An Empirical Evaluation of the Information Content of

Share Option Scheme Announcements in Hong Kong

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Abstract

This study investigates the announcement effects of share option schemes using data from Hong Kong market between 2002 and 2004. Findings indicate that share option scheme announcements have information content and that the market overall reacts unfavorably to share option scheme announcements in Hong Kong. Further investigation reveals that the market reacts favorably to share option scheme announcements by financial companies and large size firms. Higher potential growth companies have lower returns when they announce share option schemes. In addition, large size firms are more likely to announce share option schemes independently of firm's public announcements.

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1. Introduction

A series of business scandals starting with the Enron case aroused attention and discussion about many companies in USA. One such area of interest is that of employee share options. By the late 1990s outstanding employee stock options (ESOs) averaged 7% of total outstanding shares at large corporations in US and top executives held one third of the total ESOs (Guay, et al. 2003). Lambert (1984) argued that managers try to maximise their own expected utility, even if it is not in the best interest of shareholders. For example, managers may choose compensation plans, such as employee stock options plans, that smooth reported earnings. Until currently many countries implemented accounting standards for share based payments that allowed firms to disclose stock-based compensation information in footnotes only, and allowed firms to avoid expensing options in the body of their financial statements. Therefore the compensation of top management became a major reason for the insufficient transparency of companies.[1] This has also been a case with companies in Hong Kong. Before 2001, business owners resisted employee stock options and were reluctant to dilute their ownership and control. However, since 2001, there has been a dramatic rise in share option grants in Hong Kong. According to Watson Wyatt (2004), approximately 67 per cent of Hong Kong's listed companies have a share option scheme in place, and 58 percent have granted options since 2001. Virtually none of these companies expensed options before 2005.[2] In addition, in order to comply with the Hong Kong Stock Exchange amended Chapter 17 of the Rules Governing the Listing of

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[1] In the U.S.A Statement of Financial Accounting Standard (SFAS) No.123 requires firms to report stock-based compensation expense based on the fair value of options granted, it also allows firms to disclose this information in footnotes, allowing them to avoid expensing it in the body of financial statements. The new International Financial Reporting Standard - IFRS 2, Share-based Payments was issued in February 2004. It requires the costs relating to share-based payments to be measured and recognized in the financial statements. The new standard is effective in many countries from January 2005 and it is expected to improve the disclosure and accounting treatment of employee stock options.

Securities on the Stock Exchange, which became operative on 1ˢᵗ September 2001, many listed companies terminated their old share options schemes and announced new schemes between 2002 and 2004. Generally speaking, companies with high potential growth, especially companies in technology and telecommunication industries, are more likely to issue stock options. In comparison with those in the U.S., there are relatively less technology companies in Hong Kong. From 2002 to 2004 the most important industry in Hong Kong equity market was finance. Finance companies' share of total market capitalisation was the largest of the seven industry categories from 2002. In U.S., empirical studies about the reaction of the stock market to the announcement of the introduction of incentive compensation schemes have been done by DeFusco et al. (1985), Yermack (1997). Findings of these studies suggest that the market reacts favorably to the announcement of the introduction of stock option plans in the U.S. Despite a number of studies in the U.S. on stock option schemes, there is little empirical evidence of the influence of the release of share option scheme announcements on securities' prices in Hong Kong. The objective of this research is to provide evidence on the effect of announcements of employee stock option schemes on securities traded on the Hong Kong Stock Exchange. In other words, this research aims to find how investors respond when a company releases share option scheme information. The information content is assumed to be positive if stock price increases because investors consider the share option scheme as an effective tool for encouraging employees or attracting talent.

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[2] The Hong Kong Society of Accountants (HKAS) issued Hong Kong Financial Reporting Standard No. 2 – "Share-based Payment" (HKFRS 2) in April 2004 as part of its ongoing efforts to converge its accounting standards with those of the International Accounting Standards Boards. HKFRS 2 is virtually identical to IFRS 2 of the same title and applies to accounting periods beginning on January 1, 2005. Existing Statement of Standard Accounting Practice 34 –"Employee Benefits" has certain disclosure requirements for share options and other equity compensation benefits. Until HKFRS 2 was issued, there was no accounting standard in Hong Kong covering the recognition and measurement of share-based payment in the financial statements.

Alternatively, if the stock price has decreased this is assumed to be because shareholders' equity is considered by stockholders to have been diluted when share option information is publicly released. In other words, under this scenario the information content is assumed to be negative. The reaction to the information content of stock option announcement is generally measured by examining cumulative abnormal returns on the underlying stock.[3] In particular the research questions in this study are: Is share option information positive in relation to stock cumulative abnormal return or is it negative? What role does the stock option information play in Hong Kong stock market? What are the different reactions to share option scheme announcement for finance and non-finance companies, small and large size firms in Hong Kong?

2. Literature Review

This section discusses the existing listing rules about share option schemes in Hong Kong and the literature on the market reactions to issuance of employee stock options in various countries.

2.1 Listing rules for share option schemes in Hong Kong and other jurisdictions

Listing rules for share option schemes applicable in Hong Kong are different from the rules in the U.S but similar to the rules in other Asian countries, such as Singapore. These rules are a part of Chapter 17 of Rules Governing the Listing of Securities on the Stock Exchange of Hong Kong Limited. Chapter 17 requires that the share option scheme of a listed issuer must be approved by shareholders in a general meeting no matter the size of share options that are to be granted. The listed issuer must release in

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[3] Matsuura, Y. (2003) tests the market reaction to stock option plan introduction in Japan by cumulative abnormal return analysis. Yeo et al.(1999) also computed abnormal return and cumulative abnormal return based on market model to test the effects of executive share options plan on shareholder wealth and firm performance in Singapore

the newspapers an announcement on the outcome of the shareholders' meeting for the adoption of the share option scheme on the business day following such a meeting. This provision became effective from 1st September 2001. In order to comply with Chapter 17, many listed companies adopted new share option schemes during 2002 and 2003. The listing rules limit the total number of securities which may be issued upon exercise of all options to be granted under the scheme and any other schemes. These must not in aggregate exceed 10% of the relevant class of securities of the listed issuer as at the date of approval of the scheme. The listed issuer may seek approval by its shareholders in a general meeting for "refreshing" the 10% limit under the scheme. However, the total number of securities which may be issued upon exercise of all options to be granted under the limit as "refreshed" must not exceed 10% of the relevant class of securities in issue as at the date of approval of the limit. A listed issuer may seek separate approval by its shareholders in general meeting for granting options beyond the 10% limit provided the options in excess of the limit are granted only to participants specifically identified by the listed issuer before such approval is sought. In addition, the exercise price of granted options must be at least higher than either: (1) the closing price of the securities as stated in the Exchange's daily quotations sheet on the date of grant, or (2) the average closing price of the securities as stated in the Exchange's daily quotations sheets for the five business days immediately preceding the date of grant. These rules are not dissimilar to Singapore stock exchange rules.

In contrast, in the U.S. employee share options are not subjected to such strict exchange-imposed regulatory restrictions. NASDAQ has unique exceptions to shareholder approval rules for share option plans. That is, not all share option plans are needed to be approved by shareholders in U.S. In U.S., there are also no regulatory limits to size of the employee share options. Many large U.S. industrial corporations

offer stock options on more than 20% of the firms' total outstanding shares. For example, by the end of 2003, the stock options issued by Microsoft were 19.7% of the total outstanding shares. In addition, according to U.S. Internal Revenue Code, section 421, the option price in such schemes is to be not less than the fair market value of the stock at the time when such options are granted. However, the fair market value is usually defined dissimilarly by various companies which adds to the overall lack of transparency on stock options.

Singapore stock exchange requirements, on the other hand, are more similar to Hong Kong requirements and are more rigorous than U.S. regulations. Employee stock options in Singapore require the approval of both the Stock Exchange of Singapore (SES) and the shareholders. In addition, for firms listed on the Mainboard of the SES, no more than the equivalent of 5% of a firm's shares can be granted in employee share options. The maximum entitlement of any director cannot exceed 50% of the total number of granted share options. The maximum entitlement of any employee cannot exceed 25% of the total granted options. In addition, the strike price is usually the average trading price five days before the option is granted. The life of options is the statutory limit of five years compared to the 10-year period which is regulated by Hong Kong stock exchange and is also commonly practiced in U.S. Compared to Hong Kong and U.S, Singapore has more rigorous regulations relating to share options. Table 1 summarizes a comparison between the characteristics of the employee stock options in Singapore, U.S. and Hong Kong.

2.2 Literature about capital markets theory and the Abnormal Performance Index (API) test model

An impressive body of literature on capital markets theory supports the proposition that

Table 1

Characteristics of Share Option Plans: A Comparison of Singapore, U.S. and Hong Kong Firms

Characteristic	Singapore	United States	Hong Kong
Size of the ESOP	Limited to 5% of issued share capital for SEM Mainboard firms, Higher limits for SESDAQ firms, subject to SES' approval	No regulatory limit.	Limited to 10% of issued share capital. May seek separate approval by shareholders in general meeting for granting options beyond the 10% limit.
Scheme approval	Require approvals of both the Stock Exchange of Singapore and the shareholders.	Not all the share option schemes needed to be approved by shareholders meeting.	Must be approved by shareholders meeting and publicly release the outcome in the newspapers for listed issuer.
Maximum entitlement of participant	Maximum of 25% of the ESOP shares per employee. Maximum of 50% of the ESOP shares to CEOs, directors and general managers.	No such restrictions.	Not to exceed 1% of the relevant class of securities in any 12-month period for each participant.
Basis of exercise price determination	Usually the average trading price is five days before the options is granted.	No less than the fair market value on the date of grant	Higher of (1) the closing price on the date of grant; (2) the average closing price for the five business days preceding the date of grant.
Participation of Substantial Shareholders	Shareholders holding more than 5% of the firms' shares prohibited from participating in the ESOPs.	No such restrictions.	No such restrictions.
Length of Scheme Period	No such restrictions.	No restrictions	10 years
Length of Option Period	Statutory limit of five years	10 years for most ESOPs	Not to be more than 10 years from the date of granting options.
Beneficiary of the Plan	Majority to executives	Majority to executives	Executives and employees.

Characteristic of share option plans for Singapore and US complied from Yeo et al. (1999).

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capital markets are both efficient and unbiased. The underlying theory of capital markets is that if information is useful in forming capital asset prices, then the market will adjust asset prices to that information very quickly. Built on the capital markets theory, Ball and Brown (1968) were the first to report drift in stock returns after earnings announcements. They provided evidence that the information reflected in income numbers is useful by testing the relationship between stock prices adjustment and the release of the income report. In addition, Ball and Brown (1968) developed a new technique called the abnormal performance index (API) test model in the study of information content of accounting income numbers. The API is developed as a metric to detect portfolio performance above or below that which would be expected given the market mode. A portfolio which does not perform abnormally will display a pattern of API values that fluctuate around 1.00 through time. Since Ball and Brown (1968) the API test has served as the primary model in a wide variety of empirical studies in finance and accounting. Fama (1969) examines the effects of stock splits on the abnormal returns of stocks on the NYSE in the period 1925-1959. Expected returns are calculated using a market model. Elfakhani (1995) examines the information content of balance sheet and dividend announcement on the firm using standard event study methodology combined with API test. Through various types of API calculations researchers have observed over time that the security price behavior which precedes and accompanies such events as stock splits, and secondary distributions, provides explanations on changes in earnings forecasts.

2.3 Literature about market reactions to issuance of employee share options

Based on capital markets theory and the API model, Yermack (1997) investigates the announcement effect of CEOs' stock options granted using data from 620 stock options awarded to CEOs of Fortune 500 companies between 1992 and 1994. The main result

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of his study is that in the 10 weeks following option grants, firms' stocks outperform the market on a risk-adjusted basis by slightly more than 2 percent. This implies that stock option announcements have information content and a positive relationship to stock price.

Aboody (1996) studies the relationship between the value of employee stock options (ESOs) and the stock price. He analyses a sample of 478 firms that granted ESOs to a broad base of employees during the period 1980-1990. To investigate whether investors consider firms' outstanding options when determining firm's share prices, Aboody uses a valuation model that includes accounting earnings, dividend payout, book value of equity, and number of outstanding options per share. Aboody (1996) finds that the value of firms is negatively related to the value of stock options and it is negative in relation to the stock price regardless of whether he uses the modified option pricing model or Black-Scholes model to calculate the value of stock options. The result of his study shows that a dollar of ESO value reduces firm value by $1.35. Aboody's (1996) findings were therefore contrary to Yermack (1997).

Skinner (1996) points out that information on the value of employee stock option potentially has two countervailing effects on stock price: dilution effect and incentive effect. The dilution effect refers to the shareholder value being diluted when a company issues employee stock options. This implies that the value of employee stock options is inversely related to stock price. In contrast, the incentive effect means that when a company issues employee stock options this can strengthen the motivation to employees to work hard. This is because issuing employees stock options more strongly aligns employees' incentive with those of stockholders, reaching the goal of shareholder value maximization. This argument is based on some of the evidence and the widely accepted

explanation that the announcement and the introduction of incentive compensation correlates with positive and significant abnormal returns.

The incentive effects of compensation plans such as employee stock options schemes are based on agency theory. Jensen and Murphy (1990), using the agency perspective theorize that the introduction of equity based compensation (such as ESOs) has incentive effects on management and aligns their interests with shareholders regarding the enhancement of the value of the company. Based on Jensen and Murphy (1990) prior studies in U.S and elsewhere interpreted that significant abnormal returns are the market positive reaction to the employee incentive schemes and contracts.

In addition, stock options as employee incentives can decrease the employee turnover. This incentive therefore also implies that the value of employee stock options is positive in relation to the stock price.

In his 1996 study, Skinner also evaluates the limitations of the research conducted by Aboody in 1996. He points out that the relative strength of the two countervailing effects of employee option schemes can be affected by the relative timing of the two effects. For example, benefits from granting share options include savings on training new employees by aligning employees to the firms, and increased creativity and productivity by employees who expect the share price to rise. However, there is the question of when the incentive benefits are recognized in accounting earnings and when market participants recognize these benefits. According to Aboody's (1996) results, the coefficient on estimated employee stock options value is reliably negative. Aboody (1996) interprets this result as evidence that dilution effect dominates the incentive effect. However, Skinner (1996) suggests that we cannot conclude that incentive effects of employee stock options are 'small' or nonexistent. This conclusion follows due to the

fact that incentive effects of employee stock option plans may be included in stock prices and earnings at the time the firm's first employee stock option plan is announced, and many of the incentive effects may also take place before options are actually granted.

In addition, executive stock options and convertible securities can increase the number of common shares outstanding while adding less than the market value of the newly issued securities to a firm's assets. Huson, Scott and Wier (2001) model the earnings response coefficients (ERCs) to test the relations among earnings, valuation, and dilutive securities. They test 63,656 firm-years samples covering the period from 1970 to 1995. The ERC is modeled as a function of the percentage of shares reserved for conversion, size, risk, growth, the magnitude of the earnings surprise, and the presence of positive earnings. The empirical tests show that the ERC is a decreasing function of expected dilution and it is inversely related to the number of dilutive securities outstanding.

More recently, Yeo, Chen and Ho (1999) study the effects of executive share option plans on shareholder wealth and firm performance in 56 Singaporean firms. The sample period spans from 1986 through to 1993. The majority of the employee share options schemes in that study were adopted in the years 1989-1991. Singapore was then a fast-growing economy and an important international investment location internationally. Corporate governance in Singapore is largely based on regulations. There are several unique regulations governing employee share options in Singapore. These regulations include The Singapore Companies Act (1994) and The Income Tax Act of Singapore (1996). Compared to the U.S., Singapore has stricter regulation on the issuance of employee share options. As discussed earlier, Yeo et al. (1999) therefore expected that regulatory characteristics might reduce the effectiveness of employee share options in

Singapore. After providing the comparison between the characteristics of employee share options in Singapore and those in the US, their research examines the short-term market reaction to employee share option announcement and long-term stock and operating performance following the adoption of the employee share options. The standard event-study methodology was used by Yeo et al. (1999) to examine the market response to announcements of employee share options in Singapore. They calculate the abnormal return and cumulative abnormal return during the event period. The circular date was used as the event date. Yeo et al. (1999) results indicate that those companies which adopt executive stock option plans don't have the positive abnormal return on days surrounding the employee share option announcement in Singapore. To further test the long-term stock and operating performance following employee share option adoption, they compute the average monthly-adjusted return as the arithmetic average of the amounts by which the firm's return exceed the SES All Share Index returns. Yeo et al. (1999) find that in the three years subsequent to implementing a stock option plan, there are no signs to show that the sample firms perform significantly better, or worse, than market benchmarks. Further in their study, there is no evidence of a significant improvement in operating performance of the employee share option granting firms over the same period. These results imply that employee share options did not have the intended incentive effects envisioned by decision makers in Singapore and contrary to similar U.S studies, share option announcements do not seem to have information content in Singaporean stock exchange environment. The findings by Yeo et al. (1999) are different from previous findings by Aboody (1996), and Yermack (1997). Yeo et al. (1999) therefore conclude that their results are the consequence of the institutional environment. The incentive effectiveness of employee share options is reduced by

unique regulatory characteristics in Singapore, and hence, their impact on shareholder wealth is also reduced. Yeo et al. (1999) results are also different from findings by Mastsuura (2003) who investigate the announcement effect of the introduction of stock options plans in the Japanese market. Mastsuura's (2003) findings suggest that the market reacts favorably to the announcement of the introduction of stock option plans in Japan which is consistent with the previous findings in the U.S. studies.

All of the companies adopting share option plans in Hong Kong describe that the purpose of issuing share options is to attract and retain the best quality personnel for the development of the company's businesses and to promote the long term financial success of the company by aligning the interest of the grantees with that of the shareholders. In addition, under Chapter 17 of the Listings Rules in Hong Kong, an important (amended) term is to limit the size of granted share options to 10% percent of the total number of outstanding common stocks. This amended term can reduce the dilutive effect of employee share options to some extent and protect shareholders. Compared to regulations in Hong Kong, Singapore has relatively stricter rules on share options.

In summary, this study expects the announcement of stock options schemes to have information content in Hong Kong, and the information content to have a positive effect on cumulative abnormal returns (which means that investors may consider the announcement of new share options scheme as favorable news). This study is also to research whether similar but slightly less regulated Hong Kong environment provides for similar or dissimilar results compared to previous U.S studies and the Yeo et al. (1999) Singapore study.

3. Research Design

This research will adopt event-study methodology previously used by Aboody (1996), Yermark (1997) and Yeo et al. (1999) to examine the relationship between share option announcements and stock price adjustments. The market model will be used to compute the AR and CAR around event dates. The market model assumes a linear relationship between a return of any security to the return of the market portfolio. Using data during the estimate period, firstly, I intend to find the linear relationship between daily returns of a specific security to the corresponding daily market return, which is expressed by α (intercept) and β (slope). Secondly, using data during the event period, combined with the linear relationship from the estimation period, the estimated stock return on each event day will be given by market model. The AR is the difference between the estimated return and the actual return on an event day. The AR can only explain the stock price abnormal fluctuation phenomena on a specific event day. However, the CAR can indicate the stock price fluctuation tendency during consecutive event periods. In addition, a CAR regression model will be used to test the implication of stock price changes by calculating the Pearson correlation coefficient between each independent variable.

3.1 The main model

It is commonly accepted that share price movements have an element of commonality with all other share price movements. This commonality comes from effects that market-wide-events have on all shares over which the individual firm has no control. To test the effect of a particular share option announcement on share returns, this common effect must be removed. There are three widely used methods to obtain and estimate abnormal returns: the single-index model, the market model and the capital asset pricing

model (CAPM). Henderson (1990) points out that the three estimating methodologies yield similar results. In a prior study in Singapore, Yeo et al. (1999) compute abnormal returns and cumulative abnormal returns based on the market model (to test the short-term market reaction to share option announcements). In this research, I use the same event-study methodology to test the market reaction to share option scheme announcements in Hong Kong and then compare the results with those of the Singapore study. Following Yeo et al. (1999), I will similarly calculate the abnormal return and cumulative abnormal return during the event period based on the market model, where market returns are publicly available.

In order to get expected returns, the market model is used. Based on the actual market return on day t, the estimated return for security f on day t is given by the following equation:

$$R_{f,t} = \hat{\alpha} + \hat{\beta} \times R_{m,t} \qquad (1)$$

where $R_{f,t}$ and $R_{m,t}$ are the firm's and the market index' continuously compounded returns, respectively and α_f, β_f are the estimated intercept and slope, respectively, from a regression of firm returns on index returns over a 180 trading day period from trading day t=-199 through trading day t=-20 relative to the alternative event day. These estimated parameters are then used to obtain daily predicted returns over the 70-day period from day t = -19 through day t = +50.

The model assumes that actual returns are represented by the following relationship:

$$R_{f,t} = \hat{\alpha}_f + \hat{\beta}_f \times R_{m,t} + \varepsilon_{f,t} \qquad (2)$$

Where $R_{f,t}$, $R_{m,t}$ is the rate of return on security f and the market index on day t respectively. α_f and β_f is the intercept and slope of the linear relationship between

security f and the return on the market index, and $\varepsilon_{f,t}$ is of course the error term. The abnormal return for each security f on day t is calculated as:

$$AR_{f,t} = R_{f,t} - (\hat{\alpha}_f + \hat{\beta}_f \times R_{m,t}) \qquad (3)$$

Where $AR_{f,t}$ is the abnormal return of firm f on day t. $R_{f,t}$ is the actural return of firm f on day t. α_f and β_f are the intercept and slope respectively given by the market model. $R_{m,t}$ is the actural return of market index on day t.

Yeo et al. (1999) used the circular date as the event date to examine the market reaction to share option scheme announcements on the Singapore exchange.[4] However, the Yeo et al. (1999) research results indicate that there is a positive effect of 2.34% over the interval from days -58 to -6. This result implies that there might be information leakage from the board of directors' meetings before the circulars are issued. In my research, I set two alternative event dates: the circular date and the shareholder meeting date. According to Chapter 17 of the listing rules in Hong Kong, all listed companies' share option schemes must be approved by directors and shareholders, following the board of directors meeting that approved the ESO. In most cases the circular on the share option scheme is released on the same day as the board of directors' meeting date. The circular is dispatched to shareholders between one and three days after the directors' meeting.[5] The scheme document itself does not need to be circulated to shareholders of the listed issuer. However, if the scheme document is not circulated, it must be available for

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[4] Yeo et al (1999) indicated that information on Board meeting dates in not available. Share options scheme must be approved by the SEC in Singapore. Therefore, they did a further study with the SEC stamp date as the event date. Results are qualitatively unchanged when the SEC stamp date is used as the event date.

[5] New share option schemes must be approved by directors first prior to shareholders' meeting. On the directors' meeting day, the new share options scheme which has been approved by directors will be announced. Generally, on the same day, the circular relating to adoption of the new share option scheme and termination of the existing share option scheme will be dispatched.

inspection at a place in Hong Kong for a period of not less than 14 days before the date of the general meeting. Normally the new scheme must be approved by shareholders in a general meeting in the month following release of the circular. Therefore, the shareholders' meeting day is a potential day which influences investors' reaction to share option plans.

The event period in this study spans a period from 19 trading days prior to the event day to 50 trading days afterward, so the event period is in total 70 days. According to previous studies results, if the stock option information release can cause abnormal returns in stock prices, in other words if the cumulative abnormal return (CAR) is not equal to 0, then this means that employee stock option announcements may be the cause of the abnormal return. This would imply that employee stock options do have information content.

3.2 The additional model and analysis

This study also includes cumulative abnormal returns as a dependent variable to build a regression model. Gillian (2001) put forward a view that when a company adopts stock options as a reward method for employees, the stock options can save the company's cash outflow, because the new scheme acts as if the company was using a specific form of financing with additional conditions. This implies that firms with higher growth opportunities are probably expected by the market to issue more options since this enables them to postpone wages until higher cash flows are actually obtained. Huson (2001) demonstrates that the earnings response coefficient (ERC) is positively related to growth opportunities and inversely related to risk. Firms that issue dilutive securities are smaller and riskier, and have greater growth opportunities than other firms. Huson (2001) uses the log of opening market value of equity as a size proxy. He explains in the

footnote that the results are robust when the log of opening total assets is used as the size proxy. In my study, I will use the log of book value of total assets as the proxy to measure the firms' size. In addition, Huson (2001) uses the percentage of share reserve to the sum of outstanding shares and shares reserve as a measure of relative use of dilutive shares. In Hong Kong, Chapter 17 of the listing rules requires that the listed companies' share option scheme documents must include the total number of securities which may be issued upon exercise of all options to be granted under the scheme, together with the percentage of the issued share capital that it represents at the date of approval of the scheme. Therefore, in my study, I measure the magnitude of dilutive share options as the proportion of outstanding share options to the total number of outstanding common shares as at the date of circular day. I use the cumulative abnormal return as a dependent variable to identify the stock price change. Since the systematic risk is the risk associated with the movement of a market, it can also be a measure of the sensitivity of stock returns to broad market movements. In this research, systematic risk is measured by the market model. Systematic risk is the slope of the regression line between stock returns and market returns.

Several independent variables have been identified in previous researches that are correlated with stock price changes. Hence, I include systematic risk, firm size, outstanding share options and growth opportunities in the cumulative abnormal return regression model. I also add a control variable to identify the nature of the share option scheme announcement, as some listed companies release their schemes independently, but some are announced along with other events such as company name changes, re-elections of directors, repurchases of shares, financial results announcements etc. These other events may also cause abnormal returns, as well as the share option scheme announcement, therefore I set a dummy variable as a proxy for other announcements.

Following Huson's (2001) ERC regression model, I model the CAR as a function of outstanding share options percentage, firm size, risk, growth, and announcements[6] as follows:

$$CAR = \alpha_0 + \beta_1 ESO + \beta_2 ANNOUNCEMENT + \beta_3 SIZE + \beta_4 RISK + \beta_5 GROWTH + \varepsilon$$

Where CAR is the cumulative abnormal return in the event period, ESO is measured as the fraction of the number of outstanding share options to the total number of outstanding common stocks as of the date of circular. Announcement is a control variable which is equal to 0 if the scheme was announced independently, otherwise is 1. Size is measured as the log of book value of total assets. Risk is the systematic risk from the market model. Growth is measure by the ratio of market to book equity.

3.3 Event period setting

Yermack (1997) adopted the market model to test the market reaction to receipt of stock options by CEOs. He set the event period beginning 20 trading days prior to the stock option award and lasting until 120 trading days thereafter. His findings indicate that after approximately 50 trading days, the rate of CAR slows down. Following Yermack (1997), I set the event period from 19 days before event date and 50 days afterwards. There will be in total 70 trading days examined in this study. Yeo (1999) set the market model estimation period between 59 days and 199 days before event day (as also used by the Scholes and Williams (1977)). In order to join the market model estimation period with the event period as mentioned above, I set the market model estimation period between 199 days and 20 days before event date.

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[6] Huson(2001) models the ERC as a function of the percentage of shares reserved for conversion, size, risk, growth, the magnitude of the earnings surprise, and the presence of positive earnings.

Because new listing rules for share options in Hong Kong are effective from 1st September 2001, and many listed companies adopted new share option schemes and terminated old schemes during 2002 to 2004, the research period in this study covers three fiscal years, 2002-2004.

3.4 Alternative event days

Yeo et al (1999) used the circular date as the event date to examine the market reaction to share option scheme announcements on the Singapore exchange. Because employee share option plans require the approval of both the SES and the shareholders, Yeo et al (1999) did a further study with the SEC stamp date as the event date. In Hong Kong, share option schemes require approval at both directors' and shareholders' meeting. Although the board of directors meeting is when the share option scheme has been declared, the detailed scheme terms which have been approved by a board are generally only released at the shareholders meeting. The circular of adopting share option plans is usually dispatched to shareholders as a reference attached with the notice of a general meeting, announced by the board of a company. Even when final approval of a new share option scheme is the date of the shareholders' meeting, sometimes the share price may have abnormal fluctuations prior to shareholders' meeting due to information about the scheme leaking from the board of directors meeting or earlier. I assume that these two event days both influence investors' reactions to share option plans. Therefore, this research will separately consider the circular date and the shareholders meeting day as event days.

3.5 Method of analysis

This research includes cross sectional analysis and regression analysis under two

alternative event days. The cross sectional analysis is based on the market model. The calculation of CAR follows these steps:

1. Expected return for individual stocks

I calculate α and β parameters to find a linear relation between share price changes and market index changes according to the data in the estimated period. Then I use the market model and ordinary least square regression to compute the expected return in the event period.

2. Abnormal returns for individual stock (AR)

I calculate AR as the difference between actual returns and expected daily stock returns during the event period.

3. Average abnormal returns (AAR)

I calculate an average return for each date during the event period as a simple cross-sectional average over N firms in the sample.

Calculation of average abnormal returns on the event date aims to find whether the announcement or determination of share option schemes can cause abnormal stock price fluctuations and assist in judging whether share option schemes have information content. However, we can't conclude that share option schemes don't have information content if AAR is equal to 0 on the event date. Sometimes information leakage or investors' lagged reaction to new information can cause abnormal share price fluctuations prior to or after the event date. Therefore, judging whether share option schemes have information content and how investors react to this information should be assisted with analysis of cumulative abnormal returns over the entire event period.

1. Cumulative abnormal returns for individual company (CAR)

I compute CAR as a sum of abnormal returns during the event period.

2. Average cumulative abnormal returns (CAAR)

Finally, the average cumulative abnormal return is the arithmetic mean of CAR for all sample companies. Average cumulative abnormal return is an indicator to test the information content for share option schemes. If CAR is not equal to 0, it means share option schemes have information content. Further, if CAR is positive, it implies that investors consider this information as good news.

Huson (2001) tests the effect of dilutive shares on the earnings/return relation by calculating Pearson correlation coefficients between variables. According to the Huson (2001) results, there is a strong positive correlation between a share reserve[7] percentage and the use of dilutive securities. The correlations also show that firms using dilutive securities more extensively are more likely to be riskier, with more variable earnings. Following Huson (2001), in this research, I calculate the Pearson correlation coefficient between each independent variable. The larger the correlation is in magnitude, the stronger the relationship (Pearson, 1901). Here is how I interpret correlations in this study.

- -0.7 to -0.3 weak negative association.
- -0.3 to +0.3 little or no association.
- +0.3 to +0.7 weak positive association.
- +0.7 to +1.0 strong positive association.

Hong Kong is an international financial center. Financial companies are a major industry in Hong Kong. I divide all companies in the sample into finance and non-

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[7] Huson (2001) define shares reserve as the total number of common shares that the firm would issue if investors converted all convertible securities into common shares, and exercised all options issuable under option plans.

finance groups to make further analysis. In addition, both findings by Huson (2001) and by Smith and Watts (1992) indicate that smaller firms are more likely to issue dilutive securities due to cash constraints. However, they do not reveal any market reactions to dilutive securities issuance by big and small firms. In this study, I also conduct additional analysis by partitioning the sample according to market capitalization. This is following Smith and Watts (1992) research and in order to test the correlation between market reactions to different firm size.

4. Sample and Data Collection

My sample consists of 258 firms that announced share option scheme between 2002 and 2004 on the Hong Kong exchange. I began constructing the sample by searching the Hong Kong Exchange and Clearing Limited website for historical circulars relating to share option schemes over the entire period from 2002 to 2004. Although 8263 articles were found, only 395 companies were listed as having a share option scheme announcement during this period. To extract the data the following criteria was applied:

1. A sample company has to be listed on the Main Board of the Hong Kong Stock Exchange at the time of the announcement in the period 2002-2004.

2. Historic announcement, share price and other financial data, as specified in the research design section, have to be available.

3. No other significant events related to the company being reported for the period from 7 days before to 7 days after the announcement occured.[8]

Of 395 companies, 137 are excluded from the sample because of not meeting the above

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[8] Yoshiyuki (2003) studied the market reaction to stock option plans introduction in Japan. In his study, the same sample selection criterion was applied.

selection criteria. The final sample consists of 258 companies from 7 industries (representing about 28% of the listed firms on Mainboard as at end- December 2004).

Table 2

The Sample Distribution by 7 Industry Categories.

Industry Categories	N	%
Finance	12	4.65
Industrial	128	49.61
Properties	25	9.69
Consolidated	88	34.11
Hotel	2	0.78
Utilities	1	0.39
Miscellaneous	2	0.78
Total	258	100

The number of industrials is the largest of the seven industry categories with 128 entities (49.6% of the full sample) classified as industrial. The principle activities of these industries are design, manufacture of electronic products, knitting fabrics, and building construction. The second largest sample pool is consolidated enterprises with 88 entities (about 34.1% of the full sample). These companies generally have multiple principle activities relating to finance, industry, securities investment, video programmes, film exhibition and provision of video conversation services, and provision of telecommunications network services.

Even though these 258 firms announced share option schemes between 2002 and 2004, some of them had old share option schemes before the 2002-2004 announcements. Table 3 shows the distribution of share option scheme starting dates across the various periods. The share option scheme starting date distribution is also related to Hong Kong's equity market growth. Hong Kong equity market has been through several major changes. Similar to other Asian financial markets, the equity market in Hong Kong was sluggish with negative growth in 1997 and 1998 due to the Asian financial crisis in 1997. It recovered in 1999 but slowed down again in 2000. During May 2002, in conjunction with NASDAQ, the Stock Exchange of Hong Kong introduced the Pilot Program to globalize Hong Kong's equity market. From 2002 to 2004, market capitalization has increased by 86% of from HK$5,477 billion to HK$6,629 billion. Listed companies were therefore interested in announcing share option schemes during this boom period.

Table 3

Share Option Scheme Starting Date Distribution by Year

Year of Share Option Scheme Starting	N	%	Year of Share Option Scheme Starting	N	%
1987	1	0.39	1998	13	5.04
1991	7	2.71	1999	26	10.08
1992	13	5.04	2000	18	6.98
1993	17	6.59	2001	15	5.81
1994	20	7.75	2002	59	22.87
1995	11	4.26	2003	9	3.49
1996	17	6.59	2004	5	1.94
1997	27	10.47			
Total				258	100.00

Out of 258 samples, 171 companies (66.3% of the full sample) started their share option schemes since 1997. The most prevalent period of share option schemes usage occurred in 2002 with 59 companies (about 22.9% of the full sample) starting share option schemes in that year. This may be attributed to the fact that the new provision relating to share option schemes was released in 2001 by Hong Kong Stock Exchange. Some listed companies announced the termination of all old schemes and adoption of a new scheme after 2001 in order to comply with this new rule. Some companies that had not had any share option schemes started to express their intention to adopt a share option scheme as incentive and reward after 2001.

The percentage of outstanding share options to issued capital shares indicates the amount by which existing shareholders' interests might be diluted by the exercise of outstanding stock options. I find that 95 sample firms (about 36.8% of the full sample) do not have outstanding share options on their circular date and 99 sample firms (about 38.4% of the full sample) have less than 5% outstanding share options. Only 7 sample firms have more than 10% of outstanding options.

In Hong Kong, most companies' financial year end is either in December or March, and the annual general meeting is normally held four months afterwards. Most companies announced their new share option schemes along with financial results release. Table 4 shows the distribution of share option scheme announcements by the circular date.

In this research, the stock price change is measured by using the percentage change in adjusted daily closing price. The data on historical share price and daily market index is

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Table 4

Distribution of Share Option Scheme Announcements by the Circular Date

Month of Share Option Scheme Accouncement	2002		2003		2004		Total	
	N	%	N	%	N	%	N	%
1	0	0.00	1	1.69	1	1.03	2	0.78
2	0	0.00	1	1.69	2	2.06	3	1.16
3	7	6.86	1	1.69	5	5.15	13	5.04
4	20	19.61	21	35.59	23	23.71	64	**24.81**
5	12	11.76	8	13.56	15	15.46	35	13.57
6	5	4.90	4	6.78	7	7.22	16	6.20
7	25	24.51	9	15.25	19	19.59	53	**20.54**
8	20	19.61	4	6.78	9	9.28	33	12.79
9	0	0.00	1	1.69	4	4.12	5	1.94
10	7	6.86	5	8.47	4	4.12	16	6.20
11	5	4.90	2	3.39	3	3.09	10	3.88
12	1	0.98	2	3.39	5	5.15	8	3.10
Total	102	100.00	59	100.00	97	100.00	258	100.00

Most sample firms announced the circular of new share option schemes in April and July, in either 2002, 2003 or 2004, and very few firms announced their schemes at the beginning or end of the calendar year. In addition, out of 258 firms, there are 39.5% (102 sample firms) which released share option scheme circulars independently of any other events and the other 60.5% (156 sample firms) announced share option scheme along with other events including annual financial results announcement, repurchase of shares, change of company name etc.

obtained from the Yahoo Finance Hong Kong website and the WSTOCK stock price database; historical announcement for share option schemes and data relating to interim or annual financial statements are obtained from the Hong Kong Exchange and Clearing Limited website. The listing rules about share option schemes have been obtained from HKEX Fact Book 2001, Chapter 17.

5. Empirical Results

5.1 Testing the abnormal return and cumulative abnormal return on both circular date and shareholders meeting day

Table 5 and Table 6 report the average abnormal return (AAR) and average cumulative abnormal return (CAAR) for all companies in the sample using two alternative event

dates. Abnormal return and cumulative abnormal return are calculated using market model, where announcement day zero is the date of circular date and shareholders' meeting day. Standard deviation, t-test and p values are also reported in those tables. Significant test are conducted using the parametric T-tests described in Corrado and Cameron (2005).

Results reported in Table 5 show that the AAR for day zero is statistically significant when using the circular date as event day which is -0.93% (p=0.006). In addition, during the whole event period the AARs are only significant on day -19, -10, -3, 0, +2, +4, +10, +15, +19, +28, +32, and +33. Among these 12 trading days with statistically significant AAR, the highest AAR is +0.49% (p=0.05) on day -10, and the lowest AAR is -1.17% on day +32 (p=0.00). When using shareholders' meeting day as event day the AAR for day zero is +0.38% but insignificant. The AARs are only significant on -18, -9, -4, -3, +2, +3, +5, +12, +13, +15, +16, +25, +40, and +50.

Results reported in Table 6 show that the CAAR during the whole event period is negative with a value of -7.31% (significant at the 0.01 level using a two-tailed test) when using the circular date as the event day and -2.53% when using the shareholders' meeting date as event day which is statistically insignificant. In addition, the CAARs are significant during the whole event windows when using circular date as event day. However, the statistical significance of CAARs is weaker when using shareholders meeting day as event day. The CAARs are insignificant on -19, +2, +4, +11, +27, +28 and from day +31 to +50.

Previous findings by Matsuura (2003) indicate that the abnormal returns are negative and insignificant between the event period [-3, 0] but 0.467% and significant on event day (day 0). Also, the cumulative abnormal returns are 1.627% and statistically

Table 5

Average Abnormal Returns under Alternative Event Day for All Samples

Average abnormal returns (AARs) are as a simple cross-sectional average over 258 firms in the sample, where the alternative event day is 0. Singnificant tests are conducted using the t-statistic. The p-value and standard deviations are also reported.

Circular Date as Event Day

Relative Trading Day	mean	standard deviation	t-statistic	p-value	Relative Trading Day	mean	standard deviation	t-statistic	p-value
-19	-0.46%	4.14%	-1.780 **	0.040	16	-0.09%	4.66%	-0.290	0.380
-18	-0.29%	4.27%	-1.090	0.140	17	-0.22%	4.47%	-0.810	0.210
-17	0.22%	5.22%	0.670	0.250	18	-0.06%	3.94%	-0.260	0.400
-16	-0.34%	5.59%	-0.990	0.160	19	0.50%	5.42%	1.480 *	0.070
-15	-0.22%	5.12%	-0.700	0.240	20	0.09%	4.31%	0.340	0.370
-14	0.07%	4.90%	0.210	0.420	21	0.12%	6.18%	0.310	0.380
-13	-0.38%	5.20%	-1.170	0.120	22	-0.22%	4.44%	-0.800	0.210
-12	0.04%	3.62%	0.180	0.430	23	-0.26%	4.39%	-0.950	0.170
-11	-0.05%	4.43%	-0.200	0.420	24	0.00%	4.19%	-0.005	0.500
-10	0.49%	4.70%	1.680 **	0.050	25	0.09%	5.16%	0.270	0.400
-9	-0.17%	5.97%	-0.460	0.320	26	-0.27%	4.04%	-1.070	0.140
-8	0.14%	5.69%	0.390	0.350	27	-0.04%	4.33%	-0.130	0.450
-7	-0.68%	4.23%	-2.570	0.005	28	-0.50%	5.03%	-1.600 *	0.060
-6	0.20%	5.62%	0.570	0.280	29	-0.13%	4.33%	-0.480	0.320
-5	-0.21%	4.81%	-0.710	0.240	30	-0.03%	5.37%	-0.100	0.460
-4	-0.36%	4.80%	-1.190	0.120	31	-0.02%	4.40%	-0.060	0.480
-3	-0.55%	4.77%	-1.870 **	0.030	32	-1.17%	5.16%	-0.365 ***	0.000
-2	0.17%	6.38%	0.430	0.330	33	-0.47%	5.09%	-1.470 *	0.070
-1	-0.38%	5.70%	-1.080	0.140	34	-0.27%	5.57%	-0.790	0.220
0	-0.93%	5.96%	-2.510 ***	0.006	35	0.07%	7.75%	0.140	0.450
1	0.15%	6.64%	0.370	0.360	36	-0.25%	7.66%	0.520	0.300
2	-0.44%	5.16%	-1.360 *	0.090	37	0.12%	5.88%	0.330	0.370
3	0.22%	5.16%	0.680	0.250	38	0.48%	9.60%	0.800	0.210
4	-0.56%	3.97%	-2.270 ***	0.010	39	-0.11%	4.47%	-0.400	0.350
5	-0.28%	4.93%	-0.910	0.180	40	0.25%	4.81%	0.860	0.200
6	0.25%	4.32%	0.930	0.180	41	0.26%	5.36%	0.800	0.210
7	-0.32%	4.47%	-1.140	0.130	42	-0.16%	4.62%	-0.550	0.290
8	-0.10%	4.42%	-0.370	0.360	43	0.00%	5.89%	-0.002	0.500
9	-0.02%	4.92%	-0.070	0.470	44	-0.28%	4.92%	-0.920	0.180
10	-0.42%	4.68%	-1.440 **	0.080	45	0.31%	7.52%	0.650	0.260
11	-0.10%	4.61%	-0.350	0.360	46	0.62%	7.73%	-0.001	0.500
12	0.12%	4.62%	0.420	0.340	47	-0.05%	6.02%	-0.920	0.180
13	-0.05%	4.47%	-0.180	0.430	48	-0.21%	4.34%	-0.790	0.210
14	0.03%	5.65%	0.080	0.470	49	-0.32%	7.47%	-0.690	0.240
15	0.40%	5.21%	1.230 *	0.100	50	-0.09%	5.91%	-0.240	0.400

Shareholders Meeting Date as Event Day

Relative Trading Day	mean	standard deviation	t-statistic	p-value	Relative Trading Day	mean	standard deviation	t-statistic	p-value
-19	0.03%	5.31%	0.090	0.460	16	-0.49%	4.50%	-1.760 **	0.040
-18	-0.57%	4.03%	-2.280 ***	0.010	17	0.14%	7.60%	0.306	0.380
-17	0.08%	5.73%	0.230	0.410	18	-0.17%	4.62%	-0.596	0.276
-16	-0.19%	4.94%	-0.610	0.270	19	-0.11%	5.07%	-0.360	0.358
-15	-0.18%	4.28%	-0.670	0.250	20	-0.36%	4.89%	-1.198	0.116
-14	0.09%	5.71%	0.270	0.400	21	0.08%	4.65%	0.267	0.395
-13	-0.29%	4.27%	-1.100	0.140	22	0.11%	4.63%	0.377	0.353
-12	-0.33%	4.83%	-1.110	0.130	23	-0.06%	4.84%	-0.207	0.418
-11	-0.05%	4.69%	0.270	0.400	24	-0.02%	8.07%	-0.030	0.488
-10	0.32%	5.73%	0.890	0.190	25	0.80%	8.63%	1.480 **	0.070
-9	-0.33%	4.19%	-1.280 *	0.100	26	-0.06%	8.07%	-0.129	0.449
-8	-0.26%	4.73%	-0.880	0.190	27	0.25%	5.22%	0.756	0.225
-7	0.27%	5.71%	0.770	0.220	28	0.07%	7.50%	0.154	0.439
-6	-0.38%	5.11%	-1.120	0.120	29	-0.17%	5.97%	-0.446	0.328
-5	-0.18%	4.76%	-0.590	0.280	30	0.01%	6.03%	0.016	0.494
-4	0.56%	5.35%	1.670 **	0.048	31	0.28%	5.56%	0.800	0.212
-3	-0.39%	3.85%	-1.620 **	0.050	32	0.40%	5.41%	1.187	0.118
-2	0.03%	4.34%	0.120	0.450	33	-0.09%	4.84%	-0.298	0.382
-1	0.16%	6.03%	0.440	0.330	34	-0.29%	4.89%	-0.957	0.170
0	0.38%	5.26%	1.150	0.125	35	-0.02%	4.34%	-0.080	0.468
1	-0.25%	4.93%	-0.800	0.210	36	0.02%	5.76%	0.056	0.478
2	0.50%	4.43%	1.800 **	0.036	37	0.03%	3.85%	0.136	0.446
3	-0.34%	3.81%	-1.420 *	0.078	38	-0.46%	5.01%	-1.468	0.072
4	0.06%	4.37%	0.220	0.410	39	0.29%	6.30%	0.742	0.229
5	-0.59%	4.86%	-1.960 **	0.026	40	-0.47%	4.73%	-1.600 *	0.055
6	-0.21%	5.52%	-0.600	0.274	41	0.18%	4.41%	0.640	0.261
7	0.29%	7.49%	0.620	0.266	42	0.13%	4.29%	0.485	0.314
8	-0.07%	5.12%	-0.225	0.410	43	-0.06%	4.89%	-0.200	0.421
9	0.12%	5.18%	0.380	0.350	44	-0.13%	4.76%	-0.453	0.325
10	0.14%	4.72%	0.467	0.320	45	-0.12%	4.17%	-0.449	0.327
11	0.24%	3.56%	1.090	0.137	46	-0.02%	4.92%	-0.075	0.470
12	-0.39%	3.26%	-1.910 **	0.028	47	0.37%	5.36%	1.106	0.135
13	-0.56%	4.86%	-1.865 **	0.030	48	-0.17%	4.66%	-0.584	0.280
14	0.21%	7.38%	0.450	0.326	49	0.12%	4.71%	0.425	0.336
15	-0.43%	5.09%	-1.370 *	0.086	50	0.40%	4.93%	1.317 *	0.094

*** indicates statistical significance at the 0.01 level

** indicates statistical significance at the 0.05 level

* indicates statistical significance at the 0.1 level

Table 6

Cumulative Abnormal Returns under Alternative Event Day for All Samples

Cumulative abnormal returns (CARs) are calculated based on market model, where the alternative event day is 0. Singnificant tests are conducted using the t-statistic. The p-value and standard deviations are also reported. The sample comprises 258 firms in the sample.

Circular Date as Event Day

Relative Trading Day	mean	standard deviation	t-statistic	p-value	Relative Trading Day	mean	standard deviation	t-statistic	p-value
-19	-0.73%	5.24%	-2.240 **	0.013	16	-5.19%	27.93%	-2.985 ***	0.002
-18	-0.98%	6.59%	-2.396 ***	0.009	17	-5.45%	28.49%	-3.070 ***	0.001
-17	-0.72%	7.66%	-1.505 *	0.067	18	-5.49%	28.97%	-3.042 ***	0.001
-16	-1.09%	8.24%	-2.123 **	0.017	19	-5.03%	29.30%	-2.759 ***	0.003
-15	-1.30%	9.05%	-2.312 ***	0.010	20	-4.97%	29.92%	-2.668 ***	0.004
-14	-1.20%	10.04%	-1.920 **	0.028	21	-4.85%	30.79%	-2.529 ***	0.006
-13	-1.61%	10.85%	-2.380 ***	0.009	22	-5.06%	30.49%	-2.665 ***	0.004
-12	-1.59%	10.85%	-2.348 ***	0.010	23	-5.27%	31.02%	-2.730 ***	0.003
-11	-1.73%	11.37%	-2.448 ***	0.008	24	-5.26%	31.46%	-2.680 ***	0.004
-10	-1.28%	11.46%	-1.789 **	0.037	25	-5.36%	31.63%	-2.720 ***	0.003
-9	-1.44%	12.14%	-1.900 **	0.029	26	-5.67%	32.01%	-2.847 ***	0.002
-8	-1.42%	12.90%	-1.760 **	0.040	27	-5.61%	32.84%	-2.750 ***	0.003
-7	-1.96%	13.68%	-2.307 **	0.011	28	-6.05%	33.32%	-2.914 ***	0.002
-6	-1.92%	14.53%	-2.128 **	0.017	29	-6.25%	34.11%	-2.940 ***	0.002
-5	-2.12%	15.36%	-2.220 **	0.014	30	-6.24%	35.04%	-2.860 ***	0.002
-4	-2.28%	16.30%	-2.250 **	0.013	31	-6.34%	34.77%	-2.927 ***	0.002
-3	-2.99%	16.71%	-2.875 ***	0.002	32	-7.38%	35.68%	-3.320 ***	0.001
-2	-2.89%	18.13%	-2.562 ***	0.006	33	-7.88%	36.79%	-3.442 ***	0.000
-1	-3.33%	18.36%	-2.914 ***	0.002	34	-8.08%	37.35%	-3.474 ***	0.000
0	-4.14%	19.22%	-3.460 ***	0.000	35	-7.92%	37.06%	-3.435 ***	0.000
1	-3.94%	20.11%	-3.148 ***	0.001	36	-8.19%	38.91%	-3.381 ***	0.000
2	-4.37%	20.72%	-3.386 ***	0.000	37	-8.01%	40.94%	-3.143 ***	0.001
3	-4.30%	21.23%	-3.250 ***	0.001	38	-7.64%	43.79%	-2.804 ***	0.003
4	-4.77%	21.81%	-3.515 ***	0.000	39	-7.70%	43.32%	-2.856 ***	0.002
5	-5.11%	22.79%	-3.604 ***	0.000	40	-7.45%	43.94%	-2.724 ***	0.003
6	-4.85%	22.52%	-3.459 ***	0.000	41	-7.12%	43.19%	-2.647 ***	0.004
7	-5.15%	23.54%	-3.515 ***	0.000	42	-7.18%	43.56%	-2.647 ***	0.004
8	-5.29%	24.38%	-3.488 ***	0.000	43	-7.25%	45.16%	-2.578 ***	0.005
9	-5.32%	24.95%	-3.427 ***	0.000	44	-7.49%	46.40%	-2.593 ***	0.005
10	-5.58%	25.50%	-3.515 ***	0.000	45	-7.25%	46.01%	-2.532 ***	0.006
11	-5.75%	25.99%	-3.556 ***	0.000	46	-6.65%	46.45%	-2.300 **	0.011
12	-5.61%	26.08%	-3.454 ***	0.000	47	-6.62%	46.60%	-2.282 **	0.012
13	-5.64%	26.73%	-3.388 ***	0.000	48	-6.89%	47.29%	-2.340 ***	0.010
14	-5.61%	27.99%	-3.329 ***	0.001	49	-7.23%	48.69%	-2.386 ***	0.009
15	-5.14%	27.82%	-2.967 ***	0.002	50	-7.31%	49.12%	-2.390 ***	0.009

Shareholders Meeting Date as Event Day

| Relative Trading Day	mean	standard deviation	t-statistic	p-value	Relative Trading Day	mean	standard deviation	t-statistic	p-value
-19	-0.37%	6.20%	-0.960	0.169	16	-3.41%	24.66%	-2.218 **	0.014
-18	-0.94%	7.22%	-2.100 **	0.018	17	-3.26%	26.26%	-1.995 **	0.024
-17	-0.86%	8.54%	-1.620 *	0.053	18	-3.43%	26.00%	-2.120 **	0.017
-16	-1.05%	9.81%	-1.716 **	0.044	19	-3.55%	27.11%	-2.101 **	0.018
-15	-1.23%	9.92%	-1.883 **	0.030	20	-3.91%	28.14%	-2.233 **	0.013
-14	-1.13%	11.76%	-2.286 **	0.012	21	-3.83%	28.40%	-2.169 **	0.016
-13	-1.42%	12.14%	-2.271 **	0.012	22	-3.73%	28.82%	-2.077 **	0.019
-12	-1.76%	12.36%	-2.286 **	0.012	23	-3.79%	29.17%	-2.086 **	0.019
-11	-1.81%	12.82%	-2.270 **	0.012	24	-3.80%	30.97%	-1.972 **	0.025
-10	-1.49%	12.76%	-1.880 **	0.030	25	-3.01%	33.50%	-1.442 *	0.075
-9	-1.83%	13.39%	-2.190 **	0.015	26	-3.07%	36.51%	-1.352 *	0.089
-8	-2.09%	12.97%	-2.586 ***	0.005	27	-2.83%	36.34%	-1.250	0.106
-7	-1.82%	13.85%	-2.105 **	0.018	28	-2.76%	37.75%	-1.172	0.121
-6	-2.19%	14.50%	-2.430 ***	0.008	29	-2.92%	36.49%	-1.286 *	0.100
-5	-2.37%	14.62%	-2.605 ***	0.005	30	-2.92%	36.47%	-1.284 *	0.100
-4	-1.81%	15.91%	-1.833 **	0.034	31	-2.64%	37.88%	-1.119	0.132
-3	-2.20%	16.97%	-2.087 **	0.019	32	-2.24%	38.57%	-0.932	0.176
-2	-2.17%	17.03%	-2.049 **	0.021	33	-2.33%	39.27%	-0.950	0.171
-1	-2.01%	17.80%	-1.813 **	0.036	34	-2.62%	38.81%	-1.085	0.140
0	-1.63%	18.13%	-1.445 *	0.075	35	-2.64%	39.44%	-1.076	0.141
1	-1.88%	19.14%	-1.575 *	0.058	36	-2.62%	40.22%	-1.047	0.148
2	-1.38%	20.47%	-1.084	0.140	37	-2.59%	40.95%	-1.020	0.155
3	-1.72%	20.47%	-1.348 *	0.090	38	-3.05%	41.59%	-1.177	0.120
4	-1.66%	21.48%	-1.239	0.108	39	-2.76%	41.90%	-1.057	0.146
5	-2.25%	21.56%	-1.675 **	0.048	40	-3.23%	42.58%	-1.218	0.112
6	-2.46%	21.16%	-1.864 **	0.032	41	-3.05%	43.24%	-1.134	0.129
7	-2.16%	21.66%	-1.605 *	0.055	42	-2.92%	44.65%	-1.050	0.147
8	-2.24%	21.68%	-1.656 *	0.049	43	-2.98%	44.31%	-1.082	0.140
9	-2.11%	22.04%	-1.541 *	0.062	44	-3.12%	45.23%	-1.108	0.135
10	-1.98%	22.06%	-1.439 *	0.076	45	-3.24%	45.81%	-1.134	0.129
11	-1.73%	22.55%	-1.234	0.109	46	-3.26%	47.33%	-1.106	0.135
12	-2.12%	22.62%	-1.506 *	0.067	47	-2.89%	47.00%	-0.987	0.162
13	-2.69%	23.58%	-1.829 **	0.034	48	-3.06%	47.08%	-1.044	0.149
14	-2.48%	23.78%	-1.673 **	0.048	49	-2.93%	47.65%	-0.989	0.162
15	-2.91%	24.04%	-1.946 **	0.026	50	-2.53%	48.74%	-0.834	0.203

*** indicates statistical significance at the 0.01 level
** indicates statistical significance at the 0.05 level
* indicates statistical significance at the 0.1 level

significant in the event window [0, +1]. Thereby, findings by Matsuura (2003) suggest that market reacts favourably to the announcement of stock option plan announcements in Japan. Yeo et al. (1999) used the similar market model to calculate the AARs and CARs between event periods of (-58, +58). The average abnormal return for day 0 is not significant. The mean CARs for most event windows around event day are also not significant. Thereby, the results by Yeo et al. (1999) suggest that there is only weak evidence of positive market reaction to employee share option announcements in Singapore. Compared to previous findings by Matsuura (2003) and Yeo et al. (1999), the results of AARs and CARs test in my study suggests relatively strong evidence that share option scheme announcements in Hong Kong have information content and market reacts unfavourably to scheme announcements in Hong Kong as CARs are statistically significant in most event windows.

Figure 1 presents the average abnormal return tendency for all firms in the sample.


Figure 1 Average Abnormal Return for All Samples
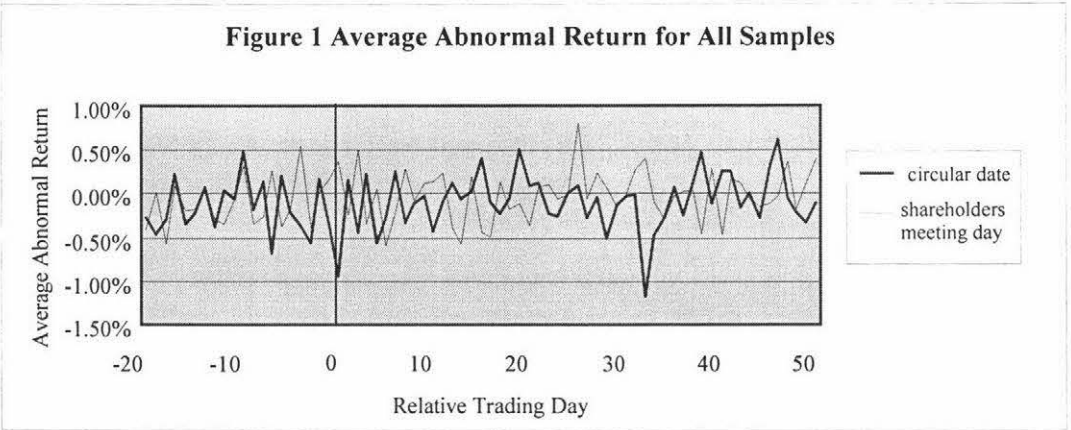
AAR for all samples fluctuated between -1.17% and +0.63% during the event period when using the circular date as the event day and was positive in 27 out of 70 trading days. Correspondingly, the fluctuation magnitude of AAR is relatively small when using the shareholders meeting day as the event date (which is between -0.59% and

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+0.80%) and was positive in 33 out of 70 trading days. This implies that share option scheme announcement did not cause significant fluctuations around announcement day when using either circular date or shareholders meeting date as the event date.

Figure 2 presents the average cumulative abnormal return for all firms in the sample.

Figure 2 Average Cumulative Abnormal Return for All Samples
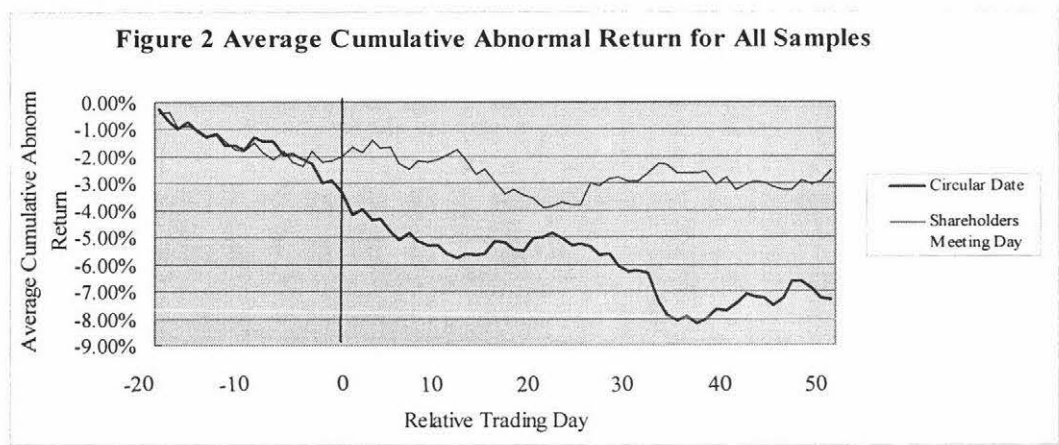
The CAAR when using the circular date as the event day is somewhat smaller than when using the shareholders' meeting date as the event day. The lowest negative average cumulative return was created at event windows of [-19, +20] with -3.91% (p=0.013) when using the shareholders' meeting day as the event date. However, the lowest point of average cumulative abnormal return was created at [-19, +36] with -8.19% (p=0.000) when using the circular date as the event day. Figure 3 presents the gap of average cumulative abnormal return on alternative event days. The difference of average cumulative abnormal return between shareholder's meeting day and circular date is +2.42% during the whole event period. However, this gap is quite small before the event day and became bigger at the time when circular released and scheme was approved by shareholders. The undulate movement indicates that share option scheme announcements may cause a greater reaction by investors around circular date than around the shareholders' meeting day.

**Figure 3 Average Cumulative Abnormal Return Gap
on Alternative Event Day**
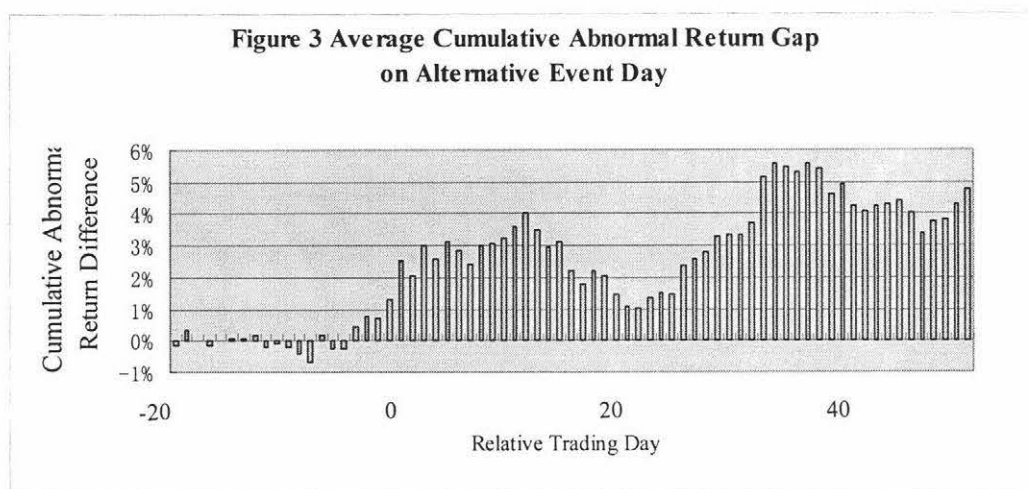
I also find that before the event day, stock prices have already shown a decrease, especially when using the circular date as the event day. The cumulative abnormal return is overall downward from the beginning of the event period of days (-19 to event day) with a negative value of -4.14% (p=0.000) when using the circular date as the event day. The results suggest some evidence of information leakage. As circulars are released after the board meeting, share price reductions might have been caused by information about stock option schemes leaking from the board, management or advisors. The information leakage phenomenon is similar with previous findings in Singapore (Yeo, 1999) which indicates a positive run-up of 2.34% before the event day. Even though the stock price maintained a downward tendency, the stock price decrease slowed from the day +11 when using the circular date as the event day but still had an increased downward tendency from the day +20. As most companies held shareholders' meeting at about 3 to 4 weeks (passing about 20 trading days) after the circular was announced, at that stage, the increase in downwards trend of the adverse stock movement from the day +20 when using circular date as the event day is likely to reflect market investors' reaction to share option scheme announcements, when a scheme is approved by shareholders at the shareholders' meeting day.

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Based on the above results, it appears that the market reacts unfavourably to share option scheme announcements in Hong Kong. However, share option scheme announcements do not appear to cause significant stock price decreases around the event day. The results are consistent with the previous findings of Aboody (1996) but contrary to previous findings, especially those of Yemack(1997) , Yeo(1999) and Mastsuure (2003) in the case of the United States, Singapore and Japan respectively. The results are also inconsistent with my expectations. Share option issuance has both incentive and dilutive effects. However, the ultimate purpose of share options issuance is to encourage companies' long-term growth and better performance by aligning the interests of employees with those of stakeholders. I assumed that investors realise the purpose of share options so the expectation of this study is that the market would react favourably to share option scheme announcements. However, the research results, which are contrary to my expectations, reveals that investors may doubt the incentive effect of the share option plan and are more worried about the dilution effect in the future (which will be caused by an increase in shares on issue).

5.2 Testing the abnormal return and cumulative abnormal return for financial firms in the sample

As an international metropolis and an important finance center in the Asia-Pacific region, Hong Kong's financial industry is always considered as one centre with high potential growth. I expect that the market reacts favorably to announcement of share option schemes for companies in this industry since a share option plan could be interpreted as a sign of high growth. To investigate this hypothesis and provide some additional insights into the basic results, I calculate the average abnormal return and cumulative abnormal return for the 12 financial firms in the sample. Figure 4 and Figure

5 present the average abnormal return and cumulative abnormal return for 12 financial firms during the event period.

Figure 4 Average Abnormal Return for Financial Firms

Figure 5 Average Cumulative Abnormal Return for Financial Firms
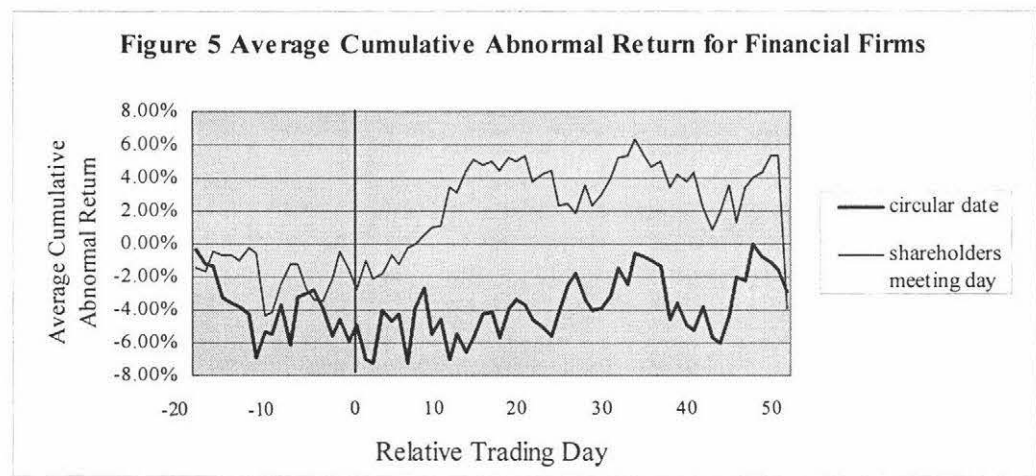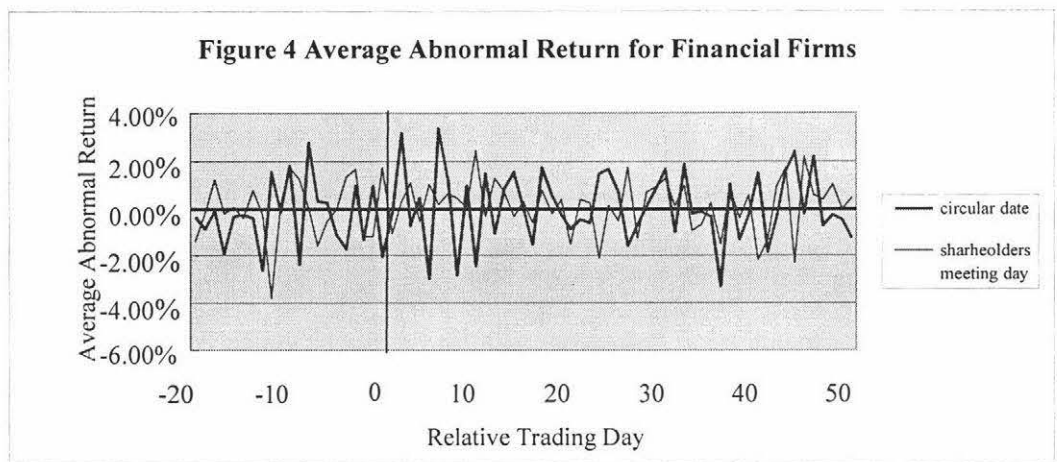
Daily average abnormal return of these 12 financial companies is -2.044% (p=0.29) on the circular date and +1.757% (p=0.193) on the shareholders meeting day. In addition, daily average abnormal returns for all 12 financial companies fluctuate between -3.28% and +3.347% during the event period when using the circular date as the event day and is positive in 30 out of 70 trading days. Correspondingly, when using the shareholders' meeting day as the event day, the daily average abnormal return fluctuation magnitude is close to the above results when using the circular date as the event day, with values

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between -3.804% and +2.4197% and is positive in 40 out of 70 trading days. Compared to my previous findings in section 5.1, share option scheme announcements by financial firms can cause larger stock price fluctuations around event day than for other firms on average.

The value of cumulative abnormal returns for the 12 financial companies in the sample during the whole event period is negative with a value of -2.867% (p=0.37) when using the circular date as the event day and -3.907% (p=0.146) when using the shareholders' meeting date as the event day. Furthermore, the value of cumulative abnormal return fluctuates around the -5% level from around 10 days to the event date when using circular date as the event day. I also find that the cumulative abnormal returns started to be positive from 7 trading days and onwards quickly increased until 13 trading days when they reached +5.058% (significant at the 5% level, p=0.049%) if the shareholders meeting date is used as the event day. This result is quite different from the previous findings for all companies in the sample. It can be seen that the share option scheme announcement is associated with larger share price reactions for finance companies than for other companies. Investors may consider share option scheme announcements as more favorable news in the financial industry. From the perspective of components of the Hong Kong exchange, the finance industry's share of total market capitalization was the largest of the seven industry categories in 2002, 2003 and 2004. The finance industry has also had the largest share of the market, about one –fourth, from 1997 to 1999. Therefore, the finance industry in Hong Kong has grown rapidly in the last three years and has made Hong Kong a major international finance centre. Investors may have a higher potential interest in finance companies in Hong Kong compared to firms in other industries. Therefore, it appears from the findings of this study that the Hong Kong market reacts less unfavorably to share option scheme announcements by
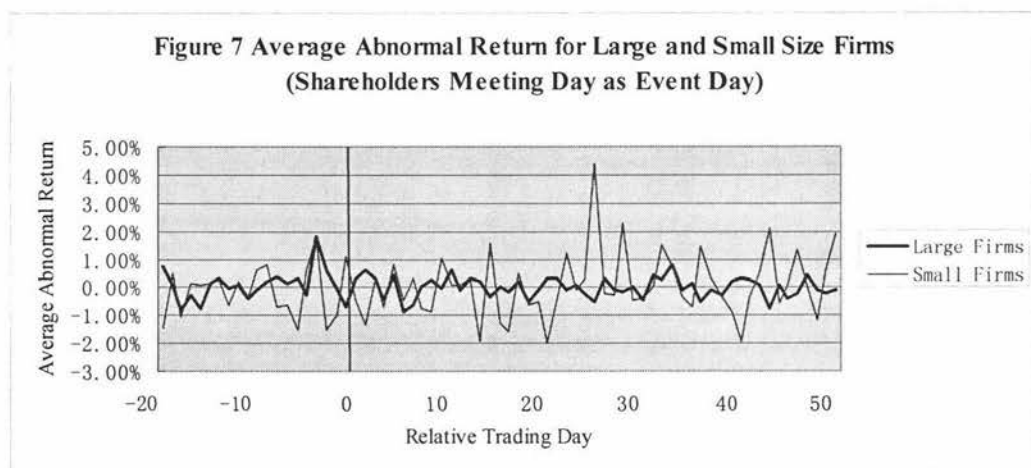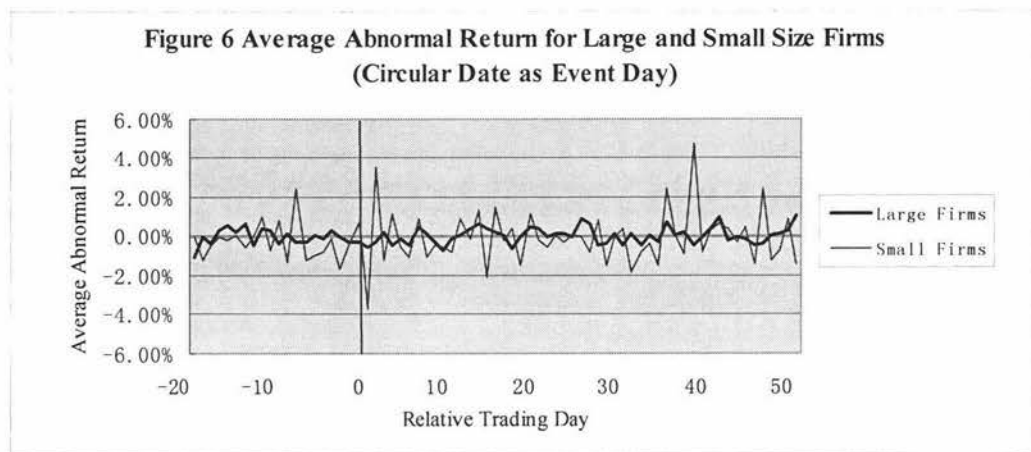
financial companies than by other companies. The less unfavorable market reactions are not as strongly negative signal by the market about the future growth prospects of the financial firms in Hong Kong.

5.3 Testing the abnormal return and cumulative abnormal return between large and small size companies

Aboody (1996) examined the relation between employee share option value and firm size. The sample was ranked by the firm's market capitalization (stock price times the number of common outstanding shares). The results show that in small firms there is no significant association between employee share option value and the stock price, but there is a significant negative association for large firms. In this research, out of 258 companies in the sample, 3 firms with market capitalizations over 60 billion are included in the Hang Seng Large Cap index, 11 with market capitalizations between 20 billion and 60 billion are included in the Mid Cap index and the other 244 firms are included in the Small Cap index with market capitalizations under 20 billion. I assume that if firm size is defined according to the above three index criteria that the result may lack persuasion as the number of companies in the large and medium size groups are too small. In order to investigate whether firm size affects the association between ESO value and firms' share price, Aboody (1996) ranked the sample by firm's market capitalization (stock price times the number of common outstanding shares). He divided the sample into two groups: the first consists of firms in the lower quartile of market capitalization and the second consists of firms in the upper quartile. Followed Aboody (1996), to test the different size firms' reactions to share option scheme announcements, I define the top 50 firms with large market capitalization as large size firms and the last 50 firms with small market capitalization as small size firms. Figure 6 and Figure 7

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present the average abnormal return during the whole event period for two different size groups of firms using two alternative event days.

Figure 6 Average Abnormal Return for Large and Small Size Firms (Circular Date as Event Day)

Figure 7 Average Abnormal Return for Large and Small Size Firms (Shareholders Meeting Day as Event Day)

Between these two size groups of firms, the daily abnormal return fluctuation magnitude is the smaller for large size firms with values between -1.03% and +1.05% when using the circular date as the event day and -0.90% and +1.81 % when using the shareholders' meeting day as the event day. This result was interpreted as small size firms having a smaller presence in the market and probably less shareholders than large size firms. In addition, the shareholding may be easily controlled by minority greater shareholders. Accordingly, the announcements made by small size firms may cause a

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market reaction and cause more fluctuations in stock prices.

Figure 8 and figure 9 present the average cumulative abnormal returns for the large and small size samples during the event period using two alternative event days.

Figure 8 Average Cumulative Abnormal Return for Large and Small Size Firms (Circular Date as Event Day)

Figure 9 Average Cumulative Abnormal Return for Large and Small Size Firms (Shareholders Metting Day as Event Day)
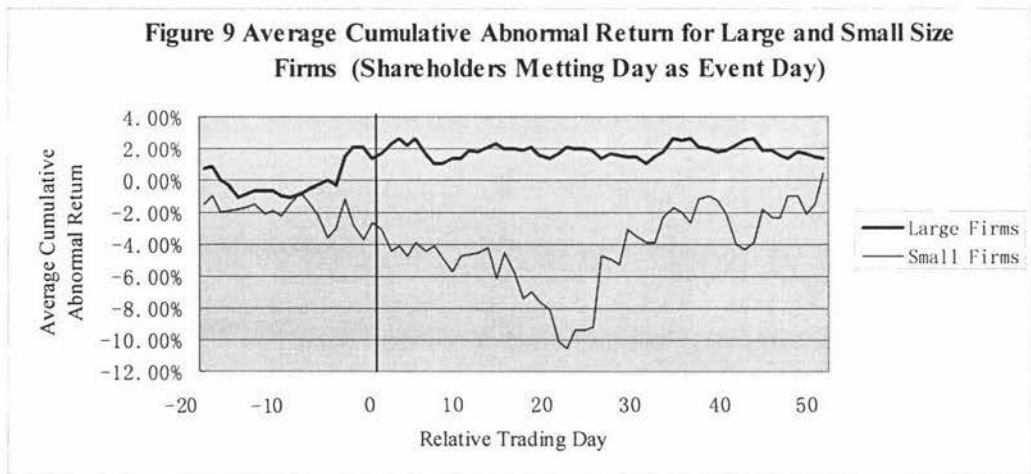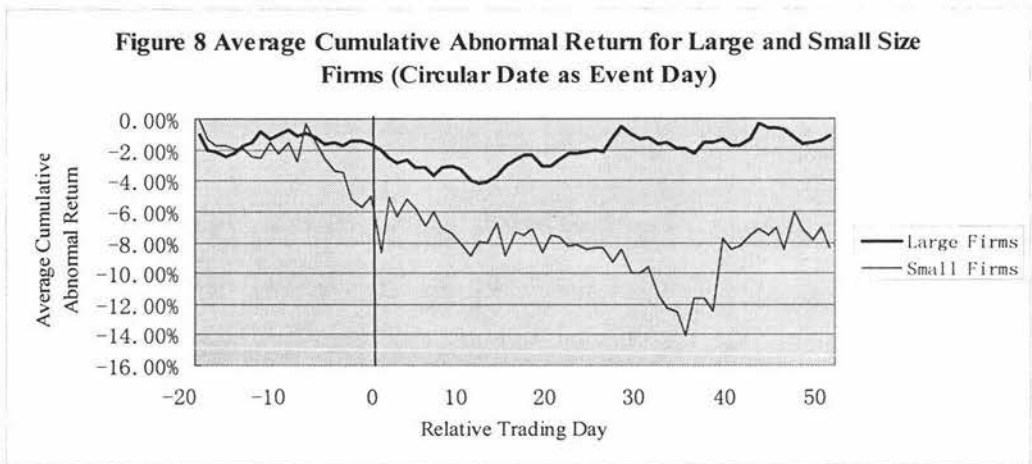
The small size firms have lower cumulative abnormal return during the whole event period with value -8.38% (p=0.16) when using the circular date as the event day and +0.46% (p=0.483) when using the shareholders' meeting day as the event day. Both CARs are statistically significant on alternative event day. In addition, the values of cumulative abnormal returns are all negative for small size firms during the whole event windows but only indicate a slight positive value at the end point of the event period.

Overall, this indicates a downward trend tendency from -19 trading day until +34 which reached the lowest point with the value of -14.07% (p=0.003) when using the circular date as event day. However, after +34 trading day, the stock price has a quick increase. This overall stock price movement tendency is quite similar when using shareholders meeting day as the event date but the overall stock price decrease magnitude is smaller than using the circular date as the event day. The lowest point of CAR is created at +21 trading day with value of -10.55% (p=0.017) when using the shareholders meeting day as the event day. However, the large size firms have higher cumulative abnormal returns than the small size firms in most event windows whether using the circular date or the shareholders meeting day as the event day. Figure 8 indicates that for the large size firms, the stock price only has a slight decrease after the circular released and has a steady growth tendency from +12 trading day when using the circular date as the event day. The results in Figure 8 and Figure 9 suggest that the large firms have more positive market behavior than small firms, with higher positive cumulative abnormal returns in most event windows. The result of the relationship between firm size and the value of CAR is quite consistent with Aboody's (1996) study. He tests for the correlation between total assets per share and ESO value per share. The correlation results indicate that large firms have higher ESO values per share than small size firms.

Even though the cumulative abnormal return is more negative for large size firms when using the circular date as the event day, then when using the shareholders' meeting day as the event day, cumulative abnormal returns begin to be positive from 11th trading day and show a rapid increase in next the 4 trading days until the shareholders meeting is held, and then the cumulative abnormal return goes flat. Therefore, the market reaction to share option scheme announcements made by large size firms is quite different under the alternative event day. Values created when using the circular date as the event day

are all negative but became positive in most event windows when using the circular date as the event day. As the circular is released before the shareholder meeting day (but the scheme has not been approved), the negative cumulative abnormal return when using the circular date as the event day just reflects the investors' initial reactions to share option scheme announcements made by large size firms. This implies that at that stage, the essence of share option schemes has not been fully understood by the market. However, when the circular is approved by shareholders in shareholder meetings, the stock price begins a steady, relative upward climb, which indicates that investors start to change their opinion on the share option scheme.

My findings show that share option schemes announced by small size firms send a negative signal to investors. When using the shareholders' meeting day as the event day, the large firms have more positive market behavior than small firms, with higher positive cumulative abnormal returns in most event windows. This result could be explained by the observation that larger firms tend to grant share options to a broad class of employees. Therefore, as firm size increases, so does the number of employees covered by a share options plan, resulting in the incentive effect outweighing the dilution effect.

The basic findings of this study show that share option scheme announcements in Hong Kong in the period 2002-2004 have information content and that the market overall reacts unfavorably to share option scheme announcements. However, this does not cause a significant effect on stock returns. In summary, reasons for the negative reaction to share option schemes in Hong Kong are as follows:

(1) Investors' considerations of share options have very clearly been affected by a series of scandals which happened in the United States starting with the Enron collapse at the

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end of 2001. As a form of compensation incentive, stock options are used to align the interests between the owners, executives and employees, enabling them to benefit from their efforts to increase shareholder value. However, the unintended consequence is that executives try to exaggerate earnings and boost stock prices to reap personal gain. Share option schemes have also been an easy way for companies to remunerate staff without showing shareholders how such schemes could dilute their earnings. Consequently, investors around the world have been misled. This resulted in negative effects to investors worldwide. In this research, the event period analysis started from the beginning of 2002, which just followed major business scandals in the US, therefore the findings of this research may reflect investors' attitude toward share options after corporate scandals.

(2) The Hong Kong Society of Accountants (HKAS) issued Hong Kong Financial Reporting Standard No. 2 – "Share-based payment" (HKFRS 2) in April 2001 as part of its ongoing efforts to converge its accounting standards with those of the International Accounting Standards Board. However, before this regulation was made effective, the disclosure requirements by Hong Kong Stock Exchange listing rule 17 did not require listed companies to expense options because it was difficult to determine their exact value. Since such options are hard to trade it is practically impossible to determine their precise value at the time when they are issued. Under Listing Rule 17, the listed issuer is only encouraged to disclose in its annual report and interim report the value of options granted to participants during the financial year/period. HKFRS 2 become effective at the beginning of 2005. Before this point, investors had difficulty interpreting the valuation implications of share options as they did not have a precise measurement to measure the dilution effect of share options.

(3) From the perspective of the sample industry distribution, most companies that have share option scheme are industrial companies in Hong Kong. This is quite different from in the United States. Generally, high potential growth companies such as technology companies prefer to make greater use of share options. However, there are very few such high potential growth technology companies in Hong Kong. Compared with high technology companies, industrial companies are not regarded as high potential growth companies. Therefore, the negative effect of share option scheme announcements may reflect that investors do not believe in high prospects for those industrial companies in Hong Kong.

(4) Under Listing Rule 17, the total number of securities which may be issued upon exercise of all options must not exceed 10% of the relevant securities as at the date of approval of the scheme. Further Listing Rule 17, the limit refreshment must be approved by shareholders at the shareholders' meeting. This implies that shareholders have substantial authority in controlling share option issuance in Hong Kong. In contrast to Hong Kong market, not all share option plans need to be approved by shareholders in the U.S. In the U.S., there are also no regulatory limits to the size of employee share option grants. Therefore, Hong Kong has stricter regulations on share option issuances and scheme approvals than the US. This is very likely why share option scheme announcements cause an overall negative reaction in Hong Kong, but not an overly large unfavorable reaction on the returns in the stock market.

(5) As the event period in this study was set from 19 trading days before and 50 days after the event day, from the short-term perspective, share option scheme announcements caused a negative effect to stock prices in Hong Kong. However, it can not be concluded that a negative CAR implies that share option schemes do not have

incentive effects, as all the sample firms declared in their circulars that their main purpose of a share option scheme adoption is to attract and retain employees of appropriate qualifications and necessary experience to work for the firm. It appears that it is important that firms should continue to provide such valuable employees with incentives by offering them opportunities to obtain a proprietary interest in companies they work for and to reward them for contributing to the long term success of the business. Therefore, the essence of share option schemes is that they are focused on a firm's long term growth and performance. Skinner (1996) states that information on share options potentially affects stock prices in two countervailing ways: a dilution effect and an incentive effect. These two effects can offset but may have different timing and magnitudes. Benefits from granting options include savings on training new employees by binding current employees to the firm, and increased productivity by employees who would like the share price to rise. The question remains on how soon do these benefits accrue to the firm and how quickly do market participants recognize these benefits? In the present study I conclude that investors recognize the dilution effect more quickly than they recognize the incentive effect in the Hong Kong equity market. Alternatively, I also conclude that the dilution effect is greater than the incentive effect from the perspective of short-term market reaction to share option scheme announcements in Hong Kong in the period under observation.

5.4. Testing the association between cumulative abnormal return and the determinants of market reaction using Huson (2001) model

Huson, Scott and Wier (2001) used ERC methodology to investigate whether investors recognize the potential dilution caused by outstanding dilutive securities.[9] They model

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[9] Huson(2001) define the dilutive securities as executive stock options, stock rights, convertible preferred shares, and convertible bonds.

the ERC as a function of the percentage of shares reserved for conversion, size, risk, growth, the magnitude of the earnings surprise, and the presence of positive earnings. Followed Huson (2001), I used cumulative abnormal returns over event windows [-19, +50] as the dependent variable in regression against five various possible determinants of the market's reaction. Here, I added a control variable of "announcement" instead of "earnings surprise" and "presence of positive earnings" which were used in Huson's (2001) ERC regression model. This is because some listed companies in Hong Kong announce their share option schemes along with other events such as dividend plan, issue new shares and repurchase of shares, financial results announcement etc. I set a dummy variable of "announcement" to bundle these events together to avoid identify market reaction to each event one by one. "Announcement" was set as 0 when share option scheme was announced independently which implies that no other event noise at the stock market. Otherwise it is 1. The other four control variables including firm size, systematic risk, potential growth and outstanding share option percentage which are included in ERC model are applied in the CAR regression model. These four variables have been identified in previous research as correlated with the stock price change. For example, Huson (2001) demonstrates that firms that issue dilutive securities are smaller and riskier, and have greater growth opportunities than other firms. Aboody's (1996) study reveals that there is a significant negative association between employee share option value and stock price for large firms. In this study, following previous tests using alternative event days, I also report two regressions with alternative event days. The Pearson correlation coefficients between the five variables and p values are reported in Table 7 and Table 8.

Results in Table 7 reveal that the correlation coefficient between size and announcement variable is -0.8932, which indicates that firm size and announcements have a strong

Table 7 Independent Variable Correlation Coefficient Matrix

(Circular date as event day)

	ESO	size	annoucement	risk	growth
ESO	1				
size	0.0860 *** (0.000)	1			
annoucement	-0.1058*** (0.000)	-0.8932*** (0.000)	1		
risk	0.07964*** (0.000)	0.0891*** (0.000)	-0.0295*** (0.0018)	1	
growth	0.1280*** (0.000)	0.0508*** (0.000)	-0.1007*** (0.0011)	0.0512*** (0.0023)	1

Note: 1. ESO: the ratio of the number of outstanding options to the number of issued capital on the circular date
2. Size: the natural log of the total assets
3. Announcement: a dummy variable. If the share options scheme announced dependently, then announcement is equal to 0; If share options scheme was announced along with other events, it will be set as 1.
4. Risk: the systematic risk B under market model
5. Growth: Market to Book Equity
*** Significant at the 0.01 level,
** Significant at the 0.05 level.

Table 8 Independent Variable Correlation Coefficient Matrix

(Shareholders meeting day as event day)

	ESO	size	annoucement	risk	growth
ESO	1				
size	-0.0292*** (0.000)	1			
annoucement	-0.1058*** (0.000)	0.0969*** (0.000)	1		
risk	0.0602*** (0.000)	0.1279*** (0.000)	0.0225*** (0.000)	1	
growth	0.0199** (0.0299)	0.01881 (0.000)	-0.0221 (0.1419)	-0.0291 (0.1952)	1

Note: 1. ESO: the ratio of the number of outstanding options to the number of issued capital on the circular date
2. Size: the natural log of the total assets
3. Announcement: a dummy variable. If the share options scheme announced dependently, then announcement is equal to 0; If share options scheme was announced along with other events, it will be set as 1.
4. Risk: the systematic risk B under market model
5. Growth: Market to Book Equity
*** Significant at the 0.01 level,
** Significant at the 0.05 level.

negative association when using the circular date as the event day. This result implies that large firms are more likely to announce share option schemes independently. Large firms might grant share options to a broader class of employees than small firms as they

like to announce share option schemes independently in order to show their concentration on the incentive scheme and get approval from shareholders in the shareholders' meeting. Large firms may also make more frequent announcements and be governed more transparently than small firms so they always make their announcement separately from other important events.

Other variables' correlation coefficients are close to 0 so they have very weak association. Gillian (2001) and Huson (2001) put forward a view that firms with higher growth opportunities are probably expected by the market to issue more dilutive securities. This is consistent with my findings about the Hong Kong market but the correlation coefficients are small. In this research, the correlation coefficient between "growth" and "ESO" variables is positive but not strong with values of 0.1280 and 0.0199 under the two alternative event days. The result provides some weak evidence that high growth firms do have a relatively higher percentage of outstanding options than other firms in Hong Kong. The relation between firm size and the percentage of outstanding options is also examined. Previous findings by Huson (2001) and Aboody (1996) indicate that firms that issue dilutive securities are smaller. However, in this study, correlation coefficients between "size" and "ESO" variables under two alternative event days are both weak with values of +0.086% and -0.0292%. This result could be explained by the observation that the percentage limit on the firm's share capital that can be issued under share option schemes in Hong Kong might weaken the relationship between firm size, growth opportunity and the amount of share options issued.

Table 9 reports the regression with cumulative announcement window returns [-19, +50] as the dependent variable. The sample includes all 258 firms that announced share

option scheme between 2002 and 2004.

Table 9 Regression with Cumulative Annoucement Window Returns(-20, +50)   as Dependent Variable

	circular date as event day			shareholders' meeting day as event day		
	coefficient	t value	p value	coefficient	t value	p value
Intercept	-0.358	-0.914	0.362	-0.286	-1.097	0.274
outstanding %	0.349	0.475	0.635	0.119	0.164	0.870
size	0.022	0.497	0.620	0.032	0.745	0.457
annoucement	0.105	0.743	0.458	0.037	0.589	0.557
risk	0.098	1.330	0.185	0.066	0.915	0.361
growth	-0.008*	-1.960	0.051	-0.004*	-1.860	0.064

* significant at the 0.10 level

Results in Table 9 reveal that it does not make much difference which alternative event date is employed. For example, both "growth" is negative and significant in alternative regressions, thereby indicating that firms with higher potential growth have lower returns when announcing share option schemes. A previous study by Huson (2001) indicates that the earnings response coefficient is positively related to growth opportunities and inversely related to risk. Some other studies, such as Gillian (2001), Smith and Watts (1992) and Brennan and Schwartz (1988) also reveal the similar notion that the benefits of share option issuances can come in the form of greater employee incentives or a more positive signal to the market about the firm's growth prospects. This will not be denied by high growth companies in Hong Kong. However, the market's unfavourable reaction to share option schemes announced by high growth companies in Hong Kong makes some intuitive sense in that investors could be more doubtful about those companies using share options as incentives. Other variables excluding "growth" suggested in the previous section as possible determinants of the share option scheme announcement are not significant in the Table 7 regression. "Outstanding options" are not significant, which is perhaps due to the fact that as share option issuance has already been set at an upper limit of 10%, investors ignore the

amount of share options outstanding but focus on the announcement. The same sort of argument could be made for all of the insignificant variables in Table 9. Firm size as proxied by log of assets is insignificant. So are systematic risks as proxied by the β coefficient in market model. Another interesting finding is that the signs and significance are very similar when using alternative event dates. This implies that event days don't matter when it comes to variable correlations in CAR regression model.

Overall, the CAR regression analysis indicates that only "growth" has a negative correlation with stock returns and is significant at the 10% level. The other four independent variables included in CAR regression model have positive correlations with stock return but are not significant. This implies that the percentage of outstanding options, firm's size, firm's systematic risk, and even the share option scheme announcement manner are not the main factors causing stock price fluctuation. Previous study by Aboody (1996) reveals that the value of firms is negatively related to the value of stock options and it is negative in relation to the stock price. I explain this result by concluding that the larger number of outstanding stock options and the higher stock prices have the higher potential dilutive effects. However, in Hong Kong, the 10% limit of stock options issuance may weaken the dilutive effect of stock options, therefore, the negative effect between the percentage of outstanding stock options and stock price are not obvious on Hong Kong securities market. On the other hand, Huson (2001) demonstrates that the ERC is positively related to growth opportunities and inversely related to risk. In addition, Huson (2001) indicates that firms that issue dilutive securities are smaller and riskier. In Hong Kong, as the 10% upper limit of stock option issuance are applied to all firms regardless of firm's size. The differences of percentage outstanding options in Hong Kong between big and small size firms will be not as large as those in the U.S. Previous result in section 5.3 indicates that the large size firms have

higher CARs in most event windows. However, I find that on the event day, the CARs difference between large and small firms are only around 5%. This result is consistent with previous CAR regression analysis which indicates that firm size has positive a relation with CAR. Coefficients are 0.022 and 0.032 on alternative event day, and they are not significant. In reference to the share option scheme announcement manner, independent variable correlation analysis (section 5.4) reveals that large firms are more likely to announce share options scheme independently. I believe that large firms adopt dependent announcements so to focus on showing the importance of share option scheme to wide range of investors.

6. Conclusions

The purpose of this study is to examine the market reaction to share option scheme announcements using data from the Hong Kong market. I analyse a sample of 258 companies that have announced share option schemes during the period 2002-2004. Empirical testes indicate that share option scheme announcements in Hong Kong in the period 2002-2004 had information content and that the market overall reacted unfavorably to share option scheme announcements but this did not cause significant stock price decrease around announcement date.

To provide some additional insights into basic results, I reestimate the abnormal return and cumulative abnormal return for financial companies and partition the sample according to the market capitalization to compare the result among small and large size firms. Further investigation reveals that the Hong Kong stock market reacts less unfavorably to share option scheme announcement by financial companies and large size firms with higher positive cumulative abnormal returns in most event windows. I also find that large size firms are more likely to announce share option schemes

independently of other announcements and higher potential growth companies have lower returns when announcing share option schemes.

Previous study by Yeo (1999) reveals that the regulatory restrictions and fiscal disincentive in Singapore render the share options ineffective. Compared to share options schemes in Singapore, Hong Kong has more flexible regulations on share option application. For example, the life option in Hong Kong is 10 years which is longer than 5 years in Singapore. This better ties the executive's compensation to the options for longer periods. Also, the percentage limit on the firm's share capital that can be issued under share options is 10% in Hong Kong which is bigger than 5% in Singapore. The larger percentage limit on share options issuance, the broader class of employees may be covered by a share options plan. These factors may increase the effectiveness of share option scheme announcement and cause the more obvious market reactions to share options scheme announcement in Hong Kong than those in Singapore. However, some previous studies especially in U.S. suggest that the market reacts favorably to the announcement of the introduction of stock options. In Hong Kong, unlike in U.S., the share options scheme announcement does not cause a significant effect on stock returns, however, the market overall reacts unfavorably to share options scheme announcement. Compared to share options schemes in U.S. and Singapore, the regulation restrictions on share options application in Hong Kong is set between U.S. and Singapore. Share option prevalent usage in Hong Kong also started later than in U.S. Therefore, investors' understanding of share options is limited. In addition, a series of business debacles such as Enron and Worldcom, who may have had questionable share option application led to an overall lower confidence level regarding share options in Hong Kong. The best way to improve the favorable effectiveness of share options in Hong

Kong is to strengthen the communication with large investors relating to share options application to avoid their surprises.

This study contributes to the literature on the effects of stock options announcements on stock markets in Asia and complements and extends previous studies such as Aboody (1996), Skinner (1996) and Yeo et al. (1999).

This study has also some limitations. For example, the market reaction to share option scheme announcement may be caused by the different institutional shareholdings, insider shareholdings and large block/controlling shareholders. In this study, the CAR regression model only includes five various possible determinants of the market's reaction against share options scheme announcement without reference to shareholding in analysed companies. Generally, high institutional shareholdings and greater stock ownership increase the power of the internal constituency and can mean greater stock price volatility. Therefore, in this study, I can't exclude that such stock price fluctuation are not caused by shareholdings structure. Adding some different shareholding percentage variables, such as institutional shareholdings percentage of all shares and insider ownership percentage, as measures of ownership structure, is likely to enhance explanation for stock price fluctuation at the share option scheme announcement.

This thesis focuses on the market reaction to share option scheme announcements by calculating the cumulative abnormal return and detailing a cumulative abnormal return regression model. Further analysis might concentrate on observing stock prices response to the Hong Kong Financial Reporting Standard 2 (HKFRS2) which requires all listed companies to recognise and expense all share-based payment in their financial statements.

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Appendix: List of Sample Firms

company name	share option scheme started date	market capitalization (HK$) As at 31/05/2005	outstanding options %	company name	share option scheme started date	market capitalization (HK$) As at 31/05/2005	outstanding options %
BANK OF E ASIA	1995-06-16	34,262,793,913	3.02%	MANDARIN ENT	2002-08-21	280,500,000	0.00%
HIGH FASHION	1999-05-06	553,031,573	4.87%	CHINA OVERSEAS	1992-07-31	9,529,834,861	6.59%
THEME INT'L	1997-05-15	205,683,011	0.00%	JOHNSON ELEC H	1998-12-12	27,002,348,562	0.00%
TECHTRONIC IND	2001-05-25	23,478,853,330	2.72%	SHANGHAI ZENDAI	1992-10-08	730,416,234	0.00%
GROUP SENSE	1993-01-08	722,193,017	3.46%	SINO GOLF HOLD	2000-12-05	238,738,000	0.00%
HKEX	2000-05-31	20,140,700,074	0.00%	AUTOMATED SYS	1997-10-16	530,963,160	3.79%
KERRY PPT	1997-03-27	20,598,017,156	2.39%	EXTRAWELL PHAR	1999-01-16	416,780,000	0.00%
BRIGHT INT'L GP	1999-10-20	258,065,000	0.00%	FOREFRONT INT'L	2001-06-21	248,390,040	0.00%
CHINA MOBILE	1997-10-08	546,969,854,822	0.62%	ALLAN INT'L	1992-10-21	385,747,398	0.00%
PAC CENTURY INS	1999-06-15	2,548,224,800	7.67%	CHEN HSONG HOLD	1996-08-30	2,721,530,240	1.93%
MIDLAND REALTY	1995-05-11	3,435,586,091	1.45%	HSIN CHONG CONS	1991-07-19	274,945,225	1.17%
CHU KONG SHIP	1997-05-06	787,500,000	10.00%	TEXWINCA HOLD	1992-07-15	8,089,259,434	0.00%
TIAN AN	2002-05-10	1,680,902,243	0.00%	UNITED POWER	2002-08-30	778,077,640	0.00%
CHINA UNICOM	2000-06-21	77,929,308,274	0.00%	KIN YAT HOLD	1997-04-08	283,374,000	2.63%
COSCO INTL HOLD	1992-01-16	1,713,893,962	0.00%	CHUANG'S CHINA	1999-11-29	399,531,479	3.81%
SHANGRI-LA ASIA	1997-12-16	28,411,044,528	1.21%	NGAI LIK IND	1992-09-02	1,665,335,036	0.00%
SUNDAY COMM	2000-03-01	1,465,100,000	0.00%	PEKING APPAREL	1997-02-18	63,407,140	0.00%
SILVER GRANT	1995-06-26	6,507,084,961	0.00%	HANSOM EASTERN	1999-07-02	116,612,597	0.00%
CHINA TRAVEL HK	1992-10-21	10,027,533,853	0.00%	GOLD PEAK	1999-09-28	860,415,055	2.72%
CHINA EB LTD	1996-09-27	4,808,072,189	0.85%	CHINA-HK PHOTO	1994-08-31	849,594,715	3.10%
K. WAH CONS	1991-09-10	8,172,306,847	3.23%	CHUANG'S INT'L	2002-08-30	960,704,001	0.00%
ORIENT POWER	2001-08-12	163,137,910	0.00%	KWOON CHUNG BUS	1996-09-06	675,289,260	4.51%
CS CONSERVAT P	1992-07-24	707,937,999	0.00%	FOUNDATION GP	1994-09-15	86,110,328	2.53%
ASIA ALLIANCE	1995-06-13	35,700,684	4.95%	KWONG HING INTL	1997-03-03	141,829,218	0.00%
HAYWOOD INV	2002-05-23	11,520,000	0.00%	NEW CENTURY GP	1999-06-02	758,274,729	0.00%
K & P INT'L	1996-12-04	71,686,296	6.72%	TAI FOOK SEC	1996-07-17	584,191,699	7.38%
KINGWAY BREW	1997-07-22	3,768,033,600	2.08%	UNIVERSAL HOLD	1999-08-04	581,513,187	0.00%
CNT GROUP	1991-05-02	214,615,827	9.58%	VITASOY INT'L	1994-03-09	2,389,424,400	3.12%
LERADO GROUP	1998-12-02	722,096,724	2.88%	CHUN WO HOLD	1993-01-18	707,337,601	0.00%
TOMSON GROUP	2002-05-29	2,086,968,817	0.00%	FE CONSORT INTL	2000-09-28	4,386,184,370	0.00%
RIVERA (HOLD)	1997-09-24	576,488,779	0.00%	CHEVALIER INT'L	1991-09-30	2,507,238,810	2.68%
SHUN TAK HOLD	1993-05-17	15,288,192,864	3.85%	KTP HOLDINGS	2002-08-30	170,308,467	0.00%
PACIFIC PLYWOOD	1995-10-17	150,684,226	7.30%	CHINA WATER	1999-09-22	253,283,799	0.00%
DENWAY MOTORS	1993-02-01	20,453,813,305	1.79%	YIP'S CHEMICAL	2001-02-28	1,100,492,531	0.95%
ZHONG HUA INT'L	1997-09-19	188,131,824	4.35%	KINGMAKER	1994-09-03	1,456,987,016	0.90%
BRILLIANCE CHI	1999-09-18	4,952,327,715	0.87%	ANEX INT'L	1991-06-27	44,837,435	0.87%
PEAKTOP INT'L	1997-12-20	101,600,382	0.00%	ASIA COMM HOLD	1997-09-24	183,545,734	2.22%
QUALITY HEALTH	1993-07-05	380,260,912	3.32%	PREMIUMLAND-NEW	2002-04-24	97,405,889	0.00%
E-NEW MEDIA	1997-12-30	453,931,136	0.28%	CULTURECOM HOLD	1993-06-15	1,179,024,678	1.68%
INNOMAXX BIOTEC	1997-03-11	330,284,922	4.50%	LUNG KEE	1993-02-11	3,128,582,580	0.00%
E-KONG GROUP	1999-10-25	63,099,823	2.77%	SUN EAST TECH	2000-09-19	273,750,000	0.00%
S.A.S. DRAGON	1994-09-17	211,010,426	1.91%	IDT INT'L	1993-09-28	2,272,351,239	0.66%
ARNHOLD	1993-12-10	141,432,480	0.00%	CHINA MOTION	1998-03-18	110,349,870	6.32%

*Companies sorted by circular date

Appendix: List of Sample Firms (*continued*)

company name	share option scheme started date	market capitalization (HK$) As at 31/05/2005	outstanding options %	company name	share option scheme started date	market capitalization (HK$) As at 31/05/2005	outstanding options %
STARLITE HOLD	1993-02-08	374,960,950	2.42%	YANION INT'L	2001-01-30	466,238,005	7.77%
STONE HOLDINGS	2002-04-12	740,360,546	0.00%	NEWOCEAN ENERGY	1999-04-09	399,791,650	9.47%
APPLIED INT'L	1997-05-28	244,229,135	1.64%	SHOUGANG INT'L	2002-06-07	2,648,363,193	9.99%
ORIENTAL INV	1999-10-19	247,682,322	0.00%	SHOUGANG CENT	2002-06-07	677,203,927	10.00%
FIRST DRAGONCOM	2002-06-21	108,899,353	8.63%	SHOUGANG GRAND	2002-06-07	818,536,658	9.65%
NGAI HING HONG	1994-03-29	216,000,000	0.00%	SHOUGANG TECH	2002-06-07	485,596,451	10.00%
SMARTONE TELE	1996-10-17	5,041,145,852	1.37%	HUALING	1993-11-26	284,258,517	0.50%
E-LIFE INT'L	1996-03-05	916,453,830	1.51%	KONG SUN HOLD	2001-05-31	64,029,173	0.00%
NEW WORLD CHINA	2000-12-18	9,781,363,363	3.62%	HUAFENG	2002-08-30	321,397,580	10.00%
ASIA ALUMINUM	1998-02-19	2,791,329,865	8.06%	ASIA TELEMEDIA	1998-02-04	167,615,639	0.00%
KANTONE HOLDING	1996-12-20	831,804,060	0.00%	PEACE MARK	2002-01-24	1,807,672,110	0.32%
RUILI HOLD	1992-05-20	93,170,207	8.42%	LINMARK GROUP	2002-04-22	1,770,211,800	9.64%
HANS ENERGY	1997-05-12	1,676,800,000	0.00%	FUJIKON IND	2002-08-21	527,512,700	7.17%
MATRIX HOLDINGS	1994-01-26	1,388,710,000	0.00%	BESTWAY INT'L	1995-09-13	328,473,600	0.00%
NEO-CHINA GROUP	1993-08-19	1,043,125,839	0.09%	LAI FUNG HOLD	2003-08-21	1,156,972,426	0.00%
CITY TELECOM	2002-12-23	497,399,457	4.35%	CAFE DE CORAL H	2000-09-19	4,821,222,095	3.86%
GLOBAL GREEN	2001-12-20	761,430,092	0.59%	HERALD HOLD	1992-09-30	491,140,610	0.00%
CHINA INSURANCE	2000-05-24	3,828,906,577	0.00%	ZIDA TECH	2000-04-29	120,445,550	6.43%
GLOBAL TECH	1999-03-16	258,298,697	1.97%	HGC HOLDINGS	1995-03-22	4,625,663,894	13.10%
LIU CHONG HING	1994-06-10	2,725,800,768	0.00%	DICKSON CONCEPT	2000-08-31	3,780,156,308	0.00%
TYSAN HOLDINGS	2000-09-27	162,172,771	0.00%	SHUI ON CONS	1997-01-20	2,222,418,000	9.49%
LI & FUNG	1992-06-02	42,401,325,590	1.08%	SKYWORTHDIGITAL	2002-08-28	6,165,509,765	6.55%
TCL MULTIMEDIA	1999-11-15	3,889,865,181	4.49%	CITIC 21CN	1998-05-28	7,269,742,509	2.25%
CATIC INT'L	2001-05-14	370,406,619	0.39%	CHINA STAR ENT	1996-10-26	169,176,023	13.11%
HENGAN INT'L	1998-11-10	5,511,908,411	0.00%	HOPEWELL HOLD	1994-10-11	17,241,026,323	0.83%
ROAD KING INFRA	1996-03-06	3,261,471,741	2.42%	CELESTIAL ASIA	2002-02-19	174,993,531	4.27%
VISION CENTURY	2000-01-10	374,376,941	0.00%	HENDERSON CHINA	1996-03-15	3,807,987,968	0.81%
ELEGANCE INT'L	1996-03-21	388,378,948	0.00%	HENDERSON LAND	1996-03-15	64,236,132,000	0.81%
COSCO PACIFIC	1994-11-30	33,748,919,789	0.65%	SHOUGANG INT'L	2002-06-07	2,648,363,193	0.00%
ARTS OPTICAL	1996-10-24	1,061,564,000	2.63%	VITOP BIOENERGY	2003-02-10	144,567,835	3.29%
KOWLOON DEV	2000-06-19	4,874,203,510	0.00%	BOSSINI INT'L	2003-11-27	2,400,434,433	0.00%
VARITRONIX INTL	2001-06-22	2,262,573,592	1.75%	CHINA HEALTH	2002-04-08	553,522,321	0.00%
PRIME SUCCESS	1995-10-09	3,074,894,453	0.00%	TRULY INT'L	2001-05-22	4,774,135,034	6.30%
FONG'S IND	2000-09-19	3,250,194,053	0.00%	SOFTBANK INV	2001-10-30	331,976,636	9.14%
SUNCORP TECH	1997-04-19	825,544,104	11.12%	TANRICH	2002-01-07	158,000,000	8.68%
TPV TECHNOLOGY	1999-09-21	6,779,049,074	7.57%	SAMSON PAPER	1995-118-8	377,747,074	0.00%
CHINA EB INT'L	1993-09-30	1,159,709,324	0.08%	SEMTECH INT'L	2000-06-13	263,250,000	0.00%
POLY HK INV	1993-06-16	1,209,125,070	9.16%	SEEC MEDIA	2002-08-26	441,514,765	2.98%
RAYMOND IND	1998-01-20	899,056,305	0.00%	ENERCHINA HOLD	2002-05-24	2,107,659,192	0.00%
MULTIFIELD INTL	1998-07-10	535,087,500	0.00%	SMI CORP	2002-08-28	111,494,409	4.13%
ONFEM HOLDINGS	1993-09-30	401,534,527	0.00%	VANTAGE INT'L	2004-04-15	225,781,920	0.00%
TECH VENTURE	1999-06-12	57,639,109	7.09%	FIRST PACIFIC	1999-05-24	8,442,881,458	0.00%
FUSHAN HOLDINGS	2003-06-20	1,040,400,000	0.00%	LIFETEC GROUP	2002-07-15	209,391,339	4.65%

* Companies sorted by circular date

Appendix: List of Sample Firms (*continued*)

company name	share option scheme started date	market capitalization (HK$) As at 31/05/2005	outstanding options %	company name	share option scheme started date	market capitalization (HK$) As at 31/05/2005	outstanding options %
ROAD KING INFRA	1996-06-03	3,261,471,741	2.42%	LE SAUNDA HOLD	2002-07-22	605,579,520	0.00%
KARRIE INT'L	2002-05-21	1,306,278,400	7.91%	NEXT MEDIA	2002-07-31	4,783,360,896	8.30%
PCCW	1994-09-20	31,743,155,551	3.93%	RISING DEV HOLD	1997-10-09	254,888,960	1.91%
SHELL ELECTRIC	2002-11	644,964,993	15.29%	IMAGI INT'L	2002-08-16	229,237,190	6.50%
TITAN PETROCHEM	1998-05-18	3,780,067,358	1.71%	DNA SECURITY	1994-04-11	681,492,430	0.98%
SYMPHONY HOLD	2001-10-22	1,764,587,059	6.83%	SA SA INT'L	1997-05-22	4,801,946,509	7.96%
OMNICORP	1998-02-27	124,864,496	2.04%	GRANEAGLE HOLD	1999-10-11	63,471,786	0.00%
SOFTBANK INV	2001-10-30	331,976,636	16.08%	CLIMAX INT'L	1992-02-19	165,693,783	2.73%
TPV TECHNOLOGY	1999-09-21	6,779,049,074	9.79%	JADE DYNASTY	2002-10-07	246,366,633	3.60%
ORIENTAL METALS	1994-11-25	1,518,374,030	1.83%	JOYCE BOUTIQUE	1997-09-23	1,020,474,000	1.00%
CHINA ASSETS	2004-05-19	303,111,377	0.00%	AV CONCEPT HOLD	2002-05-13	376,726,650	3.68%
COSLIGHT TECH	1999-10-26	770,882,400	0.00%	U-RIGHT INT'L	2002-07-09	497,438,340	3.47%
HAIER ELEC	1997-11-24	3,046,072,638	8.84%	OCEAN G CHEM	2003-07-28	566,046,000	9.89%
CITIC RESOURCES	1997-08-21	4,619,066,288	0.00%	FOUR SEAS FOOD	2002-09-02	294,446,040	5.41%
GOLIK HOLDINGS	1994-06-25	127,656,563	0.00%	SUN HING VISION	1999-05-04	886,785,240	4.91%
OCEAN GRAND	1997-09-04	900,650,044	12.48%	PAUL Y-ITC	2002-08-27	2,711,006,963	0.00%
SHOUGANG CENT	2002-06-07	677,203,927	22.62%	ASIA STANDARD	1991-12-23	1,725,839,997	0.04%
SUNCORP TECH	2002-05-23	825,544,104	12.00%	KING FOOK HOLD	2004-08-27	230,587,975	0.00%
CHINA RAREEARTH	1999-09-29	937,605,406	0.66%	CHEUNG TAI HONG	1994-02-28	169,575,039	0.00%
HK CONSTRUCTION	1998-01-22	1,234,056,914	0.88%	NAM HING	2002-08-23	96,441,312	0.97%
SINOLINK HOLD	2002-05-24	3,027,994,090	2.94%	HANG FUNG GOLD	1999-02-27	901,830,400	10.93%
GLOBAL GREEN	2001-12-20	761,430,092	0.00%	HANNY HOLDINGS	2003-03-17	626,159,554	6.86%
KPI COMPANY	1993-03-19	142,222,827	5.76%	CHINA RESOURCES	2002-01-31	23,104,183,122	9.54%
SOUNDWILL HOLD	1997-02-25	354,465,815	1.31%	MEI AH ENTER	1993-09-24	246,720,000	0.00%
GUANGZHOU INV	1992-11-21	3,881,554,388	5.43%	UNITED PACIFIC	1994-04-01	118,096,381	1.44%
TONGDA GROUP	2000-12-07	518,021,500	0.62%	PACIFIC ANDES	1994-09-09	1,359,218,758	0.40%
FIRST NATURAL	2002-01-17	495,974,946	0.00%	YANGTZEKIANG	1991-01-22	395,493,133	0.00%
SHOUGANG GRAND	2002-06-07	818,536,658	0.14%	YGM TRADING	1987-12-01	2,011,929,296	0.00%
NIPPON ASIA-NEW	2002-01-31	152,651,507	4.89%	MAE HOLDINGS	1998-11-10	46,183,552	0.44%
C.P. POKPHAND	2002-11-26	953,611,159	19.03%	VITOP BIOENERGY	2003-02-10	144,567,835	8.57%
SHOUGANG TECH	2004-06-08	485,596,451	0.00%	HERITAGE INT'L	1996-10-10	103,434,249	0.62%
GUANGNAN (HOLD)	1994-11-21	1,099,931,609	1.56%	FIRST SIGN INTL	1995-10-30	304,022,600	0.00%
CGD HOLDINGS	2000-09-28	102,305,625	8.00%	JIUZHOU DEV	2002-09-26	399,500,000	10.00%
GUANGDONG TANN	2002-05-31	102,305,625	2.93%	ART TEXTILE	2003-08-16	490,872,246	0.91%
COMPASS PACIFIC	1995-03-15	462,490,044	6.67%	WANG ON GROUP	2002-05-03	376,215,961	6.84%
ZHONGDA INT'L	2001-10-08	108,001,080	0.00%	DAQING PECHEM	2002-11-18	710,304,000	1.35%
CHIA TAI ENT	1994-03-18	755,573,415	20.00%	JINHUI HOLDINGS	2004-11-18	1,234,431,966	0.00%
SUN INNOVATION	2002-05-16	435,952,628	3.73%	HUA HAN	2002-11-25	627,881,760	8.60%
WING LEE HOLD	2002-02-01	321,418,170	0.00%	CHINA GAS HOLD	2003-02-06	3,316,359,156	16.74%
DVN (HOLDINGS)	2002-06-26	1,070,915,337	10.32%	CITY TELECOM	2002-12-23	497,399,457	3.37%
DVN (HOLDINGS)	2002-06-26	1,070,915,337	10.32%	MIRABELL INT'L	1996-11-19	795,406,250	0.00%
CHINA PHARMA	1994-05-27	2,430,236,964	0.00%	RICHE M-MEDIA	2002-01-21	1,829,520,000	9.80%
SEAPOWER RES I	1999-09-30	1,043,180,043	0.00%	CHINA UNITED	2002-11-20	524,524,163	0.00%

* Companies sorted by circular date

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