.0152	0.0053	0.0016	0.0117
cefd	-0.1634***	-0.2542***	0.0005	-0.0533	-0.0532	-0.0381	0.0701	0.3303***
es	-8.4637***	-11.820***	-1.3166	-1.6247	-4.0499	-10.8782*	-0.7924	-1.9614
p-value of F-statistic	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0620	0.0711	0.0518	0.0499	0.0700	0.0574	0.0652	0.0496
N	1721	1721	2250	2250	2056	2056	2052	2052

Appendix 6A Abnormal Returns of Stock Splits between Economic Expansions and Contractions in different Sub-periods, Industries and Sizes

This table shows a robustness check for abnormal returns of stock splits between economic expansions and contractions in four sub-periods, six groups of industries and five size quintiles for the period 1926 to 2008. Abnormal returns are calculated by the market adjusted model $AR_{it} = R_{it}-R_{mt}$ in Panel A, where AR_{it} is abnormal returns for security i at time t, R_{it} is the actual returns for security i at time t, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes. Market model adjusted returns measured by $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, are in Panel B. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. (-1, +1), (1, +30), (1, +60) and (1, +90) are event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). Industry classifications are based on the two-digit SIC code of the Coding Scheme on the US Department of Labour website (http://www.osha.gov/oshstats/sicser.html). All abnormal returns are in percentage. *, **, and *** denote statistical significance at the 10%, 5%, and 1% significant level, respectively.

Panel A: Market Adjusted Returns	(-1,+1)				(1,+30)				(1,+60)				(1,+90)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
	Exp	Con	Exp	Con	Exp	Con	Exp	Con	Exp	Con	Exp	Con	Exp	Con	Exp	Con
Abnormal returns in different sub-periods																
1926-1960	0.33***	0.16	0.32***	0.32	1.02***	-0.80	1.30***	0.40	1.77***	0.30	1.92***	2.33*	1.50**	0.19	1.89***	3.48**
1961-1975	3.15***	4.35***	3.22***	4.34***	2.07***	3.52**	2.69***	4.02***	3.25***	2.29	4.59***	3.02**	3.80***	2.74	5.69***	4.58**
1976-1995	3.13***	3.47***	3.26***	3.57***	3.81***	5.00***	4.98***	5.82***	4.42***	6.35***	6.40***	9.22***	4.18***	8.36***	6.84***	12.67***
1996-2008	3.45***	0.41	3.58***	0.82	4.12***	1.97	5.07***	5.96***	5.18***	4.05**	6.72***	10.84***	5.50***	4.26**	7.64***	13.48***
Abnormal returns in different industries																
Agriculture, Forestry, Fishing, Mining and Construction	2.60***	3.35***	2.70***	3.39***	3.59***	1.83	4.65***	2.01	5.58***	3.68	7.13***	4.90	6.01***	7.54***	8.33***	9.93***
Manufacturing	3.10***	3.07***	3.21***	3.18***	3.22***	2.89***	4.16***	3.89***	3.90***	3.61***	5.50***	6.13***	3.98***	4.83***	6.14***	8.68***
Wholesale and Retail trade	3.27***	2.33***	3.42***	2.53***	3.27***	5.05***	4.34***	6.56***	4.00***	6.53***	5.73***	9.78***	3.94***	8.58**	6.21***	13.73***
Finance, Insurance, and Real Estate	2.59***	2.01***	2.67***	2.14***	3.65***	2.59**	4.56***	4.40***	4.22***	2.55	5.87***	6.31***	3.96***	2.54	6.21***	7.68***
Services and Public Administration	3.98***	3.38***	4.14***	3.62***	4.67***	6.39***	5.87***	8.60***	6.33***	7.80***	8.20***	12.84***	6.25***	7.84***	9.01***	14.45***
Transportation, Communication, Electric, Gas, and Sanitary Services	2.05***	1.50***	2.20***	1.62***	1.96***	2.21*	2.97***	3.10**	2.12***	5.51***	3.81***	7.27***	2.59***	5.07**	4.83***	9.05***
Abnormal returns in different size																
1st Quintile	4.79***	5.41***	4.90***	5.52***	6.57***	7.33***	7.61***	8.37***	7.12***	6.64***	9.03***	8.82***	6.86***	8.37***	9.57***	11.90***
2nd Quintile	3.55***	2.98***	3.66***	3.01***	4.12***	4.72***	5.11***	5.30***	5.03***	6.27***	6.64***	8.27***	4.54***	7.99***	6.72***	11.27***
3rd Quintile	2.79***	2.73***	2.91***	2.92***	3.18***	3.03***	4.08***	4.18***	4.25***	4.13***	5.75***	7.03***	4.55***	5.01***	6.52***	9.59***
4th Quintile	2.35***	2.37***	2.45***	2.50***	2.35***	3.40***	3.40***	4.36***	3.10***	5.41***	4.80***	8.42***	3.46***	6.71***	5.79***	11.38***
5th quintile	1.96***	0.61***	2.08***	0.80***	1.55***	-0.16	2.56***	1.95**	2.37***	0.88	4.05***	5.10***	2.46***	1.69	4.82***	7.32***
Panel B: Market Model Adjusted Returns																
Abnormal returns in different sub-periods																
1926-1960	0.17**	0.04	0.09	0.07	-0.66**	-3.45***	-1.02***	-2.79***	-1.88***	-4.80***	-2.90***	-3.61**	-3.94***	-7.34***	-5.46***	-5.17**
1961-1975	2.82***	4.08***	2.79***	4.23***	-0.99**	-0.34	-1.38***	0.89	-3.23***	-5.03***	-3.74***	-2.25*	-6.02***	-7.77***	-6.92***	-3.03*
1976-1995	2.73***	2.99***	2.74***	3.10***	0.30***	0.37*	-0.08**	1.30***	-2.50***	-3.75**	-3.89***	0.10	-6.14***	-6.89***	-8.58***	-1.03
1996-2008	2.91***	0.11	2.96***	0.19	-0.56***	-3.42***	-1.07	-2.95**	-3.82***	-7.63***	-5.42***	-6.98***	-8.10***	-14.20***	-10.60***	-13.27***
Abnormal returns in different industries																
Agriculture, Forestry, Fishing, Mining and Construction	2.06***	3.05***	2.15***	3.03***	-0.96	-2.30	-0.94	-3.58*	-2.58	-7.92*	-3.54**	-8.37**	-6.00***	-11.48**	-7.90***	-11.38**
Manufacturing	2.71***	2.62***	2.71***	2.75***	-0.31	-1.61**	-0.82***	-0.71	-3.11***	-5.90***	-4.56***	-2.98**	-6.50***	-9.71***	-8.95***	-5.05***
Wholesale and Retail trade	2.87***	1.85***	2.87***	2.05***	-0.35	-0.04	-0.91	1.99*	-3.22***	-3.59	-4.86***	1.13	-7.10***	-6.16*	-9.83***	1.11
Finance, Insurance, and Real Estate	2.32***	1.83***	2.31***	1.86***	1.38***	-0.60	1.07***	0.24	-0.46	-3.76***	-1.33**	-1.28	-2.95***	-6.70***	-4.47***	-3.20**
Services and Public Administration	3.19***	2.93***	3.26***	3.16***	-2.10**	1.24	-2.41***	3.47**	-6.97***	-3.37	-8.50***	2.64	-13.70***	-7.91	-16.07***	-0.06
Transportation, Communication, Electric, Gas, and Sanitary Services	1.74***	1.25**	1.82***	1.28**	-0.63	-1.63	-0.84	-1.16	-2.72***	-1.54	-3.80***	-0.29	-4.82***	-5.06	-6.60***	-2.26
Abnormal returns in different size																
1st Quintile	4.39***	5.22***	4.39***	5.22***	2.80***	4.48***	2.50***	4.76***	-0.76*	1.07	-1.46	2.49	-5.11***	-0.12	-6.35***	2.91**
2nd Quintile	3.14***	2.62***	3.15***	2.58***	0.11***	0.95	-0.14**	0.87	-3.10***	-1.64	-4.14***	-0.10	-7.56***	-4.61	-9.47***	-1.72
3rd Quintile	2.40***	2.28***	2.39***	2.57***	-0.17	-1.79	-0.60	-0.09	-2.24***	-5.40**	-3.65***	-1.12	-5.05***	-8.68***	-7.62***	-2.21
4th Quintile	1.96***	1.92***	1.95***	2.08***	-0.96***	-2.09	-1.45***	-1.11	-3.29***	-6.97***	-4.91***	-2.84	-6.12***	-11.65***	-8.74***	-5.52**
5th quintile	1.46***	0.15	1.53***	0.25	-2.38***	-4.82***	-2.96***	-3.30***	-5.08***	-9.49***	-6.87***	-6.06***	-8.84***	-14.19***	-11.52***	-9.62***

Appendix 6B Regressions for Event Returns of Stock Splits on Expansion Dummy in Sub-periods

This table shows a robustness check for abnormal returns of stock splits on the *Expansion* dummy in four sub-periods: 1926 to 1960, dormant period of stock splits; growth period 1961 to 1975; peak period 1976 to 1995; and decline period 1996 to 2008. The dependent variable is abnormal returns (CARs) calculated by the market adjusted model $AR_{it} = R_{it}-R_{mt}$, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes; and by the market model $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, where estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. Event windows used for abnormal returns are five days window of (-2, +2) and ten days window of (-1, +9) (in days) relative to announcements (0 represents the actual announcement day). The dependent variable in all CARs is regressed in percentage. Panel A is the equal-weighted market adjusted abnormal returns; Panel B is the value-weighted market adjusted abnormal returns; Panel C is the equal-weighted market model adjusted abnormal returns; and Panel D is the value-weighted market model adjusted abnormal returns in stock split announcements. *Expansion* is a dummy variable that takes a value of one for a split announced in economic expansion periods and a value of zero for an announcement in contraction periods. Economic expansion and contraction periods are determined by the NBER (www.nber.org/cycles/cyclesmain.html). *SplFac* is the split ratio obtained from CRSP and defined as the number of additional shares per existing share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to stock split announcements. *Ln(Price)* is the natural logarithm of stock price one day before stock split announcements. *, **, and *** denote statistical significance at the 10%, 5%, and 1% significant level, respectively.

Variables/CAR	1926-1960		1961-1975		1976-1995		1996-2008	
	(-2,+2)	(-1,+9)	(-2,+2)	(-1,+9)	(-2,+2)	(-1,+9)	(-2,+2)	(-1,+9)
Panel A: Market Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	-0.3899	0.6950	17.4539***	18.5162***	14.9524***	19.7619***	11.0443***	15.8554***
Expansion	0.8454**	0.8741*	-0.2450	0.2930	0.2162	-0.3115	2.4305***	3.0072***
SplFac	-0.3888**	-0.1103	1.1720***	1.5431***	1.4533***	1.6234***	2.1626***	3.3315***
Ln(Size)	0.0067	0.0602	-0.3599***	-0.1634	-0.5750***	-0.8824***	-0.7029***	-0.7141***
Ln(Price)	0.2488	-0.2015	-2.9495***	-4.2122***	-2.0402***	-2.2837***	-0.9962***	-2.7573***
p-value of *F*-statistic	0.0154	0.3922	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0125	0.0042	0.1212	0.1132	0.0881	0.0923	0.0442	0.0619
N	982	982	2136	2136	9251	9251	4267	4267
Panel B: Market Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	0.6931	2.2044	17.4307***	19.2286***	15.2282***	20.1259***	11.6482***	17.3290***
Expansion	0.5795	0.5844	-0.2214*	-0.0200	0.2087	-0.2564	1.9825**	1.7644*
SplFac	-0.3343**	-0.0903	1.1206***	1.4427***	1.4495***	1.6143***	2.0628***	3.2290***
Ln(Size)	-0.0482	-0.0220	-0.3778***	-0.2562	-0.5700***	-0.8753***	-0.7306***	-0.7369***
Ln(Price)	0.1675	-0.2590	-2.8367***	-3.9241***	-2.0772***	-2.2976***	-0.8297**	-2.5872***
p-value of F-statistic	0.1002	0.3922	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0079	0.0042	0.1149	0.1100	0.0877	0.0897	0.0415	0.0572
N	982	982	2136	2136	9251	9251	4267	4267
Panel C: Market Model Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	0.1583	0.8776	16.9764***	17.3570***	13.2693***	16.4851***	12.2906***	17.3068***
Expansion	0.8339**	1.1382**	-0.1415	0.5134	0.3859	0.0407	2.2077***	2.8046***
SplFac	-0.3488**	-0.1649	1.1363***	1.4130***	1.4236***	1.5285***	2.4163***	3.5269***
Ln(Size)	-0.0469	-0.0169	-0.2483*	0.0867	-0.4544***	-0.6068***	-0.4920***	-0.2718*
Ln(Price)	0.1794	-0.2288	-3.3056***	-4.9547***	-2.1910***	-2.7228***	-2.3848***	-5.2576***
p-value of F-statistic	0.0306	0.1271	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0108	0.0073	0.1223	0.1098	0.0794	0.0747	0.0580	0.0834
N	982	982	2134	2134	9248	9248	4266	4266
Panel D: Market Model Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	0.5826	1.4255	16.7953***	17.3327***	13.4946***	16.7669***	11.9084***	17.3320***
Expansion	0.6001*	0.9314*	-0.4927	-0.4800	0.1753	-0.4400	2.1282***	2.3985**
SplFac	-0.3100**	-0.1085	1.1171***	1.3469***	1.4232***	1.4879***	2.2436***	3.3913***
Ln(Size)	-0.0581	-0.0206	-0.2128	0.1257	-0.4424***	-0.6133***	-0.5849***	-0.4046***
Ln(Price)	0.1125	-0.3576	-3.2730***	-4.8092***	-2.2423***	-2.6511***	-1.8212***	-4.6170***
p-value of F-statistic	0.1186	0.2021	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0075	0.0061	0.1170	0.1072	0.0800	0.0730	0.0518	0.0773
N	982	982	2134	2134	9248	9248	4266	4266

Appendix 6C Regressions for Event Returns of Stock Splits on Macroeconomic Variables in Sub-periods

This table shows a robustness check for abnormal returns of stock splits on macroeconomic variables in four sub-periods. The dependent variable is abnormal returns (CARs) calculated by the market adjusted model $AR_{it} = R_{it}-R_{mt}$, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes; and by the market model $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, where estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. Event windows used for abnormal returns are five days window of (-2, +2) and one month window of (-1, +30) (in days) relative to announcements (0 represents the actual announcement day). The dependent variable in all CARs is regressed in percentage. Panel A is the equal-weighted market adjusted abnormal returns; Panel B is the value-weighted market adjusted abnormal returns; Panel C is the equal-weighted market model adjusted abnormal returns; and Panel D is the value-weighted market model adjusted abnormal returns in stock split announcements. *SplFac* is the split ratio obtained from CRSP and defined as the number of additional shares per existing share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to stock split announcements. *Ln(Price)* is the natural logarithm of stock price one day before stock split announcements. *DIV* is the market dividend yield, defined as the total dividend payments on the market over the current level of the index. *DEF* is the default spread, defined as the difference between the average yield of bonds rated BAA by Moodys and the average yield of bonds with a Moodys rating of AAA. *TERM* is the term spread, measured as the difference between the average yield of long term Treasury bonds (more than 10 years) and the average yield of T-bills that mature in three months. *YLD* is the three-month T-bills yield. *, ** and *** denote statistical significance at the 10%, 5%, and 1%, respectively.

Variables/CAR	1926-1960		1961-1975		1976-1995		1996-2008	
	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)
Panel A: Market Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	2.4385	3.1833	15.1598***	11.2049***	15.4879***	26.2391***	16.6212***	23.1997***
Ln(Size)	0.0297	-0.2365	-0.4420***	-0.5604**	-0.5305***	-1.0651***	-0.6613***	-0.9386***
Ln(Price)	0.1890	-0.1151	-2.5829***	-2.1551***	-2.1202***	-3.6054***	-1.2858***	-2.5741***
SplFac	-0.3929**	0.3249	1.1491***	1.5638***	1.4704***	2.6189***	1.9692***	3.7399***
DIV	-0.1798	-0.1631	0.0529	-1.2226	1.0224	-0.4151	-2.7761***	-4.4062***
DEF	-0.2109	-1.7374*	0.7644	0.9497	0.9197***	0.9983**	-0.8405	-1.9899
YLD	-0.3559	0.5378	0.1839	1.3875***	-0.1585***	0.0367	0.5005**	1.2448***
TERM	-0.4398	1.0632	-0.0549	1.1863*	-0.3084***	-0.0771	0.4528**	1.2095**
p-value of *F*-statistic	0.2022	0.4621	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0100	0.0068	0.1248	0.0546	0.0907	0.0700	0.0498	0.0343
N	982	982	2136	2136	9251	9251	4342	4342
Panel B: Market Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	2.7881	5.3447	15.8136***	16.3634***	15.5747***	30.1108***	15.6816***	18.9194***
Ln(Size)	0.0231	-0.2396	-0.4319***	-0.7192***	-0.5181***	-1.0226***	-0.6911***	-0.9520***
Ln(Price)	0.0949	-0.5935	-2.5699***	-1.8780***	-2.1596***	-3.7408***	-1.1268***	-2.3563***
SplFac	-0.3777**	0.3633	1.1002***	1.1166**	1.4748***	2.6148***	1.8908***	3.4924***
DIV	-0.1954	-0.2871	0.07483	-0.3640	0.1735	0.3651	-3.1961***	-6.3031***
DEF	0.3873	0.2630	1.1156	4.9766***	1.1724***	2.9278***	-0.4818	-0.0726
YLD	-0.4636	0.2700	0.0231	-0.1001	-0.2677***	-0.8808***	0.7251***	2.1893***
TERM	-0.4886	0.8975	-0.2505	-0.8162	-0.3345***	-0.7377***	0.7988***	2.8567***
p-value of F-statistic	0.3081	0.2769	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0084	0.0088	0.1176	0.0472	0.0909	0.0740	0.0511	0.0385
N	982	982	2136	2136	9251	9251	4342	4342
Panel C: Market Model Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	3.2611*	7.3906*	15.2975***	11.6438***	14.2030***	17.3214***	17.3213***	27.6813***
Ln(Size)	0.0236	0.0004	-0.2720*	0.4044	-0.4075***	-0.2296	-0.4787***	0.0206
Ln(Price)	0.0940	-1.1379	-3.1440***	-4.9223***	-2.2640***	-4.5700***	-2.4151***	-7.3846***
SplFac	-0.3834**	0.3521	1.1248***	1.2352**	1.4462***	2.2889***	2.1918***	3.7496***
DIV	-0.2402	-0.3821	0.2871	0.0508	0.1214	0.4391	-1.3398***	3.0421***
DEF	0.1879	-0.7866	0.5697	1.3933	0.5955**	-1.5473***	-1.1315	-5.4981***
YLD	-0.595*	-0.7248	0.0162	0.0444	-0.1883***	-0.0717	0.0914	-1.1429**
TERM	-0.6578	-0.6835	-0.2939	-0.7462	-0.3669***	-0.2850	0.0867	-1.0539**
p-value of F-statistic	0.2176	0.3519	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0097	0.0079	0.1245	0.0364	0.0817	0.0424	0.0560	0.0484
N	982	982	2134	2134	9248	9248	4341	4341
Panel D: Market Model Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	3.4695*	8.0005*	15.2914***	12.8123***	14.0940***	18.1404***	15.7133***	20.1204***
Ln(Size)	0.0438	0.0748	-0.2055	0.7328**	-0.3911***	-0.1359	-0.5674***	-0.1199
Ln(Price)	-0.0013	-1.5781**	-3.2295***	-5.6940***	-2.3311***	-4.8926***	-1.9131***	-6.9871***
SplFac	-0.3612**	0.5537	1.1157***	0.9652	1.4494***	2.2284***	2.0463***	3.8451***
DIV	-0.2439	-0.3642	0.3218	0.6549	0.1502	0.9643***	-1.9520***	1.6097
DEF	0.5374	-0.0202	0.8939	3.6764*	1.4611***	3.7442***	-0.7874	-2.7608
YLD	-0.7009**	-0.9885	-0.1252	-0.9283**	-0.3199***	-1.1666***	0.4206**	0.0491
TERM	-0.8277*	-1.0934	-0.4178	-1.6889**	-0.4027***	-1.0203***	0.4609**	0.4628
p-value of F-statistic	0.1707	0.1376	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0105	0.0112	0.1184	0.0431	0.0847	0.0496	0.0531	0.0478
N	982	982	2134	2134	9248	9248	4341	4341

Appendix 6D Regressions for Event Returns of Stock Splits on Business Cycle Variables in Sub-periods

This table shows a robustness check for abnormal returns of stock splits on general business cycle variables in four sub-periods. The dependent variable is abnormal returns (CARs) calculated by the market adjusted model $AR_{it} = R_{it}\text{-}R_{mt}$, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes; and by the market model $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, where estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. Event windows used for abnormal returns are five days window of (-2, +2) and one month window of (-1, +30) (in days) relative to announcements (0 represents the actual announcement day). The dependent variable in all CARs is regressed in percentage. Panel A is the equal-weighted market adjusted abnormal returns; Panel B is the value-weighted market adjusted abnormal returns; Panel C is the equal-weighted market model adjusted abnormal returns; and Panel D is the value-weighted market model adjusted abnormal returns in stock split announcements. *SplFac* is the split ratio obtained from CRSP and defined as the number of additional shares per existing share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to stock split announcements. *Ln(Price)* is the natural logarithm of stock price one day before stock split announcements. *GDP* is the change in nominal GDP; *UNEMP* is the unemployment rate; *cpi* is the consumer price index; and *inf* is the inflation rate in the US. *, ** and *** denote statistical significance at the 10%, 5%, and 1%, respectively.

Variables/CAR	1926-1960		1961-1975		1976-1995		1996-2008	
	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)
Panel A: Market Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	-0.5966	-1.5813	16.5996***	4.1644	12.9690***	38.0279***	18.5411***	30.8966***
Ln(Size)	-0.0527	-0.2627	-0.3320**	-0.4541	-0.4464***	-1.1632***	-0.7014***	-0.9931***
Ln(Price)	0.4609	0.2390	-2.8958***	-2.3998***	-2.2352***	-3.4215***	-1.2348***	-2.4340***
SplFac	-0.4230***	0.2606	1.2057***	1.6326***	1.4922***	2.5983***	1.8792***	3.6377***
GDP	0.1225	0.3641*	-0.1387	-0.2771	0.0233***	-0.0190	0.2274	0.1420
UNEMP	0.0648	0.1600	-0.7527**	0.2594	0.2166	-0.5345**	-0.9288***	-1.6026***
cpi	-0.0467	0.0910	0.2534**	-0.0032	0.0145*	0.0624**	0.0420***	0.0931***
inf	-0.0293	0.5175	-0.2242	0.6934	0.1646	-0.3844	1.0372**	-0.8800
p-value of *F*-statistic	0.0666	0.1863	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0149	0.0115	0.1312	0.0569	0.0909	0.0701	0.0491	0.0334
N	981	981	2133	2133	9249	9249	4343	4343
Panel B: Market Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	0.4495	2.9725	18.0290***	14.6485***	8.0281***	11.1257**	18.0252***	23.9831***
SplFac	-0.0565	-0.2782	-0.3417**	-0.6114**	-0.4290***	-1.1096***	-0.7341***	-1.0048***
Ln(Size)	0.3231	-0.2460	-2.8269***	-2.1506***	-2.3075***	-3.6487***	-1.0615***	-2.0620***
Ln(Price)	-0.3963**	0.3307	1.1446***	1.1885**	1.4898***	2.5409***	1.7990***	3.3957***
GDP	0.0248	0.1106	-0.0163	-0.5298**	0.0503	0.0313	0.3080	0.3178
UNEMP	0.1152**	0.3232	-1.0397***	-1.2164*	-0.5098***	-0.9322***	-0.7500***	-0.3594
cpi	-0.0665	-0.0615***	0.3482***	0.5155**	0.0317**	0.0524*	0.0572***	0.1537***
inf	-0.0289	0.2459	-0.7371	-1.7881	0.2266	-1.4689***	1.2984***	-1.8627*
p-value of F-statistic	0.0976	0.0463	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0137	0.0160	0.1233	0.0479	0.0923	0.0714	0.0493	0.0321
N	981	981	2133	2133	9249	9249	4343	4343
Panel C: Market Model Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	0.6419	4.5561	18.9154***	16.0984***	7.9491***	4.9299	17.1512***	19.9368***
SplFac	-0.0466	0.0335	-0.1354	0.7485**	-0.3092***	-0.2321	-0.5103***	0.0195
Ln(Size)	0.2892	-1.1321	-3.5722***	-6.0854***	-2.4048***	-4.5664***	-2.4054***	-7.4842***
Ln(Price)	-0.4020**	0.2771	1.1905***	1.4068**	1.4736***	2.3021***	2.1320***	3.7661***
GDP	0.0844	0.3099	-0.0775	0.0800	0.0786	0.1576	0.3739*	0.4923
UNEMP	0.0747	0.0640	-0.9592***	-0.9330	-0.3165**	0.1807	-0.5935**	0.5964
cpi	-0.0853	-0.1965	0.2848**	0.1758	0.0365***	0.0782**	-0.0092	0.0292
inf	-0.0871	-0.0842	-0.2154	0.7071	0.1180	0.0640	0.7544	0.2018
p-value of F-statistic	0.1930	0.3824	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0114	0.0087	0.1313	0.0413	0.0823	0.0426	0.0570	0.0457
N	981	981	2131	2131	9246	9246	4342	4342
Panel D: Market Model Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	0.8594	4.2045	18.7135***	16.4229***	10.4960***	20.3388***	18.3022***	22.2830***
SplFac	-0.0326	0.0513	-0.0844	1.0279***	-0.2934***	-0.2366	-0.6024***	-0.1208
Ln(Size)	0.1784	-1.5754**	-3.6217***	-6.6793***	-2.4749***	-4.7439***	-1.8907***	-6.9787***
Ln(Price)	-0.3718**	0.5264	1.1772***	1.1234*	1.4676***	2.1505***	1.9785***	3.9188***
GDP	0.2610	0.1549	0.0088	-0.3724	0.0652	0.1097	0.4229**	1.0423**
UNEMP	0.0962**	0.1139	-0.9877***	-0.9557	-0.2947**	-0.0998	-0.6588**	0.4198
cpi	-0.0722	-0.0558	0.3112**	0.3211	-0.0207	-0.0172	0.0263*	0.0163
inf	-0.0927	-0.1266	-0.7624	-2.3022	-0.0355	-2.8680***	1.1481**	-2.7387***
p-value of F-statistic	0.2067	0.1881	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0111	0.0115	0.1246	0.0481	0.0839	0.0437	0.0539	0.0495
N	981	981	2131	2131	9246	9246	4342	4342

Appendix 7A Abnormal Returns of Special Dividends between Economic Expansions and Contractions in different Sub-periods, Industries and Sizes

This table shows a robustness check for abnormal returns of special dividends between economic expansions and contractions in four sub-periods, six groups of industries and five size quintiles for the period 1926 to 2008. Abnormal returns are calculated by the market adjusted model $AR_{it} = R_{it}-R_{mt}$ in Panel A, where AR_{it} is abnormal returns for security i at time t, R_{it} is the actual returns for security i at time t, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes. Market model adjusted returns measured by $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, are in Panel B. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. (-1, +1), (1, +30), (1, +60) and (1, +90) are event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). Industry classifications are based on the two-digit SIC code of the Coding Scheme on the US Department of Labour website (http://www.osha.gov/oshstats/sicser.html). All abnormal returns are in percentage. *, **, and *** denote statistical significance at the 10%, 5%, and 1% significant level, respectively.

Panel A: Market Adjusted Returns	(-1,+1)				(1,+30)				(1,+60)				(1,+90)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
	Exp	Con	Exp	Con	Exp	Con	Exp	Con	Exp	Con	Exp	Con	Exp	Con	Exp	Con
Abnormal returns in different sub-periods																
1926-1940	-0.29***	0.13	0.03	0.14	-2.39***	-1.25*	0.79*	1.49**	-3.04***	-0.94	2.17***	2.83***	-4.71***	-1.46	2.31***	3.84***
1941-1960	-0.05*	0.21*	0.08*	0.22*	-0.67***	-0.18	0.68***	0.66**	-0.32***	0.42	1.60***	1.35***	-0.55***	0.03	1.79***	1.83***
1961-1985	1.67***	2.42***	1.71***	2.39***	0.78***	2.35***	2.35***	3.65***	0.62	1.60	4.60***	5.69***	0.72	2.47*	6.00***	8.33***
1986-2008	1.91***	2.63***	1.91***	2.76***	0.93***	2.33	2.63***	5.46***	-0.38***	-0.01***	2.75***	7.84***	-0.65***	-2.09***	3.42***	10.28***
Abnormal returns in different industries																
Agriculture, Forestry, Fishing, Mining and Construction	1.36***	1.67**	1.42***	1.58*	1.07	0.91	2.62***	2.22	1.25	-0.78	4.76***	2.15	0.08	0.82	4.82***	6.01*
Manufacturing	0.75***	0.80***	0.87***	0.80***	-0.28***	0.31	1.28***	1.59***	-0.22***	0.33	2.81***	2.91***	-0.31***	0.16	3.64***	4.10***
Wholesale and Retail trade	1.06***	1.88***	1.16***	1.82***	-0.33***	0.74	1.64***	2.71***	-0.99***	2.52	2.38***	5.64**	-0.91***	2.82	3.30***	7.73***
Finance, Insurance, and Real Estate	1.22***	1.99***	1.23***	2.12***	0.57	2.22***	2.50***	4.08***	-0.83***	0.56	2.65***	5.19***	-1.44***	-0.09	3.03***	6.84***
Services and Public Administration	3.25***	0.42	3.32***	0.49	1.88**	2.72	3.20***	4.28**	2.54	3.51	5.40***	6.30**	1.88	5.17	5.97***	9.69***
Transportation, Communication, Electric, Gas, and Sanitary Services	1.06***	0.68	1.13***	0.65	0.02	0.00	1.66***	1.23	-0.60***	0.37	2.32***	3.20*	-0.55**	-0.88	3.17***	2.91
Abnormal returns in different size																
1st Quintile	1.47***	2.50***	1.58***	2.43***	1.27***	2.64***	3.08***	4.20***	2.08***	3.46**	5.62***	6.43***	2.56***	4.18**	7.26***	8.80***
2nd Quintile	1.12***	1.47***	1.23***	1.52***	0.33	0.69	2.01***	2.37***	0.65	-0.19	3.84***	2.91***	0.67	0.55	4.91***	5.18***
3rd Quintile	0.92***	0.95***	1.02***	0.93***	-0.10*	0.43	1.59***	1.95***	-0.60***	1.24	2.58***	4.07***	-0.97***	1.04	3.27***	5.63***
4th Quintile	0.86***	0.56***	0.93***	0.58***	-0.48***	0.05	1.21***	1.38***	-1.77***	-0.24	1.47***	2.87***	-2.38***	-0.46	1.78***	4.09***
5th quintile	0.79***	0.57***	0.81***	0.59***	-0.52***	-0.01	0.98***	1.17***	-1.74***	-1.27***	1.16***	1.86***	-2.55***	-2.73***	0.98***	1.93***
Panel B: Market Model Adjusted Returns																
Abnormal returns in different sub-periods																
1926-1940	-0.07	0.26	-0.07	0.21	-0.71***	-0.56	-0.43*	0.67	-0.67**	-0.16	-0.59*	1.09	-1.80***	-1.08*	-2.10***	0.89
1941-1960	-0.03	0.20**	0.00	0.19*	-0.75***	-0.60*	-0.18	0.15	-0.62***	-0.36	-0.03	0.53*	-1.03***	-0.99	-0.77**	0.62**
1961-1985	1.58***	2.29***	1.51***	2.23***	0.28**	1.64***	0.71***	2.77***	-0.29	0.83***	1.21***	4.94***	-0.73	0.92***	1.03***	7.16***
1986-2008	1.84***	2.65***	1.79***	2.81***	1.36***	3.07*	1.62***	6.13***	0.38***	2.13	0.71***	9.90***	-0.01	1.18	0.12	13.27***
Abnormal returns in different industries																
Agriculture, Forestry, Fishing, Mining and Construction	1.26***	1.42	1.23***	1.23	0.69	-1.71	0.95*	-0.42	0.91	-4.91**	1.51**	-1.95	-0.38	-5.45*	0.04	-0.44
Manufacturing	0.76***	0.79***	0.74***	0.77***	-0.41***	-0.12	0.02	0.91**	-0.60***	-0.38	0.30***	1.99***	-0.99***	-1.12	-0.19	2.68***
Wholesale and Retail trade	1.09***	1.81***	1.08***	1.75***	-0.20	0.65	0.31	2.50***	-1.18*	1.19	-0.42	4.73***	-1.56	1.05	-1.03	6.47***
Finance, Insurance, and Real Estate	1.17***	1.95***	1.12***	1.99***	1.37***	3.13***	1.73***	4.30***	0.55***	3.46***	1.02***	6.69***	0.01	4.08***	0.38*	8.96***
Services and Public Administration	3.17***	0.39	3.13***	0.54	1.51**	3.25	1.40**	3.92*	1.72*	1.79	1.92**	4.91*	1.09	1.98	1.10	7.47**
Transportation, Communication, Electric, Gas, and Sanitary Services	0.99***	0.78	0.96***	0.77	-0.19	-0.33	0.48*	0.83	-1.01	0.24	-0.08	2.46	-1.52	-1.33	-0.82	1.90
Abnormal returns in different size																
1st Quintile	1.45***	2.47***	1.43***	2.36***	1.18***	3.12***	1.62***	4.16***	1.85***	4.88***	2.61***	7.19***	2.04***	6.10***	2.67***	9.73***
2nd Quintile	1.10***	1.31***	1.09***	1.34***	0.22**	0.40	0.67***	1.65**	0.32**	-0.57	1.05***	2.07***	0.02	-0.53	0.70***	3.57***
3rd Quintile	0.92***	1.02***	0.89***	1.01***	-0.03	0.35	0.34**	1.59***	-0.50	1.32***	0.23	3.76***	-1.16**	1.26***	-0.48	5.15***
4th Quintile	0.84***	0.53***	0.83***	0.48***	-0.15	-0.36	0.33***	0.77**	-1.29***	-1.13	-0.40	1.93***	-1.96***	-2.13	-1.19***	2.62***
5th quintile	0.76***	0.50***	0.69***	0.52***	-0.30	-1.24**	0.02	-0.22	-1.54***	-3.50***	-0.82**	-0.56	-2.43***	-5.97***	-1.93***	-1.32

Appendix 7B Regressions for Event Returns of Special Dividends on Expansion Dummy in Sub-periods

This table shows a robustness check for abnormal returns of special dividends on the *Expansion* dummy in four sub-periods: 1926 to 1940, before the US joined World War II; 1941 to 1960, before the Organization of the Petroleum Exporting Countries (OPEC) was formed; 1961 to 1985, before the US Tax Reform of 1986; and 1986 to 2008, after the Tax Reform. The dependent variable is abnormal returns (CARs) calculated by the market adjusted model $AR_{it} = R_{it}\text{-}R_{mt}$, where AR_{it} is abnormal returns for security i at time t, R_{it} is the actual returns for security i at time t, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes; and by the market model $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, where estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. Event windows used for abnormal returns are five days window of (-2, +2) and one month window of (-1, +30) (in days) relative to announcements (0 represents the actual announcement day). The dependent variable in all CARs is regressed in percentage. Panel A is the equal-weighted market adjusted abnormal returns; Panel B is the value-weighted market adjusted abnormal returns; Panel C is the equal-weighted market model adjusted abnormal returns; and Panel D is the value-weighted market model adjusted abnormal returns in special dividend announcements. *Expansion* is a dummy variable that takes a value of one for a special dividend announced in economic expansion periods and a value of zero for an announcement in contraction periods. Economic expansion and contraction periods are determined by the NBER (www.nber.org/cycles/cyclesmain.html). *Divamt* is an amount of special dividend paid per share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to special dividend announcements. *Ln(Price)* is the natural logarithm of stock price one day before special dividend announcements. *, **, and *** denote statistical significance at the 10%, 5%, and 1% significant level, respectively.

Variables/CAR	1926-1940		1941-1960		1961-1985		1986-2008	
	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)
Panel A: Market Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	-0.0956	1.7614	0.2386	3.6253***	6.4368***	10.7243***	12.3653***	13.0771***
Expansion	-0.8608***	-1.4860**	-0.2686*	-0.6480**	-0.4841**	-0.9095**	-0.7299	-0.4802
Divamt	0.0381	0.0433	0.1675**	0.1204	1.5178***	1.7440***	0.4333***	0.4659***
Ln(Size)	0.0676	-0.0963	0.0010	-0.2285***	0.0208	-0.1485	-0.4273***	-0.4385***
Ln(Price)	-0.0929	-0.5401	-0.0140	-0.3679*	-1.4977***	-2.2996***	-1.6714***	-2.0827***
p-value of *F*-statistic	0.0166	0.0215	0.0944	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0076	0.0072	0.0015	0.0059	0.0488	0.0367	0.0671	0.0336
N	1593	1593	5344	5344	5185	5185	4136	4136
Panel B: Market Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	0.3321	5.4087***	0.3650	4.9131***	6.5837***	13.4877***	12.6053***	16.5421***
Expansion	-0.4164*	-0.7776	-0.0793	-0.2182	-0.3093	-0.4411	-0.7984	-1.9115**
Divamt	0.0235	0.0761	0.1872**	0.2530	1.5533***	1.9316***	0.4326***	0.4075***
Ln(Size)	0.0054	-0.0859	-0.0122	-0.1719**	0.0132	-0.2090	-0.4325***	-0.3058**
Ln(Price)	-0.0011	-0.8107**	-0.0162	-0.6574***	-1.5562***	-2.6477***	-1.6944***	-2.7467***
p-value of F-statistic	0.4993	0.0073	0.2003	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0021	0.0088	0.0011	0.0077	0.0504	0.0478	0.0670	0.0436
N	1593	1593	5344	5344	5185	5185	4136	4136
Panel C: Market Model Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	-0.0763	0.7604	0.2955	3.9235***	5.7092***	9.0108***	12.2727***	13.4900***
Expansion	-0.4895*	-0.5197	-0.2028	-0.4308	-0.3311	-0.3809	-0.9427*	-0.7482
Divamt	-0.0105	-0.0142	0.1113	0.0338	1.4349***	1.2419***	0.4190***	0.3253***
Ln(Size)	0.0424	0.1740	-0.0007	-0.1195	0.1228*	0.1260	-0.3905***	-0.2057
Ln(Price)	0.0037	-0.8056**	-0.0261	-0.8676***	-1.7133***	-3.0315***	-1.7485***	-2.9418***
p-value of F-statistic	0.3999	0.1225	0.4249	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0025	0.0046	0.0007	0.0090	0.0502	0.0383	0.0677	0.0388
N	1593	1593	5343	5343	5182	5182	4135	4135
Panel D: Market Model Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	-0.0032	2.7781	0.2995	4.2269***	5.7882***	10.6597***	12.7119***	16.7621***
Expansion	-0.5460**	-1.3128**	-0.1150	-0.6752**	-0.3254	-0.9798**	-1.3302**	-3.6258***
Divamt	-0.0145	0.0355	0.1456*	0.1975	1.4505***	1.4685***	0.4186***	0.2991***
Ln(Size)	0.0156	0.2170	-0.0004	0.0295	0.0946	0.1246	-0.4063***	-0.1508
Ln(Price)	0.0700	-1.1578***	-0.0507	-1.1916***	-1.6730***	-3.2713***	-1.7302***	-3.2273***
p-value of F-statistic	0.2873	0.0005	0.4293	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0031	0.0124	0.0007	0.0104	0.0487	0.0454	0.0679	0.0477
N	1593	1593	5343	5343	5182	5182	4135	4135

Appendix 7C Regressions for Returns of Special Dividends on Macroeconomic Variables in Sub-periods

This table shows a robustness check for abnormal returns of special dividends on investor sentiment variables in four sub-periods. The dependent variable is abnormal returns (CARs) calculated by the market adjusted model $AR_{it} = R_{it}-R_{mt}$, where AR_{it} is abnormal returns for security i at time t, R_{it} is the actual returns for security i at time t, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes; and by the market model $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, where estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. Event windows used for abnormal returns are five days window of (-2, +2) and one month window of (-1, +30) (in days) relative to announcements (0 represents the actual announcement day). The dependent variable in all CARs is regressed in percentage. Panel A is the equal-weighted market adjusted abnormal returns; Panel B is the value-weighted market adjusted abnormal returns; Panel C is the equal-weighted market model adjusted abnormal returns; and Panel D is the value-weighted market model adjusted abnormal returns in special dividend announcements. *Divamt* is an amount of special dividend paid per share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to special dividend announcements. *Ln(Price)* is the natural logarithm of stock price one day before special dividend announcements. *DIV* is the market dividend yield, defined as the total dividend payments on the market over the current level of the index. *DEF* is the default spread, defined as the difference between the average yield of bonds rated BAA by Moodys and the average yield of bonds with a Moodys rating of AAA. *TERM* is the term spread, measured as the difference between the average yield of long term Treasury bonds (more than 10 years) and the average yield of T-bills that mature in three months. *YLD* is the three-month T-bills yield. *, **, and *** denote statistical significance at the 10%, 5%, and 1%, respectively.

Variables/CAR	1926-1940		1941-1960		1961-1985		1986-2008	
	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)
Panel A: Market Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	-1.1021	0.6529	2.4518***	9.9876***	6.8889***	9.8211***	11.2487***	10.9105***
Ln(Size)	0.0851	-0.0398	0.0080	-0.2467***	0.0456	-0.1547	-0.5299***	-0.2675*
Ln(Price)	-0.1904	-0.9376**	-0.0515	-0.6077***	-1.6347***	-2.3022***	-1.4133***	-2.0857***
Divamt	0.0257	-0.0088	0.1680**	0.1927	1.5616***	1.6703***	0.4266***	0.4807***
DIV	0.3480***	1.1076***	-0.1337**	-0.2785**	-8.0345	-0.7302**	-0.1597	0.5932
DEF	-0.8968***	-4.2594***	-0.1317	-3.0801***	0.1644	-1.4476***	1.6292***	0.1918
YLD	0.3050	1.3306	-0.4334***	-0.4998*	-0.0777	0.6094***	-0.0303	-0.1547
TERM	0.1611	1.2620	-0.7994***	-1.2705***	-0.0474	0.6497***	-0.0163	-0.5468*
p-value of *F*-statistic	0.0038	<.0001	0.0006	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0131	0.0386	0.0048	0.0298	0.0492	0.0416	0.0561	0.0310
N	1593	1593	5344	5344	5185	5185	4350	4350
Panel B: Market Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	-0.2591	5.3540*	2.5299***	9.7014***	7.0572***	11.9508***	11.5399***	14.0102***
Ln(Size)	0.0220	-0.0444	0.0052	-0.1717**	0.0379	-0.2148	-0.5342***	-0.2294
Ln(Price)	-0.1141	-1.0816***	-0.0242	-0.6817***	-1.6744***	-2.5642***	-1.4641***	-2.6188***
Divamt	0.0174	0.0599	0.1748**	0.2504	1.5971***	1.8879***	0.4284***	0.4276***
DIV	0.1113	0.1903	-0.1431***	-0.3510***	-2.9067	0.1570	-2.6358	-0.1478
DEF	-0.5329*	-1.1931*	0.3556*	1.3965***	0.1594	-0.0938	1.5619***	0.1785
YLD	0.3975	0.6648	-0.5768***	-1.0249***	-0.1092*	0.0114	-0.1178	-0.1496
TERM	0.3543	0.4669	-0.8711***	-2.1054***	0.0086	0.3733**	0.0299	0.1507
p-value of F-statistic	0.3430	0.0037	0.0018	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0050	0.0132	0.0043	0.0118	0.0523	0.0496	0.0586	0.0393
N	1593	1593	5344	5344	5185	5185	4350	4350
Panel C: Market Model Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	-0.1649	3.4186	1.6131**	6.8663***	6.4954***	8.6540***	10.9894***	13.2135***
Ln(Size)	0.0537	0.2216	0.0140	-0.0984	0.1513**	0.1282	-0.5020***	-0.1333
Ln(Price)	-0.0554	-1.0538***	-0.0226	-0.9514***	-1.8648***	-3.0518***	-1.4874***	-2.8811***
Divamt	-0.0187	-0.0449	0.0961	0.0466	1.4922***	1.2233***	0.4149***	0.3507***
DIV	0.1943*	0.2886	-0.1002*	-0.1739	-0.0715	-0.1858	-0.2298	0.1288
DEF	-0.5328*	-1.4343**	0.4211**	-0.8380*	0.2502	-0.5388	1.6056***	-0.3762
YLD	0.0577	-0.0528	-0.4254***	-0.5505*	-0.1258**	0.1811	-0.0265	-0.1742
TERM	-0.0733	-0.5822	-0.6748***	-0.7874	-0.0796	0.1936	0.0935	-0.2818
p-value of F-statistic	0.2614	0.0030	0.0851	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0056	0.0135	0.0023	0.0111	0.0521	0.0387	0.0570	0.0352
N	1593	1593	5343	5343	5182	5182	4349	4349
Panel D: Market Model Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	-0.5132	4.5201	2.0029***	7.2409***	7.0501***	11.5177***	10.7523***	11.4738***
Ln(Size)	0.0300	0.2598	0.0159	0.0423	0.1289*	0.1544	-0.5150***	-0.0702
Ln(Price)	-0.0312	-1.4104***	-0.0390	-1.1626***	-1.8569***	-3.4559***	-1.4977***	-3.1768***
Divamt	-0.0220	0.0036	0.1232	0.1492	1.5204***	1.5446***	0.4151***	0.3164***
DIV	0.1942*	0.5877**	-0.1131**	-0.2102*	-0.2492*	-0.2637	-0.3141	-0.3565
DEF	-0.7283**	-2.2175***	0.5248**	1.2400***	0.3851	1.7538***	1.9614***	1.4605**
YLD	0.3111	0.0091	-0.5336***	-0.9094***	-0.1163**	-0.3159***	0.0070	0.1000
TERM	0.2626	-0.4352	-0.8423***	-1.0882***	-0.0171	-0.1876	0.1279	-0.1062
p-value of F-statistic	0.1360	<.0001	0.0047	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0069	0.0255	0.0038	0.0127	0.0524	0.0481	0.0601	0.0429
N	1593	1593	5343	5343	5182	5182	4349	4349

Appendix 7D Regressions for Returns of Special Dividends on Business Cycle Variables in Sub-periods

This table shows a robustness check for abnormal returns of special dividends on investor sentiment variables in four sub-periods. The dependent variable is abnormal returns (CARs) calculated by the market adjusted model $AR_{it} = R_{it}-R_{mt}$, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes; and by the market model $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, where estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. Event windows used for abnormal returns are five days window of (-2, +2) and one month window of (-1, +30) (in days) relative to announcements (0 represents the actual announcement day). The dependent variable in all CARs is regressed in percentage. Panel A is the equal-weighted market adjusted abnormal returns; Panel B is the value-weighted market adjusted abnormal returns; Panel C is the equal-weighted market model adjusted abnormal returns; and Panel D is the value-weighted market model adjusted abnormal returns in special dividend announcements. *Divamt* is an amount of special dividend paid per share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to special dividend announcements. *Ln(Price)* is the natural logarithm of stock price one day before special dividend announcements. *GDP* is the change in nominal GDP; *UNEMP* is the unemployment rate; *cpi* is the consumer price index; and *inf* is the inflation rate in the US. *, **, and *** denote statistical significance at the 10%, 5%, and 1%, respectively.

Variables/CAR	1926-1940		1941-1960		1961-1985		1986-2008	
	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)	(-2,+2)	(-1,+30)
Panel A: Market Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	1.0333	-16.9800	-0.2293	-1.0627	6.2655***	13.9824***	11.2544***	18.0372***
Ln(Size)	0.0743	-0.0237	0.0300	-0.2876***	0.0429	-0.1355	-0.5256***	-0.3781***
Ln(Price)	-0.2455	-0.9865**	-0.0956	-0.4211**	-1.5816***	-2.3836***	-1.5083***	-2.0889***
Divamt	0.0255	-0.0165	0.1189	0.0487	1.5544***	1.6035***	0.4296***	0.4547***
GDP	-0.0491	-0.2026*	-0.0953***	-0.1144**	-0.1125	0.1336	0.2805	0.4977
UNEMP	-0.1108	-0.0593	-0.0259	-0.0928	0.0468	-0.4840***	0.0093	-1.0330***
cpi	0.0205	1.1615	0.0436**	0.3382***	-0.0131	0.0892***	0.0274**	0.0920***
inf	-0.4934	0.3758	0.0085	0.2459*	0.1559	2.1327***	-0.5648	1.9651***
p-value of *F*-statistic	0.0005	<.0001	0.0003	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0186	0.0303	0.0057	0.0254	0.0493	0.0419	0.0527	0.0398
N	1497	1497	5175	5175	5169	5169	4282	4282
Panel B: Market Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	6.3298	-9.8565	0.5846	4.2436***	6.3193***	11.3573***	8.3770***	7.5903**
Ln(Size)	0.0124	-0.0470	0.0329	-0.1621*	0.0359	-0.2151	-0.5282***	-0.2916**
Ln(Price)	-0.1516	-1.1009	-0.1115	-0.8139***	-1.6455***	-2.5876***	-1.5791***	-2.6437***
Divamt	0.0159	0.0551	0.1447*	0.2550	1.5997***	1.8847***	0.4312***	0.4216***
GDP	-0.0243	-0.0996	0.0003	-0.0605	-0.0698	-0.2622*	0.2642	-0.0959
UNEMP	-0.1299	0.1080	0.0160	0.1914***	0.1062	0.1192	0.3625*	0.4826
cpi	-0.2035	0.9496	-0.0156	0.0798**	0.0174*	-0.0038	0.0285**	0.0422**
inf	-0.1894	0.1981	0.0600	0.0916	-0.1968	-0.8469	-0.2993	0.8535
p-value of F-statistic	0.1670	0.0044	0.2563	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0078	0.0148	0.0020	0.0117	0.0518	0.0487	0.0556	0.0418
N	1497	1497	5175	5175	5169	5169	4282	4282
Panel C: Market Model Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	1.2145	-15.1139	0.5365	3.6677***	6.2023***	13.0934***	9.5937***	15.6188***
Ln(Size)	0.0498	0.2351	0.0408	-0.1244	0.1581**	0.1788	-0.4996***	-0.2348
Ln(Price)	-0.1632	-1.1523***	-0.1002	-0.8999***	-1.8529***	-3.3022***	-1.5811***	-2.8051***
Divamt	-0.0173	-0.0311	0.0714	0.0748	1.4842***	1.1875***	0.4181***	0.3347***
GDP	-0.0327	0.0439	-0.0034	-0.0168	-0.1244*	-0.0889	0.2626	0.0135
UNEMP	-0.0750	0.0826	-0.0017	-0.0875	0.0341	-0.4620***	0.1743	-0.6972**
cpi	0.0036	0.9685	-0.0125	0.0272	-0.0113	0.0642***	0.0265**	0.0664***
inf	-0.4629**	-0.2452	-0.0458	-0.1837	0.0215	0.5845	-0.5893	0.6266
p-value of F-statistic	0.0357	<.0001	0.6253	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0110	0.0304	0.0012	0.0101	0.0520	0.0400	0.0538	0.0386
N	1497	1497	5174	5174	5166	5166	4281	4281
Panel D: Market Model Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	3.4788	-19.8151	0.4616	3.0492***	6.3156***	11.4050***	8.9969***	17.2240***
Ln(Size)	0.0295	0.2914	0.0406	0.0212	0.1345*	0.1982	-0.5091***	-0.1276
Ln(Price)	-0.1433	-1.5847***	-0.1297	-1.2528***	-1.8460***	-3.6298***	-1.6145***	-3.1522***
Divamt	-0.0225	0.0149	0.1050	0.2092	1.5054***	1.4966***	0.4209***	0.3248***
GDP	-0.0386	-0.0169	-0.0375*	0.0008	-0.1343*	-0.5824***	0.2196	-0.2110
UNEMP	-0.1125	0.1068	0.0314	0.1380**	0.0572	-0.0111	0.2734	-0.6046*
cpi	-0.0702	1.3107*	-0.0195	-0.0138	-0.0123	0.0018	0.0276**	0.0478***
inf	-0.2460	-0.2858	-0.0114	-0.1879	-0.3406	-1.7260	-0.5872	-1.1552*
p-value of F-statistic	0.0454	<.0001	0.1140	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0105	0.0236	0.0025	0.0123	0.0513	0.0493	0.0556	0.0442
N	1497	1497	5174	5174	5166	5166	4281	4281

Appendix 8A Mean Adjusted Returns for Stock Split Announcements in Each Month for the period 1926 to 2008

This table calculates excess returns for the firms announcing stock splits in each month from 1926 to 2008 using the Mean Adjusted Model, $AR_{it}=R_{it}-E(R_{it})$. AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, and $E(R_{it})$ is the constant mean returns for security *i* at time *t* with estimation period of 255 trading days. Short term event windows are examined one day surrounding an announcement date, one week after an announcement date, 10 days, 15 days, three weeks, one month, two months, three months and six months after an announcement date (0 represents the actual announcement day). All returns are in percentage with *t*-statistics underneath. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Stock splits												
Event window results												
(-30,-2)	4.03	5.82	4.57	3.21	3.70	2.93	3.10	1.59	1.79	1.50	2.27	4.23
	[8.20]***	[12.21]***	[9.56]***	[7.46]***	[9.76]***	[5.40]***	[6.27]***	[4.20]***	[2.98]***	[2.67]***	[3.51]***	[10.92]***
(-1,+1)	3.24	2.80	2.37	2.49	2.81	2.77	2.39	2.47	2.48	2.52	2.84	2.19
	[19.06]***	[19.45]***	[15.45]***	[17.70]***	[20.50]***	[9.39]***	[14.73]***	[16.50]***	[14.37]***	[13.86]***	[15.71]***	[12.21]***
(-1,0)	1.92	1.74	1.44	1.53	1.79	1.56	1.42	1.43	1.42	1.63	1.76	1.29
	[15.00]***	[15.20]***	[11.73]***	[13.80]***	[16.51]***	[11.80]***	[13.19]***	[12.81]***	[11.08]***	[11.21]***	[12.86]***	[8.49]***
(0,+1)	2.86	2.49	2.29	2.22	2.53	2.58	2.25	2.39	2.29	2.23	2.61	2.09
	[19.04]***	[19.52]***	[16.65]***	[18.67]***	[20.69]***	[9.17]***	[14.78]***	[17.46]***	[14.59]***	[13.91]***	[16.07]***	[12.83]***
(1.+7)	1.34	1.11	0.87	1.28	1.07	1.30	0.32	1.33	0.95	0.30	2.00	1.44
	[7.79]***	[6.34]***	[6.28]***	[8.15]***	[7.91]***	[4.88]***	[4.35]***	[7.08]***	[4.99]***	[1.86]*	[8.97]***	[7.00]***
(1,+10)	0.97	0.88	0.37	0.91	0.76	0.91	-0.56	1.08	0.57	0.15	1.85	1.46
	[5.86]***	[4.69]***	[4.72]***	[5.17]***	[5.44]***	[3.70]***	[1.27]	[5.39]***	[3.24]***	[1.03]	[7.71]***	[6.16]***
(1,+15)	0.49	0.12	-0.50	-0.01	0.24	0.19	-1.04	0.39	-0.44	-0.63	1.28	1.28
	[3.34]***	[1.43]	[2.44]**	[0.75]	[3.06]***	[1.80]*	[-0.40]	[2.31]**	[0.19]	[-1.30]	[4.86]***	[4.62]***
(1,+21)	0.16	-0.60	-1.08	-0.24	-0.48	-0.70	-1.84	-0.28	-1.74	-1.04	1.00	1.21
	[1.75]*	[-0.38]	[1.86]*	[-0.43]	[0.09]	[-0.21]	[-2.59]***	[0.39]	[-3.06]***	[-1.68]*	[3.47]***	[3.82]***
After												
1month	-0.09	-1.65	-2.04	-0.91	-1.15	-2.51	-2.47	-0.86	-3.10	-1.39	1.16	0.99
	[0.88]	[-2.17]**	[0.94]	[-0.97]	[-1.39]	[-2.46]**	[-3.39]***	[-0.45]	[-5.14]***	[-1.47]	[3.29]***	[2.62]***
2months	-5.11	-5.12	-5.90	-4.36	-7.35	-9.52	-7.77	-7.34	-6.60	-2.80	-0.90	-2.03
	[-4.21]***	[-6.11]***	[-2.69]***	[-6.65]***	[-10.84]***	[-10.52]***	[-8.85]***	[-8.47]***	[-6.18]***	[-2.61]***	[0.73]	[-1.51]
3months	-9.96	-8.91	-11.68	-10.14	-13.22	-16.82	-12.46	-11.49	-9.01	-6.85	-5.35	-6.25
	[-8.68]***	[-8.42]***	[-5.82]***	[-12.84]***	[-16.46]***	[-15.69]***	[-11.71]***	[-10.21]***	[-6.64]***	[-5.29]***	[-3.21]***	[-4.38]***
6months	-27.91	-26.33	-32.38	-22.76	-27.09	-29.01	-23.26	-23.00	-23.39	-21.87	-22.91	-22.47
	[-18.32]***	[-18.83]***	[-15.82]***	[-21.98]***	[-20.49]***	[-16.33]***	[-14.22]***	[-13.61]***	[-11.64]***	[-12.61]***	[-12.42]***	[-12.39]***

Appendix 8B Equal-weighted Market Adjusted Returns for Stock Split Announcements in Each Month for the period 1926 to 2008

This table calculates excess returns for the firms announcing stock splits in each month from 1926 to 2008 using the Equal-weighted Market Adjusted Model, $AR_{it}=R_{it}-R_{mt.}$ AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, and R_{mt} is market return at time *t*, proxied by CRSP equal-weighted market index. Short term event windows are examined one day surrounding an announcement date, one week after an announcement date, 10 days, 15 days, three weeks, one month, two months, three months and six months after an announcement date (0 represents the actual announcement day). All returns are in percentage with *t*-statistics underneath. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Stock splits												
Event window results												
(-30,-2)	4.43	4.85	7.64	6.22	6.72	7.18	7.14	6.28	5.90	6.99	7.10	7.49
	[5.97]***	[7.91]***	[16.26]***	[17.17]***	[18.39]***	[15.81]***	[17.76]***	[15.65]***	[13.37]***	[18.24]***	[15.38]***	[18.01]***
(-1,+1)	3.24	3.11	2.88	2.73	3.16	3.37	3.01	2.91	3.04	3.25	3.11	2.83
	[19.02]***	[22.60]***	[19.00]***	[20.26]***	[23.64]***	[13.22]***	[19.79]***	[19.75]***	[18.31]***	[19.01]***	[17.78]***	[15.51]***
(-1,0)	1.89	1.91	1.80	1.71	2.03	1.98	1.83	1.72	1.82	2.08	1.94	1.74
	[14.60]***	[17.24]***	[14.87]***	[15.96]***	[19.34]***	[15.76]***	[17.01]***	[15.44]***	[14.78]***	[15.07]***	[14.66]***	[11.01]***
(0,+1)	2.88	2.70	2.61	2.35	2.75	2.96	2.68	2.69	2.63	2.74	2.79	2.52
	[19.15]***	[21.99]***	[19.40]***	[20.64]***	[23.06]***	[12.35]***	[18.90]***	[20.08]***	[17.22]***	[17.85]***	[17.53]***	[15.63]***
(1.+7)	1.66	2.06	2.20	1.82	2.01	2.68	1.92	2.33	2.34	2.07	2.82	2.32
	[7.65]***	[10.62]***	[11.21]***	[11.12]***	[12.88]***	[9.83]***	[10.89]***	[11.00]***	[10.98]***	[9.86]***	[11.97]***	[9.85]***
(1,+10)	1.58	2.26	2.30	1.72	2.16	2.87	1.80	2.53	2.62	2.49	3.25	2.23
	[6.31]***	[10.30]***	[11.18]***	[9.15]***	[11.81]***	[9.74]***	[9.15]***	[10.34]***	[10.65]***	[9.39]***	[12.18]***	[7.50]***
(1,+15)	1.72	2.33	2.36	1.40	2.43	3.12	2.33	2.63	2.97	2.77	3.72	1.49
	[5.21]***	[8.90]***	[9.26]***	[6.41]***	[11.07]***	[9.18]***	[8.73]***	[9.00]***	[10.64]***	[8.89]***	[11.20]***	[2.62]***
(1,+21)	2.38	2.65	2.81	1.94	2.85	3.64	2.54	3.03	3.37	3.27	4.62	0.77
	[5.78]***	[8.98]***	[9.10]***	[7.16]***	[10.75]***	[9.80]***	[7.87]***	[8.70]***	[9.87]***	[9.27]***	[11.75]***	[-0.91]
After												
1month	3.60	3.21	3.26	2.28	3.89	4.01	3.39	4.39	4.44	4.48	4.95	0.79
	[7.18]***	[8.77]***	[9.10]***	[7.93]***	[12.40]***	[8.91]***	[8.02]***	[10.38]***	[10.04]***	[10.70]***	[9.55]***	[-1.77]*
2months	4.22	3.74	4.53	4.08	4.41	3.62	5.36	6.04	6.47	5.27	3.28	1.26
	[6.92]***	[7.40]***	[9.57]***	[10.06]***	[10.55]***	[6.49]***	[8.48]***	[10.08]***	[11.41]***	[8.16]***	[2.96]***	[-0.86]
3months	3.90	4.55	4.92	4.16	4.64	4.35	5.69	7.05	4.62	4.13	3.32	1.63
	[5.33]***	[7.91]***	[8.12]***	[9.04]***	[9.29]***	[7.14]***	[8.12]***	[10.24]***	[6.37]***	[5.16]***	[2.76]***	[0.39]
6months	4.78	4.85	4.34	5.40	2.21	3.44	2.92	4.60	3.75	4.08	2.55	1.33
	[5.35]***	[6.97]***	[6.32]***	[8.30]***	[2.91]***	[3.46]***	[1.73]*	[3.66]***	[3.38]***	[3.79]***	[2.09]**	[0.99]

Appendix 8C Value-weighted Market Adjusted Returns for Stock Split Announcements in Each Month for the period 1926 to 2008

This table calculates excess returns for the firms announcing stock splits in each month from 1926 to 2008 using the Value-weighted Market Adjusted Model, $AR_{it}=R_{it}-R_{mt}$. AR_{it} is abnormal returns for security i at time t, R_{it} is the actual returns for security i at time t, and R_{mt} is market return at time t, proxied by CRSP value-weighted market index. Short term event windows are examined one day surrounding an announcement date, one week after an announcement date, 10 days, 15 days, three weeks, one month, two months, three months and six months after an announcement date (0 represents the actual announcement day). All returns are in percentage with t-statistics underneath. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Stock splits												
Event window results												
(-30,-2)	8.18	9.18	9.22	7.31	8.16	8.08	7.78	6.88	7.07	7.64	7.13	7.62
	[17.76]***	[21.53]***	[21.15]***	[21.11]***	[22.72]***	[17.49]***	[19.37]***	[17.44]***	[16.62]***	[20.24]***	[15.59]***	[18.54]***
(-1,+1)	3.72	3.30	2.95	2.83	3.30	3.36	3.10	2.98	3.15	3.28	3.18	2.78
	[21.56]***	[24.29]***	[19.39]***	[20.76]***	[24.56]***	[14.14]***	[19.92]***	[20.18]***	[19.02]***	[19.48]***	[18.05]***	[15.06]***
(-1,0)	2.21	2.02	1.84	1.76	2.10	1.96	1.90	1.75	1.89	2.10	1.96	1.69
	[17.01]***	[18.15]***	[15.12]***	[16.24]***	[19.71]***	[15.57]***	[17.34]***	[15.53]***	[15.33]***	[15.39]***	[14.72]***	[10.43]***
(0,+1)	3.20	2.83	2.66	2.44	2.86	2.95	2.74	2.75	2.70	2.77	2.84	2.48
	[21.09]***	[23.32]***	[19.73]***	[21.30]***	[24.15]***	[13.35]***	[19.07]***	[20.48]***	[17.61]***	[18.31]***	[17.72]***	[15.45]***
(1.+7)	2.52	2.44	2.33	2.24	2.31	2.66	2.04	2.68	2.46	2.05	3.04	2.48
	[12.08]***	[12.62]***	[11.98]***	[13.39]***	[14.99]***	[9.96]***	[11.19]***	[12.66]***	[11.46]***	[9.63]***	[12.83]***	[11.07]***
(1,+10)	2.70	2.77	2.45	2.31	2.52	2.88	1.89	3.10	2.73	2.36	3.45	2.85
	[11.53]***	[12.73]***	[12.03]***	[12.03]***	[13.87]***	[9.68]***	[9.44]***	[12.76]***	[11.05]***	[8.93]***	[12.71]***	[10.62]***
(1,+15)	3.20	2.96	2.59	2.20	2.88	3.26	2.40	3.54	3.10	2.61	3.87	3.18
	[11.18]***	[11.37]***	[10.74]***	[9.99]***	[13.10]***	[9.47]***	[8.93]***	[12.49]***	[11.22]***	[8.19]***	[11.66]***	[9.59]***
(1,+21)	4.21	3.36	3.24	2.95	3.26	3.88	2.65	4.23	3.37	2.97	4.75	3.88
	[12.14]***	[11.49]***	[11.33]***	[10.95]***	[12.41]***	[10.10]***	[8.21]***	[12.41]***	[10.13]***	[8.19]***	[12.24]***	[9.85]***
After												
1month	5.71	4.05	3.99	3.47	4.32	4.24	3.86	5.66	4.32	4.08	6.05	5.18
	[13.12]***	[11.31]***	[11.66]***	[11.49]***	[13.93]***	[9.17]***	[9.40]***	[13.71]***	[9.77]***	[9.78]***	[12.75]***	[10.76]***
2months	6.83	5.55	5.91	5.33	4.72	3.97	5.98	6.79	5.80	7.62	8.79	7.05
	[12.68]***	[11.21]***	[12.59]***	[12.48]***	[11.23]***	[6.78]***	[9.83]***	[11.17]***	[10.10]***	[13.31]***	[13.82]***	[10.59]***
3months	7.71	6.73	6.56	5.05	5.41	4.26	6.13	7.56	8.05	8.89	9.88	8.09
	[12.05]***	[11.54]***	[11.30]***	[10.29]***	[10.88]***	[6.56]***	[8.79]***	[10.69]***	[11.63]***	[13.15]***	[13.58]***	[10.98]***
6months	9.77	7.88	5.75	7.66	6.44	7.69	9.29	11.94	10.28	10.76	10.90	8.73
	[11.39]***	[10.36]***	[7.98]***	[10.93]***	[8.97]***	[8.21]***	[9.06]***	[11.87]***	[10.01]***	[11.96]***	[11.58]***	[9.13]***

Appendix 8D Equal-weighted Market Model Adjusted Returns for Stock Split Announcements in Each Month for the period 1926 to 2008

This table calculates excess returns for the firms announcing stock splits in each month from 1926 to 2008 using the Equal-weighted Market Model Adjusted Model, $AR_{it}=R_{it}-\hat{\alpha}_i-\hat{\beta}_i*R_{mt}$. AR_{it} is abnormal returns for security i at time t, R_{it} is the actual returns for security i at time t, R_{mt} is proxied by the CRSP equal-weighted market index. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the Market Model of $R_{it}=\alpha_i+\beta_i*R_{mt}+\varepsilon_i$ with estimation period of 255 trading days. Short term event windows are examined one day surrounding an announcement date, one week after an announcement date, 10 days, 15 days, three weeks, one month, two months, three months and six months after an announcement date (0 represents the actual announcement day). All returns are in percentage with *t*-statistics underneath. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Stock splits												
Event window results												
(-30,-2)	-0.66	0.28	3.16	2.85	2.88	2.98	3.06	2.45	2.06	3.20	2.92	3.26
	[-1.81]*	[-0.32]	[7.29]***	[7.10]***	[8.39]***	[7.05]***	[8.11]***	[6.74]***	[4.30]***	[8.55]***	[6.90]***	[9.34]***
(-1,+1)	2.72	2.64	2.45	2.41	2.76	2.92	2.66	2.50	2.62	2.90	2.58	2.51
	[17.17]***	[19.20]***	[16.61]***	[17.91]***	[19.76]***	[10.46]***	[16.76]***	[17.42]***	[16.18]***	[17.34]***	[15.22]***	[14.40]***
(-1,0)	1.56	1.61	1.50	1.50	1.77	1.68	1.59	1.44	1.52	1.88	1.57	1.52
	[13.23]***	[14.71]***	[12.90]***	[14.24]***	[14.04]***	[13.57]***	[15.07]***	[13.42]***	[12.95]***	[14.03]***	[12.34]***	[10.26]***
(0,+1)	2.54	2.36	2.34	2.14	2.47	2.65	2.46	2.42	2.43	2.47	2.45	2.30
	[17.78]***	[19.37]***	[17.56]***	[18.73]***	[20.56]***	[9.88]***	[16.46]***	[18.27]***	[15.73]***	[16.40]***	[15.72]***	[14.58]***
(1.+7)	0.52	1.05	1.29	1.06	1.12	1.73	1.19	1.39	1.55	1.48	1.73	1.52
	[4.25]***	[6.53]***	[7.82]***	[7.51]***	[8.61]***	[6.70]***	[7.19]***	[7.57]***	[7.38]***	[7.72]***	[8.40]***	[7.53]***
(1,+10)	-0.05	0.86	0.97	0.63	0.90	1.54	0.76	1.16	1.50	1.63	1.75	1.04
	[1.89]*	[5.12]***	[6.55]***	[4.36]***	[6.44]***	[6.11]***	[4.87]***	[5.89]***	[6.33]***	[6.72]***	[7..82]***	[4.63]***
(1,+15)	-0.75	0.30	0.43	-0.19	0.58	1.17	0.76	0.54	1.27	1.40	1.57	-0.41
	[-0.66]	[2.52]**	[4.19]***	[0.45]	[4.52]***	[4.73]***	[3.76]***	[3.03]***	[5.13]***	[5.12]***	[5.94]***	[-0.90]
(1,+21)	-1.03	-0.15	0.23	-0.29	0.26	0.89	0.22	0.13	1.14	1.25	1.64	-2.06
	[-1.25]	[1.35]	[3.54]***	[-0.14]	[2.67]***	[3.95]***	[1.56]	[1.70]*	[3.85]***	[4.51]***	[5.33]***	[-5.04]***
After												
1month	-1.22	-0.57	-0.31	-0.89	0.27	0.21	-0.11	0.37	1.10	1.44	0.64	-3.17
	[-0.89]	[0.30]	[2.74]***	[-0.64]	[2.74]***	[2.54]**	[0.41]	[2.51]**	[3.13]***	[4.78]***	[2.47]**	[-6.60]***
2months	-4.30	-3.24	-3.36	-2.31	-2.61	-4.06	-1.31	-0.87	-0.63	-1.77	-5.94	-6.82
	[-3.46]***	[-3.57]***	[-0.26]	[-2.38]**	[-2.60]***	[-3.47]***	[-1.20]	[0.76]	[1.82]*	[-0.64]	[-6.36]***	[-8.80]***
3months	-8.84	-6.34	-7.10	-4.93	-5.98	-6.37	-4.18	-3.39	-6.71	-6.76	-10.41	-10.30
	[-7.81]***	[-5.41]***	[-2.41]**	[-5.40]***	[-6.77]***	[-4.51]***	[-3.34]***	[-1.48]	[-4.75]***	[-5.56]***	[-8.94]***	[-9.81]***
6months	-20.58	-15.80	-18.28	-12.29	-18.42	-19.16	-18.15	-17.71	-18.53	-17.83	-22.98	-22.15
	[-12.16]***	[-10.02]***	[-7.49]***	[-10.58]***	[-13.82]***	[-10.76]***	[-12.39]***	[-11.38]***	[-10.13]***	[-11.02]***	[-13.19]***	[-12.63]***

Appendix 8E Long-Term Post-announcement Abnormal Returns Using Monthly Fama-French (1993) and Carhart (1997) Calendar Time Portfolio Regressions for Stock Split Announcements in Each Month from 1926 to 2008

This table calculates long term abnormal returns for the one-, two-, three-, and five-year post-announcement horizons, for the firms announcing stock splits in each month during the period 1926 to 2008. Panel A is equal-weighted Three-factor Calendar Portfolio Abnormal Return and Panel B is equal-weighted Four-factor Calendar Portfolio Abnormal Return. Monthly rebalanced calendar time portfolio returns are calculated each month from all firms experience a stock split in the previous 12, 24, 36, or 60 calendar months. Monthly excess returns to calendar time portfolios are: $CTAR_t=R_{pt}-E(R_{pt})$, where R_{pt} is monthly return on portfolio of event firms at time *t*, and $E(R_{pt})$ is expected return on event portfolio at time *t*. The expected return on event portfolio, for each sample firm in month *t*, is measured by Fama-French (1993) three-factor model and Carhart (1997) four-factor model:

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + m_i PR1YR_t + \varepsilon_{it}$$

R_{it} is firm i's monthly return, R_{ft} is the one-month T-bills return, and R_{mt} is the market return on CRSP equal-weighted portfolio of all NYSE, AMEX, and Nasdaq stocks. SMB_t is the difference in returns between portfolios of small and big stocks. HML_t is the difference in returns between portfolios of high and low book-to-market ratio stocks. $PR1YR_t$ is defined as in Carhart (1997) as an equally weighted portfolio return of stocks with highest returns less an equally weighted portfolio return of stocks with lowest returns in months *t-12* to *t-2*. Ordinary, Weighted Least Squares (White, 1980) and Generalized Method of Moment (GMM) are estimated. All abnormal returns are in percentage and *t*-statistics of intercepts are shown in brackets under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Equal-weighted, three-factor Calendar Portfolio Abnormal Returns

		Intercept of the Fama-French Regression, three-factor without momentum (Fama-French, 1993)											
Post period	Model Estimated	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Horizon = 1 year	OLS	1.92	1.52	1.69	1.54	1.35	1.64	1.79	1.87	2.01	1.89	1.75	1.81
		[12.82]***	[10.80]***	[13.05]***	[12.29]***	[8.61]***	[11.71]***	[16.41]***	[8.75]***	[14.85]***	[12.74]***	[11.91]***	[15.42]***
	Hetero t	[12.01]***	[10.47]***	[12.86]***	[13.06]***	[8.63]***	[11.94]***	[16.15]***	[8.51]***	[14.52]***	[13.89]***	[11.70]***	[15.41]***
	WLS	2.42	2.16	2.21	2.03	2.09	2.26	2.39	2.31	2.33	2.40	2.44	2.23
		[24.57]***	[24.83]***	[20.98]***	[23.41]***	[21.90]***	[23.45]***	[24.58]***	[21.32]***	[21.91]***	[23.99]***	[22.57]***	[22.52]***
	GMM	1.92	1.52	1.69	1.54	1.35	1.64	1.79	1.87	2.01	1.89	1.75	1.81
		[12.04]***	[10.12]***	[11.35]***	[12.59]***	[7.47]***	[10.93]***	[14.52]***	[8.85]***	[13.64]***	[13.38]***	[11.82]***	[14.31]***
Horizon = 2 years	OLS	1.47	0.78	1.22	1.08	0.89	0.93	1.18	1.18	1.26	1.34	1.07	1.21
		[10.54]***	[5.64]***	[10.88]***	[8.04]***	[3.82]***	[7.80]***	[11.23]***	[6.24]***	[10.90]***	[9.83]***	[8.22]***	[11.88]***
	Hetero t	[10.01]***	[5.77]***	[11.71]***	[7.48]***	[5.40]***	[7.75]***	[11.14]***	[6.17]***	[11.24]***	[11.38]***	[8.21]***	[11.63]***
	WLS	1.61	1.40	1.46	1.36	1.33	1.47	1.59	1.54	1.51	1.59	1.59	1.45
		[20.72]***	[19.43]***	[18.04]***	[17.93]***	[15.91]***	[18.92]***	[20.02]***	[17.51]***	[17.77]***	[19.50]***	[18.91]***	[18.76]***
	GMM	1.47	0.78	1.22	1.08	0.89	0.93	1.18	1.18	1.26	1.34	1.07	1.21
		[9.97]***	[5.07]***	[11.58]***	[7.44]***	[5.11]***	[7.57]***	[10.81]***	[6.39]***	[10.59]***	[11.41]***	[8.51]***	[11.35]***
Horizon = 3 years	OLS	1.13	0.74	0.87	0.63	0.69	0.70	0.94	0.86	0.88	0.99	0.75	0.90
		[8.23]***	[4.80]***	[8.87]***	[5.46]***	[2.97]***	[6.00]***	[9.72]***	[5.84]***	[8.08]***	[10.00]***	[6.04]***	[8.73]***
	Hetero t	[8.15]***	[5.46]***	[9.12]***	[6.30]***	[4.61]***	[6.68]***	[10.25]***	[5.91]***	[8.55]***	[10.42]***	[6.06]***	[9.32]***
	WLS	1.19	1.04	1.07	0.97	0.99	1.09	1.25	1.17	1.13	1.20	1.16	1.06
		[17.55]***	[16.22]***	[16.05]***	[14.59]***	[13.12]***	[15.89]***	[17.58]***	[15.07]***	[15.17]***	[16.62]***	[15.82]***	[14.94]***
	GMM	1.13	0.74	0.87	0.63	0.69	0.70	0.94	0.86	0.88	0.99	0.75	0.92
		[8.25]***	[5.95]***	[9.21]***	[6.00]***	[4.25]***	[6.39]***	[10.18]***	[6.03]***	[8.33]***	[10.15]***	[6.06]***	[9.46]***
Horizon = 5 years	OLS	0.71	0.44	0.60	0.36	0.55	0.35	0.65	0.74	0.72	0.68	0.56	0.62
		[6.87]***	[3.65]***	[7.05]***	[4.12]***	[4.15]***	[4.14]***	[7.52]***	[5.88]***	[8.73]***	[7.92]***	[4.54]***	[7.05]***
	Hetero t	[7.21]***	[4.13]***	[7.62]***	[4.73]***	[4.62]***	[4.36]***	[8.29]***	[6.63]***	[9.35]***	[8.38]***	[4.83]***	[7.54]***
	WLS	0.85	0.69	0.72	0.64	0.69	0.70	0.90	0.83	0.81	0.84	0.76	0.68
		[14.17]***	[12.27]***	[12.56]***	[10.62]***	[11.26]***	[11.68]***	[14.47]***	[12.28]***	[12.62]***	[13.08]***	[11.75]***	[10.57]***
	GMM	0.71	0.44	0.60	0.36	0.55	0.35	0.65	0.74	0.72	0.68	0.56	0.62
		[7.41]***	[4.53]***	[7.18]***	[4.78]***	[4.64]***	[4.41]***	[8.68]***	[6.62]***	[9.20]***	[7.85]***	[4.85]***	[7.78]***

Panel B: Equal-weighted, four-factor Calendar Portfolio Abnormal Returns

		Intercept of the Fama-French Regression, four-factor with momentum (Carhart, 1997)											
Post period	Model Estimated	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Horizon = 1 year	OLS	1.59	1.27	1.35	1.33	1.17	1.40	1.55	1.47	1.68	1.48	1.49	1.43
		[10.41]***	[8.74]***	[10.60]***	[10.48]***	[7.24]***	[9.87]***	[14.29]***	[6.78]***	[12.55]***	[10.26]***	[10.29]***	[12.51]***
	Hetero t	[9.42]***	[8.24]***	[10.55]***	[8.59]***	[7.05]***	[9.23]***	[14.11]***	[6.58]***	[12.58]***	[10.44]***	[9.25]***	[12.24]***
	WLS	2.07	1.85	1.86	1.79	1.83	1.99	2.08	2.00	1.94	2.06	2.02	1.89
		[22.32]***	[22.49]***	[18.48]***	[21.05]***	[19.51]***	[20.93]***	[22.19]***	[19.27]***	[19.16]***	[21.53]***	[20.16]***	[19.62]***
	GMM	1.59	1.27	1.35	1.33	1.17	1.40	1.55	1.47	1.68	1.48	1.49	1.43
		[9.06]***	[8.01]***	[9.31]***	[8.48]***	[6.08]***	[8.34]***	[12.46]***	[7.19]***	[11.72]***	[9.87]***	[9.48]***	[11.50]***
Horizon = 2 years	OLS	1.26	0.78	1.09	0.88	0.76	0.85	1.03	0.98	1.03	1.08	0.89	0.97
		[8.75]***	[5.44]***	[9.47]***	[6.38]***	[3.13]***	[6.89]***	[9.60]***	[5.05]***	[8.81]***	[7.88]***	[6.87]***	[9.51]***
	Hetero t	[7.82]***	[5.22]***	[8.35]***	[5.90]***	[3.62]***	[6.37]***	[9.25]***	[4.87]***	[8.93]***	[8.17]***	[6.60]***	[8.56]***
	WLS	1.46	1.25	1.28	1.23	1.22	1.35	1.46	1.36	1.28	1.38	1.37	1.31
		[18.53]***	[17.18]***	[15.82]***	[15.93]***	[14.21]***	[16.86]***	[17.97]***	[15.44]***	[15.10]***	[17.00]***	[16.47]***	[16.53]***
	GMM	1.26	0.78	1.09	0.88	0.76	0.85	1.03	0.98	1.03	1.08	0.89	0.97
		[7.62]***	[4.93]***	[8.39]***	[5.93]***	[3.58]***	[6.02]***	[8.72]***	[5.38]***	[8.78]***	[8.64]***	[6.66]***	[7.69]***
Horizon = 3 years	OLS	1.11	0.70	0.83	0.62	0.54	0.74	0.93	0.79	0.78	0.79	0.65	0.71
		[7.76]***	[4.40]***	[8.18]***	[5.13]***	[2.24]**	[6.12]***	[9.31]***	[5.16]***	[6.96]***	[7.94]***	[5.14]***	[6.69]***
	Hetero t	[7.11]***	[4.69]***	[7.87]***	[5.30]***	[2.62]***	[5.92]***	[9.38]***	[5.02]***	[6.86]***	[7.82]***	[4.83]***	[6.40]***
	WLS	1.13	0.96	0.97	0.89	0.93	1.00	1.20	1.09	0.99	1.06	1.03	1.01
		[16.08]***	[14.47]***	[14.25]***	[13.02]***	[11.92]***	[14.11]***	[16.24]***	[13.62]***	[13.03]***	[14.42]***	[13.81]***	[13.71]***
	GMM	1.11	0.70	0.83	0.62	0.54	0.74	0.93	0.79	0.78	0.79	0.65	0.71
		[6.98]***	[5.25]***	[8.24]***	[5.35]***	[2.51]***	[5.56]***	[9.04]***	[5.22]***	[6.85]***	[7.75]***	[4.83]***	[6.33]***
Horizon = 5 years	OLS	0.64	0.41	0.58	0.35	0.46	0.30	0.63	0.63	0.61	0.60	0.60	0.52
		[5.93]***	[3.32]***	[6.67]***	[3.85]***	[3.34]***	[3.37]***	[7.08]***	[4.85]***	[7.39]***	[6.87]***	[4.74]***	[5.81]***
	Hetero t	[5.51]***	[3.44]***	[6.58]***	[3.98]***	[3.32]***	[3.33]***	[7.17]***	[5.45]***	[7.22]***	[7.02]***	[4.76]***	[5.60]***
	WLS	0.81	0.64	0.67	0.59	0.63	0.63	0.85	0.77	0.71	0.77	0.67	0.65
		[13.08]***	[10.98]***	[11.28]***	[9.47]***	[10.07]***	[10.28]***	[13.32]***	[10.99]***	[10.79]***	[11.58]***	[10.17]***	[9.74]***
	GMM	0.64	0.41	0.58	0.35	0.46	0.30	0.63	0.63	0.61	0.60	0.60	0.52
		[5.60]***	[3.70]***	[6.60]***	[3.99]***	[3.42]***	[3.32]***	[7.15]***	[5.59]***	[7.52]***	[6.62]***	[4.79]***	[5.63]***

Appendix 8F Abnormal Returns of Stock Splits between January and February-December in different Sub-periods, Industries and Sizes

This table shows a robustness check for abnormal returns of stock splits between January and February-December in four sub-periods, six groups of industries and five size quintiles for the period 1926 to 2008. Abnormal returns are calculated by the market adjusted model $AR_{it} = R_{it}$-R_{mt} in Panel A, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes. Market model adjusted returns measured by $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, are in Panel B. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. (-1, +1), (1, +30), (1, +60) and (1, +90) are event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). Industry classifications are based on the two-digit SIC code of the Coding Scheme on the US Department of Labour website (http://www.osha.gov/oshstats/sicser.html). All abnormal returns are in percentage. *, **, and *** denote statistical significance at the 10%, 5%, and 1% significant level, respectively.

	(-1,+1)				(1,+30)				(1,+60)				(1,+90)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
	Jan	Feb-Dec	Jan	Feb-Dec	Jan	Feb-Dec	Jan	Feb-Dec	Jan	Feb-Dec	Jan	Feb-Dec	Jan	Feb-Dec	Jan	Feb-Dec
Panel A: Market Adjusted Returns																
Abnormal returns in different sub-periods																
1926-1960	-0.15	0.33***	0.33	0.32***	0.33	0.71*	1.62	1.11***	1.96	1.48***	2.73	1.95***	0.79	1.29**	1.49	2.22***
1961-1975	2.89***	3.30***	3.30***	3.32***	-0.80	2.58***	0.14	3.15***	2.73**	3.22***	3.89***	4.52***	2.53*	3.85***	3.36***	5.87***
1976-1995	3.29***	3.15***	3.80***	3.24***	3.58***	3.93***	6.14***	4.96***	3.69***	4.66***	7.31***	6.58***	3.59***	4.61***	8.57***	7.23***
1996-2008	3.78***	3.29***	4.23***	3.39***	6.44***	3.66***	8.54***	4.58***	6.20***	4.85***	8.13***	6.51***	5.54***	5.20***	9.41***	7.37***
Abnormal returns in different industries																
Agriculture, Forestry, Fishing, Mining and Construction	3.78***	2.58***	4.29***	2.63***	4.65*	3.37***	6.15***	4.29***	4.91	5.49***	7.08**	6.93***	5.41*	5.95***	8.34***	8.18***
Manufacturing	3.37***	3.08***	3.82***	3.15***	2.76***	3.22***	4.95***	4.04***	3.50***	3.88***	6.12***	5.46***	3.43***	4.07***	6.88***	6.26***
Wholesale and Retail trade	3.46***	3.16***	4.01***	3.29***	1.80	3.51***	4.24***	4.52***	3.99**	4.17***	7.14***	5.93***	3.96*	4.31***	8.89***	6.64***
Finance, Insurance, and Real Estate	2.30***	2.57***	2.66***	2.63***	4.78***	3.41***	6.03***	4.33***	5.03***	3.94***	7.33***	5.63***	3.63	3.82***	7.35***	6.08***
Services and Public Administration	4.09***	3.92***	4.68***	4.03***	5.64***	4.64***	8.35***	5.73***	5.36***	6.53***	7.68***	8.54***	4.54***	6.51***	8.72***	9.33***
Transportation, Communication, Electric, Gas, and Sanitary Services	1.99***	2.02***	2.57***	2.12***	0.95	2.06***	3.42***	2.90***	2.70	2.27***	5.53***	3.84***	2.78	2.74***	6.48***	4.93***
Abnormal returns in different size																
1st Quintile	4.89***	4.81***	5.46***	4.88***	6.03***	6.72***	8.18***	7.63***	7.85***	7.22***	11.09***	8.99***	7.48***	7.08***	12.20***	9.62***
2nd Quintile	3.84***	3.45***	4.30***	3.54***	3.29***	4.25***	5.22***	5.10***	3.92***	5.25***	6.57***	6.76***	2.96*	5.16***	6.92***	7.19***
3rd Quintile	2.16***	2.88***	2.61***	2.98***	2.44***	3.26***	4.12***	4.17***	3.15***	4.09***	5.56***	5.73***	3.13**	4.47***	6.79***	6.67***
4th Quintile	2.79***	2.27***	3.25***	2.34***	1.59	2.26***	3.71***	3.17***	2.73**	3.21***	5.18***	4.91***	2.90*	3.52***	6.18***	5.88***
5th quintile	2.63***	1.81***	3.09***	1.90***	4.68***	1.15***	7.36***	2.09***	3.65**	2.07***	5.92***	3.88***	3.26	2.24***	6.67***	4.74***
Panel B: Market Model Adjusted Returns																
Abnormal returns in different sub-periods																
1926-1960	0.23	0.14**	0.53	0.06	-0.65	-1.20***	-0.19	-1.41***	-1.01	-2.50***	-1.38	-3.13***	-3.86*	-4.60***	-4.78**	-5.45***
1961-1975	2.72***	2.97***	3.13***	2.90***	-2.60***	-0.72	-2.38**	-1.02**	-1.77	-3.60***	-2.23	-3.78***	-4.68**	-6.37***	-5.90***	-6.65***
1976-1995	2.83***	2.74***	3.31***	2.72***	-0.48	0.38***	1.11***	-0.05**	-4.03***	-2.49***	-3.00*	-3.61***	-8.19***	-6.03***	-6.94***	-8.03***
1996-2008	2.83***	2.81***	3.46***	2.79***	-1.80	-0.67	1.20*	-1.50**	-6.56*	-3.81***	-6.87***	-5.44***	-12.83***	-7.97***	-12.97***	-10.56***
Abnormal returns in different industries																
Agriculture, Forestry, Fishing, Mining and Construction	2.99***	2.09***	3.58***	2.11***	0.56	-1.16	0.54	-1.32*	-5.52	-2.94	-4.59	-3.95***	-10.91**	-6.46***	-10.35**	-8.34***
Manufacturing	2.79***	2.70***	3.31***	2.66***	-2.22***	-0.28	-0.41	-0.88***	-4.94***	-3.24***	-4.84***	-4.43***	-9.22***	-6.60***	-9.76***	-8.57***
Wholesale and Retail trade	3.03***	2.77***	3.57***	2.74***	-2.38	-0.20	-0.54	-0.70	-3.32	-3.30***	-2.42	-4.55***	-7.33***	-7.05***	-5.62**	-9.18***
Finance, Insurance, and Real Estate	2.29***	2.28***	2.45***	2.26***	2.92***	1.02***	3.24***	0.75***	0.63	-0.84	0.58	-1.57***	-2.50**	-3.23***	-2.37**	-4.61***
Services and Public Administration	2.85***	3.21***	3.66***	3.20***	-4.65*	-1.61	-0.81	-2.25***	-11.45	-6.23***	-10.91	-7.53***	-20.43**	-12.59***	-18.65**	-14.80***
Transportation, Communication, Electric, Gas, and Sanitary Services	1.60***	1.71***	2.27***	1.73***	-2.51	-0.53	-0.67	-0.90	-3.90**	-2.52***	-3.10*	-3.64***	-7.30***	-4.57***	-6.54***	-6.30***
Abnormal returns in different size																
1st Quintile	4.63***	4.44***	4.97***	4.40***	2.36***	3.09***	2.93***	2.74***	-0.40	-0.29**	-0.31	-0.87	-4.81	-4.38***	-4.70	-5.33***
2nd Quintile	3.52***	3.03***	3.94***	3.02***	0.12	0.08***	1.04	-0.20*	-2.27	-3.19***	-2.07	-4.04***	-6.53***	-7.45***	-5.83***	-9.06***
3rd Quintile	1.72***	2.46***	2.15***	2.46***	-1.38	-0.25	-0.30	-0.53	-4.24**	-2.83***	-3.81	-3.72***	-7.78***	-5.74***	-7.43***	-7.52***
4th Quintile	2.27***	1.90***	2.79***	1.84***	-2.93***	-1.02***	-1.02	-1.70***	-4.81***	-3.30***	-4.52**	-4.83***	-9.22***	-6.16***	-8.72***	-8.67***
5th quintile	1.56***	1.39***	2.34***	1.36***	-4.06**	-2.41***	0.08	-3.31***	-9.34***	-5.11***	-8.74***	-6.77***	-15.26***	-8.69***	-15.19***	-11.13***

Appendix 8G Regressions for Event Returns of Stock Splits on January Dummy in Sub-periods

This table shows a robustness check for abnormal returns of stock splits on the *January* dummy in four sub-periods. The dependent variable is abnormal returns (CARs) calculated by the market adjusted model $AR_{it} = R_{it}\text{-}R_{mt}$, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes; and by the market model $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, where estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. Event windows used for abnormal returns are ten days window of (-1, +9) and one month window of (-1, +30) (in days) relative to announcements (0 represents the actual announcement day). The dependent variable in all CARs is regressed in percentage. Panel A is the equal-weighted market adjusted abnormal returns; Panel B is the value-weighted market adjusted abnormal returns; Panel C is the equal-weighted market model adjusted abnormal returns; and Panel D is the value-weighted market model adjusted abnormal returns in stock split announcements. *January* is a dummy variable that takes a value of one for stock splits announced in January and a value of zero if an announcement is in other months of a year. *SplFac* is the split ratio obtained from CRSP and defined as the number of additional shares per existing share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to stock split announcements. *Ln(Price)* is the natural logarithm of stock price one day before stock split announcements. *, ** and *** denote statistical significance at the 10%, 5%, and 1%, respectively.

Variables/CAR	1926-1960		1961-1975		1976-1995		1996-2008	
	(-1,+9)	(-1,+30)	(-1,+9)	(-1,+30)	(-1,+9)	(-1,+30)	(-1,+9)	(-1,+30)
Panel A: Market Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	1.3734	2.5054	18.6719***	16.5712***	19.5927***	25.8893***	19.0071***	20.2759***
January	-1.0708	-0.7315	-0.7399	-2.4689***	-0.6082*	-0.7152	0.2099	3.4549***
SplFac	-0.1298	0.2440	1.5163***	1.5834***	1.6162***	2.6246***	2.8163***	3.4927***
Ln(Size)	0.0741	-0.0700	-0.1657	-0.1113	-0.8867***	-1.0652***	-0.7027***	-0.9616***
Ln(Price)	-0.2047	-0.3171	-4.1409***	-3.6399***	-2.2849***	-3.5683***	-2.6274***	-2.1177***
p-value of *F*-statistic	0.6126	0.8697	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0027	0.0013	0.1139	0.0431	0.0925	0.0694	0.056	0.0279
N	982	982	2136	2136	9251	9251	4342	4342
Panel B: Market Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	2.6810*	5.7352**	19.2294***	19.0338***	19.8572***	26.8319***	19.2316***	21.4446***
January	0.1181	0.6293	0.1707	1.7928**	0.5619	1.1140**	1.1496**	4.8841***
SplFac	-0.0992	0.4243	1.4469***	1.1896**	1.6164***	2.5924***	2.7508***	3.2203***
Ln(Size)	-0.0152	-0.228	-0.2575	-0.4688*	-0.8752***	-0.9971***	-0.7332***	-0.9967***
Ln(Price)	-0.2731	-0.6738	-3.9323***	-2.8633***	-2.3022***	-3.7521***	-2.4603***	-1.9146**
p-value of F-statistic	0.8289	0.2917	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0015	0.0051	0.11	0.0397	0.0899	0.068	0.0537	0.0279
N	982	982	2136	2136	9251	9251	4342	4342
Panel C: Market Model Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	1.7878	3.2237	17.7548***	12.8622***	16.6317***	16.4259***	20.1446***	22.5984***
January	-0.4253	0.5194	0.0238	-0.8122	-0.9401***	-1.1899*	-0.8737	-0.4296
SplFac	-0.1854	0.3315	1.3920***	1.2032*	1.5218***	2.2612***	3.0144***	3.8197***
Ln(Size)	-0.0017	-0.0135	0.0669	0.4436	-0.6098***	-0.2544*	-0.2745*	0.0233
Ln(Price)	-0.2470	-1.1672*	-4.8670***	-5.0818***	-2.7191***	-4.5620***	-5.0187***	-7.6411***
p-value of F-statistic	0.6827	0.3444	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0023	0.0046	0.1096	0.0349	0.0754	0.0408	0.0784	0.0445
N	982	982	2134	2134	9248	9248	4341	4341
Panel D: Market Model Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	2.1945	3.9908	17.0632***	12.4420***	16.3481***	16.4545***	19.6243***	22.4225***
January	0.5266	1.5290	1.0614*	0.0360	0.6179*	1.1747*	0.9840*	3.9094***
SplFac	-0.1209	0.5799*	1.3879***	1.0046*	1.4888***	2.1588***	2.9555***	3.9445***
Ln(Size)	-0.0110	-0.0172	0.1313	0.6564**	-0.6143***	-0.2247	-0.4116***	-0.1547
Ln(Price)	-0.3850	-1.5432**	-4.9217***	-5.6060***	-2.6579***	-4.7577***	-4.4052***	-7.2435***
p-value of F-statistic	0.5801	0.0473	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0029	0.0098	0.1083	0.0399	0.0732	0.0416	0.0726	0.0495
N	982	982	2134	2134	9248	9248	4341	4341

Appendix 9A Abnormal Returns of Stock Splits between November-April and May-October in different Sub-periods, Industries and Sizes

This table shows a robustness check for abnormal returns of stock splits between November-April and May-October in four sub-periods, six groups of industries and five size quintiles for the period 1926 to 2008. Abnormal returns are calculated by the market adjusted model $AR_{it} = R_{it}\text{-}R_{mt}$ in Panel A, where AR_{it} is abnormal returns for security i at time t, R_{it} is the actual returns for security i at time t, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes. Market model adjusted returns measured by $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, are in Panel B. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. (-1, +1), (1, +30), (1, +60) and (1, +90) are event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). Industry classifications are based on the two-digit SIC code of the Coding Scheme on the US Department of Labour website (http://www.osha.gov/oshstats/sicser.html). All abnormal returns are in percentage. *, **, and *** denote statistical significance at the 10%, 5%, and 1% significant level, respectively.

Panel A: Market Adjusted Returns																
	(-1,+1)				(1,+30)				(1,+60)				(1,+90)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
	MayOct	NovApr	MayOct	NovApr	MayOct	NovApr	MayOct	NovApr	MayOct	NovApr	MayOct	NovApr	MayOct	NovApr	MayOct	NovApr
Abnormal returns in different sub-periods																
1926-1960	0.30**	0.30**	0.28**	0.36***	0.75	0.63	0.88*	1.37***	1.76***	1.28*	2.08***	1.92***	1.09	1.42	2.63***	1.76**
1961-1975	3.69***	2.95***	3.69***	3.06***	3.17***	1.51***	3.18***	2.55***	4.50***	2.20***	5.13***	3.96***	4.38***	3.21***	6.53***	4.91***
1976-1995	3.34***	2.98***	3.41***	3.15***	4.49***	3.34***	4.87***	5.23***	5.29***	3.89***	5.94***	7.32***	5.23***	3.84***	6.64***	8.01***
1996-2008	3.07***	3.58***	3.19***	3.74***	4.28***	3.64***	4.64***	5.30***	5.69***	4.35***	6.31***	7.01***	5.79***	4.73***	7.35***	7.79***
Abnormal returns in different industries																
Agriculture, Forestry, Fishing, Mining and Construction	2.86***	2.51***	2.92***	2.62***	4.63***	2.45***	5.19***	3.78***	7.96***	3.19***	8.63***	5.45***	7.02***	4.91***	8.63***	7.80***
Manufacturing	3.24***	2.98***	3.31***	3.12***	3.51***	2.86***	3.77***	4.45***	4.09***	3.62***	4.64***	6.34***	4.19***	3.85***	5.63***	6.95***
Wholesale and Retail trade	3.26***	3.10***	3.39***	3.28***	3.89***	2.89***	4.34***	4.65***	4.54***	3.76***	5.23***	6.81***	4.28***	4.29***	5.83***	7.78***
Finance, Insurance, and Real Estate	2.74***	2.38***	2.79***	2.49***	4.26***	2.90***	4.56***	4.41***	5.15***	3.08***	5.90***	5.69***	4.74***	3.00***	6.38***	6.03***
Services and Public Administration	3.43***	4.43***	3.50***	4.68***	5.08***	4.41***	5.40***	6.59***	7.78***	5.07***	8.22***	8.67***	7.72***	4.92***	9.30***	9.24***
Transportation, Communication, Electric, Gas, and Sanitary Services	1.91***	2.11***	2.02***	2.29***	2.84***	1.16*	3.27***	2.66***	3.44***	1.31	4.15***	3.86***	4.24***	1.40	5.93***	4.32***
Abnormal returns in different size																
1st Quintile	5.01***	4.61***	5.07***	4.76***	7.07***	6.21***	7.41***	7.89***	7.39***	6.86***	8.11***	9.96***	7.30***	6.74***	9.07***	10.54***
2nd Quintile	3.66***	3.35***	3.74***	3.49***	4.43***	3.85***	4.73***	5.45***	5.37***	4.83***	5.85***	7.62***	5.42***	4.32***	6.63***	7.69***
3rd Quintile	2.95***	2.69***	3.02***	2.85***	3.93***	2.61***	4.20***	4.16***	5.30***	3.26***	5.82***	5.94***	4.97***	4.07***	6.27***	7.13***
4th Quintile	2.45***	2.17***	2.52***	2.33***	2.93***	1.60***	3.30***	3.25***	4.16***	2.07***	4.86***	4.83***	4.40***	2.70***	6.02***	5.88***
5th quintile	1.66***	2.12***	1.75***	2.27***	2.11***	0.82	2.46***	2.56***	3.46***	1.19	4.14***	3.98***	3.28***	1.50	5.09***	4.60***
Panel B: Market Model Adjusted Returns																
Abnormal returns in different sub-periods																
1926-1960	0.08	0.21*	-0.02	0.18*	-1.49***	-0.88**	-1.89***	-0.85**	-2.84***	-2.03***	-3.50***	-2.60***	-5.82***	-3.42***	-6.09***	-4.79***
1961-1975	3.34***	2.65***	3.27***	2.68***	-0.05	-1.57***	-1.01	-1.28***	-2.39*	-4.11***	-3.56***	-3.63***	-6.08***	-6.25***	-6.49***	-6.62***
1976-1995	2.91***	2.59***	2.85***	2.69***	0.96***	-0.33	-0.54	0.61***	-1.69	-3.51***	-5.07***	-2.07**	-5.12***	-7.27***	-9.71***	-6.21***
1996-2008	2.68***	2.92***	2.63***	3.07***	0.22**	-1.71	-1.38**	-1.09	-2.19*	-5.83***	-5.39***	-5.76***	-6.38***	-10.37***	-9.82***	-11.71***
Abnormal returns in different industries																
Agriculture, Forestry, Fishing, Mining and Construction	2.26***	2.08***	2.41***	2.08***	-0.57	-1.59	-1.15	-1.19	-1.57	-4.57**	-3.67*	-4.30**	-6.40***	-7.21***	-9.69***	-7.46***
Manufacturing	2.86***	2.57***	2.78***	2.67***	0.07*	-0.93***	-1.46***	-0.25	-2.85***	-3.89***	-5.93***	-3.10***	-6.42***	-7.22***	-10.14***	-7.31***
Wholesale and Retail trade	2.86***	2.71***	2.79***	2.80***	0.26*	-0.97	-1.24	-0.13	-2.78**	-3.83***	-6.03***	-2.75**	-6.98***	-7.16***	-10.94***	-6.91***
Finance, Insurance, and Real Estate	2.39***	2.19***	2.34***	2.22***	1.36***	1.05***	0.46***	1.39***	-0.42	-0.96	-2.28***	-0.62	-2.94***	-3.36***	-5.25***	-3.70***
Services and Public Administration	2.94***	3.39***	2.85***	3.64***	0.42	-4.22***	-1.77***	-2.42	-1.58	-11.83***	-6.06***	-9.67***	-6.90***	-19.75***	-12.14***	-18.18***
Transportation, Communication, Electric, Gas, and Sanitary Services	1.63***	1.77***	1.61***	1.93***	0.30*	-1.63**	-0.56	-1.17*	-1.17	-3.99***	-3.47***	-3.70***	-2.72*	-6.72***	-5.46***	-7.09***
Abnormal returns in different size																
1st Quintile	4.59***	4.61***	4.53***	4.76***	2.95***	2.87***	1.95***	3.36***	-1.20	-0.05***	-3.00***	0.84***	-5.62***	-3.89	-7.64***	-3.32
2nd Quintile	3.26***	2.94***	3.21***	3.03***	0.39***	-0.07	-0.70	0.59**	-2.93*	-3.11***	-5.45***	-2.12*	-6.76***	-7.68***	-10.15***	-7.08***
3rd Quintile	2.49***	2.31***	2.43***	2.41***	0.29**	-0.80	-1.04	-0.03	-1.61	-3.69***	-4.57***	-2.64***	-5.04***	-6.47***	-9.04***	-6.12***
4th Quintile	2.07***	1.79***	1.99***	1.86***	-0.22	-2.08***	-1.81***	-1.44***	-1.92**	-5.21***	-5.33***	-4.67***	-4.72***	-8.10***	-8.92***	-8.55***
5th quintile	1.36***	1.47***	1.28***	1.65***	-0.80	-4.22***	-2.76***	-3.25***	-2.15*	-8.31***	-6.08***	-7.63***	-5.90***	-12.23***	-10.12***	-12.83***

Appendix 9B Regressions for Event Returns of Stock Splits on Halloween Dummy in Sub-periods

This table shows a robustness check for abnormal returns of stock splits on the *Halloween* dummy in four sub-periods. The dependent variable is abnormal returns (CARs) calculated by the market adjusted model $AR_{it} = R_{it}\text{-}R_{mt}$, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes; and by the market model $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, where estimator $\hat{\alpha}_i$and $\hat{\beta}_i$are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. Event windows used for abnormal returns are five days window of (-2, +2) and ten days window of (-1, +9) (in days) relative to announcements (0 represents the actual announcement day). The dependent variable in all CARs is regressed in percentage. Panel A and E are the equal-weighted market adjusted abnormal returns; Panel B and F are the value-weighted market adjusted abnormal returns; Panel C and G are the equal-weighted market model adjusted abnormal returns; and Panel D and H are the value-weighted market model adjusted abnormal returns in stock split announcements. *January* is a dummy variable that takes a value of one for stock splits announced in January and a value of zero if an announcement is in other months of a year. *Halloween* is another dummy variable that takes a value of one for stock splits announced in the months of November to April and a value of zero if announcements are in the months of May to October. *HalnoJan* is the dummy variable to separate the January Effect from the Halloween Effect, which takes a value of one for stock splits announced in the months of November to April, except January and a value of zero if the announcements are in the months of May to October. *SplFac* is the split ratio obtained from CRSP and defined as the number of additional shares per existing share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to stock split announcements. *Ln(Price)* is the natural logarithm of stock price one day before stock split announcements. *, ** and *** denote statistical significance at the 10%, 5%, and 1%, respectively.

Variables/CAR	1926-1960		1961-1975		1976-1995		1996-2008	
	(-2,+2)	(-1,+9)	(-2,+2)	(-1,+9)	(-2,+2)	(-1,+9)	(-2,+2)	(-1,+9)
Panel A: Market Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	0.2462	1.3857	17.3741***	18.9635***	15.2529***	19.6888***	13.0886***	18.7157***
Halloween	0.1888	0.0669	-0.3656	-0.7428**	-0.2759*	-0.3567*	0.5943**	0.6133*
SplFac	-0.3957**	-0.1220	1.1876***	1.5417***	1.4515***	1.6160***	1.8082***	2.8217***
Ln(Size)	0.0190	0.0715	-0.3489***	-0.1711	-0.5708***	-0.8813***	-0.6618***	-0.7060***
Ln(Price)	0.2097	-0.2276	-2.9721***	-4.1220***	-2.0430***	-2.2936***	-0.9829***	-2.6202***
p-value of *F*-statistic	0.1214	0.8962	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0074	0.0011	0.1218	0.1150	0.0884	0.0926	0.0391	0.0567
N	982	982	2136	2136	9251	9251	4342	4342
Panel B: Market Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	1.0876	2.5919	17.3190***	19.3552***	15.4404***	19.8861***	13.2726***	18.8346***
Halloween	0.2923	0.3331	-0.1976	-0.4763	-0.1033	0.0829	0.6791**	0.8974**
SplFac	-0.3332**	-0.0878	1.1328***	1.4505***	1.4499***	1.6133***	1.7140***	2.7413***
Ln(Size)	-0.0380	-0.0113	-0.3685***	-0.2533	-0.5675***	-0.8780***	-0.6974***	-0.7371***
Ln(Price)	0.1227	-0.3087	-2.8642***	-3.9020***	-2.0769***	-2.2987***	-0.8063**	-2.4297***
p-value of F-statistic	0.8289	0.2917	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0015	0.0051	0.11	0.0397	0.0899	0.068	0.0537	0.0279
N	982	982	2136	2136	9251	9251	4342	4342
Panel C: Market Model Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	0.7441	1.7156	16.9281***	17.8753***	13.6941***	16.7123***	14.2465***	20.2634***
Halloween	0.3477	0.3259	-0.2040	-0.4127	-0.2593*	-0.4095**	0.1305	-0.3071
SplFac	-0.3498**	-0.1715	1.1452***	1.3976***	1.4234***	1.5233***	2.1066***	3.0274***
Ln(Size)	-0.0330	0.0005	-0.2420*	0.0690	-0.4491***	-0.6026***	-0.4735***	-0.2736*
Ln(Price)	0.1227	-0.2895	-3.3189***	-4.8441***	-2.1918***	-2.7300***	-2.2767***	-5.0404***
p-value of F-statistic	0.1388	0.6037	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0071	0.0028	0.1225	0.1101	0.0795	0.0752	0.0529	0.0781
N	982	982	2134	2134	9248	9248	4341	4341
Panel D: Market Model Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	0.9488	2.0287	16.4215***	16.9888***	13.6046***	16.2602***	13.6463***	19.3638***
Halloween	0.4646*	0.5867	-0.0197	-0.0874	0.0561	0.3424*	0.5246*	0.6066*
SplFac	-0.3029*	-0.1024	1.1380***	1.3683***	1.4255***	1.4888***	1.9298***	2.9452***
Ln(Size)	-0.0458	-0.0029	-0.1940	0.1444	-0.4417***	-0.6197***	-0.5726***	-0.4141***
Ln(Price)	0.0477	-0.4430	-3.3568***	-4.8871***	-2.2395***	-2.6494***	-1.7072***	-4.3799***
p-value of F-statistic	0.1194	0.3123	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0075	0.0049	0.1166	0.1070	0.0800	0.0732	0.0476	0.0726
N	982	982	2134	2134	9248	9248	4341	4341

Variables/CAR	1926-1960		1961-1975		1976-1995		1996-2008	
	(-2,+2)	(-1,+9)	(-2,+2)	(-1,+9)	(-2,+2)	(-1,+9)	(-2,+2)	(-1,+9)
Panel E: Market Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	0.2014	1.3216	17.3652***	18.8979***	15.2509***	19.7099***	13.0950***	18.7080***
HanoJan	0.2753	0.1908	-0.3546	-0.6609*	-0.2825*	-0.2848	0.5736*	0.6383*
January	-0.5389	-0.9746	-0.4133	-1.0953*	-0.2407	-0.7396**	0.6806	0.5087
SplFac	-0.3967***	-0.1234	1.1863***	1.5320***	1.4517***	1.6135***	1.8101***	2.8195***
Ln(Size)	0.0225	0.0765	-0.3482***	-0.1663	-0.5706***	-0.8835***	-0.6618***	-0.7060***
Ln(Price)	0.2117	-0.2247	-2.9710***	-4.1141***	-2.0433***	-2.2907***	-0.9855***	-2.6170***
p-value of *F*-statistic	0.1100	0.7144	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0091	0.0030	0.1218	0.1152	0.0884	0.0927	0.0391	0.0567
N	982	982	2136	2136	9251	9251	4342	4342
Panel F: Market Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	1.0781	2.5892	17.4050***	19.4199***	15.4076***	19.8599***	13.3196***	18.8790***
HanoJan	0.3085	0.3384	-0.3051	-0.5571	-0.2153	-0.0065	0.5258*	0.7526**
January	0.1370	0.2887	0.2649	-0.1288	0.4933*	0.5589	1.3189***	1.5019**
SplFac	-0.3334**	-0.0879	1.1456***	1.4601***	1.4537***	1.6163***	1.7280***	2.7544***
Ln(Size)	-0.0373	-0.0110	-0.3747***	-0.2580	-0.5640***	-0.8752***	-0.6973***	-0.7371***
Ln(Price)	0.1232	-0.3086	-2.8745***	-3.9098***	-2.0814***	-2.3024***	-0.8257**	-2.4480***
p-value of F-statistic	0.2772	0.8174	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0064	0.0023	0.1157	0.1110	0.0884	0.0899	0.0384	0.0546
N	982	982	2136	2136	9251	9251	4342	4342
Panel G: Market Model Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	0.7310	1.6815	16.9618***	17.9108***	13.6992***	16.7491***	14.2233***	20.2166***
HanoJan	0.3730	0.3917	-0.2462	-0.4571	-0.2421	-0.2852	0.2063	-0.1539
January	0.1346	-0.2278	-0.0227	-0.2217	-0.3507	-1.0717***	-0.1860	-0.9458
SplFac	-0.3501**	-0.1723	1.1502***	1.4028***	1.4228***	1.5191***	2.0998***	3.0136***
Ln(Size)	-0.0320	0.0031	-0.2445*	0.0664	-0.4497***	-0.6065***	-0.4736***	-0.2737*
Ln(Price)	0.1233	-0.2880	-3.3230***	-4.8483***	-2.1911***	-2.7249***	-2.2672***	-5.0212***
p-value of F-statistic	0.2143	0.6629	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0072	0.0033	0.1226	0.1101	0.0795	0.0756	0.0531	0.0785
N	982	982	2134	2134	9248	9248	4341	4341
Panel H: Market Model Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	0.9636	2.0424	16.5649***	17.1709***	13.5743***	16.2380***	13.6911***	19.4073***
HanoJan	0.4361	0.5603	-0.1991	-0.3154	-0.0461	0.2675	0.3781	0.4641
January	0.7038	0.8091	0.7513	0.8920	0.6002**	0.7413**	1.1357**	1.2012**
SplFac	-0.3026*	-0.1021	1.1593***	1.3953***	1.4290***	1.4913***	1.9429***	2.9581***
Ln(Size)	-0.0469	-0.0040	-0.2045	0.1310	-0.4385***	-0.6174***	-0.5726***	-0.4140***
Ln(Price)	0.0471	-0.4436	-3.3738***	-4.9088***	-2.2436***	-2.6525***	-1.7256***	-4.3978***
p-value of F-statistic	0.1854	0.4349	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0077	0.0049	0.1183	0.1086	0.0805	0.0733	0.0482	0.0729
N	982	982	2134	2134	9248	9248	4341	4341

Appendix 10A Mean Adjusted Returns for Special Dividend Announcements in Each Month for the period 1926 to 2008

This table calculates excess returns for the firms announcing special dividends in each month from 1926 to 2008 using the Mean Adjusted Model, $AR_{it}=R_{it}-E(R_{it})$. AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, and $E(R_{it})$ is the constant mean returns for security *i* at time *t* with estimation period of 255 trading days. Short term event windows are examined one day surrounding an announcement date, one week after an announcement date, 10 days, 15 days, three weeks, one month, two months, three months and six months after an announcement date (0 represents the actual announcement day). All returns are in percentage with *t*-statistics underneath. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Special Dividend												
Event window results												
(-30,-2)	1.70	3.14	-0.21	-0.09	0.37	-0.87	0.73	0.25	-0.24	-1.63	-1.13	0.62
	[6.28]***	[7.38]***	[-1.36]*	[0.24]	[0.04]	[-2.15]**	[1.38]*	[0.88]	[-0.62]	[-6.51]***	[-5.22]***	[14.30]***
(-1,+1)	1.34	1.49	1.47	1.81	1.61	1.16	1.57	1.55	0.69	0.78	1.26	0.76
	[9.99]***	[7.27]***	[6.84]***	[6.73]***	[6.10]***	[6.75]***	[7.71]***	[8.04]***	[4.14]***	[7.10]***	[13.04]***	[2.59]***
(-1,0)	0.69	0.70	0.85	1.03	0.86	0.70	0.95	0.93	0.27	0.27	0.72	0.34
	[6.12]***	[3.58]***	[5.61]***	[4.54]***	[4.28]***	[4.70]***	[5.36]***	[5.97]***	[1.71]*	[3.79]***	[9.08]***	[0.54]
(0,+1)	1.02	1.42	1.37	1.69	1.52	1.14	1.55	1.46	0.72	0.84	1.14	0.73
	[8.76]***	[8.38]***	[6.92]***	[7.32]***	[6.17]***	[7.82]***	[8.77]***	[8.61]***	[5.16]***	[8.57]***	[13.08]***	[12.65]***
(1.+7)	1.13	1.19	0.90	1.48	1.47	1.23	1.38	1.01	0.42	0.52	0.65	1.19
	[7.32]***	[5.08]***	[4.42]***	[4.16]***	[4.35]***	[5.89]***	[6.30]***	[5.56]***	[2.88]***	[3.81]***	[5.67]***	[15.69]***
(1,+10)	0.90	1.16	0.48	1.28	1.02	1.32	1.10	0.67	0.34	0.67	0.51	1.35
	[4.90]***	[4.37]***	[2.35]**	[3.26]***	[2.29]**	[4.70]***	[3.70]***	[3.37]***	[1.81]*	[4.44]***	[3.73]***	[15.74]***
(1,+15)	0.91	1.19	0.35	0.97	0.41	1.19	0.66	0.48	0.12	0.16	0.30	1.76
	[4.20]***	[3.83]***	[1.88]*	[2.13]**	0.22]	[3.46]***	[2.93]***	[2.04]**	[0.34]	[1.42]	[2.76]***	[16.87]***
(1,+21)	0.87	1.25	0.12	0.77	-0.14	1.40	0.44	0.75	-0.24	-0.08	0.24	2.18
	[3.46]***	[3.05]***	[0.86]	[1.48]	[-1.20]	[3.70]***	[2.18]**	[2.48]**	[-0.77]	[0.28]	[2.21]**	[16.97]***
After												
1month	0.83	0.64	-0.46	0.46	-0.18	1.48	0.37	-0.01	-0.27	-0.58	1.08	2.54
	[2.87]***	[1.36]	[-0.26]	[1.30]*	[-0.75]	[3.56]***	[1.42]*	[0.91]	[-0.76]	[-1.16]	[6.54]***	[18.88]***
2months	0.55	0.41	-1.98	-0.26	-1.15	0.35	-1.34	-2.28	-0.95	1.01	3.77	2.36
	[1.20]	[0.25]*	[-2.51]***	[0.19]	[1.93]**	[0.56]	[-1.81]**	[-3.29]***	[-1.09]	[3.96]***	[14.85]***	[11.65]***
3months	-0.30	-0.49	-2.09	-1.11	-2.66	-1.65	-3.31	-2.58	0.96	2.01	3.77	1.60
	[-0.49]	[-1.49]*	[-2.21]**	[-1.23]	[-3.24]***	[-2.09]**	[-4.23]***	[-2.97]***	[3.67]***	[6.03]***	[12.11]***	[6.52]***
6months	-2.62	-6.82	-7.13	-7.11	-1.86	-1.84	-2.49	-1.65	-2.15	-1.35	0.07	-1.19
	[-2.99]***	[-7.62]***	[-6.62]***	[-5.56]***	[-0.82]	[-1.42]*	[-1.86]**	[-0.39]	[-1.08]	[-0.87]	[2.87]***	[-3.05]***

Appendix 10B Equal-weighted Market Adjusted Returns for Special Dividend Announcements in Each Month for the period 1926 to 2008

This table calculates excess returns for the firms announcing special dividends in each month from 1926 to 2008 using the Equal-weighted Market Adjusted Model, $AR_{it}=R_{it}-R_{mt}$. AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, and R_{mt} is market return at time *t*, proxied by CRSP equal-weighted market index. Short term event windows are examined one day surrounding an announcement date, one week after an announcement date, 10 days, 15 days, three weeks, one month, two months, three months and six months after an announcement date (0 represents the actual announcement day). All returns are in percentage with *t*-statistics underneath. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Special Dividend												
Event window results												
(-30,-2)	-1.04	-0.53	0.05	0.70	1.13	0.66	1.49	1.42	1.03	0.97	1.02	0.95
	[-5.47]***	[-2.78]***	[-0.99]	[1.00]	[1.57]*	[1.96]**	[3.22]***	[2.82]***	[3.41]***	[3.67]***	[6.13]***	[5.77]***
(-1,+1)	0.41	1.41	1.53	1.80	1.71	1.27	1.49	1.69	0.86	1.05	1.26	0.74
	[0.20]	[6.89]***	[6.98]***	[6.42]***	[6.97]***	[7.53]***	[7.45]***	[9.06]***	[5.30]***	[9.80]***	[13.42]***	[10.71]***
(-1,0)	0.11	0.65	0.87	1.05	0.94	0.81	0.88	1.03	0.47	0.49	0.71	0.34
	[-1.67]*	[3.28]***	[5.32]***	[4.25]***	[4.92]***	[5.44]***	[4.91]***	[6.98]***	[3.90]***	[6.78]***	[8.86]***	[5.74]***
(0,+1)	0.37	1.39	1.42	1.65	1.59	1.17	1.50	1.54	0.78	0.96	1.12	0.70
	[0.95]	[8.06]***	[7.08]***	[6.83]***	[6.90]***	[7.87]***	[8.67]***	[9.30]***	[5.64]***	[10.14]***	[13.11]***	[11.91]***
(1.+7)	-0.22	1.21	1.28	1.60	1.75	1.20	1.17	1.35	0.69	1.04	0.88	0.64
	[-3.36]***	[4.91]***	[6.46]***	[4.27]***	[6.19]***	[5.86]***	[4.74]***	[6.57]***	[3.96]***	[7.81]***	[7.02]***	[6.96]***
(1,+10)	-0.34	1.15	1.06	1.61	1.49	1.28	1.17	1.20	0.83	1.26	0.92	0.32
	[-4.01]***	[4.05]***	[4.85]***	[4.03]***	[4.64]***	[4.81]***	[3.83]***	[4.91]***	[4.18]***	[8.44]***	[5.24]***	[1.70]*
(1,+15)	-0.70	1.20	1.08	1.49	0.96	0.94	0.98	1.32	0.91	1.06	1.03	-0.28
	[-5.38]***	[3.80]***	[4.21]***	[3.14]***	[2.17]**	[2.68]***	[3.44]***	[4.21]***	[3.83]***	[5.84]***	[5.43]***	[-5.36]***
(1,+21)	-0.79	1.50	1.02	1.80	0.76	1.11	1.07	1.86	0.86	1.00	1.24	-0.80
	[-5.31]***	[3.45]***	[3.21]***	[3.79]***	[1.61]	[2.67]***	[3.33]***	[5.25]***	[3.35]***	[4.35]***	[5.65]***	[-9.96]***
After												
1month	-0.87	1.22	0.66	1.82	1.07	1.34	1.23	1.96	1.20	0.94	0.60	-1.33
	[-4.85]***	[2.21]**	[2.00]**	[3.66]***	[2.08]**	[2.55]***	[2.64]***	[4.86]***	[3.89]***	[3.83]***	[0.75]	[-14.02]***
2months	-0.59	1.30	1.10	2.47	1.08	1.56	1.48	2.31	1.80	0.03	-1.35	-1.61
	[-3.64]***	[1.28]	[2.50]***	[3.66]***	[1.13]	[1.95]**	[1.95]**	[3.96]***	[4.30]***	*[-1.35]	[-9.23]***	[-13.10]***
3months	-1.05	1.88	1.72	2.52	1.31	1.17	1.72	2.49	0.43	-0.97	-1.50	-1.64
	[-3.90]***	[1.39]*	[2.44]***	[2.15]**	[0.76]	[1.20]	[1.47]*	[2.78]***	[-0.28]	[-4.39]***	[-8.94]***	[-11.76]***
6months	-1.02	1.44	1.49	0.28	0.78	-2.34	-2.09	-0.57	-0.61	-0.52	-2.38	-2.22
	[-2.95]***	[0.43]	[1.41]*	[-0.98]	[-0.29]	[-4.11]***	[-4.30]***	[-2.47]***	[[-2.23]**	[-2.91]***	[-8.24]***	[-10.29]***

Appendix 10C Value-weighted Market Adjusted Returns for Special Dividend Announcements in Each Month for the period 1926 to 2008

This table calculates excess returns for the firms announcing special dividends in each month from 1926 to 2008 using the Value-weighted Market Adjusted Model, $AR_{it}=R_{it}-R_{mt}$. AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, and R_{mt} is market return at time *t*, proxied by CRSP value-weighted market index. Short term event windows are examined one day surrounding an announcement date, one week after an announcement date, 10 days, 15 days, three weeks, one month, two months, three months and six months after an announcement date (0 represents the actual announcement day). All returns are in percentage with *t*-statistics underneath. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Special Dividend												
Event window results												
(-30,-2)	1.15	3.59	1.24	1.57	1.65	0.80	2.04	2.27	1.74	1.27	0.64	0.94
	[2.67]***	[7.42]***	[2.23]**	[2.60]***	[2.68]***	[2.23]**	[4.09]***	[4.82]***	[6.11]***	[5.10]***	[3.66]***	[5.92]***
(-1,+1)	1.19	1.61	1.64	1.80	1.77	1.24	1.60	1.77	0.96	0.94	1.26	0.73
	[7.96]***	[8.12]***	[7.39]***	[6.24]***	[7.22]***	[7.22]***	[7.92]***	[9.41]***	[6.08]***	[8.69]***	[13.47]***	[10.69]***
(-1,0)	0.66	0.79	0.95	1.03	1.00	0.79	0.95	1.09	0.53	0.42	0.70	0.34
	[5.15]***	[4.29]***	[5.78]***	[3.96]***	[5.19]***	[5.29]***	[5.30]***	[7.31]***	[4.64]***	[5.88]***	[8.65]***	[5.76]***
(0,+1)	0.93	1.51	1.49	1.64	1.62	1.15	1.57	1.59	0.85	0.89	1.13	0.70
	[7.25]***	[8.97]***	[7.28]***	[6.63]***	[7.08]***	[7.66]***	[8.88]***	[9.58]***	[6.26]***	[9.08]***	[13.39]***	[11.79]***
(1.+7)	0.98	1.57	1.45	1.71	1.72	1.29	1.46	1.51	0.91	0.97	0.90	0.96
	[5.93]***	[6.52]***	[7.17]***	[4.49]***	[5.80]***	[6.27]***	[5.89]***	[7.32]***	[5.52]***	[6.98]***	[7.18]***	[11.78]***
(1,+10)	1.09	1.64	1.30	1.80	1.47	1.48	1.53	1.47	1.03	1.17	0.92	1.04
	[5.85]***	[6.00]***	[5.75]***	[4.41]***	[4.34]***	[5.77]***	[4.96]***	[6.12]***	[5.65]***	[7.62]***	[5.34]***	[11.19]***
(1,+15)	1.15	1.86	1.37	1.74	0.98	1.33	1.38	1.73	1.16	0.97	0.94	1.30
	[5.00]***	[6.05]***	[5.24]***	[3.59]***	[2.09]**	[4.25]***	[4.80]***	[5.64]***	[5.57]***	[5.12]***	[5.19]***	[11.78]***
(1,+21)	1.33	2.35	1.49	2.13	0.81	1.74	1.63	2.45	1.34	0.99	1.11	1.78
	[4.89]***	[5.91]***	[4.56]***	[4.40]***	[1.50]	[4.97]***	[4.92]***	[7.03]***	[6.08]***	[4.23]***	[5.38]***	[14.03]***
After												
1month	1.63	2.34	1.26	2.25	1.18	2.28	2.04	2.77	1.67	1.02	1.53	2.30
	[4.52]***	[4.88]***	[3.23]***	[4.12]***	[1.96]**	[4.88]***	[4.41]***	[6.33]***	[5.64]***	[3.87]***	[6.37]***	[14.77]***
2months	2.57	2.98	1.68	3.41	1.96	3.16	2.87	2.76	2.23	2.83	4.05	3.23
	[4.67]***	[4.09]***	[3.14]***	[4.40]***	[2.11]**	[4.88]***	[4.27]***	[4.24]***	[5.35]***	[7.42]***	[12.60]***	[13.88]***
3months	2.50	3.86	2.73	4.30	2.88	3.28	2.94	3.43	3.97	4.68	5.28	3.62
	[3.43]***	[3.98]***	[3.34]***	[3.73]***	[2.41]***	[4.52]***	[3.07]***	[3.85]***	[7.86]***	[10.12]***	[13.22]***	[12.18]***
6months	3.76	4.56	3.76	4.04	6.31	5.30	5.34	6.74	5.22	6.61	5.90	4.28
	[3.60]***	[3.20]***	[3.37]***	[1.85]**	[4.67]***	[4.96]***	[3.78]***	[5.47]***	[7.19]***	[9.90]***	[10.62]***	[9.99]***

Appendix 10D Equal-weighted Market Model Adjusted Returns for Special Dividend Announcements in Each Month for the period 1926 to 2008

This table calculates excess returns for the firms announcing special dividends in each month from 1926 to 2008 using the Equal-weighted Market Model Adjusted Model, $AR_{it}=R_{it}-\hat{\alpha}_i-\hat{\beta}_i*R_{mt}$. AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, R_{mt} is proxied by the CRSP equal-weighted market index. Estimator $\hat{\alpha}_i$and $\hat{\beta}_i$are estimated from the Market Model of $R_{it}=\alpha_i+\beta_i*R_{mt}+\varepsilon_i$ with estimation period of 255 trading days. Short term event windows are examined one day surrounding an announcement date, one week after an announcement date, 10 days, 15 days, three weeks, one month, two months, three months and six months after an announcement date (0 represents the actual announcement day). All returns are in percentage with *t*-statistics underneath. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Special Dividend												
Event window results												
(-30,-2)	-0.58	0.29	-0.48	0.19	0.54	0.33	0.55	0.78	0.67	0.15	0.25	0.70
	[-1.30]*	[1.08]	[-1.23]	[1.00]	[0.96]	[1.66]**	[1.87]**	[1.92]**	[3.24]***	[0.76]	[2.41]***	[13.56]***
(-1,+1)	0.78	1.37	1.50	1.78	1.64	1.19	1.37	1.65	0.83	0.95	1.23	0.69
	[4.55]***	[6.87]***	[7.01]***	[6.58]***	[6.87]***	[7.27]***	[6.97]***	[8.88]***	[5.37]***	[9.26]***	[13.23]***	[2.33]**
(-1,0)	0.33	0.60	0.84	1.02	0.89	0.74	0.80	1.01	0.43	0.42	0.70	0.30
	1.73]*	[3.17]***	5.42]***	[4.27]***	[4.87]***	[5.12]***	[4.54]***	[6.80]***	[3.56]***	[6.27]***	[9.07]***	[0.43]
(0,+1)	0.63	1.36	1.40	1.66	1.54	1.11	1.42	1.51	0.77	0.90	1.09	0.67
	[4.39]***	[8.11]***	[7.14]***	[7.17]***	[6.85]***	[7.79]***	[8.41]***	[9.13]***	[5.85]***	[9.66]***	[12.89]***	[11.54]***
(1.+7)	0.23	1.18	1.12	1.59	1.59	1.15	1.00	1.22	0.66	0.84	0.73	0.72
	[1.20]	[5.38]***	[5.78]***	[4.61]***	[5.80]***	[5.97]***	[4.99]***	[6.69]***	[4.50]***	[6.68]***	[5.98]***	[9.80]***
(1,+10)	0.05	1.12	0.81	1.52	1.25	1.20	0.88	1.03	0.70	1.04	0.71	0.56
	[0.07]	[4.54]***	[3.95]***	[4.18]***	[4.14]***	[5.03]***	[3.36]***	[4.97]***	[4.23]***	[7.35]***	[4.46]***	[6.98]***
(1,+15)	-0.21	1.14	0.75	1.33	0.65	0.81	0.59	1.03	0.74	0.71	0.66	0.22
	[-1.07]	[4.11]***	[3.47]***	[3.27]***	[1.80]*	[2.77]***	[3.09]***	[3.96]***	[3.64]***	[4.53]***	[4.07]***	[2.88]***
(1,+21)	-0.29	1.36	0.59	1.41	0.36	0.98	0.60	1.44	0.60	0.57	0.72	-0.08
	[-0.98]	[3.63]***	[2.43]**	[3.51]***	[1.21]	[3.22]***	[2.96]***	[4.67]***	[2.97]***	[3.13]***	[3.98]***	[0.42]
After												
1month	-0.36	0.79	0.17	1.39	0.50	1.18	0.61	1.26	0.80	0.27	0.38	-0.39
	[-1.14]	[1.70]**	[1.59]*	[3.61]***	[1.70]**	[3.30]***	[2.09]**	[3.99]***	[3.33]***	[2.36]***	[2.36]***	[-1.34]*
2months	-0.48	0.74	0.01	1.23	-0.07	1.14	-0.06	0.94	0.91	-0.46	-0.49	-0.71
	[-1.30]*	[0.96]	[1.71]**	[3.11]***	[0.49]	[2.36]***	[0.86]	[2.31]**	[3.26]***	[-0.04]	[-0.24]	[-2.70]***
3months	-1.21	0.83	0.27	0.63	-0.32	0.33	-0.32	0.74	-0.30	-1.29	-0.97	-0.99
	[-1.98]**	[0.45]	[1.87]**	[1.59]*	[0.12]	[1.29]*	[0.16]	[1.44]*	[0.90]	[-1.59]*	[-1.32]*	[-3.29]***
6months	-1.82	-1.88	-2.05	-3.53	-0.06	-2.63	-3.97	-1.81	-2.59	-2.80	-3.17	-2.11
	[-1.21]	[-2.66]**	[-0.49]	[-1.74]**	[1.03]	[-2.01]**	[-3.48]***	[-0.70]	[-1.83]**	[-2.98]***	[-3.44]***	[-4.03]***

Appendix 10E Long-Term Post-announcement Abnormal Returns Using Monthly Fama-French (1993) and Carhart (1997) Calendar Time Portfolio Regressions for Special Dividend Announcements in Each Month from 1926 to 2008

This table calculates long term abnormal returns for the one-, two-, three-, and five-year post-announcement horizons, for the firms announcing special dividends in each month during the period 1926 to 2008. Panel A is equal-weighted Three-factor Calendar Portfolio Abnormal Return and Panel B is equal-weighted Four-factor Calendar Portfolio Abnormal Return. Monthly rebalanced calendar time portfolio returns are calculated each month from all firms experience a special dividend in the previous 12, 24, 36, or 60 calendar months. Monthly excess returns to calendar time portfolios are: $CTAR_t=R_{pt}-E(R_{pt})$, where R_{pt} is monthly return on portfolio of event firms at time t, and $E(R_{pt})$ is expected return on event portfolio at time t. The expected return on event portfolio, for each sample firm in month t, is measured by Fama-French (1993) three-factor model and Carhart (1997) four-factor model:

$$R_{it} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

$$R_{it} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + m_i PR1YR_t + \varepsilon_{it}$$

R_{it} is firm i's monthly return, R_{ft} is the one-month T-bills return, and R_{mt} is the market return on CRSP equal-weighted portfolio of all NYSE, AMEX, and Nasdaq stocks. SMB_t is the difference in returns between portfolios of small and big stocks. HML_t is the difference in returns between portfolios of high and low book-to-market ratio stocks. $PR1YR_t$ is defined as in Carhart (1997) as an equally weighted portfolio return of stocks with highest returns less an equally weighted portfolio return of stocks with lowest returns in months *t-12* to *t-2*. Ordinary, Weighted Least Squares (White, 1980) and Generalized Method of Moment (GMM) are estimated. All abnormal returns are in percentage and *t*-statistics of intercepts are shown in brackets under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Equal-weighted, three-factor Calendar Portfolio Abnormal Returns

Intercept of the Fama-French Regression, three-factor without momentum (Fama-French, 1993)

Post period	Model Estimated	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Horizon = 1 year	OLS	0.82	0.86	0.75	0.64	0.70	0.52	0.80	0.76	0.94	0.76	0.57	0.69
		[8.13]***	[6.92]***	[6.41]***	[5.02]***	[5.86]***	[4.54]***	[6.68]***	[7.29]***	[8.46]***	[8.04]***	[6.39]***	[7.63]***
	Hetero t	[8.01]***	[7.13]***	[6.56]***	[5.21]***	[5.96]***	[4.62]***	[6.65]***	[7.31]***	[8.22]***	[7.79]***	[6.62]***	[8.09]***
	WLS	0.55	0.68	0.68	0.72	0.71	0.59	0.77	0.86	0.64	0.69	0.51	0.47
		[7.28]***	[7.03]***	[7.83]***	[6.58]***	[7.06]***	[6.76]***	[7.96]***	[9.53]***	[8.81]***	[10.68]***	[8.44]***	[7.96]***
	GMM	0.82	0.86	0.75	0.64	0.70	0.52	0.80	0.76	0.94	0.76	0.57	0.69
		[7.41]***	[6.49]***	[6.56]***	[5.09]***	[5.81]***	[4.74]***	[6.58]***	[7.27]***	[8.15]***	[7.70]***	[6.16]***	[7.90]***
Horizon = 2 years	OLS	0.66	0.63	0.51	0.51	0.52	0.39	0.63	0.50	0.78	0.54	0.45	0.58
		[7.30]***	[5.33]***	[4.54]***	[4.81]***	[4.46]***	[3.83]***	[5.81]***	[4.52]***	[6.62]***	[6.72]***	[6.10]***	[7.55]***
	Hetero t	[7.49]***	[5.49]***	[4.73]***	[4.84]***	[4.70]***	[3.95]***	[5.69]***	[4.80]***	[6.72]***	[6.74]***	[6.17]***	[7.94]***
	WLS	0.41	0.52	0.50	0.55	0.56	0.43	0.53	0.62	0.44	0.50	0.38	0.36
		[5.84]***	[5.78]***	[6.24]***	[5.95]***	[6.08]***	[5.44]***	[6.30]***	[7.44]***	[6.58]***	[8.53]***	[6.70]***	[6.35]***
	GMM	0.66	0.63	0.51	0.51	0.52	0.39	0.63	0.50	0.78	0.54	0.45	0.58
		[7.23]***	[5.52]***	[4.68]***	[4.71]***	[4.48]***	[3.87]***	[5.71]***	[4.89]***	[6.55]***	[6.41]***	[5.82]***	[7.31]***
Horizon = 3 years	OLS	0.56	0.56	0.44	0.48	0.39	0.35	0.56	0.36	0.63	0.46	0.33	0.47
		[6.49]***	[4.87]***	[4.54]***	[4.80]***	[3.51]***	[3.68]***	[5.45]***	[3.71]***	[5.85]***	[6.16]***	[4.78]***	[6.21]***
	Hetero t	[6.69]***	[5.04]***	[4.83]***	[4.84]***	[3.72]***	[3.75]***	[5.37]***	[3.85]***	[6.04]***	[6.18]***	[4.81]***	[6.40]***
	WLS	0.36	0.46	0.41	0.50	0.45	0.38	0.44	0.50	0.34	0.41	0.30	0.31
		[5.37]***	[5.40]***	[5.53]***	[5.79]***	[5.16]***	[5.13]***	[5.85]***	[6.48]***	[5.41]***	[7.32]***	[5.36]***	[5.62]***
	GMM	0.56	0.56	0.44	0.48	0.39	0.35	0.56	0.36	0.63	0.46	0.33	0.47
		[6.45]***	[5.07]***	[4.68]***	[4.81]***	[3.52]***	[3.79]***	[5.56]***	[3.68]***	[6.18]***	[5.89]***	[4.35]***	[5.77]***
Horizon = 5 years	OLS	0.48	0.46	0.27	0.40	0.25	0.24	0.47	0.28	0.48	0.34	0.19	0.38
		[5.79]***	[4.08]***	[2.97]***	[4.29]***	[2.45]***	[2.70]***	[5.31]***	[3.02]***	[5.70]***	[5.10]***	[2.66]***	[5.44]***
	Hetero t	[5.97]***	[4.21]***	[3.14]***	[4.34]***	[2.57]***	[2.80]***	[5.56]***	[3.26]***	[5.76]***	[5.04]***	[2.81]***	[5.60]***
	WLS	0.32	0.41	0.32	0.39	0.36	0.32	0.37	0.41	0.28	0.30	0.20	0.26
		[5.11]***	[4.94]***	[4.56]***	[4.82]***	[4.40]***	[4.63]***	[5.49]***	[5.59]***	[4.89]***	[5.73]***	[3.73]***	[4.99]***
	GMM	0.48	0.46	0.27	0.40	0.25	0.24	0.47	0.28	0.48	0.34	0.19	0.38
		[5.86]***	[4.16]***	[3.01]***	[4.37]***	[2.43]***	[2.69]***	[5.26]***	[3.05]***	[5.85]***	[4.86]***	[2.51]***	[5.23]***

Panel B: Equal-weighted, four-factor Calendar Portfolio Abnormal Returns

Intercept of the Fama-French Regression, four-factor with momentum (Carhart, 1997)

Post period	Model Estimated	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Horizon = 1 year	OLS	0.66	0.72	0.68	0.69	0.65	0.37	0.61	0.61	0.82	0.63	0.50	0.55
		[6.43]***	[5.66]***	[5.59]***	[5.19]***	[5.25]***	[3.19]***	[4.99]***	[5.75]***	[7.24]***	[6.54]***	[5.47]***	[5.99]***
	Hetero t	[5.94]***	[5.50]***	[5.56]***	[5.27]***	[5.42]***	[3.20]***	[4.80]***	[5.71]***	[6.63]***	[6.28]***	[5.34]***	[5.63]***
	WLS	0.49	0.58	0.61	0.73	0.68	0.49	0.67	0.74	0.52	0.58	0.46	0.37
		[6.27]***	[5.78]***	[6.79]***	[6.43]***	[6.49]***	[5.48]***	[6.76]***	[8.01]***	[7.16]***	[8.86]***	[7.36]***	[6.19]***
	GMM	0.66	0.72	0.68	0.69	0.65	0.37	0.61	0.61	0.82	0.63	0.50	0.55
		[5.77]***	[5.49]***	[5.62]***	[5.29]***	[5.39]***	[3.29]***	[5.24]***	[5.48]***	[6.68]***	[6.04]***	[5.56]***	[6.07]***
Horizon = 2 years	OLS	0.50	0.55	0.46	0.51	0.56	0.32	0.44	0.47	0.59	0.50	0.39	0.42
		[5.55]***	[4.47]***	[3.99]***	[4.67]***	[4.59]***	[3.09]***	[4.00]***	[4.14]***	[4.92]***	[6.03]***	[5.05]***	[5.49]***
	Hetero t	[5.36]***	[4.27]***	[3.84]***	[4.78]***	[4.78]***	[3.12]***	[3.81]***	[4.23]***	[4.40]***	[5.71]***	[5.00]***	[5.31]***
	WLS	0.35	0.45	0.46	0.54	0.55	0.36	0.44	0.56	0.36	0.42	0.34	0.29
		[4.86]***	[4.92]***	[5.57]***	[5.66]***	[5.81]***	[4.45]***	[5.13]***	[6.47]***	[5.27]***	[7.07]***	[5.76]***	[5.03]***
	GMM	0.50	0.55	0.46	0.51	0.56	0.32	0.44	0.47	0.59	0.50	0.39	0.42
		[5.20]***	[4.19]***	[3.98]***	[4.78]***	[4.68]***	[3.14]***	[4.20]***	[4.08]***	[4.32]***	[5.38]***	[4.88]***	[5.17]***
Horizon = 3 years	OLS	0.42	0.49	0.38	0.48	0.43	0.27	0.39	0.38	0.56	0.43	0.30	0.32
		[4.86]***	[4.11]***	[3.88]***	[4.60]***	[3.74]***	[2.77]***	[3.77]***	[3.76]***	[5.11]***	[5.67]***	[4.14]***	[4.72]***
	Hetero t	[4.74]***	[3.95]***	[3.90]***	[4.69]***	[3.86]***	[2.80]***	[3.54]***	[3.68]***	[4.47]***	[5.25]***	[4.03]***	[4.08]***
	WLS	0.31	0.40	0.36	0.48	0.44	0.29	0.37	0.45	0.28	0.36	0.26	0.25
		[4.49]***	[4.52]***	[4.68]***	[5.43]***	[4.85]***	[3.90]***	[4.76]***	[5.68]***	[4.25]***	[6.27]***	[4.48]***	[4.41]***
	GMM	0.42	0.49	0.38	0.48	0.43	0.27	0.39	0.38	0.56	0.43	0.30	0.32
		[4.60]***	[3.87]***	[3.94]***	[4.81]***	[3.84]***	[2.87]***	[4.06]***	[3.57]***	[4.53]***	[4.96]***	[3.82]***	[3.87]***
Horizon = 5 years	OLS	0.34	0.37	0.27	0.38	0.29	0.21	0.37	0.28	0.40	0.30	0.16	0.26
		[4.11]***	[3.22]***	[2.94]***	[3.97]***	[2.77]***	[2.24]**	[4.10]***	[2.96]***	[4.60]***	[4.27]***	[2.18]**	[3.65]***
	Hetero t	[3.94]***	[3.10]***	[2.90]***	[3.88]***	[2.67]***	[2.18]**	[4.16]***	[2.86]***	[4.13]***	[3.73]***	[2.14]**	[3.49]***
	WLS	0.26	0.32	0.27	0.36	0.34	0.25	0.31	0.36	0.20	0.25	0.17	0.21
		[4.06]***	[3.85]***	[3.73]***	[4.30]***	[4.02]***	[3.48]***	[4.49]***	[4.82]***	[3.52]***	[4.67]***	[3.01]***	[3.81]***
	GMM	0.34	0.37	0.27	0.38	0.29	0.21	0.37	0.28	0.40	0.30	0.16	0.26
		[3.96]***	[2.96]***	[2.93]***	[4.03]***	[2.71]***	[2.17]**	[4.25]***	[2.89]***	[4.13]***	[3.55]***	[2.09]**	[3.33]***

Appendix 10F Abnormal Returns of Special Dividends between January and February-December in different Sub-periods, Industries and Sizes

This table shows a robustness check for abnormal returns of special dividends between January and February-December in four sub-periods, six groups of industries and five size quintiles for the period 1926 to 2008. Abnormal returns are calculated by the market adjusted model $AR_{it} = R_{it}$-R_{mt} in Panel A, where AR_{it} is abnormal returns for security i at time t, R_{it} is the actual returns for security i at time t, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes. Market model adjusted returns measured by $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, are in Panel B. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. (-1, +1), (1, +30), (1, +60) and (1, +90) are event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). Industry classifications are based on the two-digit SIC code of the Coding Scheme on the US Department of Labour website (http://www.osha.gov/oshstats/sicser.html). All abnormal returns are in percentage. *, **, and *** denote statistical significance at the 10%, 5%, and 1% significant level, respectively.

Panel A: Market Adjusted Returns	(-1,+1)				(1,+30)				(1,+60)				(1,+90)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
	Jan	Feb-Dec	Jan	Feb-Dec	Jan	Feb-Dec	Jan	Feb-Dec	Jan	Feb-Dec	Jan	Feb-Dec	Jan	Feb-Dec	Jan	Feb-Dec
Abnormal returns in different sub-periods																
1926-1940	-1.44***	-0.07	-0.01	0.06	-3.37***	-2.01***	0.57	0.99***	-2.28***	-2.62***	1.91	2.36***	-2.73***	-4.15***	2.56	2.65***
1941-1960	-0.55***	0.05	0.14	0.10**	-0.69***	-0.57***	1.04***	0.64***	-0.75**	-0.13***	1.17***	1.60***	-1.21***	-0.36***	0.61	1.91***
1961-1985	1.64***	1.80***	2.52***	1.78***	-0.70**	1.15***	2.69***	2.56***	0.64	0.79	5.10***	4.76***	0.46	1.05	5.38***	6.46***
1986-2008	1.72***	1.98***	2.14***	1.98***	0.05	1.13***	2.01**	2.82***	-0.83**	-0.19***	2.37	3.02***	-1.69***	-0.46***	2.32	3.82***
Abnormal returns in different industries																
Agriculture, Forestry, Fishing, Mining and Construction	1.06	1.40***	1.48*	1.41***	-2.45	1.22*	-0.51	2.69***	-1.94	1.09	1.09	4.47***	-4.58	0.42	-0.65	5.19***
Manufacturing	-0.17***	0.84***	0.78***	0.88***	-0.96***	-0.11***	1.66***	1.31***	-0.31	-0.11***	2.81***	2.82***	-0.53	-0.19***	2.84***	3.79***
Wholesale and Retail trade	1.46*	1.17***	1.96***	1.17***	-0.10	-0.15***	1.97***	1.78***	1.31	-0.68***	3.87***	2.75***	0.06	-0.31***	3.09*	4.19***
Finance, Insurance, and Real Estate	0.77	1.35***	1.39***	1.34***	-1.47***	0.94***	1.16	2.78***	-2.15***	-0.50***	1.46	2.99***	-2.64***	-1.09***	1.65	3.50***
Services and Public Administration	1.68	3.09***	2.17**	3.13***	2.59	1.94**	4.47**	3.18***	1.08	2.94*	3.98	5.71***	-0.11	2.66	3.66	6.69***
Transportation, Communication, Electric, Gas, and Sanitary Services	0.78	1.09***	1.76***	1.10***	-2.37**	0.17	0.66	1.67***	-4.18***	-0.20*	-0.35	2.65***	-2.10*	-0.50**	1.07	3.23***
Abnormal returns in different size																
1st Quintile	2.03***	1.55***	2.90***	1.56***	1.29	1.38***	4.27***	3.08***	2.72**	2.04***	6.50***	5.61***	2.84	2.64***	7.10***	7.58***
2nd Quintile	0.10	1.22***	0.96***	1.26***	-1.19	0.50	1.57***	2.14***	-0.66	0.68	2.68***	3.96***	-1.60	0.90	2.17**	5.31***
3rd Quintile	-0.15	1.03***	0.66**	1.04***	-0.86*	-0.02	1.47**	1.63***	-0.47	-0.61***	2.18**	2.60***	-1.44**	-0.88***	1.89	3.48***
4th Quintile	-0.06	1.00***	0.71***	1.03***	-2.49***	-0.06**	0.04	1.42***	-3.17***	-1.09***	0.39	1.88***	-3.77***	-1.75***	0.13	2.28***
5th quintile	0.15	0.85***	0.70***	0.84***	-1.30***	-0.25***	0.60	1.12***	-1.53***	-1.41***	0.89	1.32***	-1.51**	-2.31***	0.97	1.19***
Panel B: Market Model Adjusted Returns																
Abnormal returns in different sub-periods																
1926-1940	-0.45	0.05	0.00	-0.01	-0.98*	-0.65***	-0.44	-0.16	-1.12*	-0.50*	-1.75**	-0.06	-2.23***	-1.58***	-3.60***	-1.22***
1941-1960	-0.20	0.04	0.25**	0.01	-0.44	-0.75***	0.47*	-0.18	-0.26	-0.61***	0.48	0.03	-0.66	-1.05***	-0.54	-0.51
1961-1985	1.96***	1.68***	2.58***	1.57***	0.11	0.53***	2.02**	0.98***	1.13	-0.19	3.37***	1.73***	0.59	-0.52	2.94**	1.99***
1986-2008	1.80***	1.91***	2.10***	1.85***	-0.43	1.61***	1.36**	1.92***	-2.56**	0.73***	-0.06	1.28***	-3.90**	0.36	-1.10	0.91***
Abnormal returns in different industries																
Agriculture, Forestry, Fishing, Mining and Construction	1.14	1.25***	1.43*	1.19***	-3.25	0.44	-1.91	0.81*	-4.28	0.15	-2.33	1.03*	-7.66	-0.98	-5.87	0.06
Manufacturing	0.32	0.81***	0.89***	0.75***	-0.31	-0.34***	0.98**	0.12	0.17	-0.60***	1.32**	0.53***	-0.20	-1.05***	0.43	0.29*
Wholesale and Retail trade	1.62***	1.16***	1.94***	1.08***	-0.11	-0.05	1.04*	0.60	0.85	-1.06**	1.98**	0.15	-0.34	-1.23	0.55	0.14
Finance, Insurance, and Real Estate	1.10***	1.27***	1.40***	1.21***	-0.41	1.71***	1.02*	2.09***	-1.67**	1.05***	-0.04	1.71***	-2.51*	0.63***	-0.56	1.35***
Services and Public Administration	1.64*	3.01***	2.02**	2.96***	1.46	1.77***	2.54	1.63***	-1.10	2.07**	0.64	2.51***	-2.76	1.54	-0.85	2.09**
Transportation, Communication, Electric, Gas, and Sanitary Services	0.92	1.04***	1.61***	0.97***	-2.22*	-0.07	-0.29	0.61**	-5.24***	-0.55	-2.93	0.52*	-5.19**	-1.28	-3.44	-0.24
Abnormal returns in different size																
1st Quintile	2.35***	1.48***	2.90***	1.40***	1.74***	1.34***	3.22***	1.86***	2.88***	2.12***	4.29***	3.30***	2.84**	2.59***	4.06***	4.00***
2nd Quintile	0.60*	1.14***	1.08***	1.10***	0.12	0.34**	1.23***	0.89***	0.55	0.35***	1.37**	1.48***	-0.61	0.17**	-0.13	1.53***
3rd Quintile	0.38	1.00***	0.76***	0.94***	-0.17	-0.06	0.71	0.47***	0.03	-0.65	0.67	0.45***	-0.84	-1.28**	-0.53	-0.03
4th Quintile	0.24	0.95***	0.70***	0.91***	-2.49***	0.15*	-0.52	0.50***	-4.28***	-0.75*	-1.63*	0.06*	-5.75***	-1.46***	-2.87**	-0.50
5th quintile	0.25	0.81***	0.69***	0.71***	-1.42***	-0.23	-0.24	0.09	-2.09***	-1.59***	-0.88	-0.76*	-2.21	-2.76***	-1.60	-1.88***

Appendix 10G Regressions for Event Returns of Special Dividends on January Dummy in Sub-periods

This table shows a robustness check for abnormal returns of special dividends on the *January* dummy in four sub-periods. The dependent variable is abnormal returns (CARs) calculated by the market adjusted model $AR_{it} = R_{it}$-R_{mt}, where AR_{it} is abnormal returns for security *i* at time *t*, R_{it} is the actual returns for security *i* at time *t*, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes; and by the market model $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, where estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. Event windows used for abnormal returns are five days window of (-2, +2) and ten days window of (-1, +9) (in days) relative to announcements (0 represents the actual announcement day). The dependent variable in all CARs is regressed in percentage. Panel A is the equal-weighted market adjusted abnormal returns; Panel B is the value-weighted market adjusted abnormal returns; Panel C is the equal-weighted market model adjusted abnormal returns; and Panel D is the value-weighted market model adjusted abnormal returns in special dividend announcements. *January* is a dummy variable that takes a value of one for special dividends announced in January and a value of zero if an announcement is in other months of a year. *Divamt* is the amount of the special dividend paid per share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to special dividend announcements. *Ln(Price)* is the natural logarithm of stock price one day before special dividend announcements. *, ** and *** denote statistical significance at the 10%, 5%, and 1%, respectively.

Variables/CAR	1926-1940		1941-1960		1961-1985		1986-2008	
	(-2,+2)	(-1,+9)	(-2,+2)	(-1,+9)	(-2,+2)	(-1,+9)	(-2,+2)	(-1,+9)
Panel A: Market Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	-0.5508	-0.8540	-0.0150	1.3135***	6.1133***	8.3801***	11.9529***	12.4134***
January	-1.7934***	-2.4141***	-0.6999***	-0.9481***	-0.7015**	-1.3280***	-0.5943	-1.1227*
Divamt	0.0544	0.0471	0.1575*	0.2309**	1.5220***	1.1249***	0.4295***	0.4284***
Ln(Size)	0.0566	0.1276	0.0146	0.0105	0.0328	-0.1419	-0.4749***	-0.4306***
Ln(Price)	-0.0804	-0.2789	-0.0313	-0.4293***	-1.5544***	-1.5764***	-1.5123***	-1.7844***
p-value of *F*-statistic	<.0001	0.0002	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0154	0.0137	0.0045	0.0069	0.0488	0.0404	0.0501	0.0535
N	1593	1593	5344	5344	5185	5185	4350	4350
Panel B: Market Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	0.0616	1.2115	0.2747	2.1936***	6.3369***	8.7821***	12.1387***	12.9316***
January	0.2731	-0.0356	0.1142	0.3296	0.6573*	0.9048**	0.0218	-0.2039
Divamt	0.0273	0.0364	0.1874**	0.3655***	1.5545***	1.2002***	0.4304***	0.4043***
Ln(Size)	0.0077	-0.0048	-0.0120	-0.0382	0.0128	-0.1731*	-0.4723***	-0.4070***
Ln(Price)	-0.0299	-0.2460	-0.0142	-0.4640***	-1.5725***	-1.5944***	-1.5804***	-1.9583***
p-value of F-statistic	0.8979	0.7297	0.1842	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0007	0.0013	0.0012	0.0064	0.0507	0.0418	0.0507	0.0547
N	1593	1593	5344	5344	5185	5185	4350	4350
Panel C: Market Model Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	-0.3642	-0.6083	0.0862	1.6397***	5.4750***	7.1512***	11.7496***	12.3737***
January	-0.3602	-1.1206**	-0.1596	-0.3271	-0.1171	-0.5221	-0.3500	-1.1485**
Divamt	-0.0037	-0.0063	0.1074	0.2135*	1.4373***	0.9808***	0.4172***	0.3744***
Ln(Size)	0.0406	0.1775	0.0053	0.0191	0.1284*	0.0645	-0.4453***	-0.3484***
Ln(Price)	-0.0093	-0.3416	-0.0310	-0.5764***	-1.7456***	-2.0139***	-1.5979***	-2.0903***
p-value of F-statistic	0.8590	0.0605	0.5747	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0008	0.0057	0.0005	0.0058	0.0498	0.0427	0.0503	0.0573
N	1593	1593	5343	5343	5182	5182	4349	4349
Panel D: Market Model Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	-0.3621	0.2391	0.1586	1.8915***	5.5165***	7.4402***	11.8484***	12.7168***
January	0.4563	-0.1236	0.3700**	0.5531***	1.0237***	1.3273***	0.2522	-0.1565
Divamt	-0.0099	0.0012	0.1479*	0.3283***	1.4513***	1.0659***	0.4191***	0.3696***
Ln(Size)	0.0192	0.0868	-0.0025	0.0043	0.0918	-0.0224	-0.4533***	-0.3638***
Ln(Price)	0.0293	-0.3276	-0.0432	-0.5949***	-1.6841***	-1.8897***	-1.6305***	-2.1612***
p-value of F-statistic	0.7499	0.6058	0.0695	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0012	0.0017	0.0016	0.0078	0.0499	0.0431	0.0511	0.0591
N	1593	1593	5343	5343	5182	5182	4349	4349

Appendix 11A Abnormal Returns of Special Dividends between November-April and May-October in different Sub-periods, Industries and Sizes

This table shows a robustness check for abnormal returns of special dividends between November-April and May-October in four sub-periods, six groups of industries and five size quintiles for the period 1926 to 2008. Abnormal returns are calculated by the market adjusted model $AR_{it} = R_{it}\text{-}R_{mt}$ in Panel A, where AR_{it} is abnormal returns for security i at time t, R_{it} is the actual returns for security i at time t, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes. Market model adjusted returns measured by $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, are in Panel B. Estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. (-1, +1), (1, +30), (1, +60) and (1, +90) are event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). Industry classifications are based on the two-digit SIC code of the Coding Scheme on the US Department of Labour website (http://www.osha.gov/oshstats/sicser.html). All abnormal returns are in percentage. *, **, and *** denote statistical significance at the 10%, 5%, and 1% significant level, respectively.

Panel A: Market Adjusted Returns																
	(-1,+1)				(1,+30)				(1,+60)				(1,+90)			
	Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted		Equal-Weighted		Value-Weighted	
	MayOct	NovApr	MayOct	NovApr	MayOct	NovApr	MayOct	NovApr	MayOct	NovApr	MayOct	NovApr	MayOct	NovApr	MayOct	NovApr
Abnormal returns in different sub-periods																
1926-1940	0.05	-0.38***	0.22	-0.06	-1.83***	-2.36***	0.90	0.97***	-2.35***	-2.76***	2.38***	2.27***	-5.27***	-3.13***	2.31**	2.87***
1941-1960	0.06	-0.04	0.10	0.11**	0.37***	-1.07***	0.61***	0.71***	0.92***	-0.77***	1.46***	1.61***	0.38	-0.87***	2.42***	1.47***
1961-1985	1.93***	1.71***	1.88***	1.79***	2.23***	0.33	2.18***	2.80***	1.96***	0.08***	3.32***	5.65***	2.28***	0.25**	5.51***	6.92***
1986-2008	2.33***	1.80***	2.33***	1.83***	2.32***	0.47	2.77***	2.78***	2.11***	-1.34***	3.37***	2.80***	1.25	-1.38***	3.80***	3.71***
Abnormal returns in different industries																
Agriculture, Forestry, Fishing, Mining and Construction	1.08***	1.61***	1.06***	1.69***	0.88	1.14	1.39*	3.39***	1.44	0.54	3.11***	5.20***	0.91	-0.42*	4.49***	5.18***
Manufacturing	0.86***	0.72***	0.88***	0.86***	0.62***	-0.64***	1.11***	1.47***	0.73**	-0.63***	2.20***	3.19***	0.28	-0.51***	3.49***	3.86***
Wholesale and Retail trade	1.18***	1.22***	1.21***	1.31***	1.69**	-0.82***	2.62***	1.51***	0.70	-0.82***	2.78***	2.95***	0.05	-0.37***	4.00***	4.05***
Finance, Insurance, and Real Estate	1.69***	1.14***	1.72***	1.18***	2.11***	0.17*	2.45***	2.76***	1.79***	-1.70***	2.95***	2.85***	0.79	-2.10***	3.47***	3.33***
Services and Public Administration	3.79***	2.42***	3.75***	2.58***	2.97***	1.36	3.06***	3.46***	3.78**	2.10	5.02***	5.89***	2.36	2.44	5.56***	6.98***
Transportation, Communication, Electric, Gas, and Sanitary Services	1.34***	0.93***	1.26***	1.06***	1.43**	-0.69***	1.96***	1.43***	1.68	-1.50***	3.22***	2.12***	0.66	-1.24***	3.79***	2.77***
Abnormal returns in different size																
1st Quintile	1.65***	1.53***	1.67***	1.65***	2.03***	0.94**	2.66***	3.40***	2.55***	1.74***	4.24***	6.20***	3.09***	2.32***	6.66***	7.65***
2nd Quintile	1.30***	1.03***	1.36***	1.16***	1.20***	0.06*	1.77***	2.27***	1.54**	0.18	3.03***	4.36***	1.93*	0.17	5.24***	5.02***
3rd Quintile	1.18***	0.82***	1.21***	0.93***	0.90***	-0.39***	1.42***	1.91***	1.27**	-1.15***	2.71***	2.95***	0.35	-1.01***	3.61***	3.91***
4th Quintile	1.11***	0.83***	1.12***	0.93***	1.11***	-1.09***	1.44***	1.16***	0.34	-2.49***	1.64***	1.55***	-1.05**	-2.85***	1.88***	1.83***
5th quintile	0.94***	0.74***	0.91***	0.81***	0.85***	-1.01***	1.13***	1.01***	0.23	-2.45***	1.56***	1.20***	-1.28***	-2.92***	1.49***	1.10***
Panel B: Market Model Adjusted Returns																
Abnormal returns in different sub-periods																
1926-1940	0.15	-0.10	0.12	-0.10	-0.29	-0.95***	-0.13	-0.23	0.11	-1.02***	0.07	-0.43	-1.82***	-1.53***	-1.40**	-1.49***
1941-1960	0.04	0.00	0.00	0.05*	0.06	-1.13***	-0.19	-0.09	0.27**	-1.02***	-0.10	0.16	-0.33	-1.38***	-0.01	-0.77***
1961-1985	1.75***	1.66***	1.62***	1.64***	0.92***	0.26**	0.15	1.59***	-0.25	-0.02	-0.59	3.27***	-0.56	-0.39	0.02*	3.26***
1986-2008	2.25***	1.75***	2.14***	1.74***	1.69***	1.39***	0.93***	2.35***	1.33***	0.16*	0.03	1.76***	0.47	-0.07	-0.75	1.53***
Abnormal returns in different industries																
Agriculture, Forestry, Fishing, Mining and Construction	0.98***	1.45***	0.87***	1.46***	0.15	0.32	-0.27	1.39**	0.39	-0.44	-0.19	1.66**	-0.10	-2.26*	-0.17	-0.31
Manufacturing	0.81***	0.75***	0.72***	0.78***	0.22**	-0.68***	-0.27	0.45***	-0.09	-0.82***	-0.51	1.23***	-0.83	-1.08***	-0.48	0.77**
Wholesale and Retail trade	1.09***	1.28***	1.02***	1.27***	1.34*	-0.57**	1.00	0.54	-0.05	-1.07*	-0.59	0.77	-1.61	-0.93	-1.31	0.75
Finance, Insurance, and Real Estate	1.59***	1.11***	1.51***	1.09***	1.51***	1.57***	0.94***	2.50***	1.33***	0.65***	0.32	2.15***	0.79**	0.24**	0.01	1.75***
Services and Public Administration	3.68***	2.37***	3.63***	2.38***	2.46***	1.27	1.15	2.08**	2.16*	1.54	1.32	3.01**	0.94	1.29	0.65	2.60*
Transportation, Communication, Electric, Gas, and Sanitary Services	1.23***	0.93***	1.12***	0.94***	0.89*	-0.74*	0.66	0.52*	0.95	-1.69***	0.68	0.19	-0.57	-1.95**	-0.44	-0.36
Abnormal returns in different size																
1st Quintile	1.54***	1.53***	1.46***	1.53***	1.44***	1.28***	1.08***	2.38***	1.69***	2.29***	1.32***	4.19***	2.29***	2.59***	2.50***	4.36***
2nd Quintile	1.20***	1.04***	1.15***	1.07***	0.42*	0.29*	0.14	1.38***	0.30	0.55***	-0.17	2.49***	0.47*	0.11*	0.75**	1.90***
3rd Quintile	1.13***	0.87***	1.07***	0.86***	0.17	-0.09	-0.26	0.97***	-0.15	-0.58	-0.59	1.27***	-1.53*	-0.70	-1.33	1.08***
4th Quintile	1.05***	0.81***	0.94***	0.85***	0.93***	-0.58*	0.30	0.56***	0.04	-1.75***	-0.61	0.24**	-1.10	-2.41***	-1.21	-0.51
5th quintile	0.91***	0.72***	0.78***	0.70***	0.50**	-0.86***	-0.31	0.17	-0.27	-2.48***	-1.11	-0.59	-2.00***	-3.23***	-2.38***	-1.56***

Appendix 11B Regressions for Event Returns of Special Dividends on Halloween Dummy in Sub-periods

This table shows a robustness check for abnormal returns of special dividends on the *Halloween* dummy in four sub-periods. The dependent variable is abnormal returns (CARs) calculated by the market adjusted model $AR_{it} = R_{it}-R_{mt}$, where AR_{it} is abnormal returns for security i at time t, R_{it} is the actual returns for security i at time t, R_{mt} is proxied by both CRSP equal-weighted and value-weighted market indexes; and by the market model $AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i * R_{mt}$ with both equal-weighted and value-weighted market indexes, where estimator $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from the market model of $R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_i$ with estimation period of 255 trading days. Event windows used for abnormal returns are ten days window of (-1, +9) and one month window of (-1, +30) (in days) relative to announcements (0 represents the actual announcement day). The dependent variable in all CARs is regressed in percentage. Panel A and E are the equal-weighted market adjusted abnormal returns; Panel B and F are the value-weighted market adjusted abnormal returns; Panel C and G are the equal-weighted market model adjusted abnormal returns; and Panel D and H are the value-weighted market model adjusted abnormal returns in special dividend announcements. *January* is a dummy variable that takes a value of one for special dividends announced in January and a value of zero if an announcement is in other months of a year. *Halloween* is another dummy variable that takes a value of one for special dividends announced in the months of November to April and a value of zero if announcements are in the months of May to October. *HalnoJan* is the dummy variable to separate the January Effect from the Halloween Effect, which takes a value of one for special dividends announced in the months of November to April, except January and a value of zero if the announcements are in the months of May to October. *Divamt* is the amount of the special dividend paid per share. *Ln(Size)* is the natural logarithm of market capitalization of the stock as of one day prior to special dividend announcements. *Ln(Price)* is the natural logarithm of stock price one day before special dividend announcements. *, ** and *** denote statistical significance at the 10%, 5%, and 1%, respectively.

Variables/CAR	1926-1940		1941-1960		1961-1985		1986-2008	
	(-1,+9)	(-1,+30)	(-1,+9)	(-1,+30)	(-1,+9)	(-1,+30)	(-1,+9)	(-1,+30)
Panel A: Market Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	-0.4643	1.4731	1.4225***	3.6402***	8.9496***	11.2996***	12.9137***	11.8433***
Halloween	-0.6498***	-0.8304*	-0.3098**	-1.4185***	-1.0382***	-2.0686***	-0.9303***	-2.1109***
Divamt	0.0419	0.0647	0.2396**	0.1103	1.1519***	1.8071***	0.4222***	0.4663***
Ln(Size)	0.1380	-0.1018	0.0060	-0.1850**	-0.1468	-0.1259	-0.4185***	-0.2412*
Ln(Price)	-0.3682	-0.6329*	-0.4144***	-0.4002*	-1.5615***	-2.4007***	-1.8105***	-2.0966***
p-value of *F*-statistic	0.1678	0.0876	0.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0041	0.0051	0.0043	0.0142	0.0428	0.0431	0.0549	0.0351
N	1539	1593	5344	5344	5185	5185	4350	4350
Panel B: Market Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	1.2723	5.0644***	2.1559***	4.5941***	9.1482***	12.8669***	13.3035***	13.4005***
Halloween	-0.0818	-0.1810	0.1075	0.1716	-0.5601**	0.5090	-0.6278**	-0.2551
Divamt	0.0367	0.0859	0.3625***	0.2508	1.2168***	1.9204***	0.3993***	0.4231***
Ln(Size)	-0.0053	-0.0867	-0.0366	-0.1713**	-0.1638*	-0.2051	-0.4001***	-0.1632
Ln(Price)	-0.2491	-0.8532***	-0.4692***	-0.6554***	-1.6157***	-2.6833***	-1.9712***	-2.6989***
p-value of F-statistic	0.7158	0.0176	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0013	0.0075	0.0060	0.0077	0.0422	0.0480	0.0556	0.0378
N	1539	1593	5344	5344	5185	5185	4350	4350
Panel C: Market Model Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	-0.2347	1.1924	1.7374***	4.0307***	7.5272***	9.1829***	12.6362***	11.5996***
Halloween	-0.5541*	-0.9885**	-0.2276*	-1.1389***	-0.6656***	-0.7524**	-0.5455*	-0.6876
Divamt	-0.0073	-0.0029	0.2163*	0.0270	0.9984***	1.2651***	0.3715***	0.3447***
Ln(Size)	0.1802	0.1660	0.0202	-0.0862	0.0639	0.1350	-0.3402***	-0.0727
Ln(Price)	-0.3891*	-0.8548**	-0.5737***	-0.8932***	-2.0103***	-3.0729***	-2.1098***	-2.9029***
p-value of F-statistic	0.1122	0.0282	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0047	0.0068	0.0059	0.0141	0.0441	0.0390	0.0572	0.0354
N	1593	1593	5343	5343	5182	5182	4349	4349
Panel D: Market Model Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	0.3590	2.2696	1.8482***	3.4120***	7.6700***	9.1211***	12.7817***	11.2476***
Halloween	-0.1642	-0.4013	0.1403	0.1857	-0.3058	1.4036***	-0.1220	1.1129***
Divamt	0.0016	0.0526	0.3232***	0.1901	1.0760***	1.4366***	0.3688***	0.3314***
Ln(Size)	0.0862	0.2150	0.0078	0.0389	-0.0112	0.1318	-0.3621***	-0.0360
Ln(Price)	-0.3353	-1.2318***	-0.6044***	-1.1922***	-1.9165***	-3.3483***	-2.1647***	-3.2288***
p-value of F-statistic	0.5599	0.0050	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0019	0.0093	0.0068	0.0097	0.0419	0.0474	0.0591	0.0427
N	1593	1593	5343	5343	5182	5182	4349	4349

Variables/CAR	1926-1940		1941-1960		1961-1985		1986-2008	
	(-1,+9)	(-1,+30)	(-1,+9)	(-1,+30)	(-1,+9)	(-1,+30)	(-1,+9)	(-1,+30)
Panel E: Market Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	-0.6442	1.3645	1.4049***	3.6391***	8.9284***	11.2642***	12.9212***	11.8476***
HanoJan	-0.2823	-0.6085	-0.1899	-1.4109***	-0.9444***	-1.9121***	-0.8586***	-2.0699***
January	-2.5661***	-1.9874**	-1.0668***	-1.4669***	-1.8958***	-3.4998***	-1.6876***	-2.5443***
Divamt	0.0481	0.0685	0.2312**	0.1097	1.1505***	1.8048***	0.4216***	0.4660***
Ln(Size)	0.1260	-0.1091	0.0138	-0.1845**	-0.1403	-0.1151	-0.4211***	-0.2427*
Ln(Price)	-0.2897	-0.5854	-0.4315***	-0.4013*	-1.5779***	-2.4281***	-1.8021***	-2.0918***
p-value of *F*-statistic	0.0004	0.0598	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0142	0.0067	0.0073	0.0142	0.0436	0.0441	0.0554	0.0351
N	1539	1593	5344	5344	5185	5185	4350	4350
Panel F: Market Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	1.2725	5.0952***	2.1620***	4.6004***	9.1744***	12.8674***	13.3034***	13.1048***
HanoJan	-0.0821	-0.2439	0.0658	0.1288	-0.6758***	0.5069	-0.6288**	-0.2133
January	-0.0798	0.1468	0.3707	0.4418	0.4984	0.5287	-0.6176	-0.6966
Divamt	0.0367	0.0848	0.3654***	0.2538	1.2185***	1.9205***	0.3993***	0.4227***
Ln(Size)	-0.0053	-0.0846	-0.0393	-0.1740**	-0.1719*	-0.2053	-0.4001***	-0.1647
Ln(Price)	-0.2491	-0.8666***	-0.4632***	-0.6493***	-1.5955***	-2.6830***	-1.9713***	-2.6940***
p-value of F-statistic	0.8340	0.0319	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0013	0.0077	0.0064	0.0079	0.0434	0.0480	0.0556	0.0379
N	1539	1593	5344	5344	5185	5185	4350	4350
Panel G: Market Model Adjusted Abnormal Returns with Equal-Weighted Index								
Intercept	-0.3083	1.2219	1.7323***	4.0410***	7.5213***	9.1692***	12.6451***	11.6162***
HanoJan	-0.4038	-1.0488**	-0.1927	-1.2094***	-0.6393***	-0.6912*	-0.4598	-0.5293
January	-1.3379**	-0.6739	-0.4476*	-0.6943*	-0.9064*	-1.3121*	-1.4511**	-2.3617***
Divamt	-0.0047	-0.0040	0.2139*	0.0319	0.9980***	1.2642***	0.3708***	0.3435***
Ln(Size)	0.1753	0.1680	0.0224	-0.0908	0.0657	0.1393	-0.3433***	-0.0784
Ln(Price)	-0.3570*	-0.8677**	-0.5787***	-0.8832***	-2.0149***	-3.0836***	-2.0998***	-2.8844***
p-value of F-statistic	0.0556	0.0502	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0068	0.0069	0.0062	0.0145	0.0441	0.0392	0.0578	0.0364
N	1593	1593	5343	5343	5182	5182	4349	4349
Panel H: Market Model Adjusted Abnormal Returns with Value-Weighted Index								
Intercept	0.3549	2.3141	1.8588***	3.4254***	7.7033***	9.1329***	12.7828***	11.2535***
HanoJan	-0.1559	-0.4920	0.0682	0.0944	-0.4546*	1.3511***	-0.1118	1.1699***
January	-0.2075	0.0719	0.5957***	0.7622**	-1.0540**	1.8835**	-0.2301	0.5100
Divamt	0.0018	0.0511	0.3282***	0.1965	1.0781***	1.4373***	0.3687***	0.3310***
Ln(Size)	0.0859	0.2179	0.0031	0.0330	-0.0215	0.1281	-0.3625***	-0.0381
Ln(Price)	-0.3336	-1.2512***	-0.5941***	-1.1792***	-1.8904***	-3.3391***	-2.1635***	-3.2222***
p-value of F-statistic	0.7004	0.0090	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R-Square	0.0019	0.0096	0.0079	0.0104	0.0438	0.0475	0.0591	0.0428
N	1593	1593	5343	5343	5182	5182	4349	4349

Appendix 12A The Dominant Macro-Determinant for the Likelihood of Stock Splits with the Composite Sentiment Index and Additional Accounting Variables from 1960 to 2008

This table shows the dominant macro-determinant for the likelihood of the occurrence of stock split announcements with the composite sentiment index (Baker & Wurgler, 2006, 2007) and additional accounting variables from 1960 to 2008. The dependent variable is a binary variable that contains a value of one if a firm announces a stock split in the month; otherwise, zero. *Ln(Size)* is the natural logarithm of monthly market capitalization; *Ln(Price)* is the natural logarithm of monthly stock price; *EBIT* is a firm's earnings before interests and tax; *ROA* is a firm's return on assets; *ATO* is a firm's asset turnover; *Lgsale* is the natural logarithm of monthly sales. *GDP* is the change in nominal GDP; *UNEMP* is the unemployment rate; *cpi* is the consumer price index; and *inf* is the inflation rate in the US. *DIV* is the market dividend yield, defined as the total dividend payments on the market over the current level of the index. *DEF* is the default spread, defined as the difference between the average yield of bonds rated BAA by Moodys and the average yield of bonds with a Moodys rating of AAA. *TERM* is the term spread, measured as the difference between the average yield of long term Treasury bonds (more than 10 years) and the average yield of T-bills that mature in three months. *YLD* is the three-month T-bills yield. *Sent* is the composite sentiment index extracted from Baker and Wurgler's website. The logistic regressions run on the full sample period and on four sub-periods for a robustness check to avoid noise. *p-values* are in parentheses under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Full Sample			Sub-periods			
Variables	1926-2008			1926-1960	1961-1975	1976-1995	1996-2008
Intercept	-10.1639	-8.4312	-10.1471	-1.2274	-9.8684	-5.1392	-11.8077
	(<.0001)***	(<.0001)***	(<.0001)***	(0.7456)	(<.0001)***	(<.0001)***	(<.0001)***
Ln(Size)	-0.0116	-0.0281	-0.0052	-0.1647	-0.6148	-0.0447	0.1325
	(0.1703)	(0.0006)***	(0.5340)	(0.1616)	(<.0001)***	(0.0001)***	(<.0001)***
Ln(Price)	1.5241	1.4635	1.4849	1.1189	2.7230	1.6229	1.2786
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
EBIT	-0.0003	-0.0002	-0.0003	0.0001	-0.0004	-0.0001	-0.0003
	(<.0001)***	(<.0001)***	(<.0001)***	(0.6923)	(0.0730)*	(0.0005)***	(<.0001)***
ROA	0.0004	0.0005	0.0003	0.0654	0.0163	0.0007	0.0008
	(0.0085)***	(0.0017)***	(0.0238)**	(<.0001)***	(<.0001)***	(0.0013)***	(<.0001)***
ATO	0.1486	0.1437	0.1530	0.1372	0.1977	0.1885	0.0572
	(<.0001)***	(<.0001)***	(<.0001)***	(0.0822)*	(<.0001)***	(<.0001)***	(<.0001)***
Lgsale	-0.2400	-0.2179	-0.2402	0.1271	-0.0961	-0.2810	-0.1932
	(<.0001)***	(<.0001)***	(<.0001)***	(0.3087)	(0.0032)***	(<.0001)***	(<.0001)***
GDP_{t-1}	0.0761		0.0742	-0.3800	0.0817	0.0421	0.0905
	(<.0001)***		(<.0001)***	(<.0001)***	(0.0003)***	(<.0001)***	(0.0002)***
$Unemp_{t-1}$	0.2480		0.1648	0.1797	0.3899	0.1101	0.7533
	(<.0001)***		(<.0001)***	(0.0573)*	(0.0009)***	(<.0001)***	(<.0001)***
CPI_{t-1}	0.0005		0.0013	-0.3409	0.0633	-0.0194	-0.0033
	(0.3714)		(<.0001)***	(0.0337)**	(0.0274)**	(<.0001)***	(0.3963)
$Infl_{t-1}$	0.1140		0.1727	-0.4751	-0.2896	-0.0252	0.2814
	(0.0013)***		(<.0001)***	(0.0147)**	(0.0595)*	(0.6372)	(<.0001)***
DIV_{t-1}	-0.0307		-0.1038	0.0037	-0.3672	-0.2666	-0.6675
	(0.2184)		(<.0001)***	(0.9716)	(0.0239)**	(<.0001)***	(<.0001)***
DEF_{t-1}	-0.1508		-0.1918	-2.9647	-0.9695	-0.0894	-0.4925
	(0.0002)***		(<.0001)***	(0.0002)***	(0.0005)***	(0.1094)	(0.0002)***
YLD_{t-1}	0.0385		0.1303	0.9554	0.0042	-0.0727	0.0994
	(0.0001)***		(<.0001)***	(0.0040)***	(0.9730)	(<.0001)***	(0.0875)*
$TERM_{t-1}$	0.0238		0.1303	0.8782	-0.0334	-0.1090	-0.0712
	(0.0792)*		(<.0001)***	(0.0507)*	(0.7938)	(<.0001)***	(0.1264)
$Sent_{t-1}$	-0.2466	-0.2918			2.2158	0.7423	-0.3564
	(<.0001)***	(<.0001)***			(0.0634)*	(<.0001)***	(0.0065)***

Appendix 12B The Dominant Macro-Determinant for the Abnormal Returns of Stock Splits with the Composite Sentiment Index and Additional Accounting Variables from 1960 to 2008

This table shows the dominant macro-determinant for the abnormal returns of the occurrence of stock split announcements with the composite sentiment index (Baker & Wurgler, 2006, 2007) and additional accounting variables from 1960 to 2008. The dependent variable in Panel A is equal-weighted market adjusted abnormal returns; the dependent variable in Panel B is value-weighted market adjusted abnormal returns; the dependent variable in Panel C is equal-weighted market model adjusted abnormal returns and the dependent variable in Panel D is value-weighted market model adjusted abnormal returns for firms announcing stock splits. (-2, +2), (-1, +9) and (-1, +30) represent event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). *SplFac* is the split ratio obtained from CRSP and defined as the number of additional shares per existing share. *Ln(Size)* is the natural logarithm of monthly market capitalization; *Ln(Price)* is the natural logarithm of monthly stock price; *EBIT* is a firm's earnings before interests and tax; *ROA* is a firm's return on assets; *ATO* is a firm's asset turnover; *Lgsale* is the natural logarithm of monthly sales. *GDP* is the change in nominal GDP; *UNEMP* is the unemployment rate; *cpi* is the consumer price index; and *inf* is the inflation rate in the US. *DIV* is the market dividend yield, defined as the total dividend payments on the market over the current level of the index. *DEF* is the default spread, defined as the difference between the average yield of bonds rated BAA by Moodys and the average yield of bonds with a Moodys rating of AAA. *TERM* is the term spread, measured as the difference between the average yield of long term Treasury bonds (more than 10 years) and the average yield of T-bills that mature in three months. *YLD* is the three-month T-bills yield. *Sent* is the composite sentiment index extracted from Baker and Wurgler's website. All abnormal returns are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations, the fixed effect and the clustering effect with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Equal-weighted market adjusted abnormal returns									
	(-2,+2)			(-1,+9)			(-1,+30)		
Variables	OLS	Fixed Effect	Cluster Std. Err.	OLS	Fixed Effect	Cluster Std. Err.	OLS	Fixed Effect	Cluster Std. Err.
Intercept	13.3458	16.0182	13.3458	20.7827	30.5466	20.7827	20.5631	48.7250	20.5631
	[13.08]***	[8.37]***	[9.90]***	[16.03]***	[12.64]***	[13.50]***	[9.80]***	[12.22]***	[8.33]***
Ln(Size)	-0.2697	-0.7037	-0.2697	-0.8788	-2.1305	-0.8788	-0.7255	-4.4275	-0.7255
	[-2.59]**	[-3.18]***	[-1.87]*	[-6.63]***	[-7.64]***	[-5.43]***	[-3.40]***	[-9.62]***	[-2.87]***
Ln(Price)	-1.6111	-1.6300	-1.6111	-2.3607	-2.2615	-2.3607	-2.8180	-1.6477	-2.8180
	[-8.15]***	[-4.42]***	[-5.05]***	[-9.40]***	[-4.86]***	[-6.18]***	[-6.94]***	[-2.14]**	[-4.91]***
SplitFactor	1.5068	2.2997	1.5068	1.7948	2.5885	1.7948	2.7139	3.7209	2.7139
	[12.07]***	[9.14]***	[3.35]***	[11.32]***	[8.16]***	[3.36]***	[10.56]***	[7.10]***	[3.36]***
EBIT	0.3904	0.4903	0.3904	5.2846	10.6075	5.2846	4.4063	10.6870	4.4063
	[0.36]	[0.24]	[0.28]	[3.86]***	[4.15]***	[2.96]***	[1.99]**	[2.53]**	[1.31]
ROA	-0.0074	-0.0025	-0.0074	-0.0141	-0.0536	-0.0141	0.0799	0.0741	0.0799
	[-0.72]	[-0.12]	[-0.55]	[-1.08]	[-2.03]**	[-0.80]	[3.79]***	[1.70]*	[2.20]**
ATO	0.6106	0.4192	0.6106	0.0565	-0.2367	0.0565	0.3716	-0.4083	0.3716
	[5.80]***	[1.51]	[4.70]***	[0.42]	[-0.68]	[0.39]	[1.73]*	[-0.71]	[1.68]*
Lgsale	-0.5593	-0.2386	-0.5593	-0.1420	0.6754	-0.1420	-0.8484	1.0264	-0.8484
	[-6.96]***	[-1.05]	[-4.86]***	[-1.39]	[2.35]**	[-1.09]	[-5.16]***	[2.17]**	[-3.68]***
GDP_{t-1}	-0.0462	-0.0760	-0.0462	0.0787	0.1305	0.0787	0.2781	0.2978	0.2781
	[-0.69]	[-0.88]	[-0.76]	[0.93]	[1.20]	[0.96]	[2.01]**	[1.66]*	[2.03]**
$Unemp_{t-1}$	-0.0606	-0.0053	-0.0606	-0.4299	-0.3073	-0.4299	-1.2894	-1.0581	-1.2894
	[-0.51]	[-0.04]	[-0.48]	[-2.87]***	[-1.69]*	[-2.77]***	[-5.25]***	[-3.52]***	[-5.15]***
CPI_{t-1}	-0.0019	-0.0001	-0.0019	0.0147	0.0164	0.0147	0.0370	0.0596	0.0379
	[-0.44]	[-0.10]	[-0.41]	[2.67]***	[1.87]*	[2.58]**	[4.11]***	[4.13]***	[3.99]***
$Infl_{t-1}$	0.1185	0.2620	0.1185	0.0333	0.2910	0.0333	-0.3442	0.6073	-0.3442
	[0.46]	[0.81]	[0.43]	[0.10]	[0.71]	[0.10]	[-0.64]	[0.90]	[-0.60]
DIV_{t-1}	-0.5091	-0.3867	-0.5091	-0.3161	-0.5320	-0.3161	-0.0519	-0.6936	-0.0519
	[-2.71]***	[-1.66]	[-2.75]***	[-1.33]	[-1.81]*	[-1.34]	[-0.13]	[-1.43]	[-0.14]
DEF_{t-1}	0.8744	0.6857	0.8744	1.5443	1.1250	1.5443	2.9018	2.5354	2.9018
	[2.84]***	[1.84]*	[2.76]***	[3.97]***	[2.39]**	[3.89]***	[4.54]***	[3.26]***	[4.47]***
YLD_{t-1}	-0.1961	-0.2578	-0.1961	-0.3099	-0.3296	-0.3099	0.0111	-0.0254	0.0111
	[-2.59]**	[-2.74]***	[-2.76]***	[-3.23]***	[-2.78]***	[-3.35]***	[0.07]	[-0.13]	[0.07]
$TERM_{t-1}$	-0.0495	-0.0714	-0.0495	-0.0838	-0.1338	-0.0838	0.4716	0.2974	0.4716
	[-0.50]	[-0.58]	[-0.53]	[-0.67]	[-0.86]	[-0.69]	[2.29]**	[1.16]	[2.24]**
$Sent_{t-1}$	0.4022	0.2948	0.4022	0.2021	0.8905	0.2021	-0.3102	2.4054	-0.3102
	[0.85]	[0.47]	[0.92]	[0.34]	[1.13]	[0.34]	[-0.32]	[1.84]*	[-0.32]

Panel B: Value-weighted market adjusted abnormal returns									
	(-2,+2)			(-1,+9)			(-1,+30)		
Variables	OLS	Fixed Effect	Cluster Std. Err.	OLS	Fixed Effect	Cluster Std. Err.	OLS	Fixed Effect	Cluster Std. Err.
Intercept	13.6148	16.2615	13.6148	21.2050	30.4865	21.2050	20.3537	49.0938	20.3537
	[13.27]***	[8.45]***	[10.01]***	[16.19]***	[12.54]***	[13.55]***	[9.53]***	[12.18]***	[8.04]***
Ln(Size)	-0.2648	-0.7336	-0.2648	-0.8741	-2.1278	-0.8741	-0.7126	-4.5761	-0.7126
	[-2.53]**	[-3.30]***	[-1.82]	[-6.53]***	[-7.58]***	[-5.33]***	[-3.28]**	[-9.83]***	[-2.76]***
Ln(Price)	-1.5377	-1.4481	-1.5377	-2.2555	-1.9798	-2.2555	-2.6668	-1.0823	-2.6668
	[-7.74]***	[-3.90]***	[-4.83]***	[-8.89]***	[-4.22]***	[-5.84]***	[-6.45]***	[-1.39]	[-4.60]***
SplitFactor	1.4702	2.2044	1.4702	1.7591	2.4479	1.7591	2.5967	3.2869	2.5967
	[11.71]***	[8.72]***	[3.34]***	[10.98]***	[7.66]***	[3.31]***	[9.94]***	[6.21]***	[3.31]***
EBIT	0.1976	-0.2313	0.1976	4.9052	9.1003	4.9052	4.3391	10.2194	4.3391
	[0.18]	[-0.11]	[0.14]	[3.54]***	[3.54]***	[2.72]***	[1.92]*	[2.40]**	[1.71]
ROA	-0.0073	0.4139	-0.0073	-0.0040	-0.0419	-0.0140	0.0831	0.0999	0.0831
	[-0.71]	[1.49]	[-0.53]	[-1.06]	[-1.57]	[-0.81]	[3.87]***	[2.27]**	[1.98]**
ATO	0.6382	0.0033	0.6382	0.0580	-0.2731	0.0580	0.4233	-0.4303	0.4233
	[6.03]***	[0.16]	[4.86]***	[0.43]	[-0.78]	[0.40]	[1.93]*	[-0.74]	[1.86]*
Lgsale	-0.5822	-0.2223	-0.5822	-0.1724	0.7022	-0.1724	-0.9376	0.9609	-0.9376
	[-7.20]***	[-0.97]	[-4.99]***	[-1.67]*	[2.43]**	[-1.31]	[-5.59]***	[2.01]**	[-3.94]***
GDP_{t-1}	-0.0312	-0.0580	-0.0314	0.1504	0.2030	0.1504	0.3010	0.3155	0.3010
	[-0.47]	[-0.67]	[-0.51]	[1.76]*	[1.86]*	[1.81]*	[2.14]**	[1.74]*	[2.15]**
$Unemp_{t-1}$	0.1678	0.2101	0.1678	-0.0266	0.0921	-0.0266	-0.5539	-0.2870	-0.5539
	[1.41]	[1.45]	[1.33]	[-0.18]	[0.50]	[-0.17]	[-2.23]**	[-0.94]	[-2.18]**
CPI_{t-1}	-0.0012	-0.0001	-0.0012	0.0189	0.0189	0.0189	0.0666	0.0930	0.0666
	[-0.28]	[-0.02]	[-0.26]	[3.41]***	[2.14]**	[3.30]***	[7.30]***	[6.37]***	[7.11]***
$Infl_{t-1}$	-0.0623	0.0951	-0.0623	-0.4181	-0.1096	-0.4181	-1.9662	-0.8620	-1.9662
	[-0.24]	[0.29]	[-0.23]	[-1.26]	[-0.27]	[-1.21]	[-3.60]***	[-1.26]	[-3.35]***
DIV_{t-1}	-0.6568	-0.5055	-0.6568	-0.3687	-0.5303	-0.3687	0.7426	0.0937	0.7426
	[-3.48]***	[-2.16]**	[-3.51]***	[-1.54]	[-1.80]*	[-1.54]	[1.88]*	[0.19]	[1.92]*
DEF_{t-1}	0.8987	0.7352	0.8987	1.7280	1.3462	1.7280	3.6417	3.2868	3.6417
	[2.90]***	[1.96]*	[2.81]***	[4.40]***	[2.84]***	[4.30]***	[5.62]***	[4.18]***	[5.50]***
YLD_{t-1}	-0.2608	-0.3242	-0.2608	-0.5099	-0.5431	-0.5099	-0.7530	-0.8167	-0.7530
	[-3.42]***	[-3.43]***	[-3.65]***	[-5.27]***	[-4.55]***	[-5.46]***	[-4.72]***	[-4.13]***	[-4.72]***
$TERM_{t-1}$	-0.1356	-0.1574	-0.1356	-0.3386	-0.3931	-0.3386	-0.3384	-0.5350	-0.3384
	[-1.36]	[-1.27]	[-1.44]	[-2.67]***	[-2.52]**	[-2.75]***	[-1.62]	[-2.07]**	[-1.58]
$Sent_{t-1}$	-0.3235	-0.3525	-0.3235	-1.3806	-0.6704	-1.3806	-5.1175	-2.5814	-5.1175
	[-0.68]	[-0.56]	[-0.74]	[-2.29]**	[-0.84]	[-2.35]**	[-5.16]***	[-1.96]*	[-5.35]***

Panel C: Equal-weighted market model adjusted abnormal returns									
	(-2,+2)			(-1,+9)			(-1,+30)		
Variables	OLS	Fixed Effect	Cluster Std. Err.	OLS	Fixed Effect	Cluster Std. Err.	OLS	Fixed Effect	Cluster Std. Err.
Intercept	16.7051	19.3940	16.7054	27.1130	36.6867	27.1130	38.1743	65.8722	38.1743
	[16.10]***	[10.14]***	[11.85]***	[20.00]***	[14.94]***	[16.24]***	[16.02]***	[15.62]***	[13.37]***
Ln(Size)	-0.5710	-0.9287	-0.5710	-1.4501	-2.5182	-1.4506	-2.4606	-5.6658	-2.4288
	[-5.37]***	[-4.21]***	[-3.76]***	[-10.40]***	[-8.88]***	[-8.06]***	[-9.87]**	[-11.64]***	[-7.63]***
Ln(Price)	-2.1900	-2.3688	-2.1900	-3.5134	-3.7998	-3.5113	-5.6095	-5.4847	-5.6095
	[-10.88]***	[-6.43]***	[-6.84]***	[-13.36]***	[-8.03]***	[-9.06]***	[-12.12]***	[-6.75]***	[-9.25]***
SplitFactor	1.5584	2.2989	1.5584	1.8507	2.6472	1.8507	2.7370	3.7141	2.7370
	[12.28]***	[9.16]***	[3.61]***	[11.16]***	[8.21]***	[3.70]***	[9.39]***	[6.71]***	[3.91]***
EBIT	0.6850	1.3150	0.6850	6.1276	12.3379	6.1276	8.4143	15.9117	8.4143
	[0.62]	[0.65]	[0.45]	[4.27]***	[4.75]***	[2.88]***	[3.34]***	[3.57]***	[2.41]**
ROA	-0.0001	-0.0136	0.0001	-0.0060	-0.0785	-0.0060	0.0625	-0.0104	0.0625
	[-0.06]	[-0.65]	[0.04]	[-0.44]	[-2.92]***	[-0.27]	[2.61]***	[-0.22]	[2.01]**
ATO	0.3042	0.1512	0.3042	-0.5940	-0.7875	-0.5940	-1.5238	-2.0477	-1.5238
	[2.81]***	[0.55]	[2.27]**	[-4.17]***	[-2.22]**	[-3.79]***	[-6.03]***	[-3.36]***	[-5.79]***
Lgsale	-0.0361	0.1616	-0.0361	0.8955	1.4458	0.8955	2.0966	3.6331	2.0965
	[-0.44]	[0.71]	[-0.29]	[8.29]***	[4.96]***	[5.74]***	[10.97]***	[7.24]***	[6.75]***
GDP_{t-1}	-0.0745	-0.0899	-0.0745	0.0295	0.0919	0.0295	0.2267	0.2391	0.2267
	[-1.10]	[-1.05]	[-1.20]	[0.34]	[0.83]	[0.35]	[1.49]	[1.26]	[1.56]
$Unemp_{t-1}$	0.0434	-0.0626	0.0435	-0.2544	-0.2014	-0.2533	-0.5425	-0.4014	-0.5425
	[0.37]	[-0.43]	[0.34]	[-1.65]*	[-1.09]	[-1.57]	[-2.03]**	[-1.26]	[-2.05]**
CPI_{t-1}	-0.0063	-0.0034	-0.0063	0.0048	0.0105	0.0048	0.0042	0.0268	0.0042
	[-1.45]	[-0.48]	[-1.36]	[0.85]	[1.18]	[0.82]	[0.42]	[1.76]*	[0.41]
$Infl_{t-1}$	0.4715	0.5012	0.4715	0.8365	0.8799	0.8365	2.1944	2.5990	2.1944
	[1.81]*	[1.55]	[1.72]*	[2.48]**	[2.12]**	[2.41]**	[3.74]***	[3.64]***	[3.62]
DIV_{t-1}	-0.4949	-0.4304	-0.4949	-0.2801	-0.6147	-0.2801	0.0338	-1.0828	0.0339
	[-2.62]***	[-1.85]*	[-2.65]***	[-1.15]	[-2.06]**	[-1.15]	[0.08]	[-2.11]**	[0.08]
DEF_{t-1}	0.5127	0.3162	0.5127	0.7393	0.3507	0.7393	-1.0369	-0.5543	-0.1037
	[1.66]*	[0.85]	[1.58]	[1.85]*	[0.73]	[1.80]*	[-0.15]	[-0.67]	[-0.15]
YLD_{t-1}	-0.2935	-0.3202	-0.2935	-0.4972	-0.4532	-0.4974	-0.6192	-0.4761	-0.6192
	[-3.85]***	[-3.41]***	[-4.05]***	[-5.04]***	[-3.76]***	[-5.21]***	[-3.61]***	[-2.03]**	[-3.57]***
$TERM_{t-1}$	-0.1814	-0.1270	-0.1814	-0.2850	-0.1821	-0.2850	-0.1674	0.0547	-0.1674
	[-1.82]*	[-1.03]	[-1.90]*	[-2.21]**	[-1.16]	[-2.24]**	[-0.75]	[0.20]	[-0.70]
$Sent_{t-1}$	0.5893	0.4782	-0.5893	0.7184	1.3205	0.7184	1.3774	4.0028	1.3774
	[1.24]	[0.76]	[-1.32]	[1.17]	[1.64]	[1.20]	[1.28]	[2.90]***	[1.27]

Panel D: Value-weighted market model adjusted abnormal returns									
	(-2,+2)			(-1,+9)			(-1,+30)		
Variables	OLS	Fixed Effect	Cluster Std. Err.	OLS	Fixed Effect	Cluster Std. Err.	OLS	Fixed Effect	Cluster Std. Err.
Intercept	15.5176	17.8198	15.5175	25.2439	34.1140	25.2439	32.0885	58.7478	32.0885
	[14.94]***	[9.25]***	[11.17]***	[18.65]***	[14.94]***	[15.23]***	[13.70]***	[13.82]***	[11.40]***
Ln(Size)	-0.4911	-0.8747	-0.4911	-1.3864	-2.5025	-1.3864	-2.2571	-5.5599	-2.257`
	[-4.62]***	[-3.93]***	[-3.30]***	[-9.97]***	[-8.81]***	[-7.89]***	[-9.37]**	[-11.33]***	[-7.553]***
Ln(Price)	1.9763	-2.0082	-1.9763	-3.1583	-3.1633	-3.1583	-5.1891	-4.5926	-5.1891
	[-9.82]***	[-5.41]***	[-6.17]***	[-12.03]***	[-6.67]***	[-8.18]***	[-11.42]***	[-5.60]***	[-8.64]***
SplitFactor	1.5057	2.2078	1.5057	1.7918	2.4993	1.7918	2.6096	3.2983	2.6096
	[11.85]***	[8.73]***	[3.54]***	[10.82]***	[7.73]***	[3.61]***	[9.11]***	[5.91]***	[3.83]***
EBIT	0.1722	-0.4661	0.1722	4.8903	9.1164	4.8903	4.5076	11.2236	4.5076
	[0.16]	[-0.23]	[0.11]	[3.42]***	[3.50]***	[2.41]**	[1.82]*	[2.50]**	[1.32]
ROA	-0.0040	-0.0035	-0.0040	-0.0061	-0.0487	-0.0061	0.0968	0.0631	0.0968
	[-0.38]	[-0.17]	[-0.26]	[-0.44]	[-1.81]*	[-0.29]	[4.11]***	[1.36]	[2.96]***
ATO	0.3529	0.1949	0.3529	-0.5656	-0.8071	-0.5656	-1.4009	-1.8633	-1.4009
	[3.27]***	[0.70]	[2.66]***	[-3.98]***	[-2.27]**	[-3.67]***	[-5.70]***	[-3.03]***	[-5.54]***
Lgsale	-0.1482	0.1300	-0.1482	0.7702	1.5067	0.7702	1.8599	3.3978	1.8599
	[-1.80]*	[0.57]	[-1.22]	[7.15]***	[5.15]***	[5.14]***	[9.97]***	[6.27]***	[6.50]***
GDP_{t-1}	-0.0327	-0.0424	-0.0327	0.01653	0.2360	0.1653	0.3066	0.3272	0.3066
	[-0.48]	[-0.49]	[-1.20]	[1.89]	[2.13]**	[1.92]*	[2.03]**	[1.71]	[2.07]*8
$Unemp_{t-1}$	0.1223	0.1422	0.1223	-0.1210	-0.457	-0.1210	-0.7633	-0.5994	-0.7633
	[1.02]	[0.98]	[0.96]	[-0.79]	[-0.25]	[-0.76]	[-2.87]***	[-1.87]	[-2.84]***
CPI_{t-1}	-0.0051	-0.0032	-0.0051	0.0125	0.0146	0.0125	0.0486	0.0749	0.0486
	[-1.16]	[-0.46]	[-1.08]	[2.19]**	[1.63]	[2.11]**	[4.94]***	[4.87]***	[4.77]***
$Infl_{t-1}$	-0.1780	-0.0657	-0.1780	-0.6119	-0.3832	-0.6119	-2.3538	-1.5365	-2.3538
	[-0.68]	[-0.20]	[-0.65]	[-1.81]*	[-0.92]	[-1.75]*	[-4.03]***	[-2.13]**	[-3.83]***
DIV_{t-1}	-0.5553	-0.4110	-0.5553	-0.1163	-0.3405	-0.1163	1.6209	0.7095	1.6208
	[-2.93]***	[-1.76]*	[-2.94]***	[-0.48]	[-1.14]	[-0.48]	[3.84]***	[1.37]	[3.82]***
DEF_{t-1}	1.0115	0.8729	1.0115	1.7959	1.5060	1.7959	1.0369	3.4163	3.7026
	[3.25]***	[2.32]**	[3.12]***	[4.49]***	[3.14]***	[4.39]***	[5.35]***	[4.12]***	[5.29]***
YLD_{t-1}	-0.2660	-0.3260	-0.2660	-0.5214	-0.5473	-0.5213	-0.8828	-0.8945	-0.8828
	[-3.47]***	[-3.45]***	[-3.65]***	[-5.28]***	[-4.53]***	[-5.46]***	[-5.17]***	[-4.29]***	[-5.14]***
$TERM_{t-1}$	-0.1840	-0.1671	-0.1840	-0.4397	-0.4074	-0.4497	-0.7392	-0.6518	-0.7392
	[-1.83]*	[-1.35]	[-1.91]*	[-3.40]**	[-2.58]**	[-3.45]***	[-3.31]***	[-2.39]**	[-3.12]***
$Sent_{t-1}$	0.1151	0.40847	0.1151	0.4734	0.1765	-0.4734	-2.5164	0.1367	-2.5164
	[0.24]	[0.14]	[0.26]	[0.77]	[0.22]	[-0.80]	[-2.36]**	[0.10]	[-2.39]**

Appendix 13A The Dominant Macro-Determinant for the Likelihood of Special Dividends with the Composite Sentiment Index and Additional Accounting Variables from 1960 to 2008

This table shows the dominant macro-determinant for the likelihood of the occurrence of special dividends announcements with the composite sentiment index (Baker & Wurgler, 2006, 2007) and additional accounting variables from 1960 to 2008. The dependent variable is a binary variable that contains a value of one if a firm announces a special dividend in the month; otherwise, zero. *Ln(Size)* is the natural logarithm of monthly market capitalization; *Ln(Price)* is the natural logarithm of monthly stock price; *EBIT* is a firm's earnings before interests and tax; *ROA* is a firm's return on assets; *ATO* is a firm's asset turnover; *Lgsale* is the natural logarithm of monthly sales; *CH* is a firm's monthly cash flow; *WCAP* is a firm's monthly working capital. *Tax1986* is another dummy variable, taking a value of one if a special dividend is announced after the Tax Regime Act of 1986. *Tax2003* is another dummy variable, taking a value of one if a special dividend is announced after the Dividend Tax Cut of 2003. *GDP* is the change in nominal GDP; *UNEMP* is the unemployment rate; *cpi* is the consumer price index; and *inf* is the inflation rate in the US. *DIV* is the market dividend yield, defined as the total dividend payments on the market over the current level of the index. *DEF* is the default spread, defined as the difference between the average yield of bonds rated BAA by Moodys and the average yield of bonds with a Moodys rating of AAA. *TERM* is the term spread, measured as the difference between the average yield of long term Treasury bonds (more than 10 years) and the average yield of T-bills that mature in three months. *YLD* is the three-month T-bills yield. *Sent* is the composite sentiment index extracted from Baker and Wurgler's website. The logistic regressions run on the full sample period and on four sub-periods for a robustness check to avoid noise. *p-values* are in parentheses under each parameter. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Full Sample			Sub-periods			
Variables	1926-2008			1926-1940	1941-1960	1961-1985	1986-2008
Intercept	-6.6034	-4.7484	-5.0193	8.7097	-19.5675	-5.8296	-5.3356
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
Ln(Size)	-0.3335	-0.3511	-0.3431	-0.0201	-0.2832	-0.4564	-0.2816
	(<.0001)***	(<.0001)***	(<.0001)***	(0.3357)	(<.0001)***	(<.0001)***	(<.0001)***
Ln(Price)	1.1140	1.1145	1.0329	1.0386	0.7326	1.2459	1.0451
	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***
EBIT	0.0001	0.0001	0.0001		0.0005	-0.0004	0.0001
	(0.0018)***	(0.0006)***	(0.0010)***		(0.0060)***	(0.0085)***	(0.0358)**
ROA	0.0027	0.0026	0.0026		0.1211	0.0067	0.0023
	(<.0001)***	(<.0001)***	(<.0001)***		(<.0001)***	(<.0001)***	(<.0001)***
ATO	0.0608	0.0610	0.0579		0.1259	0.0619	0.0538
	(<.0001)***	(<.0001)***	(<.0001)***		(0.0010)***	(0.0088)***	(<.0001)***
Lgsale	-0.0761	-0.0706	-0.0418		0.0508	-0.0179	-0.1054
	(<.0001)***	(<.0001)***	(0.0006)***		(0.3827)	(0.4295)	(<.0001)***
CH	-0.0005	-0.0005	-0.0005			-0.0008	-0.0003
	(<.0001)***	(<.0001)***	(<.0001)***			(0.0289)**	(0.0015)***
WCAP	0.0002	0.0002	0.0002			0.0008	0.0001
	(<.0001)***	(<.0001)***	(<.0001)***			(<.0001)***	(0.0057)***
Tax1986	0.4083	-0.4010	0.7834				
	(0.0002)***	(<.0001)***	(<.0001)***				
Tax2003	1.0663	0.4505	1.5984				
	(<.0001)***	(<.0001)***	(<.0001)***				
GDP_{t-1}	0.1038		0.1033	-0.0889	-0.4300	0.1117	0.1410
	(<.0001)***		(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(0.0001)***
$Unemp_{t-1}$	0.1073		0.1565	-0.1521	0.3186	0.1308	-0.4911
	(0.0013)***		(<.0001)***	(<.0001)***	(<.0001)***	(0.0027)***	(<.0001)***
CPI_{t-1}	-0.0053		-0.0146	-0.8428	0.6784	0.0233	0.0048
	(0.0033)***		(<.0001)***	(<.0001)***	(<.0001)***	(<.0001)***	(0.1945)
$Infl_{t-1}$	-0.4484		-0.0979	0.0941	-0.4708	-0.7203	0.0576
	(<.0001)***		(0.1005)	(0.0620)*	(<.0001)***	(<.0001)***	(0.5735)
DIV_{t-1}	0.1875		0.3282	0.0285	0.4333	0.1167	1.4704
	(<.0001)***		(<.0001)***	(0.4881)	(<.0001)***	(0.0613)*	(<.0001)***
DEF_{t-1}	-0.3356		-0.2757	-0.2613	-2.4215	-0.2769	0.3415
	(<.0001)***		(<.0001)***	(0.0623)*	(<.0001)***	(0.0087)***	(0.0532)*
YLD_{t-1}	0.1335		-0.0492	-0.9108	-1.3630	-0.0336	-0.3753
	(<.0001)***		(0.0063)***	(<.0001)***	(<.0001)***	(0.3807)	(<.0001)***
$TERM_{t-1}$	0.0283		-0.1423	-0.4368	-2.3178	-0.2366	-0.2576
	(0.3276)		(<.0001)***	(0.0002)***	(<.0001)***	(<.0001)***	(0.0002)***
$Sent_{t-1}$	0.3919	0.0365		0.0149	-0.1413	-0.5947	0.2688
	(0.0007)***	(0.7249)		(<.0001)***	(<.0001)***	(0.2700)	(0.0543)*

Appendix 13B The Dominant Macro-Determinant for the Abnormal Returns of Special Dividends with the Composite Sentiment Index and Additional Accounting Variables from 1960 to 2008

This table shows the dominant macro-determinant for the abnormal returns of the occurrence of special dividends announcements with the composite sentiment index (Baker & Wurgler, 2006, 2007) and additional accounting variables from 1960 to 2008. The dependent variable in Panel A is equal-weighted market adjusted abnormal returns; the dependent variable in Panel B is value-weighted market adjusted abnormal returns; the dependent variable in Panel C is equal-weighted market model adjusted abnormal returns and the dependent variable in Panel D is value-weighted market model adjusted abnormal returns for firms initiating special dividends. (-2, +2), (-1, +9) and (-1, +30) represent event windows (in days) relative to announcements for which abnormal returns are being measured (0 represents the actual announcement day). *Divamt* is the amount of the special dividend paid per share. *Ln(Size)* is the natural logarithm of monthly market capitalization; *Ln(Price)* is the natural logarithm of monthly stock price; *EBIT* is a firm's earnings before interests and tax; *ROA* is a firm's return on assets; *ATO* is a firm's asset turnover; *Lgsale* is the natural logarithm of monthly sales; *CH* is a firm's monthly cash flow; *WCAP* is a firm's monthly working capital. *Tax1986* is another dummy variable, taking a value of one if a special dividend is announced after the Tax Regime Act of 1986. *Tax2003* is another dummy variable, taking a value of one if a special dividend is announced after the Dividend Tax Cut of 2003. *GDP* is the change in nominal GDP; *UNEMP* is the unemployment rate; *cpi* is the consumer price index; and *inf* is the inflation rate in the US. *DIV* is the market dividend yield, defined as the total dividend payments on the market over the current level of the index. *DEF* is the default spread, defined as the difference between the average yield of bonds rated BAA by Moodys and the average yield of bonds with a Moodys rating of AAA. *TERM* is the term spread, measured as the difference between the average yield of long term Treasury bonds (more than 10 years) and the average yield of T-bills that mature in three months. *YLD* is the three-month T-bills yield. *Sent* is the composite sentiment index extracted from Baker and Wurgler's website. All abnormal returns are regressed in percentage and all standard errors are adjusted by Newey-West (1987) estimations, the fixed effect and the clustering effect with *t*-statistics shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Equal-weighted market adjusted abnormal returns

	(-2,+2)			(-1,+9)			(-1,+30)		
Variables	OLS	Fixed Effect	Cluster Std. Err.	OLS	Fixed Effect	Cluster Std. Err.	OLS	Fixed Effect	Cluster Std. Err.
Intercept	18.7428	24.5054	18.7428	24.1054	31.2387	24.1054	27.0210	49.1926	27.0210
	[8.44]***	[6.29]***	[7.74]***	[9.09]***	[6.44]***	[8.42]***	[7.20]***	[6.64]***	[7.04]***
Ln(Size)	-0.8628	-1.7729	-0.8628	-1.1622	-2.3585	-1.1622	-1.6624	-4.1217	-1.6624
	[-4.08]***	[-4.05]***	[-3.76]***	[-4.68]***	[-4.33]***	[-4.61]***	[-4.91]***	[-4.96]***	[-4.65]***
Ln(Price)	-1.9233	-1.2725	-1.9233	-2.0026	-1.4231	-2.0026	-2.6840	-2.1245	-2.6840
	[-7.78]***	[-3.06]***	[-5.25]***	[-6.84]***	[-2.75]***	[-5.40]***	[-6.59]***	[-2.69]***	[-4.96]***
Divamt	3.6423	0.3983	0.3642	0.3203	0.4542	0.3203	0.3230	0.2327	0.3230
	[7.01]***	[4.02]***	[4.30]***	[5.17]***	[3.69]***	[4.11]***	[3.68]***	[1.24]	[3.58]***
EBIT	0.0692	-1.8943	0.0692	1.8264	-3.6608	1.8264	5.1084	6.8232	5.1084
	[0.05]	[-0.80]	[0.04]	[1.09]	[-1.24]	[0.95]	[2.17]**	[1.51]	[1.77]*
CH	2.3985	-0.4246	2.3985	3.2235	0.3281	3.2235	4.3138	-1.1888	4.3138
	[1.76]	[-0.22]	[1.39]	[1.97]**	[0.13]	[1.48]	[1.87]*	[-0.32]	[1.70]*
ROA	-0.0015	0.0200	-0.0015	-0.0046	0.0385	-0.0046	-0.0297	-0.0470	-0.0297
	[-0.11]	[0.09]	[-0.09]	[-0.29]	[1.39]	[-0.25]	[-1.32]	[-1.11]	[-1.09]
ATO	-0.3628	-0.1672	-0.3628	-0.5581	-0.0719	-0.5583	-0.9458	-1.9884	-0.9458
	[-1.59]	[-0.33]	[-1.48]	[-2.09]**	[-0.11]	[-2.13]**	[-2.58]**	[-2.04]**	[-2.45]**
Lgsale	0.4768	0.8543	0.4768	0.6557	1.4581	0.6557	1.3224	2.7477	1.3224
	[2.66]***	[2.07]**	[2.46]**	[3.11]***	[2.84]***	[3.07]***	[4.57]***	[3.50]***	[4.38]***
Tax86	-0.0174	0.2611	-0.0174	-0.2892	-0.2680	-0.2892	-0.8935	-0.3471	-0.8935
	[-0.02]	[0.30]	[-0.03]	[-0.33]	[-0.25]	[-0.34]	[-0.70]	[-0.21]	[-0.78]
Tax03	0.7433	1.2839	0.7433	1.6022	2.6155	1.6022	1.0838	1.2907	1.0838
	[1.06]	[1.43]	[1.02]	[1.88]*	[2.35]**	[1.74]*	[0.87]	[0.76]	[0.88]
GDP_{t-1}	-0.2267	-0.1199	-0.2267	-0.3243	-0.1622	-0.3244	-0.2059	0.0825	-0.2059
	[-1.88]*	[-0.76]	[-2.00]**	[-2.24]**	[-0.83]	[-2.35]**	[-0.99]	[0.28]	[-1.03]
$Unemp_{t-1}$	-0.3697	-0.3732	-0.3697	-0.2298	-0.1039	-0.2229	-0.7749	-0.6763	-0.7749
	[-1.68]*	[-1.45]	[-1.81]*	[-0.83]	[-0.32]	[-0.88]	[-1.94]*	[-1.38]	[-1.92]*
CPI_{t-1}	-0.0052	-0.0096	-0.0052	-0.0275	-0.0382	-0.0275	-0.0265	-0.0444	-0.0265
	[-0.46]	[-0.65]	[-0.44]	[-2.01]	[-2.08]**	[-1.91]*	[-1.32]	[-1.58]	[-1.35]
$Infl_{t-1}$	-0.3313	-0.6342	-0.3313	0.7361	0.3564	0.7261	1.0035	-0.3083	1.0035
	[-0.80]	[-1.30]	[-0.81]	[1.46]	[0.59]	[1.44]	[1.35]	[-0.33]	[1.40]
DIV_{t-1}	-0.2957	-0.0857	-0.2957	-1.1268	-0.9236	-0.1127	-1.3486	-1.5026	-1.3486
	[-1.05]	[-0.26]	[-1.05]	[-3.28]***	[-2.29]**	[-3.12]***	[-2.64]***	[-2.44]**	[-2.47]**
DEF_{t-1}	-0.2031	-0.0372	-0.2031	-0.1891	0.0220	-0.1891	0.0319	0.1660	0.0319
	[-0.39]	[-0.06]	[-0.40]	[-0.30]	[0.03]	[-0.28]	[0.03]	[0.15]	[0.03]
YLD_{t-1}	0.1590	0.1227	0.1590	0.4419	0.4240	0.4419	0.8009	0.8209	0.8009
	[1.15]	[0.76]	[1.21]	[2.62]***	[2.11]**	[2.64]***	[3.21]***	[2.67]***	[3.46]***
$TERM_{t-1}$	0.3443	0.3046	0.3443	0.6007	0.4384	0.6007	1.1395	1.0502	1.1395
	[1.81]*	[1.36]	[1.75]*	[2.58]***	[1.57]	[2.45]**	[3.21]***	[2.46]**	[3.17]***
$Sent_{t-1}$	0.3927	1.2529	0.3929	1.0164	1.8656	1.0164	3.6369	4.0801	3.6369
	[0.55]	[1.43]	[0.49]	[1.17]	[1.71]*	[1.05]	[2.83]***	[2.44]**	[2.80]***

Panel B: Value-weighted market adjusted abnormal returns									
	(-2,+2)			(-1,+9)			(-1,+30)		
Variables	OLS	Fixed Effect	Cluster Std. Err.	OLS	Fixed Effect	Cluster Std. Err.	OLS	Fixed Effect	Cluster Std. Err.
Intercept	18.0037	23.3772	18.0037	22.8823	29.9452	22.8823	26.5662	49.8580	26.5662
	[8.05]***	[5.94]***	[7.07]***	[8.55]***	[6.10]***	[7.83]***	[7.03]***	[6.77]***	[6.78]***
Ln(Size)	-0.8296	-1.7254	-0.8296	-1.1316	-2.3473	-1.1316	-1.9023	-4.4624	-1.9023
	[-3.90]***	[-3.90]***	[-3.57]***	[-4.52]***	[-4.26]***	[-4.45]***	[-5.55]***	[-5.40]***	[-5.28]***
Ln(Price)	-1.9527	-1.2686	-1.9527	-2.1223	-1.5217	-2.1223	-2.9376	-2.3443	-2.9376
	[-7.85]***	[-3.02]***	[-5.22]***	[-7.18]***	[-2.91]***	[-5.62]***	[-7.15]***	[-2.99]***	[-5.26]***
Divamt	0.3629	0.4028	0.3629	0.3174	0.4253	0.3174	0.3265	0.1926	0.3265
	[6.93]***	[4.03]***	[4.29]***	[5.08]***	[3.41]***	[4.14]***	[3.70]***	[1.03]	[3.42]***
EBIT	0.0719	-1.9858	0.0719	1.7457	-3.4968	1.7457	5.9129	8.8350	5.9129
	[0.05]	[-0.83]	[0.04]	[1.04]	[-1.17	[0.89]	[2.49]**	[1.96]*	[2.06]**
CH	2.3365	-0.8291	2.3365	2.8214	-0.3943	2.8214	3.9663	-2.0964	3.9663
	[1.70]*	[-0.42]	[1.36]	[1.71]*	[-0.16]	[1.27]	[1.71]*	[-0.56]	[1.54]
ROA	-0.0001	0.0237	-0.0001	-0.0001	-0.0419	-0.0001	-0.0280	-0.0543	-0.0280
	[-0.00]	[1.05]	[-0.00]	[-0.03]	[-1.57]	[-0.03]	[-1.24]	[-1.29]	[-1.04]
ATO	-0.3295	-0.1657	-0.3295	-0.5312	-0.0272	-0.5312	-1.1105	-2.0992	-1.1105
	[-1.44]***	[-0.32	[-1.34]***	[-1.97]**	[-0.04]	[-2.00]**	[-3.00]***	[-2.16]**	[-2.83]***
Lgsale	0.4431	0.8325	0.4431	0.6266	1.4582	0.6266	1.5120	2.6873	1.5120
	[2.46]**	[2.00]**	[2.25]**	[2.95]***	[2.81]***	[2.91]***	[5.17]***	[3.45]***	[4.96]***
Tax86	-0.0364	0.2573	-0.0364	-0.7072	-0.6908	-0.7072	-1.7279	-0.9783	-1.7279
	[-0.05]	[0.30]	[-0.05]	[-0.81]	[-0.64]	[-0.82]	[-1.36]	[-0.60]	[-1.50]
Tax03	0.5190	1.0413	0.5190	0.5900	1.7006	0.5900	-2.4692	-1.7493	-2.4692
	[0.73]	[1.15]	[0.70]	[0.69]	[1.51]	[0.64]	[-1.98]**	[-1.03]	[-2.02]**
GDP_{t-1}	-0.2047	-0.0891	-0.2047	-0.3308	-0.1495	-0.3308	-0.3823	-0.0281	-0.3823
	[-1.69]*	[-0.56]	[-1.81]*	[-2.26]**	[-0.75]	[-2.38]**	[-1.83]*	[-0.09]	[-1.91]*
$Unemp_{t-1}$	-0.1080	-0.0981	-0.1080	0.1833	0.3554	0.1833	0.0497	0.2741	0.0497
	[-0.49]	[-0.38]	[-0.52]	[0.67]	[1.10]	[0.72]	[0.12]	[0.56]	[0.12]
CPI_{t-1}	-0.0020	-0.0063	-0.0020	-0.0107	-0.0231	-0.0107	0.0267	0.0084	0.0267
	[-0.17]	[-0.42]	[-0.16]	[-0.78]	[-1.24]	[-0.73]	[1.33]	[0.30]	[1.35]
$Infl_{t-1}$	-0.4829	-0.8003	-0.4829	0.3540	0.0784	0.3540	-0.3036	-1.1084	-0.3036
	[-1.16]	[-1.62]	[-1.16]	[0.70]	[0.13]	[0.70]	[-0.41]	[-1.20]	[-0.42]
DIV_{t-1}	-0.1442	0.0701	-0.1442	-0.6519	-0.4754	-0.6519	0.2931	-0.0820	0.2931
	[-0.51]	[0.21]	[-0.51]	[-1.88]*	[-1.16]	[-1.79]*	[0.58]	[-0.13]	[0.53]
DEF_{t-1}	-0.2742	-0.1046	-0.2742	-0.1094	-0.0528	-0.1094	0.6288	0.2720	0.6288
	[-0.52]	[-0.17]	[-0.53]	[-0.17]	[-0.07]	[-0.16]	[0.67]	[0.24]	[0.65]
YLD_{t-1}	0.0111	-0.0202	0.0111	0.0454	0.0506	0.0454	-0.4254	-0.2286	-0.4254
	[0.08]	[-0.12]	[0.08]	[0.27]	[0.25]	[0.27]	[-1.71]*	[-0.75]	[-1.80]
$TERM_{t-1}$	0.1672	0.1271	0.1672	0.1824	0.0359	0.1824	-0.0339	0.0313	-0.0339
	[0.87]	[0.56]	[0.84]	[0.78]	[0.13]	[0.74]	[-0.10]	[0.07]	[-0.09]
$Sent_{t-1}$	0.0458	0.8811	0.0458	0.1675	1.0594	0.1675	1.3515	1.8301	1.3515
	[0.06]	[0.99]	[0.06]	[0.19]	[0.96]	[0.17]	[1.05]	[1.10]	[1.04]

Panel C: Equal-weighted market model adjusted abnormal returns									
	(-2,+2)			(-1,+9)			(-1,+30)		
Variables	OLS	Fixed Effect	Cluster Std. Err.	OLS	Fixed Effect	Cluster Std. Err.	OLS	Fixed Effect	Cluster Std. Err.
Intercept	17.8006	23.9172	17.8006	23.1642	32.6596	23.1642	28.2335	56.9504	28.2335
	[8.02]***	[6.14]***	[7.11]***	[8.64]***	[6.66]***	[8.28]***	[7.04]***	[7.34]***	[7.18]***
Ln(Size)	-0.8867	-1.9171	-0.8867	-1.2555	-2.8003	-1.2555	-1.9876	-5.4266	-1.9876
	[-4.20]***	[-4.38]***	[-3.79]***	[-5.01]***	[-5.08]***	[-4.80]***	[-5.44]***	[-6.23]***	[-4.90]***
Ln(Price)	-2.0741	-1.4742	-2.0741	-2.3795	-1.9973	-2.3795	-3.5449	-3.7747	-3.5449
	[-8.41]***	[-3.55]***	[-5.55]***	[-8.04]***	[-3.82]***	[-6.20]***	[-8.10]***	[-4.56]***	[-5.94]***
Divamt	0.3635	0.4079	0.3635	0.3079	0.4813	0.3079	0.2806	0.3097	0.2806
	[7.00]***	[4.12]***	[4.32]***	[4.92]***	[3.86]***	[3.94]***	[2.99]***	[1.57]	[2.66]***
EBIT	-0.6601	-3.3817	-0.6601	0.9887	-5.0330	0.9887	2.4472	2.7066	2.4472
	[-0.47]	[-1.42]	[-0.35]	[0.59]	[-1.68]*	[0.48]	[0.97]	[0.57]	[0.72]
CH	2.0964	-0.9201	2.0964	2.6507	-0.5967	2.6507	3.1556	-3.2563	3.1556
	[1.54]	[-0.47]	[1.21]	[1.61]	[-0.24]	[1.19]	[1.28]	[-0.83]	[1.21]
ROA	0.0032	0.0339	0.0032	0.0001	0.0541	0.0001	-0.0143	-0.0001	-0.0143
	[0.24]	[1.52]	[0.17]	[0.03]	[1.92]*	[0.03]	[-0.60]	[-0.00]	[-0.45]
ATO	-0.4402	-0.2754	-0.4402	-0.7765	-0.5130	-0.7765	-1.5818	-3.2406	-1.5818
	[-1.93]*	[-0.54]	[-1.79]*	[-2.87]***	[-0.79]	[-2.92]***	[-4.01]***	[-3.17]***	[-3.64]***
Lgsale	0.5864	1.1035	0.5864	0.9128	2.0311	0.9128	1.9406	4.4656	1.9406
	[3.28]***	[2.68]***	[3.01]***	[4.29]***	[3.91]***	[4.15]***	[6.22]***	[5.44]***	[5.69]***
Tax86	-0.0068	0.4364	-0.0068	-0.1416	0.3054	-0.1416	-0.3465	1.2488	-0.3465
	[-0.01]	[0.51]	[-0.01]	[-0.16]	[0.28]	[-0.17]	[-0.26]	[0.73]	[-0.28]
Tax03	0.5100	1.1021	0.5100	1.0554	2.3787	1.0554	0.4630	1.6341	0.4630
	[0.73]	[1.23]	[0.72]	[1.22]	[2.11]**	[1.17]	[0.35]	[0.92]	[0.37]
GDP_{t-1}	-0.1339	-0.0390	-0.1339	-0.2031	-0.0782	-0.2031	0.1076	0.4066	0.1076
	[-1.11]	[-0.25]	[-1.19]	[-1.39]	[-0.39]	[-1.46]	[0.48]	[1.30]	[0.51]
$Unemp_{t-1}$	-0.3667	-0.3767	-0.3667	-0.3296	-0.2485	-0.3296	-0.9179	-1.0243	-0.9179
	[-1.66]	[-1.46]	[-1.79]	[-1.21]	[-0.77]	[-1.20]	[-2.17]**	[-2.00]**	[-1.96]*
CPI_{t-1}	0.0029	-0.0012	0.0029	-0.0169	-0.0264	-0.0169	-0.0081	-0.0224	-0.0081
	[0.26]	[-0.08]	[0.24]	[-1.22]	[-1.42]	[-1.18]	[-0.38]	[-0.76]	[-0.39]
$Infl_{t-1}$	-0.3283	-0.5278	-0.3283	0.6648	0.5325	0.6648	0.8909	0.3778	0.8909
	[-0.80]	[-1.08]	[-0.82]	[1.31]	[0.87]	[1.29]	[1.13]	[0.39]*	[1.18]
DIV_{t-1}	0.0199	0.3288	0.0199	-0.5459	-0.1776	-0.5459	-0.0087	0.4923	-0.0087
	[0.07]	[1.01]	[0.07]	[-1.57]	[-0.43]	[-1.52]	[-0.02]	[0.76]	[-0.02]
DEF_{t-1}	0.0431	0.2155	0.0431	0.0927	0.4301	0.0927	0.4256	1.0992	0.4256
	[0.08]	[0.36]	[0.08]	[0.14]	[0.57]	[0.13]	[0.43]	[0.92]	[0.38]
YLD_{t-1}	0.0001	-0.0474	0.0001	0.2139	0.1584	0.2139	0.0629	-0.0939	0.0629
	[0.01]	[-0.29]	[0.01]	[1.25]	[0.78]	[1.27]	[0.24]	[-0.29]	[0.25]
$TERM_{t-1}$	0.2163	0.1869	0.2163	0.5499	0.4102	0.5499	0.7093	0.6810	0.7093
	[1.14]	[0.83]	[1.12]	[2.34]**	[1.45]	[2.28]**	[1.95]*	[1.52]	[1.87]*
$Sent_{t-1}$	0.0206	1.1329	0.0206	1.0640	2.2375	1.0640	2.9591	3.8580	2.9591
	[0.03]	[1.29]	[0.03]	[1.21]	[2.02]**	[1.07]	[2.18]**	[2.20]**	[2.05]**

Panel D: Value-weighted market model adjusted abnormal returns

	(-2,+2)			(-1,+9)			(-1,+30)		
Variables	OLS	Fixed Effect	Cluster Std. Err.	OLS	Fixed Effect	Cluster Std. Err.	OLS	Fixed Effect	Cluster Std. Err.
Intercept	17.5299	24.2851	17.5299	22.9802	33.1829	22.9802	29.5112	61.7326	29.5112
	[7.83]***	[6.18]***	[6.99]***	[8.50]***	[6.72]***	[8.03]***	[7.24]***	[7.95]***	[7.30]***
Ln(Size)	-0.8707	-1.9648	-0.8707	-1.2371	-2.8138	-1.2371	-2.1850	-5.8686	-2.1850
	[-4.09]***	[-4.45]***	[-3.69]***	[-4.89]***	[-5.08]***	[-4.70]***	[-5.85]**	[-6.73]**	[-5.37]**
Ln(Price)	-2.0462	-1.4213	-2.0462	-2.3969	-2.0476	-2.3969	-3.7298	-3.9262	-3.7298
	[-8.22]***	[-3.39]***	[-5.41]***	[-8.02]***	[-3.89]***	[-6.19]***	[-8.37]***	[-4.74]***	[-6.13]***
Divamt	0.3687	0.4117	0.3687	0.3172	0.4693	0.3172	0.2723	0.2299	0.2723
	[7.04]***	[4.12]***	[4.42]***	[5.03]***	[3.74]***	[4.13]***	[2.86]***	[1.17]	[2.24]**
EBIT	-0.5352	-2.9418	-0.5352	1.1837	-4.1821	1.1837	3.5077	4.7228	3.5077
	[-0.38]	[-1.23]	[-0.29]	[0.70]	[-1.39]	[0.58]	[1.37]	[1.00]	[1.04]
CH	2.3093	-0.5420	2.3093	2.5497	-0.0580	2.5497	2.3362	-2.5501	2.3362
	[1.68]*	[-0.27]	[1.32]	[1.53]	[-0.02]	[1.13]	[0.93]	[-0.65]	[0.90]
ROA	-0.4215	0.0308	-0.4215	-0.0016	0.0462	-0.0016	-0.0205	-0.0146	-0.0205
	[-1.84]*	[1.37]	[-1.70]*	[-0.10]	[1.63]	[-0.08]	[-0.84]	[-0.33]	[-0.65]
ATO	0.0014	-0.4064	0.0014	-0.7391	-0.5657	-0.7391	-1.8125	-3.6506	-1.8125
	[0.11]	[-0.78]	[0.08]	[-2.71]***	[-0.87]	[-2.77]***	[-4.49]***	[-3.57]***	[-4.13]***
Lgsale	0.5399	1.1203	0.5399	0.8271	1.9481	0.8271	2.1093	4.5991	2.1093
	[2.99]***	[2.69]***	[2.74]***	[3.85]***	[3.73]***	[3.73]***	[6.62]***	[5.60]***	[6.17]***
Tax86	-0.2661	0.0344	-0.2661	-0.7166	-0.6375	-0.7166	-0.9898	0.2228	-0.9898
	[-0.37]	[0.04]	[-0.38]	[-0.81]	[-0.59]	[-0.83]	[-0.73]	[0.13]	[-0.80]
Tax03	0.1699	0.7711	0.1699	0.1411	1.4836	0.1411	-2.0789	-0.1826	-2.0789
	[0.24]	[0.85]	[0.23]	[0.16]	[1.31]	[0.15]	[-1.56]	[-0.10]	[-1.60]
GDP_{t-1}	-0.1210	-0.0119	-0.1210	-0.2420	-0.0950	-0.2420	-0.1096	0.1764	-0.1096
	[-1.00]	[-0.08]	[-1.05]	[-1.64]	[-0.48]	[-1.72]*	[-0.49]	[0.56]	[-0.50]
$Unemp_{t-1}$	-0.3530	-0.3448	-0.3530	-0.3429	-0.2250	-0.3429	-1.0712	-1.0977	-1.0712
	[-1.59]	[-1.33]	[-1.72]*	[-1.25]	[-0.69]	[-1.24]	[-2.52]**	[-2.14]**	[-2.27]**
CPI_{t-1}	0.0080	0.0036	0.0080	-0.0017	-0.0112	-0.0017	0.0261	0.0103	0.0261
	[0.71]	[0.24]	[0.67]	[-0.12]	[-0.60]	[-0.12]	[1.22]	[0.35]	[1.20]
$Infl_{t-1}$	-0.6420	-0.8352	-0.6420	-0.0092	-0.0548	-0.0092	-0.7316	-0.9800	-0.7316
	[-1.54]	[-1.70]*	[-1.59]	[-0.02]	[-0.09]	[-0.02]	[-0.92]	[-1.01]	[-0.96]
DIV_{t-1}	0.0833	0.3747	0.0833	-0.3242	0.0116	-0.3242	0.7521	0.9770	0.7521
	[0.29]	[1.15]	[0.29]	[-0.93]	[0.03]	[-0.89]	[1.39]	[1.51]	[1.29]
DEF_{t-1}	0.4025	0.5526	0.4025	0.9351	1.1394	0.9351	2.9794	3.2402	2.9794
	[0.77]	[0.91]	[0.76]	[1.44]	[1.50]	[1.30]	[2.96]***	[2.72]***	[2.63]***
YLD_{t-1}	-0.0223	-0.0736	-0.0223	0.1112	0.0516	0.1112	-0.2684	-0.3053	-0.2684
	[-0.16]	[-0.45]	[-0.17]	[0.65]	[0.25]	[0.66]	[-1.01]	[-0.95]	[-1.03]
$TERM_{t-1}$	0.1840	0.1182	0.1840	0.3390	0.2050	0.3390	0.1950	0.2927	0.1950
	[0.78]	[0.52]	[0.77]	[1.43]	[0.72]	[1.41]	[0.53]	[0.65]	[0.52]
$Sent_{t-1}$	-0.2104	0.8568	-0.2104	0.3817	1.5139	0.3817	1.5354	2.1569	1.5354
	[-0.29]	[0.97]	[-0.26]	[0.43]	[1.36]	[0.39]	[1.12]	[1.23]	[1.07]