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**INVESTOR PROTECTION, FIRM FUNDAMENTALS
INFORMATION, AND STOCK PRICE
SYNCHRONICITY**

A thesis submitted in partial fulfillment of the requirements for the degree of

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ABSTRACT

This thesis entails a cross-country study on the use of firm fundamentals information (FFI) in capital market pricing decisions and the role investor protection (IP) institutional arrangements play in enhancing the use of FFI in capital markets. I first examine the association between IP and SPS across the 40 countries of Morck Yeung and Yu (MYY) (2000) from 1995 to 2010. This is followed by a study of the association between FFI and SPS and the complementing effects of IP on this association.

MYY study the use of FFI by the capital market in making investment decisions. They use stock price synchronicity (SPS) measures as indicators of the use of FFI by the market. SPS is the tendency of share prices to move in the same direction in a given period of time. They posit that when the information environment in a capital market is more developed, investors would use FFI of firms in making investment decisions and this would lower SPS. Conversely, when the information environment in a capital market is less developed, investors would rely on market information in making investment decisions and this would increase SPS.

To test the use of FFI they examine the association between SPS and country development (CD), IP, and FFI variables. They do not find any conclusive evidence of the direct association between FFI and SPS, but find that CD and IP are negatively associated with SPS. They also find that CD and IP are both proxies of the general quality of the information environment, with IP being the more effective of the two. Therefore, they conclude that better IP improves the information environment and hence lowers SPS.

MYY's analysis covered only one year, 1995. Since 1995, three major global economic crises have occurred, the Asian Financial Crisis (AFC), the Dotcom Crisis and the Global Financial Crisis (GFC). Many countries have responded to these crises by improving their IP oversight system. This provides further motivation for assessing the beneficial effects of IP on the information environments of capital markets around the world.

I find that, in general, IP is a consistent determinant of SPS across the 40 countries over the sample period 1995 to 2010. However, the change in SPS across years is only explained by the change in stock market development (SMD) proxied by the natural log of number of companies in a market, and that is also limited to the time segment 1995-2005.

For the association of FFI with SPS, I find no consistent association between SPS and FFI that are used in previous studies as a proxy for firm performance risk. However, I find an FFI construct known as accruals to be associated with SPS when IP levels are high. Accruals greatly enhance the amount of information on accounting statements with respect to the future economic benefits of a firm. These results suggest that IP has a complementing effect on the association between FFI and SPS, which suggests that investors rely on FFI in making investment decisions instead of market movements when IP is better.

I conclude that IP is a strong and consistent determinant of quality of the information environment of countries, and better IP arrangements lead to a greater use of FFI in investment decision making. This study would assist in better understanding the information environments of the capital markets around the world. It sheds light on the information dynamics both within a country and at a cross-country level, thus helping in the formulation of regulations that are more effective in achieving market transparency.

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LIST OF ACRONYMS

AAI	-	Accrual Accounting Information
AFC	-	Asian Financial Crisis
CD	-	Country Development
CLERP	-	Corporate Law Economic Reforms Program
CG	-	Corporate Governance
CoC	-	Control of Corruption
Com	-	Co-movement
DSI	-	DataStream International
FFI	-	Firm Fundamentals Information
GDP	-	Gross Domestic Product
GE	-	Government Efficiency
GFC	-	Global Financial Crisis
IP	-	Investor Protection
IASB	-	International Accounting Standard Board
IFRS	-	International Financial Reporting Standards
MICG	-	Malaysian Institute of Corporate Governance

OECD	-	The Organization for Economic Cooperation and Development
PS	-	Political Stability
R ²	-	Co-efficient of Determination from the Market Model
RoL	-	Rule of Law
RQ	-	Regulatory Quality
SMD	-	Stock Market Development
SOX	-	Sarbanes Oxley
SPS	-	Stock Price Synchronicity
SYNCH	-	Stock Price Synchronicity
V&A	-	Voice and Accountability
WSE	-	Warsaw Stock Exchange

CHAPTER 1 INTRODUCTION

1.1 Background and Purpose

“The price system is just one of those formations which man has learned to use (though he is still very far from having learned to make the best use of it) after he has stumbled upon it without understanding it”. (Hayek, 1945)

The information asymmetry between insiders and outsiders is a fundamental issue for investors and market participants including regulators. Reducing information asymmetry through firm fundamentals information (FFI) has long been a regulatory goal of the capital market regulators. Studies emphasize the need for reducing information asymmetry through voluntary and mandated disclosure, and regulation of financial information (Lev, 1988; Frankel & Li, 2004).

Firms disclose information through regulated financial reports (financial statements, footnotes). Additionally, firms engage in voluntary disclosures, issue managements’ forecasts, analysts’ presentations, press releases and place information on company’s websites. There are also other sources of firm-level information such as analyst followings, financial intermediaries and industry experts who provide information to the market participants in a capital market. Healy and Palepu (2001) argue that the credibility of such disclosures is enhanced by regulators, standard setters, auditors and other capital market intermediaries.

A variety of institutional and regulatory mechanisms determine whether regulation and information intermediaries eliminate information asymmetry. These factors include but are not limited to monitoring and enforcing disclosure of firm-specific information to

stakeholders. Research on corporate governance (CG), investor protection (IP), and property rights protection focuses on cross-sectional variation in these factors and their economic consequences for a capital market (La Porta, de-Silanes, Shleifer & Vishny, 1998; Levine 2001).

It is argued that if there is less information asymmetry and strong IP, investors will be more confident in the capital market and they would freely invest with the hope of getting a return. However, if there is information asymmetry in the market, then investors may suffer from a lack of information about company fundamentals leaving them to rely on market price movements to make investment decisions. In such a scenario, share prices would be determined more from the overall trend of the market than on the basis of FFI, thus inducing higher levels of stock price co-movement. Therefore, the availability of accurate and timely FFI is an important determinant of stock price informativeness. In an efficient market, stock price returns not only reflect market wide movements, but also and more importantly, the use of FFI in the stock price returns.

Studies find that a significant proportion of stock return variations are not explained by market-wide information alone, which suggests the use and importance of FFI in making investment decisions in the markets. The proportion of firm-specific return variation measures the level of FFI that is incorporated in stock prices in these markets. However, the variations reported in the cross-country studies are partly due to the differences in how effectively each country's stock market incorporates accounting information.

The findings reported by Morck, Yeung and Yu (MYY) (2000) illustrate that stock markets around the world are not equally effective in incorporating FFI. In their seminal work on

stock price synchronicity (SPS), MYY report that stock returns reflect FFI impounded in stock prices in countries that have stronger IP. They conclude that the use of FFI is limited in countries with greater impediments to informed trading due to the countries' weak legal and institutional structures. However, developed countries show low SPS meaning that investors rely more on FFI in these countries due to their efficient enforcement mechanisms.

Stock Price Synchronicity (SPS) is defined as the tendency of stock prices to move in the same direction in a particular period of time. According to MYY, SPS represents the level of development of the information environment of a capital market. MYY use 1995 data to study SPS across forty capital markets. Their findings suggest that countries with better IP have lower SPS, which they contend arises from better IP countries having higher quality FFI. However, they do not find any direct evidence for the effects of FFI on SPS.

A growing body of research supports these findings internationally while others challenge the MYY's conclusions. Two recent studies (Alves, Peasnell, & Taylor, 2010; Ashbaugh, Gassen, & La-Fond, 2006) investigate the conclusion of MYY that SPS is a measure of the firm-specific information capitalized into stock price in international markets. These studies show that SPS does not capture FFI.

Alves et al. (2010) made no direct tests of FFI with SPS. They raise questions about the interpretability of R^2 . Ashbaugh et al. (2006) attempt to show a direct association between FFI and SPS, but fail to provide conclusive evidence. One of the reasons for the unsuccessful attempt to draw a connection between FFI and SPS could be due to the small number of mostly highly developed countries' data used in the study, and the absence of a

focus on a key aspect of accounting information, namely accounting accruals information (AAI).¹ Ashbaugh et al. (2006) and MYY's variables are concerned with the current variability of firm performance as a proxy for firm risk. Given the small number of similarly developed countries, Ashbaugh et al. (2006) do not make allowance for and test the complementing effects of IP in the association between FFI and SPS.

The purpose of this thesis is to conduct an FFI study in a cross-country environment by making allowance for the complementing effects of IP. The proposition in this regard is that FFI reduces SPS in stronger IP environments. The reason for this is that the use of FFI, as posited by cross-country IP and accounting studies, is dependent on the quality of IP of a country.

The tests in this study are conducted in two stages. In the first stage, the effects of IP on SPS in a cross-country setting are examined. The tests are akin to MYY's; however, this study uses a multi-year data set to reduce any single year bias that may have affected the MYY results. In the second stage, the study examines both the direct effects of FFI on SPS and the complementing effects of IP on the relation between FFI and SPS. In doing so, first the Ashbaugh et al. (2006) FFI measures are used and then a measure representing accounting based accruals is used.

The remainder of the chapter is structured as follows: Section 1.2 describes the motivation for the thesis; section 1.3 describes the framework of the thesis; section 1.4 states the hypotheses of the thesis; section 1.5 briefly identifies the methods and findings of the thesis; section 1.6 presents the contribution of the research, while the last section provides details about the structure of the thesis.

¹ Ashbaugh et al. (2006) use Australia, France, Germany, Japan, UK and US as their sample countries.

1.2 Motivation of the study

Since MYY, many countries have experienced unprecedented crises in their corporate sector. In response to these crises, many countries have undertaken CG, regulatory and accounting standard setting reforms. These reforms have kindled further interest in evaluating how institutions help in the generation and use of firm fundamentals in markets. This section highlights some of the key institutional arrangements under these reforms and how they may impact stock market information efficiencies around the world.

1.2.1 Institutional Reforms

1.2.1.1 Legislative Arrangements

Since 1995, the US experienced crises of significant magnitude such as Enron, WorldCom, Adelphia, and Tyco, that had momentous effects on its capital market. The subsequent regulations that evolved from the crises were not only significant steps in disclosure and CG for the US market alone, but also were emulated around the world as best practice standards. Amid falling stock prices, the US Government recognized the need for an immediate legislative response, which led to the Sarbanes-Oxley (SOX) (Hamilton, 2003).

The effects of SOX are evident around the globe, contributing to a worldwide trend towards IP. Many countries followed the US example and instituted their own institutional reforms similar to SOX (Singam, 2003; Wahab, How, & Verhoeven, 2007). For example, Australia, in response to its own crises, enhanced its IP in 2004 through Corporate Law Economic Reforms Program 9 (CLERP-9). CLERP-9 brought significant changes with respect to IP such as oversight of standard-setting for audit and accounting, and the development of best practice guidelines of CG. These changes strengthened the internal control, auditing

practices and emphasized the need for more open and frequent disclosures of firm-specific information.

1.2.1.2 Corporate Governance Arrangements

Prior to the Asian Financial Crisis (AFC), many Asian countries had weak CG arrangements. For example, the Malaysian capital market suffered from a lack of transparency and accountability (Mitton, 2002) and weak legal protection of minority shareholders (Claessens, Fan, Djankov, & Lang, 1999). However, to resolve these issues and also in response to the AFC, Malaysia initiated comprehensive institutional reforms in its capital market.² These reforms focus on boards of directors, their remuneration, shareholders, accountability and audit (Singam, 2003; Wahab et al., 2007). These reforms have thrust the Malaysian capital market into a capital market of choice for international and institutional investors. Similar reforms have taken place in other Asian capital markets, e.g., Thailand, Singapore, and South Korea.

1.2.1.3 Accounting Arrangements

Another institutional reform embraced by many countries during 1995-2010 is the adoption of International Financial Reporting Standards (IFRS). Most of the sample countries of this study have adopted IFRS in a comprehensive manner. It is demonstrated by many studies that IFRS adoption leads to better disclosure quality at both firm and country levels (Ashbaugh & Pincus, 2002; Barth, Landsman, & Lang, 2008), which leads to market efficiencies (Leuz & Verrecchia, 2004; Shi & Kim, 2007).

² For example, Malaysian Code on Corporate Governance (MCCG), Minority Shareholders' Watchdog Group, the Malaysian Institute of CG (MICG) and the Capital Market Master Plan (Singam, 2003; Wahab et al., 2007)

1.2.1.4 Market Structure Arrangements

Some countries experienced even greater reform in their markets since 1995 with profound effects on these markets. For example, Poland started moving from a centrally-planned socialist system to a capital market economy. It enacted laws to regulate equities, introduced requirements for public officials, company directors and managers to disclose their career information.³ It also regulated requirements for financial statements, auditing and a reconciliation of the financial results to the Polish Securities and Exchange Commission. Other regulatory actions include a code of comprehensive regulation of company law and commercial partnership laws (McGee, 2008). Moreover, the entry of Poland to the EU allowed its capital market to be part of a set of capital markets with developed market status.

Similarly, China has made significant strides in moving towards a capitalist form of market from a highly centralized planned economy. Economic reforms towards market principles began in 1978, but the 1990s were particularly important for the privatization of industries, the lifting of price controls and protectionist policies, and reduction of state monopolies (Cheung, Ouyang, & Tan, 2009). Since these reforms, the domestic private sector of China has exceeded 50% of GDP (Chovanec, 2010).

1.2.2 The Cross-Country FFI Literature

Two strands of cross-country studies have been examining the effects of institutional development on market transparency. One set deals with effects of broader institutions, as for example, legal institutions, rule of law, and securities laws; while another set examines the effects of accounting regulatory developments or, in other words, regulatory

³For example, disclosure of their remuneration, bonuses, the value of outstanding loans to them and their next of kin, and warranties for payments.

developments dealing with FFI. In the first set, of course, the assumption is that broader institutional development leads to better IP which, in turn, improves FFI at the country level. La Porta et al. (1998) and MYY are some of the significant studies in this regard. La Porta et al. (1998) type studies look at the impact of IP on general market indicators, e.g., market liquidity and cost of capital (Bhattacharya, Daouk, & Welker, 2003). IP is defined as, “the means by which minority shareholders are protected from expropriation by managers or controlling shareholders” (Mitton, 2002, p. 216). Bushman and Smith (2003) argue that IP ensures dissemination of reliable information to stakeholders, monitors expropriation of the managers and ensures that managers maximize value of the firm. Inadequate IP is frequently cited as one of the causes of financial crises throughout the world. La Porta et al. (1998) emphasize the significance of IP in all capital markets, especially in emerging capital markets. They provide evidence from a comparative study of 49 countries that weak shareholders’ rights and weak enforcement result in underdeveloped stock markets. Similarly, country-specific IP variables explain the extent of stock market movements better than standard macroeconomic variables (Johnson, Boone, Breach, & Friedman, 2000).

MYY type studies more specifically examine whether or not market participants use FFI for trading. SPS is their main measure of the use of FFI in the capital markets. SPS measures whether the markets rely on FFI (low synchronicity) to make pricing decisions or do they mainly rely on market level information (high synchronicity).

Recent cross-country studies on accounting regulatory developments have mainly focused on the effects of the adoption of IFRS on the quality of accounting information and market transparency. These studies demonstrate that IFRS adoption leads to less accounting

flexibility/manipulation (Ashbaugh & Pincus, 2002), higher market liquidity (Leuz & Verrecchia, 2004), low levels of earnings management (Barth, Landsman, & Lang, 2008), and low levels of SPS (Shi & Kim, 2007). All of these studies support the view that enhanced disclosure via IFRS adoption increases the quantity and quality of publicly available financial disclosures. This encourages market participants to collect and trade on private information, thus facilitating the incorporation of FFI into stock prices via trading (Roll, 1988).

1.2.3 Summary

All these institutional reforms indicate that IP is an important factor of a functioning capital market. IP arrangements encourage accountability of managers through multiple mechanisms aimed at reducing or mitigating agency issues. Such arrangements also mobilize savings, help in allocating capital and exert corporate control resulting in the development of stock markets (Black, 2001; Levine & Zervos, 1998). These studies conclude that economic growth is positively related to stock market development, which is indirectly an indication of the improvement in the institutional arrangements of countries (Pagano, 1993).

MYY attribute high SPS to a lack of high quality FFI in the stock markets, forcing investors to rely on market trends rather than the economic performance of firms. MYY examine the cross-country differences in SPS and conclude that in countries with weaker institutional arrangements the stock prices of firms are more synchronous with average market price change. This study suggests that weak institutional arrangements force investors to rely less on firm fundamentals and to rely more on broad market information.

Leuz et al. (2003) find that IP complements FFI in improving the information environment of the markets. More specifically, AAI greatly enhances the quality of FFI (Feltham & Ohlson, 1995). International accounting studies (such as Ali & Hwang, 2000; Hung, 2000) show that cross-country variations in the relevance of accounting earnings occur due to variations in the quality of AAI across countries. On the other hand, AAI could also be a cause for concern because abnormally high AAI is a sign of earnings manipulation. However, abnormal tendencies are moderated by the quality of IP in cross-country settings (Leuz et al., 2003).

As noted earlier, the previous SPS study examining the effects of FFI on SPS by Alves et al. (2010) made no direct tests of FFI effects on SPS, and Ashbaugh et al. (2006) did not test the complementing effects of IP on the association of FFI with SPS; both provided inconclusive results. This study provides a more comprehensive examination of the associations between IP, FFI and SPS.

1.3 Framework of the Thesis

The thesis first ascertains whether or not MYY's results are generalizable across years. It replicates MYY using a sixteen year period. Second, the thesis investigates the association of SPS with two different proxies for FFI. First, I use FFI from Ashbaugh et al. (2006). FFI from Ashbaugh et al. (2006) captures the volatility of firm-specific information. The higher volatility of firm-specific information is an indication of risk arbitrage, which leads to high SPS. Second, I use a primary accounting construct, accruals, as the second proxy for FFI. Accruals is a better predictor of accounting earnings than cash flow based accounting and provides more information to the market than a cash flow based accounting system. Strong IP arrangements improve the quality of accounting information. This leads investors to rely

on FFI for making investment decisions instead of following market movements, resulting in low SPS. For each set of FFI, this study investigates the complementing effects of IP on the association of FFI with SPS.

1.4 Research Hypotheses

The thesis is divided into two stages. The first stage examines the effects of IP on SPS between 1995 and 2010. Specifically, it tests MMY's argument that institutional reforms have beneficial effects on SPS across time. Likewise, it is posited that:

H1: There is a negative association between IP and SPS.

The second stage examines the association of SPS with FFI and the complementing effects of IP on the relation between FFI and SPS. Keeping in line with the MYY and Ashbaugh et al. (2006) notion that FFI reduces SPS, it is posited that:

H2: There is a negative association between FFI and SPS.

The second stage also examines the influence of IP on the association between FFI and SPS. As the earlier section implies IP is likely to have a beneficial influence on this association. Likewise it is posited that:

H3: The negative association between FFI and SPS is enhanced by IP.

1.5 Methods and Findings

1.5.1 IP and SPS

Following the MYY contention that IP is the primary driver of capital market development, I use several proxies of IP identified from MYY and other prior studies to explain the variation in SPS over time. The components of IP I use are Rule of Law (RoL),

Government Efficiency (GE), Regulatory Quality (RQ), Control of Corruption (CoC), Political Stability (PS), and Voice and Accountability (VA) measures obtained from the World Bank. I also use country development (CD) proxied by the natural log of per capita GDP, and stock market development (SMD) proxied by natural log of the number of companies as other explanatory variables.

Using a sample of forty countries from 1995 to 2010, I find a statistically significant negative relation between IP and SPS. Using year-by-year cross-sectional data, I find that IP is the only significant determinant of SPS on a consistent basis.

Additional analyses reveal that the level of country development and stock market development are also significant factors in determining SPS. However, analyzing the change in SPS, I find that only stock market development is a strong determinant in explaining the reduction in SPS. This effect is only statistically significant for the change from 1995 to 2005. Supplementary analysis shows that countries with large decreases in SPS have achieved large proportionate increases in the number of companies. Though the change in SPS is explained partly by the change in SMD, it is not a consistent explanatory variable of the change in SPS.

I carry out trend analysis based on the explanatory variables. Clustering on the basis of CD, IP and SMD, I substantiate that CD along with strong IP are the main determinants in explaining improvements in SPS across years. Countries with high CD and strong IP show the lowest SPS among other clusters, while countries with low IP and high SMD tend to show high levels of SPS.

From the regression and cluster analyses, I conclude that only CD and IP are strong determinants of the variation in SPS. However, the results for the change in SPS, and the change in number of companies for the 1995-2005 time-segments, cannot be ignored. While MYY used market size (number of listed stocks) to control for market activity, I contend that market activity itself is a significant contributing factor in the development of markets. However, Pagano (1993) argues that the growth in the number of companies may be due to institutional arrangements. Therefore, SMD is also a reflection of the institutional environment (IP) of a country.

I also explore why IP variables are not a strong determinant of SPS change, and identify four reasons that contribute to the lack of explanatory power of IP for the change analysis. First, the IP variables change gradually and their implementation and effects may not be immediate, because of other inefficiencies in the regulatory system. Second, many of the IP variables that have been identified in the literature are categorical or ordinal variables, with limited variation. Third, the extant measures of IP may not have captured the specific regulatory, political and economic changes that have occurred across the world during the sample period. Some of these changes are unique to a country, e.g., the opening up of China and Poland cannot be placed in a common measure of cross-country differences in regulatory reform. Lastly, a sample of forty countries is not large enough to allow further tests, such as a test involving only the developing countries, to ascertain if these countries are more affected by IP changes than the developed countries.

1.5.2 FFI and SPS

This stage examines the association of FFI with SPS measures using two sets of FFI variables. The first set of FFI is from Ashbaugh et al. (2006). Their FFI are *LOSS*, standard

deviation of return on assets (*STDROA*) and standard deviation of sales (*STDSALES*). These FFI capture firm fundamentals that proxy for firm-level risk. The second set of FFI uses accruals (*AAI*) as a fundamental accounting construct capturing firm-specific information but may also reflect an earnings manipulation aspect. For both sets of FFI, I examine the complementing effects of IP on FFI.

For the Ashbaugh et al. (2006) FFI, I find mostly inconclusive results as Ashbaugh et al. (2006) did. After controlling for firm size, industry and year effects, I find that neither of the SPS measures is associated with the Ashbaugh et al. (2006) FFI measures at the firm-level. However, at a country-level, I find that the standard deviation of ROA shows a negative and statistically significant association with SPS. In addition to this, I find that countries with strong *IP* and a large market have low level of SPS. I conclude that while accounting-based firm fundamentals are not clearly reflected in SPS, the presence of effective IP arrangements at the country-level allows investors to rely on these and other sources of FFI to make investment decisions.

For *AAI*, I find that on its own *AAI* does not provide conclusive results, but when complemented by *IP*, *AAI* has a negative association with SPS. In other words, when the quality of IP arrangements is better in a country, investors appreciate the information-enhancing aspect, and use *AAI* for investment decision making. *AAI* is both relevant and reliable. It is relevant because it reflects future economic benefits of a firm (Barth et al., 2008; Feltham & Ohlson, 1995). It is reliable when IP arrangements are stronger, as *AAI*, under higher quality IP, undergoes careful processing and greater scrutiny before it is released to the market. Likewise, I conclude that FFI is used to assess the fundamentals of firms in investment markets when it provides accruals-based information under higher

quality IP arrangements. Summing up, I conclude that although FFI is not directly related to SPS on a consistent basis, the strong association of SPS with the interaction of FFI and IP suggests that investors rely on FFI in making investment decisions in strong IP countries.

1.6 Contributions of the Thesis

This thesis makes several contributions to the literature. The study contributes to both the synchronicity literature and the capital markets institutions literature. The study updates the understanding of market synchronicity and shows that cross-country variations in synchronicity remain. For the institutional literature, this study provides confirmatory evidence of the effects of the much cited institutional variables on synchronicity. As stated by MYY, SPS arises from investors relying more on market-based information than on firm-specific information.

This study provides further insights into how SPS is related to the firm-specific and country-specific constructs. It supports the contention that accruals-based FFI is important for assessing the fundamentals of firms and in making better quality investment decisions. It also shows that FFI is dependent on the quality of IP. Therefore, better functioning investment markets need to have both better quality FFI and strong IP.

This study also contributes to the international accounting literature related to the quality of information environments across countries. This is of particular importance to both the investing community and regulators. Due to the globalization of international trade and increasing capital mobility, investors require more country-specific information and a better understanding of foreign capital markets. Moreover, regulators have been trying to harmonize both capital market regulations and financial reporting rules. Therefore, the

study helps in understanding the information dynamics both within a country and at cross-country-level, thus assisting the formulation of high quality regulations.

The study contributes to the CG literature. It provides further insights into how SPS is related to the firm-specific and country-specific constructs. As in Ashbaugh et al. (2006) and Alves et al. (2010), the results infer that firm-specific accounting-based fundamentals are not associated with synchronicity. The likely reason for this, in developed markets, is that there are many other competing sources of information in such markets. On the other hand, in less developed markets, the lack of quality information from firms could be the main reason for a lack of association between accounting-based fundamental information and stock price synchronicity.

This study also contributes to the accounting literature that deals with FFI. It provides evidence on the relation of FFI and reducing information asymmetry through the use of FFI. Accounting research emphasizes the role of financial reporting in reducing information asymmetry between managers and investors (Healy & Palepu, 2001). Managers disclose financial statements to stakeholders and outsiders in order to reduce information asymmetry, leading investors to rely on FFI in making investment decisions. I use R^2 as a measure of accounting informativeness. Researchers use R^2 to evaluate the quality of accounting information (MYY; Francis & Schipper, 1999). Yet, others (such as Alves et al., 2010; Ashbaugh et al., 2006) raise questions about the interpretability of R^2 . This thesis provides evidence that SPS proxied by R^2 derived from the market model represents FFI impounded in stock prices across countries.

Finally, the thesis provides evidence on the use of accruals as FFI. The literature recognizes that the discretion inherent in accruals allows and provides the flexibility to managers to better communicate their knowledge of the firm's economic position in financial reports (Dechow, 1994; Dechow, Kothari & Watts, 1998). This study provides evidence that accruals are used as information signals in the market confirming the conclusions of prior literature (Dechow, 1994; Sloan, 1996).

1.7 Structure of the Thesis

The remainder of the thesis is organized as follow. Chapter 2 provides literature review of the thesis. Hypotheses development and research methodology are reported in Chapter 3. Chapter 4 reports results for the IP and SPS stage. Chapter 5 explains the results for the FFI and SPS stage. Chapter 6 concludes the thesis.

CHAPTER 2 Literature Review

This chapter reviews studies relevant for this thesis and identifies the research purpose for the thesis. There are two main strands of literature dealing with use of FFI in capital markets. The first strand relates the IP environment with the use of FFI. The second strand relates the use of FFI in making investment decisions with particular FFIs or features of FFIs, while taking into account the role of IP.

The chapter is structured as follows. Section 2.1 reviews the literature relating the IP environment. Section 2.2 reviews the literature relating the use of FFI in making investment decisions with particular FFIs or features of FFIs, while taking into account the role of IP. The last section summarizes the literature review and identifies the purpose of this thesis.

2.1 IP Environment Studies

It is reported that the type of IP environment that prevails in a particular economy is an essential factor in defining reporting regulations and practices (Leuz, 2010; Nobes, 1998). For example, market-oriented economies that adhere to standards and regulations along with high quality public disclosure result in lower cost of capital, higher value relevance and lower levels of earnings management. On the other hand, bank-oriented economies are usually associated with limited public disclosure and the adoption of measurement practices that protect creditors and align accounting rules with taxation (Ali & Hwang, 2000; Bhattacharya et al., 2003; Leuz et al., 2003). Such markets have higher cost of capital, lower value relevance and higher earnings management.

In this section, I review the literature that relates the IP to the use of FFI across countries. The section has been divided into two broad categories of literature. The first category is

addressed in sub-section 2.1.1. It deals with the differences observed in international reporting and practices across countries due to variations in IP, and their effects on market transparency. This is referred to as Cross-country studies on the association between IP and market transparency. . The second category of research is addressed in sub-section 2.1.2. It deals with the quality of the IP for information and its effects on stock price informativeness in capital markets around the world. This is referred to as the Cross-country studies on the association between IP and SPS. Specifically, both sections refer to how IP facilitates the disclosure and use of firm-specific information in capital markets.

2.1.1 Cross-country Studies on the Association between IP and Market Transparency

This strand of the literature deals with the differences observed in international reporting practices across countries due to variations in IP arrangements, and how these differences in practices affect market transparency. Prior studies show that the quality of financial information varies across countries due to variations in IP, resulting in information asymmetry between insiders and outsiders (Hung, 2001). For example, Bhattacharya et al. (2003) examine earnings opacity and the informational risk associated with it. They find that opaque firms have a high cost of capital and low trading volume.⁴ However, enhancing the quality of accounting information helps investors distinguish between good and bad investments based on FFI. This leads to a decrease in estimation risk and agency costs, resulting in a decrease in the cost of capital (Bushman & Smith, 2001).

⁴They study earnings aggressiveness, loss avoidance, and earnings smoothing. They combine these three measures to form an earnings opacity measure. They argue that earnings opacity is difficult to measure as it is not possible to capture all factors that influence earnings opacity. Therefore, instead of studying the inputs that determine earnings opacity, they study the outcome; i.e. the distributional properties of reported accounting numbers (earnings aggressiveness, loss avoidance, and earnings smoothing) that suggest earnings opacity.

Ali and Hwang (2000) investigate the value relevance of accounting earnings and find that value relevance is higher in countries with a market-oriented system, those in which the private sector is involved in standard setting, American/British model countries, and where more is spent on auditing services. Value relevance is high because such market-oriented systems have higher demands for financial information than traditional bank-oriented systems which have direct access to private information (Mueller, Gernon, & Meek, 1997).

Leuz et al. (2003) investigate the quality of accounting information across 31 countries, and find that countries with strong IP engage in less earnings management. The variations in the quality of information enable insiders to mask their performance using their financial reporting discretion in countries with weak IP, resulting in higher earnings management. They conclude that these variations can be linked to differences in the IP of the countries. Similar arguments are presented by Ball, Kothari, and Robin (2000) and Ball, Robin, and Wu (2003) who report that incentives for conservative financial reporting vary across countries. They attribute these differences to variation in legal and political institutions (e.g., legal origin, judicial quality, legal enforcement, expropriation risk, and state ownership). This literature is summarized in Table 1.

Table 1 Cross-country Studies on the Association between IP and Market Transparency

Classification	Names of the author(s)	Countries Studied	Sample Period	Results
Value relevance and institutional and regulatory environment.	Hung 2000	21	1990-1997	A greater use of accrual accounting negatively affects the value relevance of accounting measures for countries with weak shareholder protection.
	Ali and Hwang 2000	16	1986-1995	Value relevance is lower in bank-oriented systems than market-oriented, in countries where government sets accounting standards; in continental model countries other than British American model countries, and those where tax rules significantly affect financial accounting measurements; and is higher when more is spent on external auditing services.
Earnings Management and institutional and regulatory environment	Leuz et al. (2003)	31	1990-1999	Outsider economies with strong <i>IP</i> have the lowest earnings management; insiders with weak <i>IP</i> have the highest level of earnings management; earnings management is lower in economies with large stock markets, dispersed ownership, strong <i>IP</i> rights and strong legal enforcements.
Conservatism and legal origin	Ball et al. (2000)	7	1985-1995	Accounting income is significantly more timely in Common law countries than in Code law countries.
	Ball et al. (2003)	4	1984-1996	The quality of financial reporting is not higher in these four Common Law countries than under Code law. Quality is timely recognition of economic income, particularly losses. Hong Kong exhibits high timeliness of accounting income while Thailand the lowest.
Cost of capital, institutional and regulatory environment	Daouk et al. (2006)	32	1969-1998	Improvements in capital market governance (CMG) result in decrease in cost of capital, increase in market liquidity, and increase in market price efficiency.
	Bhattacharya et al. (2003)	34	1984-1998	An increase in the earnings opacity index increases the cost of capital and an economically significant decrease in trading in the stock market.

In summary, the above studies conclude that the quality of accounting information differs across countries due to differences in the IP environments of the countries. High quality accounting information is consistent, comparable, and relevant and is used to make informed decisions (Wulandari & Rahman, 2004). High quality accounting information limits the opportunistic behavior of managers and helps in providing investors with more reliable and accurate economic performance of the firm (Barth et al., 2008). This leads to high value relevance, and low cost of capital (Ali & Hwang, 2000; Barth et al., 2008; Bhattacharya & Daouk, 2002; Leuz et al., 2003).

2.1.2 Cross-country Studies on the Association between IP and SPS

This strand of literature investigates the quality of the IP for information and its effects on the use of FFI in capital markets around the world. In this strand MYY is one important study, which argues that the lack of FFI leads investors to rely on general market movements to make investment decisions. They study SPS on a cross-sectional basis for a sample of forty countries for 1995. They contend that low quality FFI arises from weak IP arrangements of the countries. This leads to high SPS in low IP countries.

MYY find that SPS is negatively correlated with GDP but do not find any relation with other variables (such as earnings co-movement, geographical size, GDP growth, inflation and population) that can explain the negative relation of GDP with SPS. Alternatively, they find that the primary reason is the level of IP arrangements of the countries. These arrangements include legal protection of the interests of the investors and the ability to acquire relevant and reliable information that reflects the fundamentals (economic or otherwise) of these companies. MYY report that one potential reason for the high SPS in smaller countries may be the “small country effect”. This finding is consistent with Levine

and Zervos (1998), who document that smaller countries often have smaller, unstructured capital markets in comparison to developed markets, and that this leads to lower financial development growth in these markets.

SPS has been investigated in different contexts. One set of studies investigates the effects of IP and other country-level variables on SPS. IP is about investors being provided with material information and protected through monitoring and enforcement from the entrenchment and self-dealing transactions of managers. IP also involves restraining fraud in trading, voting, tendering of securities, and the promotion of comparable financial information across industries and countries. Countries with weak IP, such as weak legal rules and lower quality of law enforcement can have smaller capital markets. La Porta et al. (1998) observe that French civil law countries have both weak IP and the least developed capital markets, in comparison to common law countries. Further, they observe that ownership concentration in large public companies is negatively related to IP. Likewise, countries with weak IP reforms suffer from a lack of information about company fundamentals, which leads to investors' reliance on general market movements to make investment decisions.

The IP arrangements of a country include legal arrangements for protecting the interests of investors, and their ability to acquire relevant and reliable information about the fundamentals (economic or otherwise) of these companies. MYY document that stronger protection of investor and property rights promotes informed arbitrage resulting in more informative stock prices evidenced by less synchronous trading in these countries. Moreover, they argue that countries with low IP suffer from information asymmetry that induces investors to make investment decisions based on market trends.

Ball et al. (2000, 2003), Hung (2000), Leuz et al. (2003), and Burgstahler, Hail, and Leuz (2006) suggest that IP variables such as the index of anti-director rights, legal origin, and the level of legal enforcement, are important determinants of a financial reporting system. Li, Morck, Yang, and Yeung (2004) find that low SPS is associated with greater capital market openness, more efficient legal systems, and less corrupt economies in emerging markets. Jin and Myers (2004) show that low SPS is associated with a strong IP, more efficient legal systems, less corrupt economies and corporate transparency. These studies suggest that a well-functioning capital market requires strong legal and enforcement mechanisms. Therefore, strong IP is closely associated with stock market information quality in a country.

Higher quality accounting standards are an important aspect of an efficient IP and financial reporting system. Higher quality accounting standards (IFRS or US GAAP) can add to shareholder protection, which is provided by effective legal systems and stricter enforcement of laws. IFRS helps accounting measurements to better reflect a firm's economic position and performance. Such standards limit managerial discretion in determining reporting alternatives. However, implementation of such standards requires an efficient financial reporting system, e.g., more rigorous enforcement. Bartov, Goldberg, and Kim (2005) find that earnings based on IFRS are more value-relevant than earnings based on local accounting standards (in this case German standards). Moreover, Daske and Gebhart (2006) show that disclosure quality has significantly improved under IFRS.

Table 2 Cross-country Studies on the Association between IP and SPS

Classification	Names of the author(s)	Countries Studied	Sample Period	Results	IP Proxy used
SPS and Country-specific factors	Morck et al. (2000)	40	1994	Stock prices move together more in poor economies than in rich economies. Strong property rights do explain these differences in SPS across countries.	Good Government Index from La Porta et al. (1998). Sum of three measures government corruption, risk of expropriation of private property by the government and the risk of government repudiating contracts.
	Li et al. (2003)	49	1990-2000	SPS is decreasing over time in emerging markets and higher firm-specific variation is associated with greater capital market openness in countries with better institutional and regulatory environment.	Good Government Index from La Porta et al. (1998). Sum of three measures government corruption, risk of expropriation of private property by the government and the risk of government repudiating contracts.
	Khandaker and Heaney (2008)	41	1996-2005	Emerging markets are more synchronous. Moreover, post-communist country stock markets are more synchronous on average than common law and civil law country stock markets.	Common Law and Civil Law classification
SPS and opaqueness	Jin and Myers (2006)	40	1990-2001	Lack of transparency increases R^2 by shifting firm-specific risk to managers. Opaque stocks with high R^2 result in high negative returns.	Five measure for opacity i.e., (1) A survey-based measure from the Global Competitiveness Report, (2) a measure of auditing activity, (3) a measure of how many key accounting variables are included in financial statements, from La Porta et al. (1998), (4) an opaqueness measure from PricewaterhouseCoopers and (5) an opaqueness measure based on the diversity of analysts' forecasts.
SPS and Accounting Standards	Wang and Yu (2008)	44	1995-2004	Adoption of IFRS or US GAAP <i>per se</i> is not related to information content of share prices but that better accounting standards are helpful only in countries with proper reporting incentives.	Adoption of IFRS or US GAAP
SPS and Market integration	Hsin and Liao (2003)	27	1981-2001	Stock returns move together in the international market or local market based on the level of market integration.	Market Integration measures from Bekaert and Harvey (1995)

Wang and Yu (2008) study the impact of accounting standards on the information content of stock prices. They find a significant negative relation between SPS and accounting standards, better shareholder protection, and stricter legal enforcement in countries with a common law origin. They conclude that accounting standards with strong enforcement mechanisms exhibit higher accounting quality, and suggest that investors take into consideration the accounting quality while making investment decisions.

MYY identify two other determinants of SPS. First, countries with open (closed) trade and business policies have lower (higher) levels of SPS. Second, developing countries generally have less open economic policies than developed countries. Hsin and Liao (2003) examine market integration and SPS in emerging markets. They report that stock returns may move together in the international market or local market based on the level of market integration. They argue that if the market is fully integrated with the global market, the covariance risk of the global market is priced. Alternatively, if the market is segmented, the covariance risk of the local market is priced. Li et al. (2004) suggest that trade openness is a direct measure of a country's stock market openness to foreign investors. They find that lower country-level R^2 values are associated with greater capital market openness. However, this negative relation is based on the strong IP arrangement of the countries. This study leaves the investigation of the relation of market integration and trade openness with SPS to future research. Table 2 summarizes this literature.

2.1.4 Summary of the IP Environment Studies

To sum up, the improvements in IP and the adoption of high quality accounting standards improve the financial reporting systems of the capital markets. These improvements in IP systems reduce information asymmetry between insiders and outsiders, reduce the agency

problems, improve market transparency, and ensure the dissemination of a comprehensive and reliable set of information to stakeholders. Strong IP arrangements also safeguard minority shareholders from the expropriation of managers and large shareholders. Thus, high quality accounting standards, auditing, and strong IP with efficient enforcement improve the quality of accounting information and the use of such information in the markets. Therefore, I investigate the association of IP with SPS as a first step in my study, which is referred to as the IP and SPS stage of the thesis.

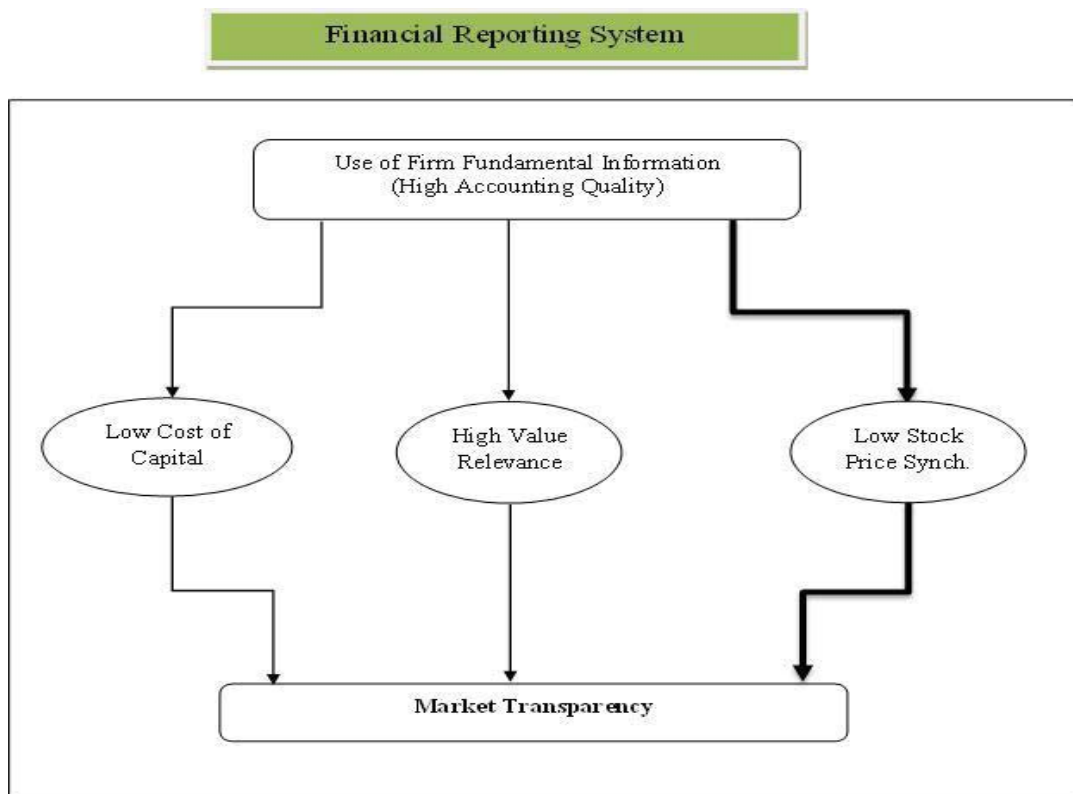
2.2 FFI and SPS Studies

This section reviews the literature relating the use of FFI in making investment decisions with particular FFIs or features of FFIs, while taking into account the role of IP. First I provide a theoretical schema of how FFI is linked with market transparency. Further, I report that investors capitalize FFI in investment decisions thus lowering SPS. The section is structured as follows; sub-section 2.2.1 reviews Single-country studies on the association between FFI and SPS; sub-section 2.2.2 evaluates Cross-country studies on the association between FFI and SPS; sub-section 2.2.3 reviews literature about accrual accounting information and its use by the market as either information signals or as an earnings manipulation tool and is referred to as Accruals and SPS; and sub-section 2.2.4 summarizes this review of the second strand of literature.

Figure 2 displays the theoretical schema of the influence of FFI on market transparency. Market transparency is referred to as investors taking into account FFI while making investment decisions, and is reflected by low cost of capital, high value relevance, and low levels of SPS. Strong financial reporting systems using high quality accounting and

auditing standards, and strong IP improve the quality of accounting information (Ali & Hwang, 2000; Ball et al., 2000; Ball et al., 2003; Barth et al., 2008).

Fig 1 **The use of FFI and Market Transparency**



Such improvement in accounting quality not only reduces information asymmetry, but also strengthens the overall financial reporting system. Thus, investors rely more on FFI than market information (such as macroeconomic and political events). Consequently, investors base their decision on accounting information and incorporate this information into stock prices. This results in a lower cost of capital, higher value relevance, lower earnings management and low levels of SPS. This earlier strand of the international accounting studies regarding IP arrangements concludes that higher accounting quality is one of the important determinants of high value relevance, low cost of capital and less earnings

management. This study focuses on the association of FFI and SPS and is reflected by the last bold line in Figure 3. This following strand of literature is related to the second stage of this dissertation, which is referred to as the FFI and SPS stage of the thesis.

2.2.1 Single-country Studies on the Association between FFI and SPS

Studies suggest that the availability of accurate and timely FFI via financial reporting is an important determinant of stock price informativeness. French and Roll (1986), and Roll (1988) emphasize the role of FFI and assert that a significant proportion of stock return variation cannot be explained by market-wide information alone. Roll (1988) concludes that this phenomenon may be due to the incorporation of private FFI into prices.

Many single-country studies investigate the use of FFI in a market. Durnev et al. (2004) find that US firms with low R^2 values are more value-relevant. Piotroski and Roulstone (2004) report that a higher level of SPS is associated with higher analyst coverage since analysts specialize by industry, and, thus, generate more industry and market-wide information than FFI. Other studies (such as Durnev et al., 2005; Wurgler, 2000) find that US firms with lower R^2 values make better capital allocation decisions. These findings are consistent with the R^2 measure that represents FFI, in that firms with low R^2 values suffer from fewer information asymmetry problems, which improves the coordination between investors and the firm, resulting in more efficient investment decisions.

Table 3 Single-Country Studies on the Association between FFI and SPS

Classification	Names of the author(s)	Countries Studied	Sample Period	Results	FFI Proxy used
Volatility of Stock Returns and use of FFI	Shiller (1981)	1	1871-1979	High volatility of stock returns cannot alone be explained by the volatility in FFI.	Dividends
	West (1988)	1	1873-1980		
	French and Roll (1986)	1	1963-1982	Asset prices are more volatile during exchange trading hours than during non-trading hours. Although a significant fraction of the daily variance is caused by mispricing, the behavior of returns around exchange holidays suggests that private information is the principal factor behind high trading variances.	They use return variances for weekdays, weekends, holidays, and holiday weekends during the sample period which is divided in two sub-periods. These estimates are used to compute multiple-to-single-day variance ratios for each stock in each sub-period.
R ² and use of FFI	Roll (1988)	1	1982-1987	Stock prices seem to imply the existence of either private information or else occasional frenzy unrelated to concrete information.	News events from the Dow-Jones News Retrieval System about every news item about a company that appeared either in the Wall Street Journal or on the Dow-Jones news wire (the Broad Tape) during the sample period.
Investment and Stock Return Variation	Durnev et al. (2004)	1	1990-1992	Firm-specific return variation gauges the extent to which information about the firm is quickly and accurately reflected in share prices. Firms with more informative stock prices facilitate more efficient corporate investment.	Log of residual sum of squares (scaled by the number of firm-year observations) from regressions of firm return on market and three-digit industry value-weighted indices and Log of residual sum of squares minus logarithm of explained sum of squares (both scaled by the number of firm-year observations) from the regressions described above.
Market Participants and the use of FFI	Piotroski and Roulstone (2004)	1	1984-2000	Stock return synchronicity is positively associated with analyst forecasting activities, consistent with analysts increasing the amount of industry-level information in prices through intra-industry information transfers.	Financial analysts, institutional investors, and insiders' trades
Co-movement and use of FFI	Barberis et al. (2005)	1	1976-2000	Additions to the S&P 500 Index do not provide information but are rather supported by the friction- or sentiment-based views i.e. changes in stock returns are not due to the firm-specific information-based view, but rather display a noise-based interpretation.	Addition or deletion of companies from S&P 500 Index.

On the other hand, opponents of the literature on stock price informativeness argue that high volatility of stock returns cannot alone be explained by the volatility in firm-fundamentals (e.g. dividends) (Shiller, 1980; West, 1988). Barberis et al. (2005) study SPS for S&P 500 firms, and find that R^2 changes when a firm is added to or deleted from S&P 500 Index. Ashbaugh et al. (2006) argue that the addition or deletion from the index does not provide new information to the market regarding firm-fundamentals; therefore changes to R^2 values to this effect are inconsistent with the information-based explanation of the R^2 measure. However, this addition and deletion is itself a signal to the market regarding firm performance, since the market constantly observes the performance of these firms. Bhattacharya, Daouk, Welker, and Jorgenson (2000) find that share prices on the Mexican Stock Exchange react very little to the announcement of company news, and conclude that these results are due to insider trading, rather than share price transparency. This strand of studies concludes that SPS is affected by both FFI and market related factors. These single-country studies are summarized in Table 3.

2.2.2 Cross-country Studies on the Association between FFI and SPS

This section reviews cross-country studies of SPS and discusses whether SPS is a proxy for FFI capitalized in share prices in international markets through investment decisions of investors. In other words, SPS is seen as a proxy for the use of FFI.

Ashbaugh et al. (2006) study the association of SPS with FFI in six developed equity markets and find inconsistent results (negative association for some countries, while positive for others). This inconsistency in results leads them to conclude that SPS does not represent FFI impounded in share prices across countries. Ashbaugh et al. (2006) also examine whether cross listing in the US stock market reduces SPS, but find no support for

their hypothesis. They argue that differences in institutional arrangements (such as voluntary information flows, ownership structures, and trading activity) affect the price formation process in these markets.

Another study by Alves et al. (2010) examines the quality of the information environment of their sample countries. They argue that if SPS is a proxy of the quality of information environment, then the spurious aggregation and decomposition should not change the R^2 proxy of SPS. Specifically, they investigate the statistical characteristics of the R^2 measure of SPS. They find that R^2 falls (increases) when they create (decompose) a hypothetical country. These changes in the R^2 measure, they believe, cannot be referenced back to the changes in the quality of the information environment, since this aggregation/decomposition represents the same quality of information environment. Moreover, they rank countries according to their average R^2 values and find that their rankings of a country's R^2 are different from those reported by MYY for 1995. They also document that the annual R^2 value changes from year to year. However, their sample selection and R^2 computation is different from the MYY's computation. Their sample of companies for each country is less than that of MYY's for 1995 and, unlike MYY, they do not control for the international market effects and currency exchange rates. However, both studies (Alves et al., 2010; Ashbaugh et al., 2006) conclude that R^2 does not represent FFI across countries.

Others study the information environments of developing countries and argue that markets in developing countries with an opaque information environment increase the cost of collecting firm-specific information. Therefore, analysts in these countries generate their forecasts based on macroeconomic or market information (Chan & Hameed, 2006).

Likewise, stock prices in these countries generate less FFI leading to higher levels of SPS. In a similar study, Jin and Myers (2004) find that countries with opaque firms and weak financial systems have higher SPS.⁵ Their results also show that higher crash frequencies are associated with higher R^2 values.⁶ Notably, these results are evident in countries with less developed financial systems and weak IP arrangements.

Li et al. (2004) find that lower country-level R^2 values are associated with greater capital market openness. However, this negative relation is contingent upon the strong IP arrangements of the countries. Similar results (negative relation) are reported by Wang and Yu (2008) for their study of accounting standards and SPS, but this relation is evident when IP is used as a moderating variable. To sum up, these studies conclude that country-level strong IP arrangements help improve the accounting quality, leading investors to capitalize FFI in making investment decisions.

As reported above, Ashbaugh et al. (2006) conclude that SPS does not reflect FFI capitalized in stock prices. They use loss, reporting of R&D, analyst following, the proportion of shares that are closely held, the standard deviation of sales and the standard deviation of ROA as proxies for FFI. The accounting based FFI they use (loss, standard deviation of ROA and standard deviation of sales) are measures of the risk associated with firm performance. These variables may have two general effects. One aspect of these variables is the information signal to the market. If SPS (R^2) represents firm-specific information, then in the information scenario, investors would look to these variables as a risk measure and would take into consideration firm-specific information while making investment decisions. However, the economic aspect of these variables shows that the

⁵Jin and Myers (2004) investigate the relation of firms' opacity and SPS for 40 countries from 1990-2001.

⁶ Higher crash frequencies mean large negative residual returns (Jin & Myers, 2004, p. 287).

higher volatility in these variables would signal to investors about the market movements; therefore, investors would follow the market trend, leading to an increase in SPS.

Other variables used by Ashbaugh et al. (2006), such as reporting of R&D, are normally reported by large firms. Moreover, although analyst following is associated with a richer information environment, it is not an accounting FFI variable. Further, including R&D and analyst following will reduce the sample size for the thesis. Their sample consists of only a small number of six developed countries. In addition to this, Ashbaugh et al. (2006) do not control for the interacting effect of IP, since studies conclude that the quality of accounting information is dependent upon a strict regulatory environment. Table 4 presents this literature in a summarized form.

One possible reason for high SPS could be volatility of FFI exposing investors to higher risks since many investors do not fully diversify their portfolio investments (Campbell et al., 2001). Another possible explanation of high SPS could be that R^2 is a measure that is affected by other macroeconomic variables. Moreover, another reason for the inconsistent results could be the absence of drawing a connection between SPS and one of the key FFI factor of accounting information, i.e., accruals.

Table 4 Cross-country Studies on the Association between FFI and SPS

Classification	Names of the author(s)	Countries Studied	Sample Period	Results	FFI Proxy used
SPS and information environment	Ashbaugh et al.(2006)	6	1990-2002	SPS defined as R^2 is not related to firm-specific information.	Loss, reporting of R&D, Analyst Following, the proportion of shares that are closely held firm, standard deviation of return on assets, and standard deviation of sales
	Chan and Hameed (2006)	25	1993-1997	Positive association between firms with higher SPS and analyst following; inconsistent results with the theory that securities analysts produce firm-specific information.	Analyst following
	Wang and Yu (2009)	44	1995-2004	Investigates the impact of accounting standards on the information content of stock prices. Adoption of IFRS or US GAAP is not related to such information content, but better accounting standards are helpful in in countries with proper reporting incentives and better institutional and regulatory environment.	Adoption of IFRS or US GAAP
SPS (R^2)	Alves et al. (2010)	40	1984-2004	Evaluation of the reliability of the R^2 measure in a cross-country setting: the R^2 measure shows severe limitations as a measure of information quality. They highlight the instability of the R^2 measure.	The statistical characteristics of R^2

A more important reason for the inconclusive evidence for the association between FFI drawn from Ashbaugh et al. (2006) and SPS is likely to be due to the effects of the IP environment of the countries. Improvements in the regulatory environment and infrastructure and the quality of accounting standards can lead to a more reliable set of FFI that are then impounded in stock prices resulting in lower SPS. The evidence of IP having an influence on SPS has been provided by MYY. However, MYY do not provide direct evidence of the influence of IP on the association between FFI and SPS. This issue is addressed in the second stage of this study.

2.2.3 Accruals and SPS

This section reviews the literature about the use of accruals as either representing FFI or as an earnings management signal. It is reported that other information signals such as accruals provide incremental information beyond cash flow. Dechow (1994) reports that accruals are superior to cash-based measures as measures of firm performance. Similar arguments are also reported by Subramanyam (1996) who finds that accruals are priced by the market.

Accrual accounting provides information about a firm's earnings and its components and is a better indicator of enterprise performance than cash-based accounting information. It records transactions in the period they occur in an attempt to record the financial effects on the firm's economic performance. FASB Statement of Financial Accounting Concepts No. 1 (1978), paragraph 44 states:

“Information about enterprise earnings and its components measured by accrual accounting generally provides a better indication of enterprise performance than does information about current cash receipts and payments.”

Many studies investigate accruals as an information signal about earnings. For example, Dechow et al. (1998) and Dechow (1994) find that current earnings better predict future cash flows than current cash flows. Defond and Park (1997) find that discretionary accruals convey information about future profitability. Sankar and Subramanyam (2002) argue that managers use their discretion with appropriate restrictions in communicating private information to the market, thus increasing the information content of reported earnings. In contrast, Teoh, Yang and Zhang (2006) find that firms with income-increasing abnormal accruals in the year of an equity offer have subsequent stock underperformance.

Accrual accounting matches revenue and expense better than cash flow and thus makes accounting information more value-relevant. For example, Ali, Hwang and Trombley (2000) argue that sophisticated investors are aware of the implications of accruals and cash flow components of earnings and accordingly adjust their estimates of future earnings. Subramanyam (1996) find evidence consistent with accruals conveying information about future profitability. Specifically, he finds that accruals are positively associated with future operating cash flow, and net income. Louis and Robinson (2005) study the effects of stock splits and accruals as a means of signaling private information to the market. They find results consistent with their hypothesis that the market prices the pre-split accruals at the split announcement.⁷ All these studies suggest that the market values accruals since it increases the ability of earnings to reflect the fundamental value of the firm.

Other studies examine the accruals' components to determine which individual component provides more information about earnings (see, e.g., Fairfield, Whisenant, & Yohn, 2001;

⁷ Since prior research reports that managers have incentives to use stock splits as a private information signal to the market (Ikenberry, Rankine, & Stice, 1996) and firms get positively abnormal returns after stock splits (Ikenberry & Ramnath, 2002).

Hribar, 2000; Sloan, 1996; Thomas & Zhang, 2002; Xie, 2001). These studies find that that only inventory accruals and discretionary accruals provide information to the market. Moreover, Barth et al. (2001) study various components of accruals.⁸ They find that each component of accruals captures different information not only about delayed cash flows related to past transactions, but also about expected future cash flows related to management's expected future operating and investing activity (Barth et al., 2001, p. 28). However, Richardson, Sloan, Soliman and Tuna (2001) find that the combined effects of asset and liability accruals provide more information than the individual components. Moreover, they find that non-discretionary accruals (sales growth) also provide information about earnings quality.

On the contrary, managers may inflate earnings to either mislead investors or to expropriate funds. Consistent with this opportunistic view of accruals, Dechow et al. (1998) and Beneish (2001) show stock price declines for earnings management companies that are under investigation. Sloan (1996) and Xie (2001) show that future abnormal returns are largely negative for firms with a large component of accruals in their earnings. Moreover, Healey and Wahlen (1999) argue that firms that manage earnings upwards show subsequent stock price declines, whereas firms with downward earnings management show positive returns. It is worthwhile noting that the use of accruals depends on the IP arrangements of the respective markets. Thus, this study also investigates the association of SPS with accruals to ascertain whether accruals provide information to the market, or are an earning manipulation tool.

⁸ They disaggregate accruals into change in accounts receivable, change in inventory, change in accounts payable, depreciation, and amortization.

2.2.4 Summary of the FFI and SPS Literature

This section focused on the quality and use of firm-specific accounting information. It is reported that the accounting information helps investors understand firm-specific information leading to a reduction in information asymmetry. Thus, investors rely on firm-specific information for investment decisions resulting in a lower cost of capital, higher value-relevance and lower levels of earnings management.

It is also reported that the information content of stock prices requires reliable and accurate FFI. A major portion of this information content can be linked to stock return variation of the market but can also be driven by private information. MYY and others report that countries with low R^2 values reflect more FFI in the share prices. These studies also conclude that strong IP arrangements help in improving the information environment of the market. Therefore, investors rely on FFI rather than market-wide movements in making investment decisions, thus reducing SPS. However, others report that SPS does not reflect FFI and variation in stock returns occur due to noise or factors unrelated to FFI. These variables only reflect the risk measures related to firm performance.

It is also concluded that accruals are used to provide information to outsiders that reflect a firm's performance. The investors' demand for and reliance on publicly disclosed information may drive insiders to provide information that truly and accurately reflect a firm's economic performance. However, this may induce managers to smooth accounting information through accruals. To sum up, accruals can be perceived as an information signal about current economic performance of a firm but may also be recognized as a tool used for misleading outsiders about the actual firm performance. Therefore, in the second

stage of this study I investigate the use of FFI by the market with the complementing effect of IP on the use of FFI in a capital market.

2.3 Summary of the Literature Review

This chapter focused on cross-country studies of the use and effects of FFI in the capital markets. It is reported that countries differ in their IP environments. Such variations result in differences in the quality of accounting information in these capital markets, i.e., there are different levels of information asymmetry. Accordingly, reduction of information asymmetry depends on the demand for accounting information from investors, and for capital from managers. Therefore, managers disclose information to cater to the demands of the outsiders and to attract potential investors in order to fund their future projects.

Managers have discretion of disclosing information either to hide firm performance to mislead investors or to hide private benefits of control. However, such disclosure of information is facilitated and monitored by the efficient enforcement of the IP of the respective countries. The stronger the IP arrangement of a country, the higher is the quality of accounting information and *vice versa*. Such IP arrangements improve the information environment of capital markets. Therefore, investors incorporate different levels of FFI in stock prices, thus resulting in variations in market transparency proxied by lower cost of capital, higher value-relevance, lower earnings management and lower SPS.

It is also reported that stock prices reflect different levels of firm-specific accounting information in respective capital markets. This information content not only reflects market-wide movements but also suggests the incorporation of FFI. Studies report that countries differ in the use of FFI impounded in share prices thus resulting in different levels

of SPS. However, others report that the incorporation of FFI depends on the institutional arrangements of the respective capital markets. Thus for an efficient capital market not only FFI is important but also IP is a fundamental factor for reducing information asymmetry and for capitalization of FFI in share price returns.

Likewise, this thesis has two main purposes. (1) It examines the effects of IP on SPS, which I refer to as the IP and SPS stage of the study. (2) It investigates the specific use of FFI in the capital market and, in doing so, it also examines the complementing effects of IP arrangements of the respective countries on the use of FFI in those markets, which I refer to as FFI and SPS stage of the study.

Chapter 3 Hypotheses Development and Research

Methodology

This chapter provides the discussion for hypotheses development and the research design to test the hypotheses. The chapter is structured as follows; section 3.1 presents hypotheses development discussion; and section 3.2 explains the research design of the thesis.

3.1 Hypotheses Development

This section reports the hypotheses of the thesis. It is structured into two sub-sections; section 3.1.1 develops the hypothesis for the effects of IP on SPS and section 3.1.2 develops hypotheses for the association between FFI and SPS and the complementing effect of IP on the association between FFI and SPS.

3.1.1 IP and SPS Stage

Global capital markets and economies have experienced developments and institutional changes, which have brought many new investors and traders into the capital markets. Such changes and improvements in IP have been made with the aim of improving financial markets and restoring the confidence of local and international investors. Implementation of credible accounting practices through IFRS adoption adds to these positive changes in the capital markets.

MYY find that countries with strong IP show low SPS, while countries with weak IP result in high SPS. Similarly, Jin and Myers (2004) observe that countries with less transparency tend to have high SPS, while economies with more transparent information environments show low SPS. Li et al. (2004) and Jin and Myers (2004) also document a negative relation between SPS and IP variables proxied by efficient legal systems and less corrupt

economies. All these studies suggest that these mechanisms allow investors to gather and rely upon firm-specific information. Therefore, the question is whether the continuing improvements in these IP mechanisms have continued to beneficially affect SPS in capital markets. In other words, my first research question is whether the MYY hypothesis that IP is negatively associated across countries is valid for a longer period of time is my first research question. Likewise, I hypothesize that:

H1: There is a negative association between IP and SPS.

3.1.2 FFI and SPS Stage

MYY do not find a direct support for their contention that SPS represents FFI across countries. Their study suggests that improvements in IP allow investors to gather and rely upon firm-specific information. As discussed in Chapter 2, the inconsistent results of earlier studies of the relation between FFI and SPS lead to a further investigation for a larger sample of countries over a longer period of time.⁹ A larger sample of countries with a variety of IP arrangements would be better to ascertain whether and under what circumstances FFI matters.

As identified in Chapter 2, stock prices reflect both market-wide information and the different levels of FFI of individual firms. Thus, investors rely on firm-specific information for investment decisions. MYY and others argue that SPS is a function of firm-specific information. Based on this notion, Ashbaugh et al. (2006) posit that if investors rely on FFI rather than market-wide movements in making investment decisions, better quality FFI would reduce SPS.

⁹ See for example Alves et al. (2010) and Ashbaugh et al. (2006).

However, Ashbaugh et al. (2006) report that SPS does not reflect FFI and variation in stock returns occur due to noise or factors unrelated to FFI.¹⁰ The Ashbaugh et al. (2006) FFI variables only reflect the income smoothing and risk measures related to firm's past performance and do not account for institutional arrangements, which could be the reasons for the inconclusive results. Ashbaugh et al. (2006) also use only a small set of countries, which allowed them to conduct only intra-country tests of association between FFI and SPS.

Accrual accounting information is often used to provide information to outsiders that reflect a firm's current and future performance (Dechow, 1994). Accrual accounting recognizes the expected future financial benefits and obligations accruing to an enterprise over a period. Accrual accounting matches revenue and expense better than cash flow accounting and makes accounting information more value-relevant (Hung, 2000). The investors' demand for and reliance on reliable publicly disclosed information may drive insiders to provide information that truly and accurately reflect a firm's economic performance (Healey & Wahlen, 1998). If investors perceive accruals as information signals, then this is likely to reduce SPS.

Theoretically, MYY's argument that SPS is a function of firm-specific information is logical because SPS is based on firm specific returns. Therefore, regardless of the proxy of SPS (Ashbaugh or accruals), I hypothesize:

H2: There is a negative association between FFI and SPS.

¹⁰Such as Shiller (1980) and West (1988).

However, the literature review also highlights that managers can use accrual accounting opportunistically to manage earnings. Insiders and controlling owners may have incentives to manage earnings either to mask firm performance and/or to hide their private control benefits from outsiders (Leuz et al., 2003). They do so by using their financial reporting discretion. In essence, insiders, in order to avoid outsiders' intervention, manage the level and variability of reported earnings. If investors perceive accruals to be an earnings management tool then higher accruals will increase SPS.

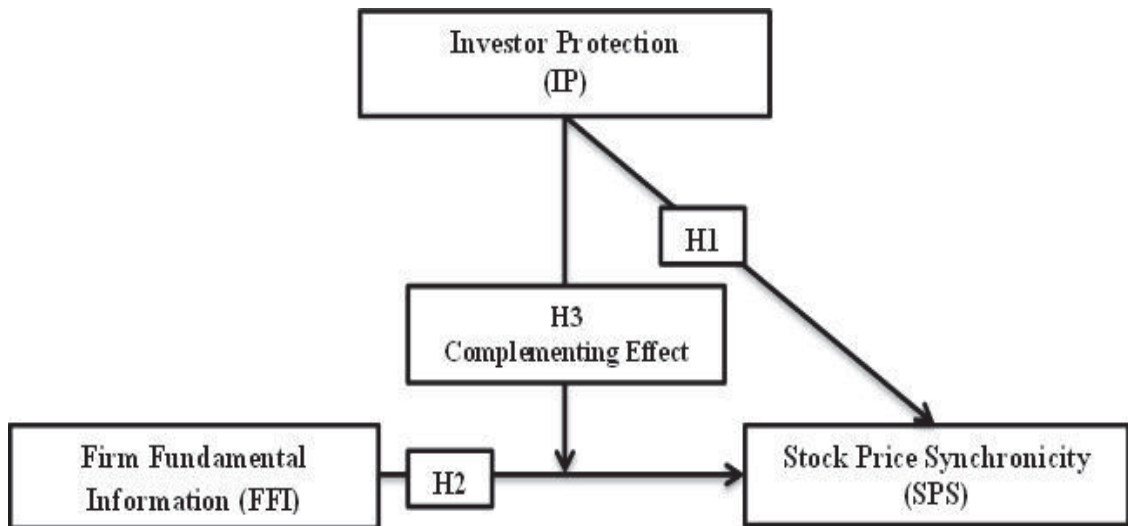
MYY argue that countries differ in the use of FFI because of different levels of IP across countries. They contend that the incorporation of FFI depends on the IP arrangements of the respective capital markets. For an efficient capital market not only FFI is important but also IP is a fundamental factor for reducing information asymmetry, and adequately capitalizing FFI in share price returns. Legal rules and their strict enforcement effectively protect outside investors (Leuz et al., 2003). MYX also argue that the level of IP arrangements endogenously regulates the quality of firm-specific information reported to outsiders. Thus, a strong IP system is likely to increase the use of FFI in capital markets and reduce SPS. I expect IP to have a complementing influence, with the strength of IP arrangements enhancing the effects of FFI. Therefore, I hypothesize:

H3: The negative association between FFI and SPS is enhanced by IP.

Figure 2 provides the framework for the thesis. It identified the main associations explained in the motivation to the hypotheses, that is, the association of IP and FFI with SPS and the complementing effects of IP on the association between FFI and SPS. In short, the figure

depicts that while both FFI and IP have direct effects on SPS, the most effective impact is when both FFI and IP are of higher quality.

Fig 2 *Framework of the Thesis*



3.2 Research Design

This section describes the research design of the thesis to test the hypotheses. It is structured as follows; sub-section 3.2.1 describes the sample. Sub-section 3.2.2 is for reporting the results for H1 over the sample period. Sub-section 3.2.3 reports results for H2. The last sub-section explains the dependent and the explanatory variables for the thesis.

3.2.1 Sample

I sample the same 40 countries of MYY from 1995-2010. For computing SPS measures, I collect weekly share prices, the local market index, the US market index, and the currency exchange rates from DataStream International (DSI) for the sample countries over the sample period. For South Korea, the currency exchange rate against US\$ is not available prior to 2006 on DSI. Therefore the exchange rates for South Korea for 1995-2005 are from

OANDA.¹¹ The initial sample consisted of all firm-year observations taken from DSI with a total of 1,241,662 firm-year observations for all 40 countries (Table 5, column 2). For each country, I download share price data for active, dead, and suspended companies for each year. A company is included in the sample if it trades for at least 30 weeks of the year on the stock exchange. I calculate share price returns on biweekly basis for each company for each year for the sample period. Like MYY, I find that the computed biweekly returns contain outliers. If these are coding errors in share prices, this may bias results or add noise to data (MYY). Therefore, I exclude the observations for which the stock returns exceeds 0.25 in absolute value. Next, I compute SPS measures (*Com* and R^2) for each year for the sample countries. To be consistent across the sample period, I match the observations of companies the sample period. After matching up the companies on a yearly basis for the sample period, the sample reduces to 656,538 firm-year observations countries (Table 5, column 3).

I download per capita *GDP* and *IP* variables from the World Bank website. The number of companies of each country is from DSI. I download firm fundamentals variables of net income, sales, total assets, market value of equity (share price multiplied by the number of share outstanding) and cash flow from operations from DSI. I use Ashbaugh et al.'s (2006) *Loss*, *STDROA*, and *STDSALES* as the first set of FFI variables. *STDRAO* and *STDSALES* are computed on a five years rolling basis. This, I lose the first four years data (199501998) and the sample starts from 1999 for the FFI and SPS stage of the thesis. I use *AAI* as the second proxy for FFI. I match companies on the basis of FFI and both SPS measures (*Com*

¹¹<http://www.oanda.com/currency/historical-rates/>

and R^2) for each year for the sample countries.¹² After matching the companies, the observations for the FFI and SPS stage are reduced to 209, 260 firm-year observations for the sample countries (Table 5, column 4).¹³ To control for firm size, I scale both *STDSALES* and *AAI* by total assets. As a country-level measures of FFI, I take the median value across all the firms scaled by its standard deviation to control for variation in the market.

Appendix 2 reports the number of companies for each country for each year. On average, Ireland has the smallest number of companies over the sample period (169) while, as expected, the US has the largest average number of companies (29,382) per year. Table 5 provides the number of firm-year observations. Column 1 provides the list of countries; column 2 provides firm-year observations for share price download; the third column reports the number of firm-year observations for computing SPS; and the last column represents the matched firm-year observations used in the regression models. The table is ranked on the basis of the last column. As expected, the US has the largest number of firm-year observations while Peru shows the smallest number of firm-year observations.

¹²There are differences in the number of companies (number of observations) for each year in each country; e.g., for one year, DSI returns data for 100 companies for FFIs while the SPS measures are available for 150 companies. Thus, in order to be consistent in the analyses, I match up companies on the bases of SPS measures and FFIs, which further reduces the sample.

¹³Alves et al. (2010) report that investigating the UK data for such extreme returns reveal that these are not measurement error and are likely to provide important new information about a firm. However, including these high return observations in the analysis does not change the results.

Table 5 No. of Firm-year Observations for the Analyses

Table 5, Column 2 displays the number of firm-year observations for share price data for each country; Column 3 reports number of firm-year observations for computing SPS measures after dropping firms with less than 30 weeks trading on the stock exchange and trimming the date for biweekly returns observations that exceeds 0.25 in absolute value. The last Column displays firm-year observations for regression analyses after matching each company's SPS measures with FFI for each country each year.

1	2	3	4
Country	TOTAL AVAILABLE OBSERVATIONS Number of total firm-year observations with share price	SAMPLE FOR IP AND SPS STAGE Number of firm-year observations for computing SPS measures with more than 30 weeks trading on stock exchange	SAMPLE FOR FFI AND SPS STAGE Number of matched firm-year observations for regression models
US	470,116	221,948	45,773
Japan	66,174	57,876	34,383
Hong Kong	17,022	14,640	15,373
China	19,929	19,368	12,728
UK	112,075	38,309	10,763
Taiwan	13,130	13,128	9,264
Malaysia	14,620	12,943	7,313
Germany	12,643	12,453	6,812
Australia	41,716	23,556	6,019
India	39,908	26,074	5,679
Canada	159,039	62,370	4,891
Singapore	12,937	8,872	4,507
Thailand	15,945	8,666	4,191
France	34,772	17,717	4,120
Greece	7,388	5,212	3,042
Italy	10,276	5,512	2,799
Indonesia	6,706	4,869	2,779
Brazil	16,754	8,546	2,488
South Africa	4,713	4,349	2,469
Sweden	19,516	7,171	2,453
South Korea	31,284	24,379	2,253
Turkey	5,651	4,600	2,032
Poland	5,059	3,589	1,743
Norway	8,072	3,604	1,668
Philippines	5,202	3,779	1,582
Finland	4,225	2,427	1,407
Spain	5,152	3,276	1,323
Chile	5,264	3,161	1,309
Denmark	6,778	3,840	1,266
Pakistan	6,556	4,552	1,061
Holland	10,870	4,116	1,039
Belgium	11,806	5,282	947
New Zealand	5,943	2,772	909
Austria	4,510	2,390	805
Mexico	8,885	2,969	764
Portugal	4,115	1,609	423
Ireland	2,697	1,119	338
Czech Rep	5,085	1,841	269
Colombia	3,401	1,096	244
Peru	5,728	2,558	32
Total	1,241,662	656,538	209,260

3.2.2 IP and SPS Stage

In this stage of the thesis, I primarily analyze the effects of IP on SPS measures. Since SPS is likely to be affected by country-level development and market development (MY), I also control for and analyze the effects of country-level development (CD) and market development (SMD).

I take the following steps to test the hypotheses. First, I replicate MY in computing SPS measures (Com and R^2) for the sample data. I also use another SPS measure, $SYNCH$, which is the first principal component of MY's SPS measures. I then compare MY's data across years to ascertain if there is any improvement in SPS and the corresponding explanatory variables.

To investigate H1 of the thesis, which is related to the investigation of the effects of IP on SPS, the following model is estimated:

$$SPS_{jt} = \alpha_0 + \alpha_1 IP_{jt} + \alpha_2 CD_{jt} + \alpha_3 SMD_{jt} + \alpha_4 Year_t + \varepsilon \quad (1)$$

where Com , R^2 and $SYNCH$ are the three SPS measures for country j at times t .¹⁴ $SYNCH$ is the first principal component of Com and R^2 . CD is country development proxied by natural log of per capita GDP ; IP is the investor protection and is the first principal component of the World Bank Governance Indicators; and SMD is stock market development proxied by the natural log of the number of companies in a country; and year is the control variable in

¹⁴ The SPS measure of Com represents the maximum number of companies whose share prices go up or down in a particular year divided by the total number of companies; while R^2 is the coefficient of determination from the market model where biweekly returns of a company is regressed over the local market returns controlled for international market and currency effects, averaged across the whole market. $SYNCH$ is the PCA of the two MY's SPS measures.

the model.¹⁵ If IP helps in the informed arbitrage across countries (MY), then I expect negative coefficients for IP.

Next, I conduct an examination of the trend analysis of SPS measures, to ascertain whether SPS changes over time. I use analysis of variance (ANOVA) to test the means of the SPS measures. ANOVA is used to test the hypothesis that the means among two or more groups are equal, under the assumption that the data is normally distributed (Brooks, 2008). The ANOVA test statistic (F) can be described by the following equation:

$$F = \frac{MST}{MSE} \quad (2)$$

where *MST* represents mean sum of squares due to treatments while *MSE* represents mean sum of squares due to error. Moreover, scatter plots are also used to graphically display the SPS trends.

As additional analysis, I also examine whether the changes in the explanatory variables across time affect SPS. Therefore, for the change in SPS with the changes in *CD*, *IP* and *SMD*, the following model is estimated:

$$\Delta SPS_{jt} = \alpha_0 + \alpha_1 \Delta IP_{jt} + \alpha_2 \Delta CD_{jt} + \alpha_3 \Delta SMD_{jt} + \varepsilon \quad (3)$$

where Δ represents change in the relevant variables.

¹⁵The number of companies represents active, dead and suspended companies in an economy from which the SPS measures are calculated. This number is different from the number of companies with available data in DSI for a particular country in a particular year.

3.2.3 FFI and SPS Stage

In this stage, I investigate the association of SPS with FFI. This investigation is done both at country-level and firm-level. For both country-level and firm-level analyses, I use two distinct proxies of FFI for the purpose of H2. The first set of FFI is from Ashbaugh et al. (2006) and the second set is AAI. Moreover, for the country-level analysis, I also test the complementing effects of IP on the association between FFI and SPS, for the purpose of H3 reported in the conceptual framework.

First, for H2 I conduct an investigation of the association of SPS with FFI at the country-level. For this purpose, the following model is proposed:

$$SPS_{jt} = \alpha_0 + \alpha_1 FFI_{jt} + \alpha_2 IP_{jt} + \alpha_3 SMD_{jt} + \alpha_4 YEAR_t + \varepsilon \quad (4)$$

where *Com*, R^2 and *SYNCH* are the three SPS measures for country *j* at times *t*; FFI represents two distinct proxies of FFI; one set drawn from Ashbaugh et al. (2006), i.e., *LOSS*, *STDROA* and *STDSALES*.. The second proxy for FFI is *AAI*. *IP* is investor protection; and *SMD* is stock market development. The variables *SMD* and *YEAR* are control variables.

Next, I examine the association between SPS and both sets of FFI with the interaction of IP (H3). The following model is estimated:

$$SPS = \alpha_0 + \alpha_1 FFI_{jt} + \alpha_2 IP_{jt} + \alpha_3 FFI * IP_{jt} + \alpha_4 SMD_{jt} + \alpha_5 YEAR_t + \varepsilon \quad (5)$$

where *FFI*IP_{jt}* represents the interaction of *IP* with respective FFI variables of loss, standard deviation of ROA, standard deviation of sales, and accruals (*IP*LOSS*, *IP*STDROA*, *IP*STDSALES*, and *AAI*IP*, respectively) in country *j* at times *t*.

I investigate the association of *SPS* with *FFI* using two different FFI proxies at firm-level (pooled data) across all years for every country. The following model is estimated:

$$SPS_{ijt} = \alpha_0 + \alpha_1 FFI_{ijt} + \alpha_4 TOV_{ijt} + \alpha_5 LnMVE_{ijt} + \alpha_6 IND_{ijt} + \alpha_7 YEAR_t + \varepsilon \quad (6)$$

where Com_{ijt} and R^2_{ijt} are the two SPS measures for firm i in country j at times t ; FFI represent Ashbaugh's et al. (2006) proxies of firm-specific information (*LOSS*, *STDROA*, and *STDSALES*) and my own proxy (*AAI*). Following Ashbaugh et al. (2006), I control for *TOV*, *LnMVE*, *IND*, and *YEAR*. *TOV* is turnover volume (the number of share traded); *LnMVE* is the natural log of market value of equity; *IND* is the industry fixed effect and *YEAR* is the fiscal year fixed effect. *TOV* is included in the model for capturing the level of trading in a firm shares. Since SPS represent FFI (MY), more trading means more information to the market. Moreover, *MVE* is included in the model to control for firm size since larger firms are generally associated with richer information environments, which includes generation of information from information intermediaries such as analysts (Ashbaugh et al., 2006). The industry control variables are from DataStream classification (INDM2) and are roughly equal to the SIC 2-digit code. The industry control variable consists of 11 industry dummies (Basic Materials, Consumer Goods, Consumer Services, Financials, Health, Industries, Oil and Gas, Technologies, Telecommunication, and Utilities) taken on the basis of the US market. If *SPS* serves as a measure of *FFI* impounded in share prices, I expect negative coefficients for both sets of FFI.

Prior research uses *LOSS* as a news event which is reflected in returns (see, e.g., Hayn, 1995; Joos & Plesko, 2005). Both *STDROA* and *STDSALES* are included in the model for capturing the volatility of the firm fundamentals (Leuz et al., 2003; Wei & Zhang, 2006).

Both measures have an effect on returns, which in turn affects SPS. Moreover, volatility of ROA and sales are included in the model due to differences in income smoothing and the potential influence of income smoothing on return-on-assets (Ashbaugh et al., 2006; Leuz et al., 2003). If firms smooth income, then the volatility of ROA and sales is likely to be low. This would be perceived in the market as lower quality accounting information and would result in high SPS.

3.2.4 Computation of Variables

This section describes how the dependent and independent variables are computed. MYY propose two measures for SPS in their seminal work, *Com* and R^2 . First, I report computation of these SPS measures (*Com*, R^2). Next, I propose another measure, a principal component of *Com* and R^2 . This is followed by the definitions of the explanatory and control variables for both IP and SPS, and FFI and SPS stages of the study, respectively. The next sub-section describes the SPS measures in detail and also proposes a new measure based on MYY's measures.

3.2.4.1 Co-movement

The first SPS measure is called co-movement (*Com*). This measure is designed to capture the tendency of company stock prices to move in the same direction. It is also named as a classical synchronicity measure (Khandaker & Heaney, 2008). It is the ratio of co-directional change at a particular period of time:

$$f_j = \frac{1}{T} \sum_t \frac{\max[n_{jt}^{up}, n_{jt}^{down}]}{n_{jt}^{up} + n_{jt}^{down}} \quad (a)$$

where n_{jt}^{up} is the number of stocks in country j whose prices rise in period t , while n_{jt}^{down} is the number of stocks whose prices fall, and T is the number of total periods. The value of Com must lie between 0.5 and 1.0 where 1 means 100% share price movement while 0.5 shows that 50% of the stocks prices move in the same direction in a particular period of time.

3.2.4.2 Market Model R^2

MYY use a modified version of the market model proposed by French and Roll (1986) and Roll (1988) to estimate the relative amount of firm-specific information impounded in stock prices. The simple explanation of this model is that after removing the return effects due to market-wide systematic factors, the remaining return volatility is due to firm-specific events. A low R^2 (coefficient of determination) from such estimation is possibly due to firms' returns capturing unique firm-specific information. It is the most widely used measure in the synchronicity literature. Following MYY, I use the same R^2 model as a second measure of SPS. This measure is as an alternative way of distinguishing firm-specific stock price movements from market-wide price movements:

$$r_{it} = \alpha_i + \alpha_1 r_{mjt} + \alpha_2 [r_{US_t} + e_{jt}] + \varepsilon \quad (b)$$

where i is the firm, j is the country, t a two week time period, r_{mt} is the domestic market index, and r_{US} is the US market return. The rate of change in the exchange rate per US dollar is e_{jt} . When calculating this model for the US, α_2 equals zero. The R^2 coefficient of determination for Equation (b) measures the percent of variation in the biweekly returns of stock i in a country j , explained by variations in country j 's market return and the US

market return. Given this statistic for each firm i in country j , I replicate MYY's measure of R^2 which is defined as:

$$R_j^2 = \frac{\sum_i R_{ij}^2 \times SST_{ij}}{\sum_i SST_{ij}} \quad (c)$$

as the second SPS measure, where SST_{ij} is the sum of squared total variations. Eq. (b) captures the SPS at firm level which is then averaged across all firms in the country sample to calculate a country-level measure. The R^2 measure calculates the correlation of a firm's stock returns with the market return for a specific time period. Lower (higher) R^2 values represent low (high) level of SPS.

3.2.4.3 SYNCH

The SPS measures proposed by MYY, Com and R^2 , are highly correlated. This correlation is statistically significant (Table 9). Moreover, the market model measure of SPS (R^2) is a noisy measure as share prices are affected by many other exogenous variables. To combine the similar underlying properties of both SPS in one measure and to control for noise in R^2 , I use principal component analysis (PCA) to extract a factor from the two SPS measures.¹⁶ The PCA results show that the first principal component (PC1) explains 75%-91% of the variation over the sample period in both SPS measures (Appendix 1). Thus, I use PC1 as my third SPS measure and name it *SYNCH*.¹⁷

¹⁶The principal component analysis (PCA) transforms a number of correlated variables into a number of uncorrelated variables called principal components (PC).

¹⁷ Com represents number of companies whose share prices go up or down together and R^2 represent comovement of share prices with the market. Although, the bivariate correlation suggests a similar underlying construct, yet they represent two different aspects of share price movement. Therefore a PCA has been used to compute a new variable that represents both of these aspects. .

3.2.4.4 Explanatory Variables for the IP and SPS Stage

As reported earlier, I use *IP* drawn from the World Bank Governance Indicators as the explanatory variables for the IP and SPS stage. *IP* represents the investor protection variables of Rule of Law (RoL), Regulatory Quality (RQ), Voice and Accountability (V&A), Control of Corruption (CoC), Government Efficiency (GE), and Political Stability (PS) obtained from the World Bank's Governance indicators. These World Bank governance indicators are constructed using the unobserved components methodology, a statistical methodology for constructing weighted averages from a data set, with weights reflecting the precision of the individual data sources (Kaufmann, Kraay, & Mastruzzi, 2009). Higher values correspond to better governance outcomes. These are survey responses from a large number of enterprises, citizens, experts, survey institutes, think tanks, non-governmental organizations, and international organizations (Kaufmann et al., 2009). These are the only variables available on a time-series basis indicating important criteria for measuring a country's social and economic institutions.¹⁸ Definitions of the constituent variables of *IP* are:

1. **Voice and Accountability (VA)** – measures the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.
2. **Political Stability and Absence of Violence (PV)** – measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including domestic violence and terrorism.

¹⁸ These World Bank governance indicators for the earlier years of 1995, 1997 and 1999 are not available as for the earlier years these indicators are computed on an alternate year basis; therefore, for the missing years I use mean values computed from the available observations.

3. **Government Effectiveness (GE)** – measures the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.
4. **Regulatory Quality (RQ)** – measures the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
5. **Rule of Law (RL)** – measures the extent to which agents have confidence in and abide by the rules of society, in particular, the quality of contract enforcement, the police, and the courts.
6. **Control of Corruption (CC)** – measures the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

The above IP variables range from -2.5 to 2.5 where high scores represent an efficient governance system. These variables are positively and significantly correlated with each other (correlation ranges from 74% to 98% for all years) with a p-value ≤ 0.001 (not reported) in all cases. Moreover, Kaufman et al. (2009, p.5) report that these governance indicators should not be thought of as being independent of one another. Therefore, to remove multicollinearity, I use PCA of these variables to obtain a factor. I use this factor, termed *IP*, as the investor protection variable for the sample period (Appendix 1).

3.2.4.5 Explanatory Variables for the FFI and SPS Stage

I use two distinct sets of FFI variables. The first set of FFI is from the previous literature (Ashbaugh et al., 2006), which are loss (*LOSS*), standard deviation of ROA (*STDROA*), and

standard deviation of sales (*STDSALES*) as the first set of FFI. *LOSS* is a dummy variable of 1 if the company reports a loss, otherwise 0; standard deviation of ROA and standard deviation of sales are the five-year rolling standard deviation of return on assets and sales. The second set of FFI variables has only one variable, i.e., accruals. I use standardized accruals (*AAI*) computed as net income less cashflow from operations. To control for firm size, the total accruals are scaled by total assets. Moreover, to control for variation across the market, this scaled accruals value is then divided by its standard deviation to compute a country-level proxy for each year.

3.2.4.6 Control Variables

For the IP and SPS analysis, I control for country development (*CD*) proxied by the natural log of per capita GDP and stock market development (*SMD*) proxied by the natural log of the number of companies. For the FFI and SPS analysis, the control variables are *SMD* and *YEAR* for the country-level analyses while for the firm-level analysis, I control for *TOV*, *LnMVE*, *IND*, and *YEAR*. *TOV* is turnover volume (the number of share traded) to capture the trading volume; *LnMVE* is the natural log of market value of equity to control for size; *IND* is the industry fixed effect and *YEAR* is the fiscal year fixed effect. Industry fixed effect controls for any industry idiosyncrasies such as industry based regulations or industry concentration. Year fixed effect controls for macro-economic and regulatory changes across years.

Chapter 4 Results-The Impact of IP on SPS

The chapter reports the cross-country comparison of the three SPS measures and presents the results of the first stage of the thesis which is referred to as IP and SPS stage. The chapter is structured as follows: section 4.1 provides descriptive statistics of the variables of interest; bivariate statistics are reported in section 4.2; the cross-country comparison of the SPS measures is presented in section 4.3; section 4.4 analyses trends of SPS measures across time; section 4.5 compares the MYY's 1995 data with data from 2010 and section 4.6 reports the regression results for the IP and SPS stage of the thesis.

4.1 Descriptive Statistics

This section investigates hypothesis 2. It reports descriptive and bivariate statistics for the pooled cross-sectional data followed by multivariate regression analysis. Table 8 reports descriptive statistics for *Com*, R^2 , *SYNCH*, *IP*, *CD*, *LnCD*, *SMD* and *LnSMD*. For *Com*, its mean is equal to its median (0.65) while for R^2 , its mean is 0.18 and its median is 0.16. The skewness and kurtosis of all SPS measures suggest that the data are normally distributed (see Appendix 3). On the other hand, *CD*, *IP* and *SMD* have changed over time, as is evidenced from their respective standard deviations, and this suggests improvements in the economies, stock markets, and IP over the years. Moreover, the standard deviations for *CD* and *SMD* suggest large variations, which is also evident from the minimum and maximum values of these variables. Additionally, skewness and kurtosis for *SMD* suggest that this variable is not normally distributed. Therefore, to cater for outliers of these variables, I use the natural log of *CD* and *SMD* in all the applicable analyses.

Table 6 Descriptive Statistics of SPS, CD, IP and SMD

Table 8 reports descriptive statistics for the dependent and the explanatory variables. *Com*, R^2 and *SYNCH* are the three SPS measures. *IP* is the investor protection and is the first principal component of the World Bank Governance Indicators; *CD* is country development proxied by the natural log of *GDP*; and *SMD* is stock market development proxied by the natural log of the number of companies.

Variable	Mean	Median	StdDev	Min	Max	Skew	Kurt
<i>Com</i>	0.65	0.65	0.05	0.55	0.82	0.73	0.73
R^2	0.18	0.16	0.09	0.03	0.58	1.17	1.90
<i>SYNCH</i>	0.00	-0.23	1.33	-2.43	5.21	0.95	1.13
<i>IP</i>	0.00	0.66	2.29	-5.57	2.99	-0.57	-0.94
<i>CD</i>	19,752	18,935	16,188	391	93,016	0.79	0.54
<i>SMD</i>	1,026	326	2,255	23	15,893	4.93	26.12
<i>LnCD</i>	9.33	9.84	1.27	5.96	11.44	-0.82	-0.36
<i>LnSMD</i>	6.04	5.78	1.19	3.13	9.67	0.67	0.53

4.2 Bivariate Statistics

Table 9 shows correlation coefficients for the pooled cross-sectional data for SPS measures and the explanatory variables of *IP*, *CD*, and *SMD*. The results show a strong negative correlation (p-value ≤ 0.01) between country development and all SPS measures confirming the results of MYY. Results also show that *IP* and *SMD* are negatively and statistically significantly associated (p-value ≤ 0.01) with all SPS measures. *IP* is highly positively correlated with *CD* and this association is statistically significant. This correlation demonstrates that countries with high *CD* have strong *IP*. Moreover, *SMD* is also correlated with *IP* and *CD* but these correlations, though statistically significant, are not high, suggesting that institutional development supports the development of stock markets.¹⁹

¹⁹ VIFs were computed for all regression models. Only in one case where both *IP* and *CD* are used in one model, VIF for *CD* is 6.17. In all other cases the highest value for VIF is 2.45.

Table 7 Bivariate Statistics of SPS, CD, IP and SMD

Table 7 reports bivariate statistics for the dependent and the explanatory variables. *Com*, R^2 and *SYNCH* are the three SPS measures; *IP* is the investor protection and is the first principal component of the World Bank Governance Indicators; *CD* is country development proxied by the natural log of *GDP* while *SMD* is stock market development proxied by the natural log of the number of companies. The first row for each variable is the correlation coefficient while the second row represents their respective p-value given in italics.

Variables	<i>Com</i>	R^2	<i>Synch</i>	<i>IP</i>	<i>CD</i>	<i>SMD</i>	<i>LnCD</i>
R^2	0.80						
	<i>0.000</i>						
<i>Synch</i>	0.90	0.87					
	<i>0.000</i>	<i>0.000</i>					
<i>IP</i>	-0.43	-0.36	-0.44				
	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>				
<i>CD</i>	-0.32	-0.24	-0.37	0.78			
	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>			
<i>SMD</i>	-0.21	-0.20	-0.24	0.15	0.25		
	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>		
<i>LnCD</i>	-0.35	-0.25	-0.36	0.89	0.87	0.20	
	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	
<i>LnSMD</i>	-0.13	-0.15	-0.17	0.11	0.18	0.73	0.14
	<i>0.001</i>	<i>0.000</i>	<i>0.000</i>	<i>0.004</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>

4.3 Cross-Country Comparison of SPS

This section reports the three SPS measures' means and medians for the sample countries over the sample period. Since the means and medians are reasonably similar, it can be construed that SPS is normally distributed within countries (Appendix 3 for details). I rank countries on the basis of average SPS measures. I use the two SPS measures from MYY. These measures are highly correlated, and the correlations are statistically significant (Table 7). The market model measure of SPS (R^2) is a noisy measure, as share prices are affected by many other exogenous variables. To combine the similar underlying properties of both SPS measures and also to cater to any transitory noise in R^2 measure of SPS, I use PCA to extract a factor from the two SPS measures. The PCA results show that the first principal component (PC1) explains 75%-91% of the variation over the sample period in both SPS measures (Appendix 1).

Table 8 Ranking of Countries on the basis of Average SPS

Table 8 ranks countries on the basis of SPS measures. Panels A, B and C are the rankings of the countries based on the 16 years' average SPS measures of *Com*, R^2 and *SYNCH*, respectively. Rankings show almost the same trend in developed countries with low SPS, while developing economies show high SPS.

Panel A: <i>Com</i>			Panel B: R^2			Panel C: <i>SYNCH</i>		
Country	Mean	Median	Country	Mean	Median	Country	Mean	Median
Canada	0.59	0.58	US	0.08	0.08	Canada	-1.76	-1.82
US	0.59	0.59	Canada	0.10	0.09	US	-1.73	-1.71
Australia	0.60	0.59	Australia	0.10	0.09	Australia	-1.59	-1.67
Germany	0.60	0.60	New Zealand	0.10	0.10	Germany	-1.45	-1.46
Austria	0.60	0.61	France	0.11	0.10	France	-1.34	-1.41
France	0.61	0.60	UK	0.11	0.11	UK	-1.29	-1.26
UK	0.61	0.60	Germany	0.12	0.11	New Zealand	-1.06	-1.13
Belgium	0.61	0.61	South Africa	0.13	0.13	Belgium	-1.00	-1.00
South Africa	0.62	0.62	Ireland	0.13	0.12	Austria	-0.96	-0.80
Denmark	0.63	0.63	Belgium	0.14	0.14	South Africa	-0.93	-1.01
New Zealand	0.63	0.62	Denmark	0.15	0.14	Denmark	-0.62	-0.68
Brazil	0.63	0.63	Singapore	0.15	0.14	Ireland	-0.62	-0.65
Czech Rep.	0.63	0.65	Austria	0.15	0.14	Brazil	-0.45	-0.44
Norway	0.64	0.63	Hong Kong	0.16	0.17	Czech Rep.	-0.30	-0.32
Portugal	0.64	0.63	Brazil	0.16	0.16	Norway	-0.28	-0.28
Ireland	0.64	0.63	Philippines	0.17	0.16	Sweden	-0.27	-0.31
Sweden	0.64	0.64	Sweden	0.17	0.16	Portugal	-0.20	-0.35
Holland	0.64	0.65	Czech Rep.	0.17	0.12	Hong Kong	-0.20	0.08
Chile	0.64	0.64	Norway	0.17	0.17	Chile	-0.09	-0.12
Peru	0.65	0.64	Indonesia	0.18	0.18	Peru	-0.08	-0.23
Finland	0.65	0.66	Portugal	0.18	0.17	Philippines	-0.02	0.04
Hong Kong	0.66	0.66	Peru	0.18	0.16	Indonesia	0.01	-0.22
Indonesia	0.66	0.66	Finland	0.18	0.17	Holland	0.01	0.02
Philippines	0.66	0.66	Chile	0.18	0.16	Finland	0.07	0.12
Pakistan	0.66	0.65	Pakistan	0.19	0.17	Pakistan	0.21	0.17
Mexico	0.66	0.66	Holland	0.19	0.20	Singapore	0.30	0.34
Japan	0.67	0.66	South Korea	0.20	0.19	South Korea	0.36	0.22
South Korea	0.67	0.67	Italy	0.20	0.20	Poland	0.47	-0.23
Thailand	0.67	0.67	Japan	0.20	0.21	Japan	0.47	0.20
Poland	0.67	0.66	Poland	0.21	0.19	Italy	0.49	0.37
Italy	0.67	0.66	India	0.22	0.21	Mexico	0.50	0.60
Spain	0.67	0.67	Mexico	0.22	0.21	Thailand	0.68	0.65
Colombia	0.67	0.68	Spain	0.23	0.25	Spain	0.82	0.86
India	0.69	0.68	Thailand	0.23	0.23	Colombia	0.83	0.81
Singapore	0.69	0.69	Colombia	0.23	0.20	India	0.95	0.55
Taiwan	0.71	0.70	Malaysia	0.25	0.23	Malaysia	1.44	1.29
Greece	0.71	0.69	Greece	0.25	0.24	Greece	1.48	0.95
Malaysia	0.72	0.71	Taiwan	0.30	0.28	Taiwan	1.80	1.82
Turkey	0.75	0.74	China	0.31	0.33	Turkey	2.60	2.63
China	0.76	0.76	Turkey	0.32	0.30	China	2.76	3.22
Correlation between <i>Com</i> and R^2			$r = 0.907$ (p-value ≤ 0.000)					

Thus, I use PC1 as my third SPS measure and name it *SYNCH*. Table 8, panels A, B and C rank countries on the basis of *Com*, R^2 and *SYNCH*, respectively. It is observed that developed economies such as Canada (58.4%), US (59.4%), Germany (59.6%) and Australia (59.8%) show the lowest average *Com*. On the other hand, developing economies such as China (75.5%), Turkey (74.6%), and Malaysia (71.6%) show the highest average *Com* during the sample period. The same pattern is noted for R^2 and *SYNCH*.

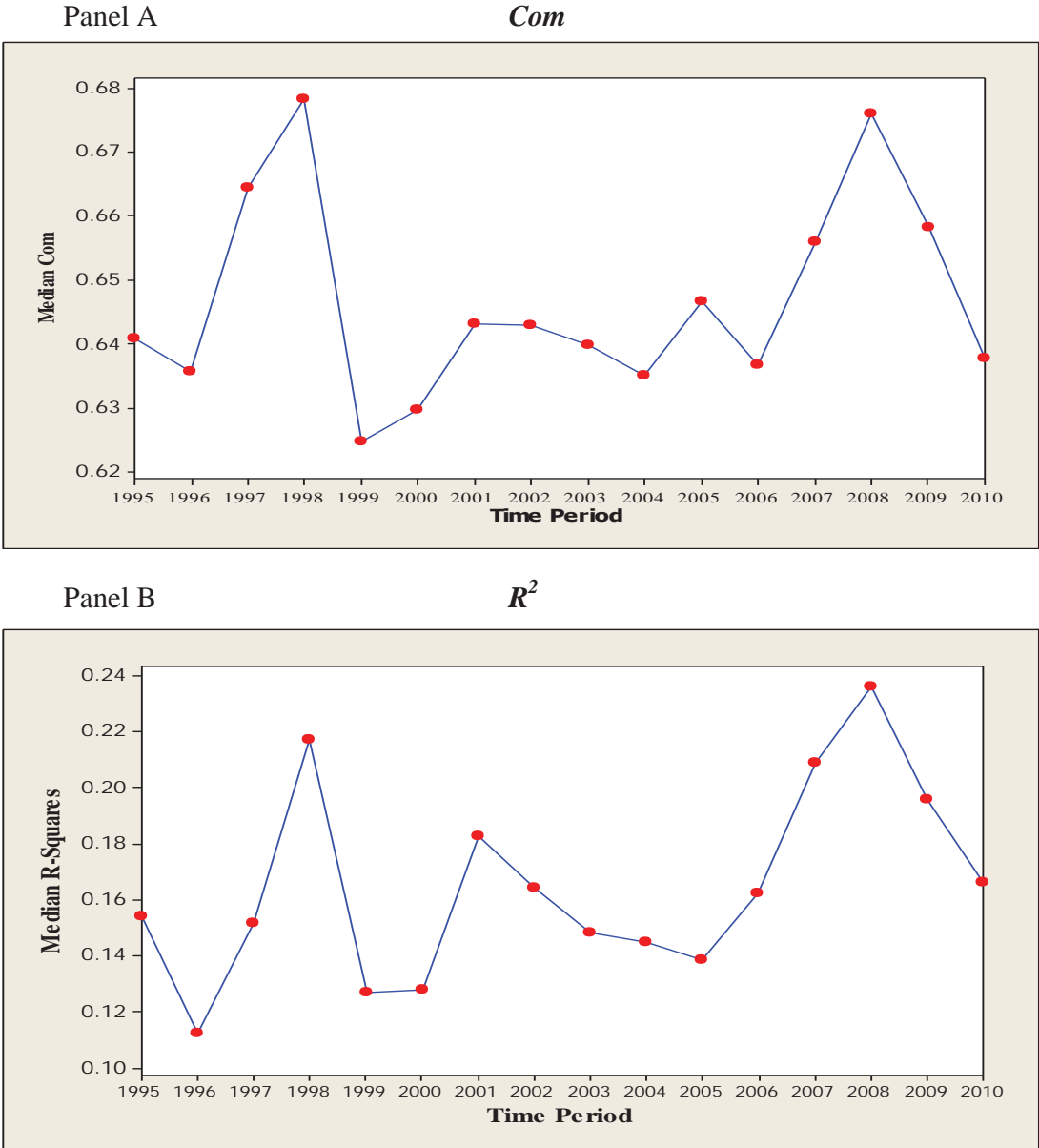
In summary, the ranking of the countries shows that developed countries have low SPS while developing countries have high levels of SPS on the basis of all three SPS measures. This pattern and rankings are similar to MYY's conclusions. I also compute correlations between SPS measures (*Com* and R^2). As expected, I find a highly significant correlation (0.909 with p-value ≤ 0.000). This correlation confirms the above conclusion that both SPS measures represent a similar underlying construct.

4.4 SPS Trends

Figure 3, Panels A and B display scatter plots of the medians of the SPS measures (*Com* and R^2) against the sample period (1995-2010). I observe that SPS is high during the crises years of 1998, 2001 and 2008. However, in 2001, SPS is not as high as in 1998 and 2008, which may be due to crises in only one country, i.e., the US. The major effects are noted in the AFC (1997-98) and the Global Financial Crisis (GFC) (2007-08). These results are consistent with Li et al. (2003) who document that SPS increases during financial crises. However, they argue that an immediate increase in FFI leads to a decrease in SPS. This, they believe, is due to the restructuring measures taken in the shape of institutional reforms (IP arrangement). Consistent with this view, Johnson et al. (2000) argue that weak legal institutions for IP have adverse effects on stock markets, and find evidence that lack of

shareholders' rights enforcement is associated with market failures. Expropriation and low returns on investment trigger adverse shocks to investors' confidence (Johnson et al., 2000). This leads to more expropriation and a fall in capital inflow, or an increase in capital outflow, translating into lower stock prices and market failures, resulting in high SPS.

Fig 3 Scatterplot of SPS against Time



Panel A and Panel B show the scatter plots of the medians of *Com* and R^2 against the time period. X-axis reports time period while Y-axis plots median SPS values (*Com* and R^2) for each year.

4.5 Comparison of 1995 and 2010 data for the CD, IP, SMD, and SPS

This section compares the MYY 1995 data with that of 2010 for the variables of interest. For comparison purposes, I follow MYY in computing SPS measures, averaging *GDP* for three years to control for any transitory noise and change over time. Table 9 provides comparison of 1995 data with 2010 data. Panel A is for 1995 data and Panel B displays 2010 data, respectively. I use MYY's 1995 data for *Com*, R^2 , *CD* and *SMD*. However the IP data for 1995 is taken from the World Bank Governance indicators for the purpose of comparison since MYY's IP data is not available on a time series basis. I use the World Bank Governance Indicators from 1995-2010 for consistency. Each panel comprises five columns representing *Com*, R^2 , *CD*, *IP* and *SMD* for all the countries. I observe a considerable decrease in the 2010 SPS measures in comparison to 1995. Similarly, the table shows a considerable increase in *CD* and *SMD*, showing marked improvements in the economies of the countries. The lack of improvement in the *IP* may be explained by the nature of the IP variables, as these are not ratio scale variables. The IP systems of most countries have improved and little change in the rankings has taken place.

I perform paired t-tests and Mann Whitney U-tests to compare 1995 data with 2010 data. The t-tests are performed to test for significant changes in SPS across all countries while Mann Whitney U-tests determine whether rankings of the countries, based on their SPS, have changed over time. I find significant results for *Com*, *CD* and *SMD* on both t-tests and Mann-Whitney U test. Put together, the results of the t-tests and the Mann Whitney U-tests indicate that countries' SPS measures have significantly reduced, on average, across the sample, while *CD* and *SMD* have significantly improved.

Table 9 Comparison of 1995 and 2010 Data for SPS, CD, IP and SMD

Panel A is for 1995 and Panel B is for 2010. *Com* and R^2 are the two SPS measures. *CD* is country development (*CD*) proxied per capita *GDP*; *IP* is the investor protection and is the first principal component of the World Bank Governance Indicators; and *SMD* is the stock market development (*SMD*) proxied by the number of companies in each country.

Country	Panel A: 1995					Panel B: 2010				
	<i>Com</i>	R^2	<i>CD</i>	<i>IP</i>	<i>SMD</i>	<i>Com</i>	R^2	<i>CD</i>	<i>IP</i>	<i>SMD</i>
Australia	61.4	0.06	17,327	1.57	654	60.8	0.13	49,844	2.19	3,863
Austria	66.2	0.09	23,861	2.37	139	62.3	0.17	46,883	2.28	357
Belgium	65.0	0.15	21,590	1.58	283	60.8	0.14	44,507	1.47	896
Brazil	64.7	0.16	3,134	-2.71	398	62.7	0.16	9,302	-2.33	1,329
Canada	58.3	0.06	19,149	2.10	815	59.4	0.11	43,735	2.27	12,943
Chile	66.9	0.21	3,361	0.88	190	62.3	0.13	10,499	1.03	372
China	80.0	0.45	455	-3.50	323	74.2	0.42	3,842	-3.79	2,028
Colombia	72.3	0.21	1,510	-3.33	48	68.4	0.17	5,623	-3.79	276
Czech Rep.	69.1	0.19	3,072	0.23	87	66.2	0.28	19,088	0.15	330
Denmark	63.1	0.08	27,174	2.57	264	61.3	0.14	58,132	2.82	489
Finland	68.9	0.14	18,770	2.53	104	67.7	0.24	46,963	2.91	320
France	59.2	0.08	23,156	1.18	982	59.9	0.04	42,782	1.21	2,719
Germany	61.1	0.11	24,343	2.19	1,232	55.8	0.09	41,704	1.97	1,415
Greece	69.7	0.19	7,332	-0.17	248	69.8	0.17	29,316	-0.16	557
Holland	64.7	0.10	20,952	2.58	100	66.0	0.22	49,452	2.53	785
Hong Kong	67.8	0.15	19,930	0.50	502	65.8	0.19	30,621	1.28	1,575
India	69.5	0.19	302	-2.95	467	67.6	0.21	1,176	-2.87	3,117
Indonesia	67.1	0.14	735	-3.41	218	62.9	0.14	2,513	-4.23	551
Ireland	65.7	0.06	14,186	1.82	70	61.9	0.17	52,120	2.03	199
Italy	66.6	0.18	18,770	-0.02	312	65.3	0.31	36,003	-0.20	828
Japan	66.6	0.23	33,190	0.21	2,276	67.3	0.24	40,152	0.83	5,174
Malaysia	75.4	0.43	3,328	-0.86	362	62.9	0.09	7,810	-1.24	1,216
Mexico	71.2	0.29	3,944	-2.85	187	64.1	0.11	9,317	-2.46	625
N. Zealand	64.6	0.06	12,965	2.95	137	64.1	0.12	30,077	2.62	491
Norway	66.6	0.12	25,336	2.53	138	62.8	0.18	84,567	2.42	695
Pakistan	66.1	0.18	424	-4.81	120	64.1	0.17	1,003	-5.15	477
Peru	70.5	0.29	1,920	-3.27	81	69.5	0.24	4,664	-3.22	472
Philippines	68.8	0.16	880	-2.33	171	62.0	0.15	1,956	-3.24	385
Poland	82.9	0.57	2,322	-0.11	45	63.5	0.16	12,502	-0.40	753
Portugal	61.2	0.07	9,045	1.35	90	69.8	0.26	22,492	0.99	279
Singapore	67.2	0.20	2,864	1.81	93	66.8	0.17	39,067	1.86	1,252
S. Africa	70.3	0.17	7,555	-2.33	461	60.4	0.11	6,217	-1.36	443
S. Korea	69.7	0.19	20,131	-0.91	381	61.4	0.13	19,009	-0.46	2,827
Spain	67.0	0.19	12,965	0.82	144	67.3	0.33	32,678	0.82	457
Sweden	66.1	0.14	23,861	2.38	264	61.5	0.15	48,439	2.58	1,605
Taiwan	76.3	0.41	10,698	0.12	353	69.5	0.27	17,419	0.07	1,324
Thailand	67.4	0.27	2,186	-1.56	368	64.8	0.15	4,481	-2.21	1,272
Turkey	74.4	0.39	2,618	-3.34	188	69.8	0.22	9,832	-2.75	437
UK	63.1	0.06	17,154	2.27	1,628	59.1	0.11	38,377	2.00	8,945
US	57.9	0.02	24,343	1.92	7,241	60.5	0.08	46,370	1.53	40,788
Mean	67.5	0.19	12,170	0.00	554.1	64.3	0.18	27,513	0.00	2622
Median	67.0	0.17	11,831	0.36	256	64.0	0.17	29,697	0.82	769
Paired t-test (vs 1995)	(p-values)					0.003	0.685	0.000	-	0.060
Mann Whitney U test (vs 1995)	(p-values)					0.004	0.851	0.000	0.95	0.000
Correlation (Log of GDP)	Com95	-0.55***	R²95	-0.45**		Com10	-0.30*		R²10	-0.11

These results confirm that there are marked improvements for SPS, country development and institutional and regulatory environments. However, the important question is whether variations in SPS are due to the variations in the IP and country development. Thus, I examine the association of SPS with the explanatory variables of *CD*, *IP* and *SMD* using pooled cross-sectional data. The next section reports these multivariate results.

4.6 Results

This section reports the multivariate analyses' results for the IP and SPS stage of the thesis. The section is structured as follows: sub-section 4.4.1 provides regression results of the association of SPS with CD, IP and SMD; sub-sections 4.4.2 displays year-by-year regression results; analysis for the change in SPS and the change in CD, IP and SMD are presented in sub-section 4.4.3, and the last sub-section reports additional analysis.

4.6.1 Regression Results

MYY examine the association of *CD* and *IP* with SPS measures on a cross-sectional basis for 1995, and find *CD* to be a determinant of SPS. However, when they include *IP* in their model, the association of *CD* with SPS turns positive and not significant, and *IP* takes over as the main determinant of SPS. They do not explain this positive association of *CD* with SPS. However, their results could be driven by the positive association of *CD* with *IP*, and *IP* most likely is a broader variable encompassing both country development and development of regulatory institutions.²⁰

I estimate Model 1 for *Com*, R^2 , and *SYNCH* with the independent variables *CD*, *IP*, and *SMD* to examine the association using pooled cross-sectional data over the sample period.

²⁰ They report a positive correlation of GDP with the institutional variables of Good Government Index, Anti-director rights index and Accounting standards index (MY Y, p. 236).

Table 10 reports these results. The model yields a negative association for all SPS measures (*Com*, R^2 , and *SYNCH*) with *IP* (p-value ≤ 0.01) and *SMD* (p-value ≤ 0.05) but the association of *CD* with all SPS measures is positive yet significant only for R^2 (p-value ≤ 0.01) and *SYNCH* (p-value ≤ 0.05).²¹ These results suggest that countries with strong *IP* arrangements and with large capital markets have low SPS. Moreover, these results are consistent with the previous literature that countries with strong *IP* have large and efficient capital markets (e.g., Black, 2001; Levine, 1997). Moreover, the results for the years are inconsistent and show varying relations with SPS. The time effect is negative in some cases while positive in others. Specifically, the results for financial crises years are positive and statistically significant (p-value ≤ 0.07) suggesting that countries face high levels of SPS during financial crises.

The results for *CD* are opposite to its expected negative direction. These results (Table 10) are similar to *MY* and could be driven by the multicollinearity between *CD* and *IP* (Table 9). However, when I omit *CD* from the model, the results of *IP* and *SMD* become stronger (p-value ≤ 0.01). The stronger results for the reduced model are confirmed using the F test statistic (Table 10, last row).²² Table 10, last row displays the results for comparison. The analyses yield highly significant results for all SPS measures confirming the stronger results for the reduced model and that the weak results for the full model are driven by the multicollinearity between *CD* and *IP*.

²¹ I also use other proxies for *SMD* such as natural log of Market Capitalization (Mkt Cap), ratio of Mkt Cap to GDP. However, results are not significant for both of these measures.

²² I refer to the regression model of SPS with *CD*, *IP* and *SMD* in the ‘full model’ and the regression model of SPS with only *IP* and *SMD* in the ‘reduced model’.

Table 10 Regression results of SPS with CD, IP and SMD

Table 10 reports results for Model 1. *Com*, R^2 and *SYNCH* are the three SPS measures; *CD* is country development proxied by the natural log of per capita *GDP*; *IP* is the first principal component of the World Bank Governance Indicators and *SMD* is stock market development proxied by the natural log of the number of companies. The first value is the coefficient while the second value represents the p-value given in italics of the respective variable. F is the f-statistics showing significance and Adj R^2 is the explanatory power of the regression model. Last row compares full and reduced model using f statistics displaying respective p-value.

Variables	<i>Com</i>	R^2	<i>SYNCH</i>	<i>Com</i>	R^2	<i>SYNCH</i>
Intercept	0.614 <i>0.000</i>	0.071 <i>0.218</i>	-1.420 <i>0.127</i>	0.663 <i>0.000</i>	0.230 <i>0.000</i>	0.798 <i>0.010</i>
<i>CD</i>	0.005 <i>0.115</i>	0.017 <i>0.003</i>	0.231 <i>0.012</i>			
<i>IP</i>	-0.012 <i>0.000</i>	-0.021 <i>0.000</i>	-0.362 <i>0.000</i>	-0.008 <i>0.000</i>	-0.013 <i>0.000</i>	-0.247 <i>0.000</i>
<i>SMD</i>	-0.004 <i>0.014</i>	-0.009 <i>0.000</i>	-0.140 <i>0.001</i>	-0.003 <i>0.019</i>	-0.008 <i>0.000</i>	-0.131 <i>0.001</i>
1996	-0.003 <i>0.725</i>	-0.034 <i>0.043</i>	0.127 <i>0.640</i>	-0.006 <i>0.475</i>	-0.045 <i>0.006</i>	-0.024 <i>0.928</i>
1997	0.016 <i>0.096</i>	-0.000 <i>0.999</i>	0.142 <i>0.601</i>	0.012 <i>0.180</i>	-0.011 <i>0.495</i>	-0.013 <i>0.958</i>
1998	0.035 <i>0.000</i>	0.051 <i>0.002</i>	0.165 <i>0.546</i>	0.031 <i>0.001</i>	0.039 <i>0.018</i>	-0.006 <i>0.980</i>
1999	0.000 <i>0.958</i>	-0.018 <i>0.280</i>	0.162 <i>0.553</i>	-0.003 <i>0.732</i>	-0.030 <i>0.066</i>	-0.005 <i>0.982</i>
2000	0.005 <i>0.613</i>	-0.012 <i>0.448</i>	0.166 <i>0.544</i>	0.001 <i>0.899</i>	-0.025 <i>0.132</i>	-0.002 <i>0.993</i>
2001	0.013 <i>0.181</i>	0.035 <i>0.036</i>	0.173 <i>0.528</i>	0.009 <i>0.332</i>	0.023 <i>0.165</i>	-0.001 <i>0.995</i>
2002	0.007 <i>0.437</i>	0.010 <i>0.527</i>	0.156 <i>0.567</i>	0.004 <i>0.673</i>	-0.000 <i>0.957</i>	-0.004 <i>0.988</i>
2003	0.008 <i>0.360</i>	-0.000 <i>0.994</i>	0.120 <i>0.657</i>	0.006 <i>0.527</i>	-0.009 <i>0.575</i>	-0.006 <i>0.979</i>
2004	0.001 <i>0.842</i>	-0.011 <i>0.507</i>	0.088 <i>0.741</i>	-0.000 <i>0.981</i>	-0.017 <i>0.280</i>	-0.006 <i>0.980</i>
2005	0.002 <i>0.772</i>	-0.021 <i>0.204</i>	0.069 <i>0.794</i>	0.001 <i>0.906</i>	-0.026 <i>0.112</i>	-0.004 <i>0.988</i>
2006	-0.001 <i>0.866</i>	-0.001 <i>0.917</i>	0.051 <i>0.846</i>	-0.003 <i>0.768</i>	-0.005 <i>0.735</i>	-0.002 <i>0.993</i>
2007	0.016 <i>0.087</i>	0.027 <i>0.094</i>	0.023 <i>0.928</i>	0.015 <i>0.097</i>	0.026 <i>0.117</i>	0.002 <i>0.992</i>
2008	0.043 <i>0.000</i>	0.074 <i>0.000</i>	0.007 <i>0.978</i>	0.043 <i>0.000</i>	0.074 <i>0.000</i>	0.004 <i>0.986</i>
2009	0.019 <i>0.047</i>	0.045 <i>0.006</i>	0.023 <i>0.930</i>	0.018 <i>0.053</i>	0.043 <i>0.008</i>	0.001 <i>0.996</i>
2010	-0.018 <i>0.056</i>	-0.016 <i>0.333</i>	-0.129 <i>0.635</i>	-0.015 <i>0.113</i>	-0.005 <i>0.775</i>	0.032 <i>0.904</i>
F-Stat.	12.33	13.33	9.53	12.87	13.44	9.63
Adj R^2	24.2%	25.8%	19.4%	24.0%	24.9%	18.7%
Comparison of Full and Reduced Model (p-values)			<i>Com</i> = 0.00	R^2 = 0.00		<i>SYNCH</i> = 0.00

As reported above, the results for the fixed year effects vary for each year. Specifically the association of SPS with the financial crises years (1998 & 2008) is positive and statistically significant. These results suggest a further investigation into the time effect of SPS. Further, the cluster plot analysis (Figure 3) indicate that time is an important factor in determining SPS, suggesting further investigation of SPS on a continuous time series basis. Therefore, I investigate the association of SPS with *IP* and *SMD* using year-by-year cross-sectional data to determine which of the independent variables causes the time variation in SPS. Noteworthy here is that since *CD* and *IP* are highly correlated, I exclude *CD* in the subsequent models estimation. Similarly, *MY*'s SPS measures are highly correlated (Table 9), therefore for the year-by-year cross-sectional data analysis; I use only *SYNCH* as the dependent variable.

4.6.2 Regression Results for Year-by Year Cross-Sectional Data

Table 11 reports results for Model 1 for *SYNCH* with *IP* and *SMD*. I find a strong and consistent negative association of *IP* with *SYNCH* (p-value ≤ 0.05) for most of the years. *SMD* is only significant for 1997 (p-value ≤ 0.05) and 1998 (p-value ≤ 0.05). In unreported tests, I find similar results for *Com* and R^2 with *IP* and *SMD*. The results for *IP* are consistent with the extant literature findings that investors face expropriation and low returns in countries with weak *IP*, triggering further shocks to investors. This leads to a fall in capital inflow or an increase in capital outflow (Johnson et al., 2000), resulting in high SPS. The results for *SMD* are inconsistent with the earlier results for the pooled cross-sectional data, since the year-by-year cross-sectional results show that the association of *SMD* with *SYNCH* varies from one year to another.

Table 11 Year-by-Year Regression Results of SYNCH with IP and SMD

Table 11 reports results for *SYNCH* with the explanatory variables of *IP* and *SMD*. *IP* is the first principal component of the World Bank Governance Indicators and *SMD* is stock market development proxied by the natural log of the number of companies. The first value is the coefficient while the second value represents the p-value given in italics of the respective variable. F is the f-statistics showing significance and Adj R² is the explanatory power of the regression model.

Years	Intercept	<i>IP</i>	<i>SMD</i>	F	Adj R²
1995	1.500 <i>0.131</i>	-0.322 <i>0.000</i>	-0.258 <i>0.125</i>	10.12	31.8%
1996	0.994 <i>0.317</i>	-0.307 <i>0.000</i>	-0.168 <i>0.309</i>	8.44	27.6%
1997	1.942 <i>0.060</i>	-0.204 <i>0.012</i>	-0.325 <i>0.057</i>	6.06	30.6%
1998	2.479 <i>0.027</i>	-0.106 <i>0.204</i>	-0.411 <i>0.024</i>	4.05	13.5%
1999	0.514 <i>0.623</i>	-0.280 <i>0.001</i>	-0.085 <i>0.618</i>	6.79	22.8%
2000	0.198 <i>0.855</i>	-0.287 <i>0.001</i>	-0.032 <i>0.852</i>	6.23	21.1%
2001	-0.134 <i>0.905</i>	-0.207 <i>0.024</i>	-0.022 <i>0.904</i>	2.76	8.3%
2002	-0.170 <i>0.874</i>	-0.224 <i>0.015</i>	0.028 <i>0.871</i>	3.23	10.3%
2003	-0.021 <i>0.984</i>	-0.247 <i>0.007</i>	-0.003 <i>0.984</i>	4.08	13.6%
2004	-0.386 <i>0.692</i>	-0.303 <i>0.000</i>	-0.063 <i>0.687</i>	6.77	22.8%
2005	0.837 <i>0.362</i>	-0.324 <i>0.000</i>	-0.138 <i>0.352</i>	9.60	30.6%
2006	1.426 <i>0.128</i>	-0.275 <i>0.001</i>	-0.234 <i>0.120</i>	7.66	25.5%
2007	0.989 <i>0.309</i>	-0.266 <i>0.004</i>	-0.162 <i>0.299</i>	5.69	19.4%
2008	0.223 <i>0.815</i>	-0.260 <i>0.004</i>	-0.036 <i>0.811</i>	4.67	15.8%
2009	1.006 <i>0.310</i>	-0.187 <i>0.040</i>	-0.165 <i>0.299</i>	2.93	9.0%
2010	1.379 <i>0.153</i>	-0.161 <i>0.070</i>	-0.226 <i>0.144</i>	3.01	9.3%

The regression results for SPS with *CD*, *IP* and *SMD* are consistent with MYY. The institutional variables may have contributed differently across countries and time depending on their political, economic and social circumstances, for example, the accession of Austria, Finland and Sweden into the EU in 1995; Poland's political shift from communism to democracy, its economic shift from a centrally planned economic system to a capitalist system, and joining the EU in 2004. On the other hand, China's appetite for growth led to a

shift towards the market system, though still retaining the communist political system. Malaysia overcame the hurdles of the AFC through major improvements in their market institutions and CG arrangements. On a lesser scale of change, Australia has mainly made improvements in the form of harmonizing its accounting standards with those of IFRS through the adoption of CLERP 9 recommendations, and the US has improved its regulatory processes through the adoption of SOX.

Such improvements occur over time and are difficult to measure in a quantifiable index. Thus, it is difficult to directly test their effects on SPS in a given year. Consistent with these arguments that change in macroeconomic environments affect SPS, Li et al. (2003) report that after the Canadian trade agreement with the US in the early 1990s, the Canadian market showed a decrease in SPS. Similar results are reported for the East Asian economies. Therefore, to investigate the effects of different stages of the IP improvements on SPS during different time periods, I divide the full sample period (1995-2010) into three different time segments, 1995-2000, 1995-2005 and 1995-2010.²³ The next section reports the results.

4.6.3 Analysis for the Change in IP and the Change in SPS

The results for the pooled cross-sectional and year-by-year cross-sectional data show that the variation in SPS is due to variations in *IP* and *SMD*. However, from these results it is unclear whether the changes in *CD*, *IP* and *SMD* bring about a corresponding change in SPS, i.e., the question is whether the change in SPS can be attributed to the changes in the IP of the countries. Therefore, this section investigates the association of the change in SPS

²³ Other time-segments have also been investigated such as from 1995-1999, 1998-2005, 1998-2010 and 2001-2005 and from 2001-2010 based on Figure 2, to investigate whether the change in SPS can be specifically related to the change in these explanatory variables, but no conclusive results are found.

and the change in *CD*, *IP* and *SMD*.²⁴ First, I report descriptive statistics of the changes in the dependent and independent variables. Then, I provide bivariate analysis followed by regression analysis of the change in SPS and the change in *CD*, *IP* and *SMD*.

4.6.3.1 Descriptive and Bivariate Statistics for the Change Variables

Table 12, Panels A, B, and C report descriptive statistics for change in the SPS measures, and the change in *CD*, *IP* and *SMD*. Panel A is for 1995-2000, Panel B, for 1995-2005 and Panel C reports descriptives for 1995-2010, respectively. These time segments cover short, medium and long term effects of macroeconomic and institutional developments in the sample countries in response to the AFC (1998), the Dotcom bubble (2001) and the GFC (2008). The table shows that on average, there is a decrease in SPS for all countries. The mean *Com* in Panel A is -3.08; Panel B -4.37; and Panel C -3.22; showing an average decrease in *Com*. Similar patterns are reported for R^2 and *SYNCH*. As expected, the positive means and medians of *CD* and *SMD* show improvements in stock markets and countries' economies.

In summary, I observe a decrease in SPS for all the time-segments in comparison to the SPS in 1995, while an increase in countries' economies along with improvements in capital markets is noted. However, by comparing the time-segments data, it is observed that SPS decreases consistently until 2005 but increases during the last time-segment (1995-2010) in comparison to the second time-segment (1995-2005). These results are also consistent with the scatter plot (Figure 3), which shows that SPS is high during financial crisis years.

²⁴ Change in the relevant variable is calculated as (year of interest-1995). In this case for the three sub-periods' sample data sets, the change is computed as 2000-1995, 2005-1995 and 2010-1995.

After the AFC, a consistent decrease in SPS is noted until 2005; however after 2005, it starts increasing and reaches a high level due to the GFC. A potential reason for the decrease in SPS till 2005 could be that most of the institutional reforms took place during the decade of 1995-2005.

Table 12 Descriptive Statistics for the Change in SPS and the Change in CD, IP and SMD for the Sample Time-Segments

Table 12 reports descriptive statistics for the change in the dependent and the explanatory variables. SPS measures are *Com*, R^2 and *SYNCH* while the explanatory variables are country development (*CD*) proxied by the natural log of three years average per capita *GDP*; *IP* is the investor protection and is the first principal component of the World Bank Governance Indicators; *SMD* is stock market development and is represented by the natural log of the number of companies; and Δ represents change in the respective variables and is computed as (1995-2000, 1995-2005 and 1995-2010).²⁵

Panel A		1995-2000					
Variable	Mean	Med	StDev	Min	Max	Skew	Kurt
ΔCom	-3.08	-2.54	5.16	-19.95	12.55	-0.24	3.48
ΔR^2	-0.03	-0.01	0.11	-0.44	0.18	-2.10	7.10
$\Delta SYNCH$	0.00	0.09	1.24	-3.82	4.33	-0.08	5.66
ΔCD	-0.03	-0.04	0.21	-0.35	0.62	1.00	1.46
ΔIP	0.00	0.04	0.45	-1.13	0.84	-0.51	0.29
ΔSMD	0.23	0.20	0.46	-0.79	1.97	1.17	4.71
Panel B		1995-2005					
ΔCom	-4.37	-3.98	4.63	-20.96	1.30	-1.60	3.88
ΔR^2	-0.07	-0.05	0.11	-0.47	0.07	-1.71	4.12
$\Delta SYNCH$	0.00	0.05	1.20	-4.11	2.11	-0.90	2.20
ΔCD	0.38	0.37	0.27	-0.16	1.05	0.39	-0.12
ΔIP	0.00	-0.01	0.54	-0.98	1.32	0.74	0.46
ΔSMD	0.22	0.26	0.65	-1.74	2.20	0.23	2.89
Panel C		1995-2010					
ΔCom	-3.22	-2.75	4.51	-19.40	8.63	-0.99	4.16
ΔR^2	-0.01	0.00	0.12	-0.41	0.19	-1.48	3.35
$\Delta SYNCH$	0.00	0.22	1.43	-3.78	3.03	-0.44	1.12
ΔCD	0.71	0.64	0.34	0.01	1.98	1.39	4.36
ΔIP	0.00	-0.02	0.41	-0.93	0.97	0.14	0.09
ΔSMD	0.25	0.16	0.84	-2.53	2.71	-0.10	3.41

²⁵ The values of *Com* are reported in %.

Table 13 Correlations for the Change in SPS, and the Change in CD, IP, and SMD

Table 13 reports correlation coefficients for the change variables. SPS measures are *Com*, R^2 and *SYNCH* while the explanatory variables are *CD*, *IP* and *SMD*. *CD* is country development proxied by the natural log of three years average per capita *GDP*; *IP* is the investor protection and is the first principal component of the World Bank Governance Indicators; and *SMD* is stock market development and is represented by the natural log of the number of companies. The first row represents correlation coefficients while the second row displays the respective probability values in italics; Δ represents change and is computed as (2000-1995, 2005-1995 and 2010-1995).

Variables	Panel A 1995-2000					Panel B 1995-2005					Panel C 1995-2010				
	ΔCom	ΔR^2	$\Delta SYNCH$	ΔCD	ΔIP	ΔCom	ΔR^2	$\Delta SYNCH$	ΔCD	ΔIP	ΔCom	ΔR^2	$\Delta SYNCH$	ΔCD	ΔIP
ΔR^2	0.64 <i>0.000</i>					0.52 <i>0.001</i>					0.79 <i>0.000</i>				
$\Delta SYNCH$	0.84 <i>0.000</i>	0.83 <i>0.000</i>				0.12 <i>0.463</i>	0.59 <i>0.000</i>				0.79 <i>0.000</i>	0.86 <i>0.000</i>			
ΔCD	-0.03 <i>0.872</i>	0.32 <i>0.042</i>	0.13 <i>0.421</i>			-0.21 <i>0.199</i>	-0.22 <i>0.166</i>	-0.10 <i>0.557</i>			0.26 <i>0.105</i>	0.47 <i>0.002</i>	0.31 <i>0.056</i>		
ΔIP	-0.04 <i>0.808</i>	-0.02 <i>0.910</i>	-0.02 <i>0.922</i>	0.11 <i>0.512</i>		0.08 <i>0.626</i>	-0.13 <i>0.416</i>	-0.26 <i>0.112</i>	0.03 <i>0.854</i>		0.03 <i>0.88</i>	0.05 <i>0.76</i>	0.07 <i>0.667</i>	0.15 <i>0.348</i>	
ΔSMD	0.15 <i>0.357</i>	0.14 <i>0.400</i>	0.04 <i>0.818</i>	0.38 <i>0.015</i>	0.08 <i>0.611</i>	0.00 <i>0.984</i>	-0.13 <i>0.420</i>	-0.20 <i>0.221</i>	0.04 <i>0.808</i>	0.75 <i>0.000</i>	0.25 <i>0.122</i>	0.12 <i>0.474</i>	0.01 <i>0.971</i>	0.13 <i>0.429</i>	-0.10 <i>0.559</i>

Table 13 provides results for bivariate correlations for the change in dependent and independent variables. I do not find any significant negative correlation between these dependent and independent variables. However, the change in *SMD* is positively associated with the change in *CD* for the first time-segment while the change in *SMD* is highly positively correlated with the change in *IP* for the second time-segment.

The above results suggest that strong IP results in an increase in the number of companies. As Pagano (1993) puts it, the increase in the number of companies may be the result of the institutional arrangements of the countries. These results are consistent with the extant research that countries with strong institutions of property rights have large markets and strong economies (La Porta et al., 1998).

4.6.3.2 Change Regression Results

I estimate Model 3 for the change variables for the time-segment sample data (1995-2000, 1995-2005, and 1995-2010) for the SPS measures with the explanatory variables *CD*, *IP* and *SMD*. I take the natural log of *CD* and *SMD* for all the years (1995, 2000, 2005 and 2010) and then compute the change variable due to outliers. Table 14, Panels A, B and C display the change results for the time-segments 1995-2000, 1995-2005, and 1995-2010, respectively. For the first time-segment, 1995-2000, *CD* and *IP* have a negative relation with all SPS measures, but only *CD* is statistically significant. Moreover, *SMD* is positive with *Com* but shows negative relation with R^2 and *SYNCH*. Panel B has results for the second time-segment, 1995-2005. Here all explanatory variables show a negative association with SPS measures, excluding one instance where *CD* is positively related to

SYNCH. The results are only significant for *SMD* for *Com* and R^2 but not for *SYNCH*. These results indicate that only change in stock market development is a strong determinant in reducing SPS.

For the third time-segment, 1995-2010, I find no significant relation between the change in SPS and the change in any of the explanatory variables. This negative relation of the change in SPS with all explanatory variables suggests that improvements in the IP environments, accompanied by improvements in countries' economies and stock markets, tend to reduce SPS. However, the results for the second time-segment, 1995-2005, indicate that only stock market development is a strong determinant of the decrease in SPS.

While *IP* variables have an impact on synchronicity (see results for the pooled cross-sectional and year-by-year cross-sectional data), the stronger result for the change in market size (change in *SMD*) suggests that other institutional improvements that give rise to the increase in the number of companies are an important set of institutional variables for stock market development. Pagano (1993) reports that in the early nineteenth century, countries' economies grew modestly at a yearly rate of 3.8% but the number of companies grew at a rate of 21%. This increase in number of companies, he argues, is not due to increase in countries' economies, but there are other factors that are the real drivers of increase in the number of companies, such as IP arrangements. These results suggest an indirect effect of the strong IP system on SPS, through stock market development.

Table 14 Regression results for the Change in SPS with the Change in CD, IP and SMD

Table 14 reports results for Model 3. *Com*, R^2 and *SYNCH* are the three SPS measures. *CD* is country development proxied by log per capita *GDP*; *IP* is the investor protection and is the first principal component of the World Bank Governance Indicators; *SMD* is the stock market development (*SMD*) proxied by the natural log of the number of companies in each country. The first row is the coefficient while the second value represents the p-value given in italics of the respective variables. F is the F-test statistics of reporting the significance of the regression model while Adj R^2 is the explanatory power of the model. Δ represents change for all the referred variables and is computed as (2000-1995, 2005-1995 and 2010-1995).

Variables	Panel A: 1995-2000			Panel B: 1995-2005			Panel C: 1995-2010		
	ΔCom	ΔR^2	$\Delta SYNCH$	ΔCom	ΔR^2	$\Delta SYNCH$	ΔCom	ΔR^2	$\Delta SYNCH$
Intercept	-0.815 <i>0.633</i>	0.009 <i>0.782</i>	0.665 <i>0.116</i>	-0.634 <i>0.696</i>	-0.011 <i>0.767</i>	-0.181 <i>0.699</i>	-0.356 <i>0.877</i>	0.050 <i>0.413</i>	0.033 <i>0.965</i>
ΔCD	-9.565 <i>0.033</i>	-0.146 <i>0.113</i>	-1.509 <i>0.160</i>	-3.726 <i>0.124</i>	-0.025 <i>0.646</i>	0.607 <i>0.379</i>	-3.270 <i>0.107</i>	-0.036 <i>0.499</i>	0.251 <i>0.700</i>
ΔIP	-0.780 <i>0.668</i>	-0.010 <i>0.789</i>	-0.125 <i>0.778</i>	-0.448 <i>0.723</i>	-0.000 <i>0.975</i>	-0.134 <i>0.712</i>	-0.209 <i>0.907</i>	0.004 <i>0.920</i>	0.243 <i>0.680</i>
ΔSMD	0.000 <i>0.952</i>	-0.008 <i>0.786</i>	-0.305 <i>0.395</i>	-3.891 <i>0.005</i>	-0.105 <i>0.001</i>	-0.355 <i>0.350</i>	0.178 <i>0.885</i>	-0.019 <i>0.563</i>	-0.202 <i>0.617</i>
F-value	1.78	1.08	1.27	3.60***	3.61***	0.68	0.94	0.38	0.17
Adj R^2	5.7%	0.6%	2.0%	16.7%	16.7%	0.0%	0.0%	0.0%	0.0%

The effectiveness of such unique reforms of institutional and regulatory environments in different countries on a common scale is difficult to compute and measure. Consistent with this, is the view of Li et al. (2003, p. 43) as to the extent to which SPS decreases can be regarded as a possible gauge of the actual extent of real institutional reforms. Such changes, though difficult to quantify, nevertheless contribute to the overall improvement in the institutional environments of the countries resulting in an efficient capital market.

The inconsistency between the results among pooled cross-sectional data, the year-by-year cross-sectional data, and the change regression results, suggest further investigation into the

effects of *CD*, *IP* and *SMD*. Thus, I use additional analyses to examine the relation between SPS measures and the explanatory variables.

4.6.4 Additional Analyses

In this section, I analyse consistency of SPS measures over the sample period. I also examine trends of SPS measures based on the explanatory variables of *CD*, *IP* and *SMD*. Cluster analysis is used for clustering the sample countries on the basis of the explanatory variables, to investigate which explanatory variable consistently explains the changes in SPS measures across countries. In addition to this, I cluster countries into IFRS adopters and non-adopters, and plot their SPS measures to ascertain particular trend.

The pooled cross-sectional data results show that both *IP* and *SMD* explain variation in SPS while the year-by-year cross-sectional results show *IP* to be a consistent determinant of SPS. However, the change results show that only *SMD* explains the change in SPS, but for a specific time segment, 1995-2005. These inconsistencies in results lead to further investigation of the SPS measures. I first analyse the consistency of SPS measures to ascertain whether SPS changes over time. Next, I conduct cluster analysis as to which of the explanatory variables consistently explains the variation in SPS.

4.6.4.1 Consistency of SPS across Time

I use ANOVA to investigate whether means of SPS measures between years in the sample are constant. Results show that the null hypothesis is rejected at both 0.01 and 0.05 levels. Both results are highly statistically significant ($p\text{-value} \leq 0.01$) confirming that there are

significant differences between the years for both SPS measures (Table 15). These results are consistent with earlier results of Alves et al. (2010) who document that SPS measures vary across years. They also find strong ANOVA results for their SPS measure of R^2 concluding that SPS is sensitive to the choice of the year. These results conclude that SPS changes over time.

Table 15 ANOVA of SPS

Table 15 reports results for ANOVA for the two SPS measures *Com* and R^2 (Model 2). Panel A is for *Com*, while Panel B displays results for R^2 .

Panel A: <i>Com</i>					
Source	Degree of Freedom	Sum of Squares	Mean Squares	F-value	p-value
Factor	15	0.124	0.008	3.59	0.000
Error	624	1.439	0.002		
Total	639	1.563			
Panel B: R^2					
Factor	15	0.690	0.460	7.17	0.000
Error	624	4.005	0.006		
Total	639	4.6953			

4.6.4.2 Cluster Analysis

I rank countries on the basis of *CD*, *IP* and *SMD* to investigate which of the variables consistently explains the variation in SPS. First, I rank countries from high to low on the basis of *CD*, *IP* and *SMD*. Value 2 is assigned to high while value 1 represents low levels of the respective variables. Based on these criteria, I end up with eight different cluster combinations. Out of the eight clusters, no country falls into Clusters 5 and 7. Next, I plot these clusters' centroids. In order to make the plots clearly observable, I do not plot Clusters 3 and 6. Cluster 1 consists of the countries with high *CD*, strong *IP* and high *SMD*,

which are normally the developed countries. Cluster 2 represents countries with high *CD*, high *IP* but low *SMD*. Cluster 4 is low *CD*, low *IP* but high *SMD* countries while cluster 8 displays countries with low levels of *CD*, *IP* and *SMD*.

Table 16 Cluster analysis of SPS measures

Table 16 displays the scores assigned to form clusters and the respective cluster membership. 2 is assigned to represent high value while 1 is for low value of the respective variables. The last column provides cluster membership.

Clusters	<i>CD</i>	<i>IP</i>	<i>SMD</i>	Clustering Membership
1	2	2	2	Australia, Belgium, Canada, France, Germany, Holland, Hong Kong, Singapore, Sweden, UK, US
2	2	2	1	Austria, Denmark, Finland, Ireland, New Zealand, Norway, Spain
3	2	1	2	Italy, Japan
4	1	1	2	Brazil, China, India, Malaysia, South Korea, Taiwan, Thailand
5	2	1	1	
6	1	2	1	Chile, Portugal
7	1	2	2	
8	1	1	1	Colombia, Czech Republic, Greece, Indonesia, Mexico, Pakistan, Peru, Philippines, Poland, South Africa, Turkey

Figure 4, Panel A displays cluster centroids for *Com* while Panel B is for R^2 . Clusters 4 and 8 display decreasing SPS levels over the sample period. It can be seen that Cluster 1 has the lowest SPS while Cluster 4 shows the highest SPS. Cluster 4 consists of developing countries of Brazil, China, India and others. The line plot of SPS measures suggests that only *CD* and *IP* are the main determinants. Cluster 1 countries have high *CD*, strong *IP* and high *SMD* while Cluster 4 countries are of low *CD*, weak *IP* but high *SMD*. Since both clusters have high *SMD* but have different levels of *CD* and *IP*, this suggests that *CD* and *IP* consistently explain variation in SPS. However, *SMD* does not explain the variation on a consistent basis over the sample period. These results are consistent with the pooled and year-by-year cross-sectional data results.

Observing the trend of SPS measures from Figure 3 confirms the earlier trend analysis of the scatter plot in which high SPS is noted during financial crises years. This trend analysis suggests that even developed countries such as Australia, US, UK and others with high *CD*, strong *IP*, and high *SMD* result in high SPS during financial crises years. This trend is also consistent with earlier results of Li et al. (2003) who argue that SPS increases during financial crisis and then starts decreasing once these crises are over. This decrease in SPS, they believe is due to the comprehensive deregulation policies of the crisis-hit nations. The likely reason for a fall in SPS, after crises, could be the capital market reforms that took place in these countries to restructure the economy. The decrease in SPS corresponds to the seriousness with which every country undertakes institutional reforms in their respective capital markets (Li et al., 2003). This trend analysis confirms the earlier results that countries with high *CD* and strong *IP* have low SPS.

Summing up, it is concluded that these variables (*CD*, *IP* and *SMD*) complement each other and together, these variables result in low SPS. However, the determining factors of low levels of SPS are still country development and strong property rights arrangements of the countries.

Fig 4 *Line Plot of Cluster Centroids for SPS measures*

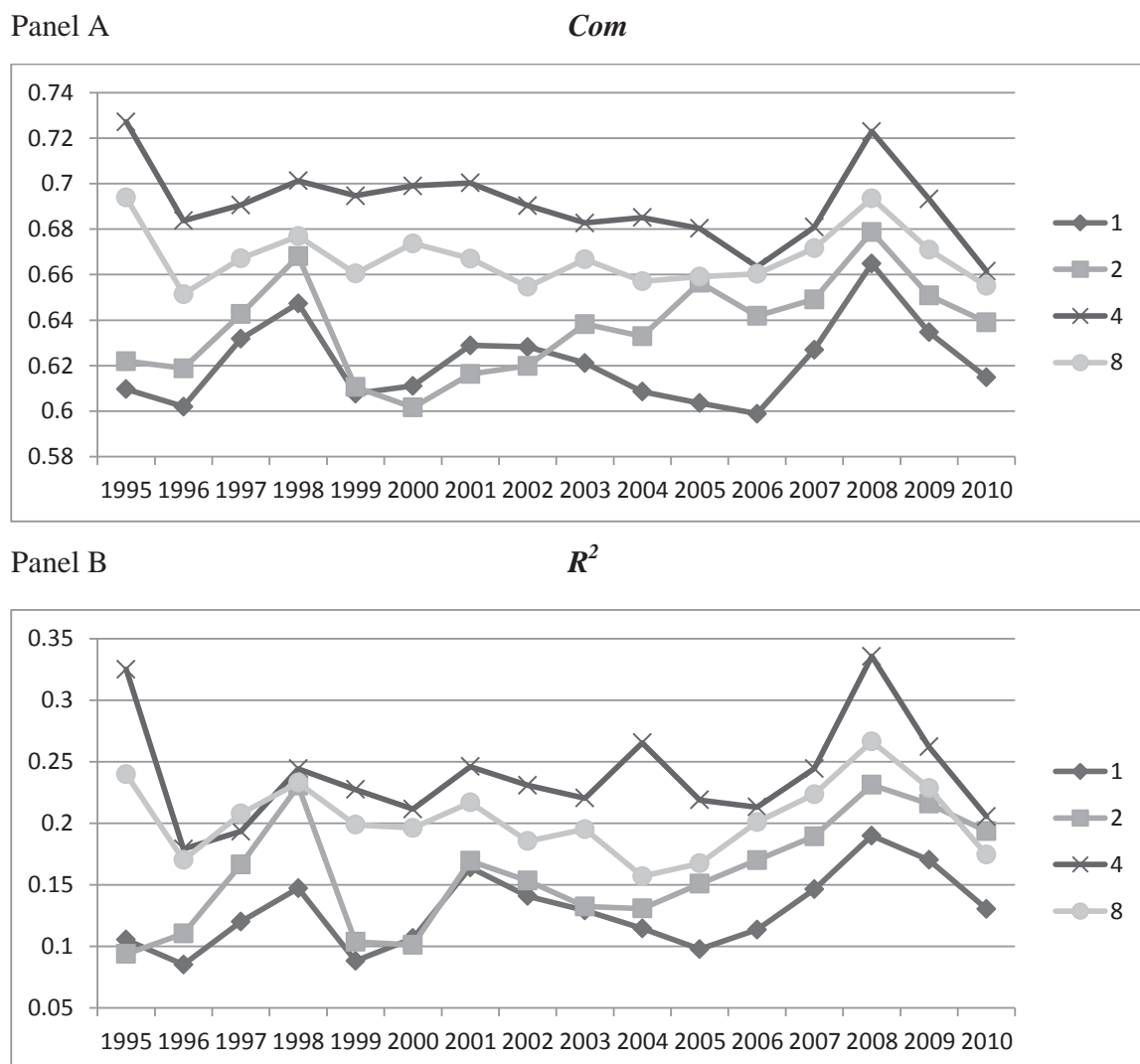


Figure 4 plots cluster centroids of SPS measures based on *CD*, *IP* and *SMD*. Panel A is for *Com* and Panel B is for *R²*.

4.6.4.3 IFRS and SPS

The implementation of higher quality accounting standards is one of the important factors of an efficient *IP* and financial reporting system. Adopting high quality accounting

standards such as IFRS increases the quality of accounting information (Barth et al., 2008). Such financial reports are easy to compare across borders.

Table 17 reports the list of countries categorized on the basis of IFRS adoption. The list is compiled from IAS plus (as of 2012) which divides countries into IFRS adopters and non-adopters.²⁶ In 2005, most of the countries adopted IFRS, including the European Union. I use IFRS adoption to investigate the patterns of SPS over time. IFRS adoption year is 2005, as at that time, most of the countries around the world adopted IFRS, such as EU, and Australia.

Table 17 IFRS adopters and non-adopters

IFRS Adopters	IFRS Non-Adopters
Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Finland, France, Germany, Greece, Holland, Hong Kong, Ireland, Italy, New Zealand, Norway, Philippines, Poland, Portugal, Singapore, South Africa, Spain, Sweden, UK	Brazil, China, Colombia, India, Indonesia, Japan, Malaysia, Mexico, Pakistan, Peru, South Korea, Taiwan, Thailand, Turkey, US

In Figure 5, Panels A and B graphically provide a comparison of the median SPS measures (*Com* and R^2) using US as a benchmark.²⁷ The graphs show that adopters have low SPS levels both the pre- and post-IFRS adoption years (In this case the sample period starts in 1995. Most countries adopted IFRS after 2005 in comparison to non-adopters. Noteworthy here is that most of the IFRS adopter countries have strong IP arrangements and such arrangements by themselves reduce SPS.

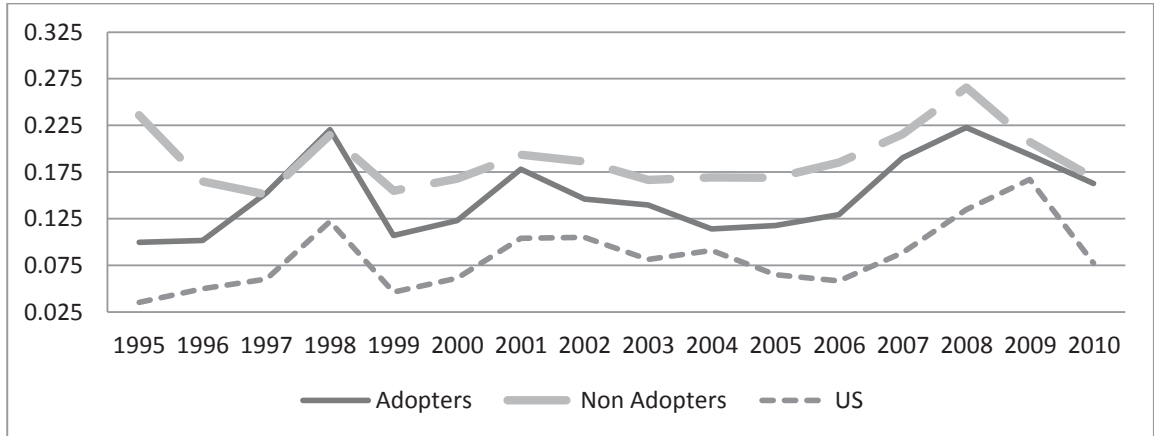
²⁶<http://www.iasplus.com/en/resources/use-of-ifs>

²⁷ Scatter plots for average (mean) SPS values of *Com* and R^2 portray similar trends.

Fig 5 Comparison of SPS between IFRS Adopter and Non-adopter

Panel A

Com



Panel B

R^2

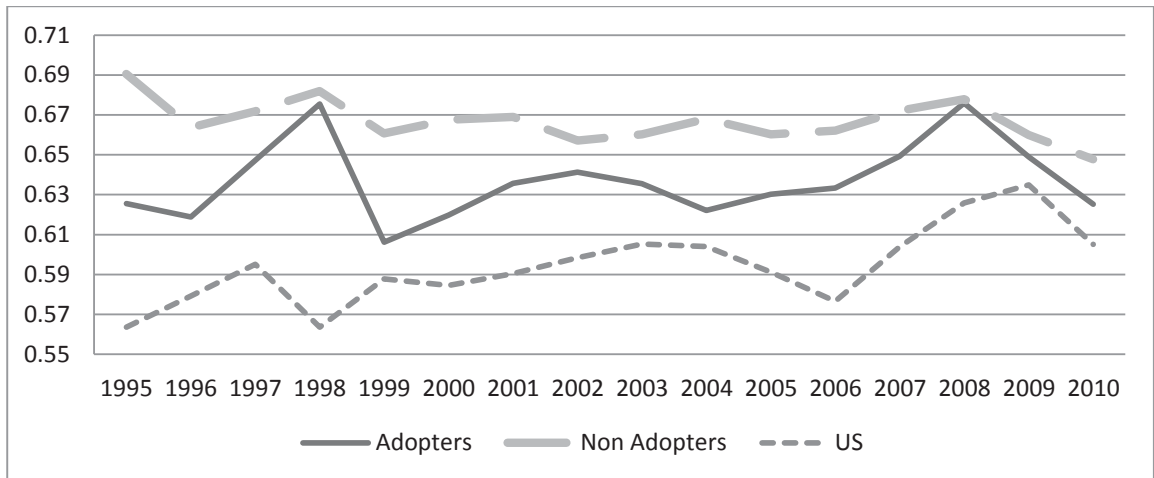


Figure 5 plots SPS for IFRS adopters and non-adopters. Panel A is for *Com* and Panel B is for R^2 .

However, it is noted that the adopters and non-adopters both suffer from the global crises (such as in 1997-98, 2001-02 and 2007-9). The trend analysis shows that during financial crises years, SPS is high for both adopters and non-adopters. An interesting pattern in the

trend analysis shows that the increase in SPS during financial crisis years seems to be more in adopters than in non-adopters. A potential reason for this could be that adopters, because of their better IP, offer more investment opportunities to investors than non-adopters, and in the face of a country or global crisis, investors would react more to macroeconomic risk related information than to firm-level information. Likewise, the stock prices in the adopter countries tend to converge towards the market mean as depicted by the sharp increase in SPS in these countries. It is also noticeable that SPS of the adopter countries almost coincides with the SPS of the non-adopter countries in the crisis years, which further supports the contention that irrespective of better IP and use of IFRS, investors tend to rely more on market level information than FFI in such years.

Prior empirical research concludes that corporate financial reporting under IFRS is of higher quality than under the local reporting standards. For example, IFRS adoption leads to less analyst forecast errors and less accounting flexibility (Ashbaugh & Pincus, 2002); reduces costs of capital (Daske, Hail, Leuz, & Verdi, 2008); results in higher market liquidity and trading volume (Leuz & Verrecchia, 2004); and provides better accounting quality (Barth et al., 2008). The findings of these studies suggest that IFRS adoption increases the quantity and quality of firm-specific information. Consistent with this view, Shi and Kim (2007) investigate the effects of voluntary IFRS adoption on SPS for a sample of 34 countries and find that IFRS adoption leads to a significant decrease in SPS. They also find that this SPS reducing effect is higher for full adopters, than for partial adopters. They conclude that enhanced disclosure under IFRS increases the quantity and quality of

accounting information, encourages investors to collect and trade on private information and facilitates the incorporation of firm-specific information into stock prices.

The above analysis suggests that the reduction in SPS can easily be connected to improvements in the institutional environments. For example, the opening up of the Canadian economy through a trade agreement with the US in early 1990s is followed by a decrease in its SPS (Li et al., 2003). Similar results are reported for the East Asian economies.

Chapter 5 Results-The Impact of IP on the Association between FFI and SPS

This chapter reports results of the FFI and SPS stage of the thesis. The chapter is structured as follows; section 5.1 reports descriptive statistics; section 5.2 displays bivariate statistics of SPS measures and the explanatory variables; country-level regression analyses of SPS with FFI are reported in section 5.3; and the last section reports sensitivity analyses.

5.1 Descriptive Statistics of the SPS and the Explanatory Variables

Table 18 provides the descriptive statistics for the SPS measures and the explanatory variables of *LOSS*, *STDROA* and *STDSALES*, *AAI*, *IP* and *SMD*. The mean and median for *Com* is the same (0.65) with a small standard deviation (0.05). However, the mean and median for R^2 is different (0.18 and 0.16, respectively). The mean for *SYNCH* is 0.00 while median is -0.23. The skewness and kurtosis values of the SPS measures reveal that these variables are normally distributed. The skewness and kurtosis of *SMD* shows that it is non-normally distributed, which can also be confirmed from the large variation between its minimum and maximum values. The reason for this could be that stock market development is proxied by the number of companies, which has a high variation among the sample countries. The means, medians, skewness and kurtosis of the firm fundamentals variables of *LOSS*, *STDROA* and *STDSALES*, and *AAI* indicate that these variables are normally distributed.

Table 18 Descriptive Statistics of the Dependent and the Independent Variables

Table 18 reports descriptive statistics. *Com*, R^2 and *SYNCH* are the three SPS measures; *LOSS* is a dummy variable of 1 if the company reports a loss, otherwise 0; *STDROA* and *STDSALES* are the five-year rolling standard deviation of Return on Assets and Sales; *AAI* is proxied by total accruals computed as net income less cashflow from operations scaled by total assets; *IP* is investor protection and is the first principal component of the World Bank Governance Indicators; *SMD* is stock market development and is represented by the natural log of the number of companies.

Variable	Mean	Median	StDev	Min	Max	Skew	Kurt
<i>Com</i>	0.58	0.58	0.03	0.50	0.74	0.83	0.90
R^2	0.15	0.13	0.10	0.02	0.56	1.20	1.95
<i>SYNCH</i>	0.00	-0.21	1.22	-2.23	4.21	0.99	1.25
<i>LOSS</i>	0.01	0.00	0.08	0.00	1.00	12.56	156.31
<i>STDROA</i>	3.29	3.06	1.58	0.18	8.21	0.76	0.19
<i>STDSALES</i>	0.09	0.09	0.04	0.01	0.22	0.49	0.46
<i>AAI</i>	-0.14	-0.13	0.11	-0.44	0.28	-0.12	0.27
<i>IP</i>	0.00	0.79	2.32	-5.57	2.89	-0.59	-0.91
<i>SMD</i>	2142	633	5402	157	40788	5.17	28.75
<i>LnSMD</i>	6.71	6.45	1.11	5.05	10.61	1.29	1.60

5.2 Bivariate Correlations of SPS and the Explanatory Variables

Table 19 reports bivariate correlations of the dependent and the independent variables. As expected, all SPS measures are highly correlated (0.81) and the correlations are statistically significant (p-value ≤ 0.01). This suggests that SPS measures proposed by MYY (*Com* and R^2) both represent a similar underlying construct. The *STDROA* is negatively associated with all SPS measures (p-values are 0.018, 0.005 and 0.000, respectively for *Com*, R^2 and *SYNCH*). Similarly standard deviation of *STDSALES* is also negatively associated with all SPS measures. This association is significant for R^2 and *SYNCH* with p-values of 0.086 and 0.009, respectively.²⁸ These results suggest that these FFI variables represent an information signal to the market, which investors take into consideration in making their investment decisions.

²⁸ VIF values are calculated for all regression models and the highest value noted is 2.35.

Table 19 Correlations for the Dependent and the Independent Variables

Table 19 reports correlation coefficients for the pooled cross-sectional data. *Com*, R^2 and *SYNCH* are the three SPS measures; *LOSS* is a dummy variable of 1 if the company reports a loss, otherwise 0; *STDROA* and *STDSALES* are the five-year rolling standard deviation of ROA and standard deviation of sales for each company; *AAI* is proxied by total accruals computed as net income less cash flow from operations scaled by total assets; *IP* is investor protection and is the first principal component of the World Bank Governance Indicators; *SMD* is stock market development and is represented by number of companies. The first row represents correlation coefficients while the second row represents the respective probability values.

	<i>Com</i>	R^2	<i>SYNCH</i>	<i>LOSS</i>	<i>STDROA</i>	<i>STDSALES</i>	<i>AAI</i>	<i>IP</i>
R^2	0.81 0.000							
<i>SYNCH</i>	0.90 0.000	0.88 0.000						
<i>LOSS</i>	-0.02 0.539	-0.04 0.302	-0.03 0.411					
<i>STDROA</i>	-0.10 0.018	-0.12 0.005	-0.17 0.000	0.19 0.000				
<i>STDSALES</i>	-0.06 0.161	-0.07 0.086	-0.11 0.009	0.02 0.546	0.67 0.000			
<i>AAI</i>	-0.006 0.896	0.02 0.562	-0.05 0.250	0.01 0.705	0.24 0.000	0.32 0.000		
<i>IP</i>	-0.43 0.000	-0.36 0.000	-0.44 0.000	-0.01 0.914	0.12 0.005	0.20 0.000	0.12 0.010	
<i>SMD</i>	-0.19 0.000	-0.19 0.000	-0.23 0.000	0.19 0.000	0.24 0.000	0.15 0.001	0.27 0.000	0.15 0.001

These results suggest that SPS values reflect firm fundamentals being incorporated into share prices. *STDROA* is positively correlated with *STDSALES* and *AAI* and this correlation is statistically significant (p-values ≤ 0.01). One of the reasons could be that both sales and accruals are scaled by total assets to control for firm size. Another reason could be that sales are directly related to income. *LOSS* is negatively related to all SPS measures but is not significant.

5.3 Regression Analysis

This section reports results of the regression analysis of SPS with FFI. I use two proxies for FFI; sub-section 5.3.1 reports regression results of SPS with FFI taken from previous literature as a first proxy and sub-section 5.3.2 presents results of SPS with AAI as a second proxy of FFI.

5.3.1 FFI from Prior Literature and SPS

I estimate Model 4 and Model 5 to examine the association of SPS with FFI from earlier literature. This analysis is conducted at country-level using pooled cross-sectional data. Table 20 reports the results. Panel A is for Model 4 while panel B is for Model 5. Model 5 provides results for SPS measures with FFI and their interaction with *IP* variables. In panel A, only *STDROA* is negatively associated with all SPS measures. This negative association is statistically significant with p-values of 0.092 for *Com*, 0.020 for R^2 and 0.003 for *SYNCH*. These results suggest that investor value FFI, specifically ROA, while making investment decisions. *LOSS* is negatively associated with SPS measures of R^2 and *SYNCH* but this association is not significant. The *STDSALES* is positively associated with all SPS measures but is statistically significant for *Com* and *SYNCH*. This positive association could be due to the positive and significant correlation between *STDROA* and *STDSALES* (Table 15).

These results suggest that investors view firms' performance as an important FFI in making investment decisions. Investors consider the volatility of firm's performance an important information signal; as Ashbaugh et al. (2006) report these variables are an information

signal to the market. They report that if SPS reflects FFI, then there should be a negative association of these FFI variables and SPS since volatility of FFI represents risk and making informed arbitrage difficult. Additionally, *IP* is negatively associated with all SPS measures, and is highly statistically significant. *SMD* is also negatively associated with all SPS measures but is not statistically significant. The *IP* results are consistent with earlier results that strong property rights reduce SPS at country-level. Summing up, the negative association of *LOSS* and *STDROA* indicate that market participants price firm fundamentals. However, the inconsistent results of FFI with SPS make it difficult to reach a clear conclusion. I also estimate Model 6 for *Com*, and R^2 with the explanatory variables of *LOSS*, *STDROA* and *STDSALES* for the sample period 1999-2010 with industry fixed effects and *YEAR* effects. The model yields an inconsistent association of SPS with FFI for both *Com*, and R^2 . Results are in Appendices 4 and 5.

Next I estimate Model 5 to test hypothesis 3 of the thesis. This model investigates the association of FFI and the interaction of *IP* variables and FFI conjecturing that investors rely more on FFI in countries with good *IP* practices. Panel B reports results of the interaction model. In panel B, *STDROA* again shows statistically significant negative association with all SPS measures (p-value ≤ 0.10 for *Com* and R^2 ; p-value ≤ 0.05 for *SYNCH*). All the interaction variables are in the expected negative direction except in one case where the interaction of *STDROA* and *IP* shows a positive relation with R^2 .

Table 20 Relation of SPS with FFI

Panel A reports results for Model 4 while Panel B is for Model 5 for *Com*, R^2 and *SYNCH*, respectively. *LOSS* is a dummy variable of 1 if the company reports a loss, otherwise 0; *STDROA* and *STDSALES* are the five-year rolling standard deviations of ROA and sales. *IP* is the investor protection variable and is the first principal component of the World Bank Governance Indicators. *SMD* is stock market development and is proxied by the natural log of the number of companies. The *IP*LOSS*, *IP*STDROA*, *IP*STDSALES* are the interactions of *LOSS*, *STDROA* and *STDSALES* with *IP* variable, respectively. The independent variables are the medians of all the companies in a country representing one observation for each country each year. F-stat is the F-statistic and Adj- R^2 represents the explanatory power of the regression model. The first row reports coefficients of the variables while the second value in italics is the respective p-value of the coefficient.

Variable	Panel A Model 4			Panel B Model 5		
	<i>Com</i>	R^2	<i>SYNCH</i>	<i>Com</i>	R^2	<i>SYNCH</i>
Intercept	0.652 <i>0.000</i>	0.214 <i>0.000</i>	0.533 <i>0.119</i>	0.652 <i>0.000</i>	0.217 <i>0.000</i>	0.573 <i>0.098</i>
<i>LOSS</i>	0.005 <i>0.857</i>	-0.005 <i>0.901</i>	-0.065 <i>0.929</i>	0.001 <i>0.975</i>	-0.013 <i>0.771</i>	-0.227 <i>0.757</i>
<i>STDROA</i>	-0.003 <i>0.045</i>	-0.006 <i>0.020</i>	-0.150 <i>0.003</i>	-0.003 <i>0.091</i>	-0.005 <i>0.066</i>	-0.131 <i>0.012</i>
<i>STDSALES</i>	0.126 <i>0.092</i>	0.161 <i>0.212</i>	4.04 <i>0.065</i>	0.096 <i>0.219</i>	0.089 <i>0.507</i>	2.872 <i>0.209</i>
<i>IP</i>	-0.008 <i>0.000</i>	-0.012 <i>0.000</i>	-0.252 <i>0.000</i>	-0.004 <i>0.082</i>	-0.004 <i>0.247</i>	-0.099 <i>0.172</i>
<i>SMD</i>	-0.001 <i>0.412</i>	-0.004 <i>0.148</i>	-0.056 <i>0.255</i>	-0.001 <i>0.507</i>	-0.004 <i>0.182</i>	-0.045 <i>0.374</i>
<i>IP*LOSS</i>				-0.006 <i>0.434</i>	-0.011 <i>0.462</i>	-0.185 <i>0.467</i>
<i>IP*STDROA</i>				-0.000 <i>0.507</i>	0.000 <i>0.886</i>	-0.008 <i>0.662</i>
<i>IP*STDSALES</i>				-0.031 <i>0.340</i>	-0.087 <i>0.120</i>	-1.322 <i>0.167</i>
Year	Controlled					
F-Stat	10.42***	11.42***	8.08***	9.06***	9.87***	7.16***
Adj-R^2	24.00%	25.9%	19.20%	24.30%	26.1%	19.70%

Overall, the negative association of the interaction term (*IP*FFI*) indicates that investors in countries with strong IP tend to price FFI in making investment decisions. Summing up, the reported negative associations in most cases, though statistically not significant, suggest that investors rely on FFI more in countries with strong property rights arrangements. These

results also suggest that *IP* is a strong determinant in reducing SPS in countries. Moreover, the coefficients on the year dummies are mostly negative and not significant. However, the result for the year 2008 (GFC) is positive and significant, showing that investors do not rely on *FFI* and *IP* in financial crisis years. This result is consistent with the IP and SPS stage of the thesis and also with earlier literature which reports that SPS increases during financial crises years (Li et al., 2003).

5.3.2 SPS and Accruals

I also run the same models (Model 4 & Model 5) for *AAI* using pooled cross-sectional data. Table 21 reports the results. In Panel A (Model 4), I find that *AAI* is positively associated with all SPS measures and this association is not statistically significant. Therefore, a conclusion cannot be drawn about whether accruals are perceived as an *FFI* or as an earnings management tool in a capital market. A potential reason for these results may be that investors face difficulties in interpreting accruals information, as reported by the extant literature; e.g. financial analysts making forecasts do not take advantage of predictable earnings declines associated with high accruals (Bradshaw, 2004). Moreover, Sloan (1996) finds that investors fail to correctly consider the lower persistence of accruals portions of earnings. Similar arguments are reported by Hand (1990) and Maines and Hand (1996).

Table 21 Pooled Cross-Sectional Regression Results of SPS with AAI, IP, SMD and AAI*IP

Panel A is for Model 4 while Panels B and C are for Model 5. *Com*, R^2 and *SYNCH* are the three SPS measures. *AAI* is proxied by total accruals computed as net income less cash flow from operations scaled by total assets; *IP* is the investor protection variable and is the first principal component of the World Bank Governance Indicators; *SMD* is stock market development proxied by the natural log of the number of companies in each country; *AAI*IP* is the interactions of *AAI* and *IP*; Year is a control variable; F-stat is the F-statistic and $AdjR^2$ is the explanatory power of the regression model. The first row reports coefficients of the variables while the second value in italics is the respective p-values.

Variables	Model 4			Model 5					
	Panel A			Panel B			Panel C		
	<i>Com</i>	R^2	<i>SYNCH</i>	<i>Com</i>	R^2	<i>SYNCH</i>	<i>Com</i>	R^2	<i>SYNCH</i>
Intercept	0.655 <i>0.000</i>	0.222 <i>0.000</i>	0.710 <i>0.072</i>	0.642 <i>0.000</i>	0.175 <i>0.000</i>	-0.018 <i>0.926</i>	0.649 <i>0.000</i>	0.205 <i>0.000</i>	0.442 <i>0.264</i>
<i>AAI</i>	0.005 <i>0.780</i>	0.026 <i>0.447</i>	0.488 <i>0.413</i>	-0.012 <i>0.507</i>	-0.035 <i>0.275</i>	-0.456 <i>0.409</i>	-0.006 <i>0.744</i>	-0.012 <i>0.730</i>	-0.103 <i>0.865</i>
<i>IP</i>	-0.008 <i>0.000</i>	-0.012 <i>0.000</i>	-0.253 <i>0.000</i>	-0.011 <i>0.000</i>	-0.021 <i>0.000</i>	-0.381 <i>0.000</i>	-0.011 <i>0.000</i>	-0.020 <i>0.000</i>	-0.370 <i>0.000</i>
<i>SMD</i>	-0.001 <i>0.264</i>	-0.006 <i>0.019</i>	-0.105 <i>0.034</i>				-0.001 <i>0.520</i>	-0.004 <i>0.131</i>	-0.067 <i>0.174</i>
<i>AAI*IP</i>				-0.019 <i>0.013</i>	-0.061 <i>0.000</i>	-0.930 <i>0.000</i>	-0.018 <i>0.021</i>	-0.057 <i>0.000</i>	-0.868 <i>0.000</i>
Year	Controlled								
F-Statistic	11.57	12.65	8.46	12.04	14.18	9.56	12.34	13.42	9.06
AdjR²	23.60%	25.40%	17.91%	24.40%	27.81%	20.01%	25.22%	28.01%	20.16%

On the other hand, *IP* shows a negative and statistically significant association (p-value \leq 0.01) with all SPS measures, confirming earlier results. *SMD* is also negatively and statistically associated with R^2 (p-value \leq 0.05) and *SYNCH* (p-value \leq 0.05) but not with *Com*. The results for *SMD* are consistent with earlier results of the IP and SPS stage of this thesis. However, important here is Model 5, that investigates the interaction of *AAI* and *IP*. The inclusion of the interaction term in the regression models tests the effect of *AAI* for countries with different levels of *IP*.

Table 21, Panels B and C report results of Model 5. Panel B shows a negative association of SPS with *AAI* but this association is not significant. Moreover, the associations of all three SPS measures with *IP* and *AAI*IP* are negative and statistically significant (p-value \leq 0.05 for both *IP* and the interaction of *IP* and *AAI*). These results indicate that investors value accruals as information signals in countries with strong *IP* arrangements.

Panel C includes *SMD* as an additional explanatory variable. The results do not change for *AAI*. In addition to this, *IP* (p-values of 0.000 with all SPS measures) and the interaction of *AAI* with *IP* (p-values of 0.021 with *Com* and 0.000 with R^2 and *SYNCH*) show a strong negative and statistically significant relation with all SPS measures. The interaction results suggest that accruals are considered as information signals by the market in countries with strong IP arrangements. In addition to this, the *IP* results indicate that countries with strong *IP* reduce SPS, which is consistent with the extant literature and earlier results of this study (Chapter 4). To sum up, accruals are considered as important information signals by markets in countries with strong IP arrangements. All these results suggest that the market

values accruals, since it increases the ability of earnings to reflect fundamental value of the firm (Ali et al., 2000; Dechow et al., 1998).

As pointed out earlier in the sample section, due to the computation of the first set of FFI proxy, the sample period is reduced to 1999-2010. In order to compare the results for both sets of FFI, I also drop the earlier years (1995-1998) from the regression analysis of SPS with *AAI*. However as a sensitivity test, I estimate the same model using full period pooled cross-sectional data (1995-2010) for SPS and *AAI* to ascertain if the results change. Results do change and are presented in Table 22. In Panel A, the association of *AAI* with R^2 becomes negative but the significance level does not change. Here the results are also inconclusive with respect to the use of *AAI*. The results for *SMD* with *Com* become negative and statistically significant (p-value of 0.05). For Panel B, the negative association of *AAI* becomes significant for R^2 (p-value of 0.056) and *SYNCH* (p-value of 0.09), suggesting that *AAI* is considered as FFI by the market participants. Moreover, the negative relation of *Com* with the interaction of *AAI* and *IP* gets stronger with a p-value ≤ 0.001 against the earlier results of p-value ≤ 0.013 (Table 21). Similarly, in Panel C, the results for the interaction of *AAI* and *IP* (p-value ≤ 0.001) and for *SMD* with a p-value ≤ 0.050 become highly statistically significant. These results change with the increase in the number of observation, which is a statistical property of the regression model.²⁹

²⁹ I also estimate Model 3 for *Com*, and R^2 with the explanatory variables of *AAI* for the sample period 1999-2010 with industry fixed effects and *YEAR* effects. The model yields an inconsistent association of SPS with *AAI* for both *Com*, and R^2 . Results are in Appendices 6 and 7.

Table 22 Pooled Cross-Sectional Regression Results of SPS with AAI, IP, SMD and AAI*IP³⁰

Panel A is for Model 4 while Panels B and C are for Model 5. *Com*, R^2 and *SYNCH* are the three SPS measures. *AAI* is proxied by total accruals computed as net income less cash flow from operations scaled by total assets; *IP* is the investor protection variable and is the first principal component of the World Bank Governance Indicators; *SMD* is stock market development proxied by the natural log of the number of companies in each country; *AAI*IP* is the interaction of *AAI* and *IP*; Year is a control variable; F-stat is the F-statistic and $AdjR^2$ is the explanatory power of the regression model. The first row reports coefficients of the variables while the second value is the respective p-value given in italics.

Variables	Model 4			Model 5					
	Panel A			Panel B			Panel C		
	<i>Com</i>	R^2	<i>SYNCH</i>	<i>Com</i>	R^2	<i>SYNCH</i>	<i>Com</i>	R^2	<i>SYNCH</i>
Intercept	0.663 <i>0.000</i>	0.231 <i>0.000</i>	0.796 <i>0.010</i>	0.643 <i>0.000</i>	0.177 <i>0.000</i>	0.013 <i>0.942</i>	0.662 <i>0.000</i>	0.228 <i>0.000</i>	0.762 <i>0.013</i>
AAI	0.000 <i>0.839</i>	-0.000 <i>0.883</i>	0.003 <i>0.941</i>	-0.002 <i>0.108</i>	-0.005 <i>0.056</i>	-0.085 <i>0.088</i>	-0.003 <i>0.134</i>	-0.005 <i>0.080</i>	-0.077 <i>0.119</i>
IP	-0.008 <i>0.000</i>	-0.012 <i>0.000</i>	-0.246 <i>0.000</i>	-0.011 <i>0.000</i>	-0.017 <i>0.000</i>	-0.320 <i>0.000</i>	-0.011 <i>0.000</i>	-0.016 <i>0.000</i>	-0.310 <i>0.000</i>
SMD	-0.003 <i>0.018</i>	-0.008 <i>0.000</i>	-0.013 <i>0.000</i>				-0.003 <i>0.030</i>	-0.008 <i>0.000</i>	-0.122 <i>0.002</i>
AAI*IP				-0.018 <i>0.000</i>	-0.031 <i>0.000</i>	-0.513 <i>0.000</i>	-0.018 <i>0.000</i>	-0.030 <i>0.000</i>	-0.491 <i>0.000</i>
Year	Controlled								
F-Statistic	11.97	12.54	9.08	12.69	12.67	9.35	12.34	12.81	9.48
AdjR²	23.61%	24.53%	18.54%	24.77%	24.74%	19.04%	25.22%	26.00%	20.14%

³⁰ These results are presented using the full sample period data (1995-2010) in comparison to the earlier Table 21 which uses data from 1999-2010. Table 21 provides results of pooled cross-sectional data in order to compare the results of both proxies of FFI (Variables used from Ashbaugh et al., 2006 as the first proxy and accrual accounting information (*AAI*) as the second proxy of FFI.

To sum up, accruals are considered as important information signals by markets in countries with strong IP arrangements. All these results suggest that the market values accruals since it increases the ability of earnings to reflect the fundamentals of the firm (Ali et al., 2000; Dechow et al., 1998). Furthermore, the results for 2008 (GFC year) (not tabulated) are positive and statistically significant and are also consistent with the earlier results for the first proxy of FFI (variables taken from Ashbaugh et al., 2006). These results suggest that investors do not use FFI and IP in years of financial distress. These results also suggest further analysis into the effects of year-wise use of FFI and the complementing effects of IP.

5.4 Sensitivity Analyses

This section reports sensitivity analysis for Model 5 using year-by-year cross-sectional data. The IP and SPS stage results show that SPS varies from year to year (Figure 3). Moreover, the results for pooled cross-sectional data also suggest that other macroeconomic indicators may be affecting SPS, i.e., the financial crises years show a positive and statistically significant association with SPS. Therefore, I investigate the year-by-year cross-sectional association of SPS with FFI using both proxies; FFI from Ashbaugh et al. (2006) and *AAI*. Results are reported in Appendix 8 and 9.

Appendix 8, Panels A, B and C report results for *Com*, R^2 and *SYNCH*. I only use *STDROA* and *STDSALES* as proxies for FFI taken from prior study.³¹ In Panel A, *STDROA* has a

³¹*LOSS* is a dummy variable of 1 if the company report losses otherwise 0. I take the median value across each year to represent one observation for each country each year. I drop this variable for year wise regression

negative coefficient for most of the years but only statistically significant for 2007 and 2010. *STDSALES* is positively related with *Com* and is statistically significant for 2006. *IP* and *SMD* are negative but not significant. The interactions of *FFI* with *IP* yield an inconclusive association. In Panel B, *STDROA* is negatively and statistically significant with R^2 for 4 years (2006, 2007, 2009 and 2010) out of the sample period (1999-2010). Similar inconclusive results are noted for Panel C (*SYNCH*).

Appendix 9 reports results for Model 5 for *AAI*. These results are not consistent for *AAI*. For example, the results show a negative association for some years while positive for others. These results are inconclusive to the use of *AAI* as either information signals or are perceived as earnings management tools. Other SPS measures (R^2 and *SYNCH*) display similar inconsistent results (positive in some cases and negative in others). Moreover, the interaction of *IP* and *AAI* show a negative association with all SPS measures. This negative association is statistically significant for 3 years (for 2005, 2006 and 2009) with *Com*; for 6 years with R^2 and for 5 years with *SYNCH*. Moreover, *IP* shows a consistent negative association with SPS for most years and this association is statistically significant for most of the years. These results for *IP* suggest that *IP* is a strong and consistent determinant of SPS across countries. These results are consistent with the earlier results of the IP and SPS stage of the thesis.

since only two years 1999 and 2010 returns different values for *LOSS*. The rest of the years are all constant with a zero.

To sum up, these results suggest that though investors do not directly capitalize FFI in investment decisions but strong *IP* arrangements facilitate the use of *FFI* in capital markets. Thus investors perceive FFI as information signals in countries with strong IP. These results suggest that strong IP determines the quality of financial information reported to outsiders, which they capitalize in stock prices in capital markets. Moreover, these results are in line with earlier literature which reports that a country's legal and institutional factors explain differences in price-earnings relation across countries (such as, Ali & Hwang, 2000; Ball et al., 2000; Hung, 2000; Leuz et al., 2003). Importantly, these results also require caution when evaluating due to the positive association (such as for 2005 for *Com*, R^2 , and *SYNCH*) of *FFI* with SPS and the use of *AAI* as a tool of earnings management.

Chapter 6 Conclusion

6.1 Summary of the thesis

The purpose of this thesis is to empirically provide evidence on the use of FFI under varying IP environments across a range of countries with high and low IP. The study conjectures that strong IP arrangements improve the information environment of the capital markets facilitating the use of FFI in investment decisions in these capital markets. Thus investors capitalize FFI in making investment decisions resulting in low levels of SPS.

The above proposition is tested in two stages. The first stage of the study tests the direct effects of the IP on stock price movements while the second stage directly investigates the association of FFI with SPS and the complementing effects IP on the use of FFI in the capital markets. The first stage of the study is referred to as the IP and SPS stage while the second stage of the study is referred to as the FFI and SPS stage. I use the same 40 countries of MYY for a sample period from 1995-2010. I follow MYY's proposed measures of SPS (Com and R^2), and also propose a new measure (SYNCH), which is the first principal component of MYY's measures.

In the first stage of this study, I use a larger sample period than MYY, though the tests are akin to MYY. The multi-year data is used to cater for any single-year bias in MYY's results. Following the MYY proposition that IP improves the information environment of the capital markets and thus capital market development, I use the principal component of the World Bank Governance Indicators as a proxy for IP. Other institutional variables such

as country development proxied by natural log of per capita GDP and stock market development proxied by natural log of the number of companies are also used.

In the second stage of the study, I use two distinct proxies for FFI. The first proxy of FFI is taken from Ashbaugh et al. (2006) while the second proxy represents accounting based accruals called accounting accruals information (AAI).³² For the complementing effects of IP, the IP variables are the same as used in the first stage of the study.

In the IP and SPS stage of the thesis, I find a statistically significant negative relation between IP and SPS. Furthermore, year-by-year cross-sectional regression results are consistent with the notion that only IP is a significant determinant of SPS across time. Additional analysis shows that the level of country development and stock market development are other determinants of the SPS. The change results show only stock market development reduces SPS across countries but this result is only strong for a specific time segment from 1995-2005. Results also support the view that developed countries have low levels of SPS while developing countries have high SPS. This result is consistent with MYY's results for 1995.

In the FFI and SPS stage, for the first proxy of FFI, I find that only volatility of ROA has a negative and statistically significant association with SPS measures. I do not find any significant association for the interaction of *IP* and FFI with SPS. However, *IP* show a consistent negative and statistically significant association with SPS. For the second FFI

³² I use reporting of loss, standard deviation of ROA and standard deviation of sales from Ashbaugh et al. (2006) as a first proxy of FFI.

proxy, I do not find any direct association between SPS and *AAI*. However, the interaction of *IP* and *AAI* show a negative and statistically significant association with SPS. The interaction of *IP* with FFI is based on the assumption that investors rely on FFI in countries with good IP practices.

These results imply that investors perceive accruals as information signal and rely on accruals in making investment decision. However, this association is dependent on the quality of IP arrangements of the countries; i.e., accruals provide information in countries with strong IP arrangements. These results are consistent with the view that countries with strong property rights have high quality FFI resulting in low earnings management (Leuz et al., 2003). These results suggest that investors perceive accruals as information signals to the market when making their investment decision in countries with strong IP (Ali et al., 2000).

Results for the year-by-year cross-sectional analyses for the direct association of both proxies of FFI with SPS are inconclusive on whether investors use FFI for investment decisions in the market. However, the interaction results provide evidence consistent with earlier results that investors tend to use FFIs in investment decisions in countries with strong IP. Overall, these results suggest that IP is a strong and consistent determinant of the use of the FFI in capital markets around the world. IP arrangements are likely to increase the quality of firm-specific information. Thus, investors capitalize such information in share prices leading to informed arbitrage, which reduces SPS.

To sum up, this thesis finds that the improvements in country development, IP and the rapid increase in the size of markets affect SPS. Specifically *IP* and *CD* are the main determinants of SPS. This improvement in *CD* and *IP* results in an increase in the size of the market. This is a reflection of the greater FFI flows in the market, which are priced by investors while making investment decisions, resulting in a decrease in SPS.

This thesis presents empirical evidence that in low IP countries, stock returns are associated with more market-wide stock price variation, and therefore have high SPS. Since these market-wide price fluctuations are not directly correlated with FFI, I surmise that poor IP may be driving these high SPS. This thesis also suggest that countries with strong IP arrangements is associated with greater firm-specific return variation, and thus with lower SPS. The results suggest that strong IP might be protecting investors from inter-corporate income-shifting by insiders and controlling shareholders and thus might be facilitating the use of FFI. Therefore, the strong IP arrangements render firm-specific informed arbitrage attractive in these stock markets thus lowering SPS. Like MYY, these results also suggest that stock markets in developing countries may be less efficient in the use of FFI than developed economies and hence have high SPS. If such movements in stock prices are only due to other economic or political connections, then in the words of MYY, the “numb invisible hands” may allocate capital to poor investment projects, thereby hindering economic growth.

The results of this study need to be read within the wider context of cross-country studies of accounting, finance and economics. With many factors involved in stock market

development and different countries having different economic and regulatory histories, it is difficult to conclude that investors price FFI in the same manner in each country. The differences in the IP lead to differences in the quality of financial information reported to outsiders. As Leuz (2010) puts it, reporting practices are unlikely to converge globally, despite widespread IFRS adoption due to variations in institutional environments. Thus investors rely on the relevant set of FFI in making investment decisions.

In spite of these caveats, I believe that this study sheds light into the complex relation between synchronicity, accounting-based firm fundamentals, and country-level institutional arrangements. These findings highlight an important link between IP and reporting of quality accounting information to outsiders, and complement the international accounting literature that documents systematic patterns in the relation between stock returns and FFI. Further investigation into intra-country association of FFI and other sources of information is left to future research studies. The next section provides a general overview of the role of institutional reforms in the development of a stock market.

6.2 Discussion

A stream of studies in accounting, economics and finance has identified the complex relation between corporate disclosures, financing, stock market development and country development. The results often indicate that the relations between stock market development, IP, and country development are not linear in nature, and that there are many other factors involved in the process. The influences of some of these additional factors are yet to be fully appreciated in the market development literature. Furthermore, as noted

earlier, many of these factors are unique to specific countries and may have influenced the development of the capital markets in different ways depending on the context of the country. For example, it can be reported that the influence of political change in some countries, and the nature of such change, is not similar across countries. Some countries may have changes in political ideology which led to greater market liberalization, while others may have had significant shifts in political ideology leading to shifts from planned, totalitarian regimes to market driven, democratic systems.

Some of the institutional reforms in Poland, Malaysia and China have been mentioned earlier in Chapter 1 (motivation section). Both Poland and China have had major shifts in their political and economic philosophies, a move from centrally planned economics to market economics, which has led to large economic growth in both countries. Both countries have tripled their per capita GDP over the sample period. While Poland has joined the EU and is now under the jurisdiction of the market regulatory arrangements of the market based system of the EU, China continues to intrigue the capital market and political science experts. China's institutional environment is quite distinct from the western capital markets (Peng, 2004). It has a socialist tradition with strong cultural influences (Scarborough, 1998). Peng and Shekshnia (2001) report that, in China, private firms still operate under restrictions for acquisition and allocation of resources. Additionally, CG and property rights are weak, and fund allocation even by private firms, must often observe political motivations (Peng, 2004; Tam, 2002). The important aspect of the Chinese system is weak decentralization of property rights compared to Western

system. Western style has its explicit system for protecting individual rights with strong constitutional foundations associated with political freedom, representation, and democracy (Montinola, Qian, & Weingast, 1995). However, none of these features are present in the Chinese system. The way forward undertaken in China is unique in its own setting. Much of the decentralization needed to improve the equity markets has been through decentralization of central government authority to state governments, the decentralization of state owned enterprises, and allowing foreign participation in the equity markets (Lo & Tang, 2006). These changes along with the market size of the country has prompted much interest in the Chinese capital market, and therefore led to unprecedented growth in that market.

Malaysia, Peru, South Korea, and Taiwan have also had major improvements. Malaysia, South Korea, and Taiwan perhaps have very similar economic backgrounds. These countries were developing very rapidly prior to the AFC of 1997, but the AFC cut short their rapid growth momentum. All three countries found that their IP arrangements were weak. They took major steps to correct the shortcomings. By 2000, all three were back into their rapid growth mode and have since seen large growth in per capita GDP.

Peru, a South American emerging market, has a unique history. It has seen sustained economic growth since the economic reforms under the liberal-democratic reforms of mid-1990s. It has experienced a 98.77% growth in the number of companies since 1995, due to these reforms. These reforms have moved Peru from a feudal and state controlled economic system to a modern liberal economy (Sheahan, 1999).

Nevertheless, the consistency in the relation between market size change (number of listed companies in the stock market) and SPS suggests that capital market initiatives that encourage companies to use the public equity market, do improve stock market information efficiencies. Examples of these changes are highlighted in the motivation for this research. These were improvements in legislative arrangements for stock market regulation, development of company level CG codes, improvements in corporate reporting standards and enforcement. A brief chronology of the institutional and regulatory reforms in some of the sample countries is provided in Appendix 10 and 11.

These and earlier observations suggest that capital market development is a concept that carries many meanings, such as development of equity markets or development of financial markets in general. Accordingly, each notion can be measured in different ways, for example, stock price synchronicity or cost of capital, for the equity notion; and bank liquidity and foreign direct investment, for the general notion. Each of these measures is influenced by a multitude of factors, most of which are intertwined.

6.3 Limitations of the Thesis

This thesis is subject to some limitations. The first limitation is the ability to conceptually identify the variables involved in the research, and empirically validate the associations between these variables. With many facets of the development of a stock market to consider, and different countries having different institutional reforms along with varying political, economic and social settings. These institutional reforms are unique to each country and may have a unique impact on its own capital market. It is difficult to have a

common scale for such vast and diversified set of arrangements. These IP variables, I use, are not ratio scale variables and are mostly with ordinal numerical properties. Moreover, these governance indicators are highly correlated with each other. These variables primarily represent different dimensions of the IP arrangements within a country (Kaufman et al., 2009). Thus, to cater for multicollinearity, I use principal component analysis and use the first principal component of these variables as my IP variable.

Second, there is a wide variety of other information sources other than accounting based firm fundamentals and other institutional arrangements present across the world with each having its impact on SPS. For example, studies (Chen, Roll, & Ross, 1986; Kilian & Park, 2009; Fama, 1981) suggest that macrocosmic news such as such as oil price shocks, inflation, and interest rates, affect share price returns and thus may affect SPS.

Third, the thesis is limited to the use of country-level IP arrangements. There is no universally accepted IP index such as index developed on the basis of independence of the board of directors, audit committees, repute of external auditors etc. at the firm level which could be used across the study.

Last but not the least, the study uses total accruals as a proxy for FFI in the FFI and SPS stage. Total accruals is a crude measure. The use of a more direct sophisticated measure of accruals such as abnormal accruals or components of accruals may give more robust results. However, due to data constraints such sophisticated measures could not be used for the purposes of this study.

6.4 Opportunities for Future Research

This thesis highlights several prospective areas for future research. This thesis investigates the effects of IP environment on SPS on a cross-country basis. An interesting area would be to conduct a more in-depth comparative analyses of the developed and developing countries with respect to IP environment at firm-level in each country such as with board of directors, audit committees, Big-Four auditors, etc. Second, the effects of major corporate collapses or financial crises on SPS could also be studied specifically in in each country. Third, since the results of this thesis suggest that macroeconomic indicators affect SPS, further investigation of the macroeconomic variable such as inflation, oil prices, the level of debt, trade openness etc. could be beneficial. Fourth, this study is only limited to the use of a few accounting based FFI items; an investigation of SPS with other FFI could also be interesting at firm-level and country-level. Fifth, this thesis uses total accruals as an information signal; however, others may wish to investigate finer measures of earnings quality when the data are more readily available. Sixth, SPS could also be investigated with respect to earnings management, and cost of capital etc. Seventh, a study of the relation of the timeliness and accounting conservatism with SPS could be another area for future research, as Ball et al. (2000) argue that conservatism facilitates monitoring of managers and of debt contracts which is an important factor of efficient CG.

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Appendices

Appendix 1 Principal Component Analysis of SPS and IP variables

Appendix 1, Panel A displays the PCA of SPS measures (*Com* and R^2) and Panel B displays PCA of the World Bank Governance Indicators of Rule of Law, Government Efficiency, Political Stability, Control of Corruption, Voice and Accountability and Regulatory Quality. Each panel displays Eigenvalue and its relative proportion of the variation of the first Principal Component.

Years	Panel A:SPS Measures		Panel B:IP Variables	
	Eigenvalue	Proportion	Eigenvalue	Proportion
1995	1.879	0.93	5.483	0.91
1996	1.882	0.94	5.121	0.85
1997	1.909	0.95	5.483	0.91
1998	1.892	0.94	5.403	0.90
1999	1.917	0.95	5.483	0.91
2000	1.898	0.94	5.485	0.91
2001	1.913	0.95	5.483	0.91
2002	1.909	0.95	5.421	0.90
2003	1.924	0.96	5.441	0.90
2004	1.930	0.96	5.492	0.91
2005	1.920	0.96	5.491	0.91
2006	1.921	0.96	5.369	0.89
2007	1.921	0.96	5.303	0.88
2008	1.917	0.95	5.303	0.88
2009	1.916	0.95	5.333	0.88
2010	1.921	0.96	5.483	0.91

Appendix 2 Number of Companies in each Country from 1995-2010

Appendix 2 provides the number of companies in each country during the sample period. The number of companies includes active, dead and suspended companies in each country. The last row is the total for each year.

Country	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Africa																
S. Africa	164	178	185	203	255	267	275	284	294	298	311	332	369	422	433	443
America																
Brazil	569	593	783	870	956	1,026	1,070	1,102	1,128	1,137	1,159	1,183	1,238	1,301	1,310	1,329
Canada	6,529	6,889	7,442	8,101	8,445	8,926	9,626	9,869	10,163	10,567	11,039	11,491	11,948	12,431	12,630	12,943
Chile	264	267	292	311	318	323	324	329	334	339	344	352	360	367	368	372
Colombia	162	168	170	171	171	186	197	214	221	226	231	237	247	259	265	276
Mexico	432	443	485	507	530	551	563	574	578	582	588	597	602	611	617	625
Peru	225	244	261	277	281	314	342	365	382	394	406	420	430	451	464	472
US	15,988	17,885	20,102	22,594	24,329	27,359	28,400	30,340	31,575	33,323	25,034	36,268	37,545	38,833	39,753	40,788
Average	3,453	3,784	4,219	4,690	5,004	5,526	5,789	6,113	6,340	6,653	5,543	7,221	7,481	7,750	7,915	8,115
Asia																
China	357	426	709	879	975	1,074	1,227	1,283	1,352	1,441	1,512	1,512	1,623	1,751	1,780	2,028
Hong Kong	580	613	679	741	768	840	934	1,040	1,119	1,197	1,251	1,330	1,395	1,467	1,493	1,575
India	1,792	1,970	2,099	2,256	2,284	2,354	2,443	2,471	2,524	2,565	2,606	2,687	2,769	2,959	3,012	3,117
Indonesia	276	299	324	353	356	374	392	425	441	450	459	470	480	520	536	551
Japan	2,996	3,164	3,318	3,441	3,534	3,682	3,880	4,077	4,210	4,356	4,542	4,730	4,924	5,037	5,109	5,174
Malaysia	500	559	649	725	743	782	824	867	912	1001	1086	1145	1186	1209	1216	1216
Pakistan	221	248	274	371	429	434	439	442	444	449	459	463	467	468	471	477

Country	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Philippines	219	251	275	296	308	314	321	329	334	344	352	353	363	378	380	385
Singapore	432	458	498	533	563	644	719	748	790	864	956	1,030	1,088	1,163	1,199	1,252
S. Korea	869	932	1,215	1,302	1,338	1,602	1,834	2,075	2,196	2,284	2,361	2,471	2,566	2,670	2,742	2,827
Taiwan	239	302	355	420	508	592	711	820	915	1,014	1,091	1,139	1,175	1,245	1,280	1,324
Thailand	737	794	840	865	872	883	892	926	951	1,010	1,092	1,156	1,182	1,228	1,245	1,272
Average	768	835	936	1,015	1,057	1,131	1,218	1,292	1,349	1,415	1,481	1,541	1,602	1,675	1,705	1,767
Australasia																
Australia	1,298	1,653	1,750	1,837	1,902	2,075	2,234	2,415	2,559	2,816	3,054	3,245	3,496	3,734	3,785	3,863
N. Zealand	218	229	250	287	301	320	346	359	378	419	448	459	470	483	485	491
Average	758	941	1,000	1,062	1,102	1,198	1,290	1,387	1,469	1,618	1,751	1,852	1,983	2,109	2,135	2,177
Europe																
Austria	186	194	197	229	240	253	276	285	296	310	318	328	340	348	353	357
Belgium	517	545	584	623	677	715	736	754	759	783	792	812	850	872	891	896
Czech Rep	292	305	310	314	316	317	318	318	319	319	321	323	325	329	329	330
Denmark	355	370	376	391	402	413	418	421	421	423	433	441	461	480	484	489
Finland	175	182	200	212	233	260	272	275	278	284	294	300	309	315	316	320
France	1,355	1,441	1,695	1,806	1,961	2,090	2,196	2,266	2,290	2,316	2,355	2,439	2,543	2,628	2,672	2,719
Germany	353	366	388	434	540	668	742	764	781	792	819	909	1,082	1,242	1,348	1,415
Greece	290	317	334	349	381	440	472	494	510	533	531	537	540	549	554	557
Holland	431	460	497	635	669	702	712	717	727	731	739	747	761	777	780	785
Ireland	125	127	136	147	157	168	172	172	172	174	175	181	195	199	198	199
Italy	439	464	483	504	539	584	633	650	665	675	691	719	774	809	819	828

Country	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Norway	287	320	360	418	438	454	481	494	497	514	541	585	633	670	685	695
Poland	31	43	70	139	189	213	251	264	268	280	326	364	494	662	712	753
Portugal	222	228	232	242	248	252	257	260	264	266	267	269	273	277	279	279
Spain	183	187	199	213	255	276	313	322	336	345	352	406	424	440	444	457
Sweden	823	853	908	994	1,068	1,149	1,200	1,225	1,238	1,264	1,302	1,365	1,447	1,508	1,567	1,605
Turkey	220	242	271	301	316	343	360	366	369	372	385	402	418	423	426	437
UK	4,954	5,229	5,481	5,695	5,821	6,075	6,425	6,865	7,063	7,284	7,747	8,194	8,572	8,833	8,892	8,945
Average	624	660	707	758	803	854	902	940	959	981	1,022	1,073	1,136	1,187	1,208	1,226

Appendix 3 Descriptive Statistics for SPS Measures

Appendix 3 provides descriptive statistics for SPS measures. *Com* is the tendency of stock prices to move in the same direction in a particular period of time. R^2 is the percent of variation in the bi-weekly returns of a stock in a country, explained by variation in that country's market returns and US market's return to control of international market effects. *SYNCH* is the first principal component of MYY's SPS measures. Panel A is for *Com*, Panel B is for R^2 and Panel C is for *SYNCH*, respectively.

Country	Panel A: <i>Com</i>							Panel B: R^2						
	Mean	Med	StDev	Min	Max	Skew	Kurt	Mean	Med	StDev	Min	Max	Skew	Kurt
Australia	0.59	0.59	0.02	0.56	0.66	1.16	2.74	0.10	0.09	0.02	0.06	0.13	0.61	-0.70
Austria	0.60	0.60	0.03	0.55	0.65	-0.11	-1.12	0.15	0.14	0.05	0.08	0.24	0.55	-0.84
Belgium	0.61	0.61	0.02	0.58	0.65	0.52	-0.77	0.14	0.14	0.04	0.05	0.22	-0.12	1.29
Brazil	0.63	0.63	0.02	0.59	0.67	-0.75	4.10	0.16	0.16	0.03	0.07	0.20	-1.31	3.11
Canada	0.58	0.58	0.02	0.56	0.65	1.81	4.48	0.10	0.09	0.03	0.06	0.16	1.00	1.60
Chile	0.64	0.64	0.03	0.60	0.70	0.79	0.56	0.18	0.16	0.07	0.07	0.32	0.48	-0.04
China	0.75	0.75	0.05	0.63	0.82	-0.61	0.64	0.30	0.27	0.16	0.09	0.58	0.17	-1.45
Colombia	0.68	0.68	0.02	0.64	0.70	-0.63	-0.51	0.23	0.20	0.08	0.13	0.43	1.18	1.04
Czech Rep.	0.64	0.65	0.04	0.58	0.71	-0.03	-1.49	0.18	0.12	0.10	0.09	0.43	1.16	0.57
Denmark	0.63	0.63	0.03	0.57	0.70	0.27	1.16	0.14	0.14	0.06	0.06	0.26	0.60	-0.39
Finland	0.65	0.65	0.03	0.60	0.70	-0.01	-0.98	0.18	0.17	0.06	0.10	0.28	0.45	-1.06
France	0.61	0.60	0.03	0.57	0.66	0.84	0.33	0.11	0.10	0.05	0.03	0.19	0.10	-1.13
Germany	0.60	0.60	0.03	0.56	0.64	0.24	-0.90	0.12	0.11	0.03	0.07	0.18	0.82	0.44
Greece	0.71	0.70	0.05	0.65	0.82	0.92	0.08	0.25	0.24	0.09	0.10	0.43	0.43	-0.22
Holland	0.64	0.65	0.03	0.58	0.68	-1.02	0.86	0.19	0.20	0.07	0.10	0.31	0.41	-0.74
Hong Kong	0.66	0.66	0.04	0.59	0.72	0.04	-0.18	0.16	0.17	0.05	0.08	0.25	0.01	-0.65
India	0.69	0.68	0.03	0.63	0.76	0.70	1.27	0.22	0.21	0.09	0.12	0.42	1.12	0.75
Indonesia	0.66	0.66	0.03	0.60	0.71	-0.07	-0.70	0.17	0.17	0.04	0.10	0.24	0.14	-0.65
Ireland	0.64	0.63	0.02	0.60	0.69	0.40	-0.48	0.13	0.12	0.04	0.08	0.22	0.60	-0.33

Country	Panel A: <i>Com</i>							Panel B: R^2						
	Mean	Med	StDev	Min	Max	Skew	Kurt	Mean	Med	StDev	Min	Max	Skew	Kurt
Italy	0.67	0.66	0.04	0.61	0.78	1.12	2.63	0.20	0.20	0.11	0.06	0.39	0.22	-1.34
Japan	0.67	0.66	0.02	0.62	0.70	-0.58	0.81	0.20	0.21	0.06	0.10	0.28	-0.43	-0.83
Malaysia	0.71	0.71	0.06	0.63	0.80	0.17	-1.42	0.25	0.23	0.11	0.09	0.48	0.67	0.00
Mexico	0.66	0.66	0.03	0.62	0.72	0.37	-0.16	0.22	0.21	0.07	0.11	0.36	0.29	-0.08
N. Zealand	0.63	0.62	0.02	0.60	0.67	0.70	-0.27	0.10	0.10	0.04	0.05	0.20	1.08	2.17
Norway	0.63	0.63	0.02	0.61	0.68	1.24	0.53	0.17	0.17	0.04	0.10	0.24	0.34	-0.33
Pakistan	0.66	0.65	0.03	0.63	0.70	0.54	-1.42	0.18	0.17	0.04	0.08	0.23	-0.80	1.47
Peru	0.65	0.64	0.03	0.60	0.70	0.20	-1.24	0.18	0.16	0.06	0.10	0.29	0.52	-0.72
Philippines	0.66	0.66	0.03	0.61	0.72	0.24	-0.74	0.16	0.15	0.05	0.10	0.27	0.84	0.00
Poland	0.67	0.66	0.05	0.62	0.80	1.20	1.81	0.21	0.19	0.11	0.10	0.54	1.95	5.27
Portugal	0.64	0.63	0.04	0.58	0.70	0.23	-0.93	0.18	0.17	0.07	0.07	0.29	0.08	-1.08
Singapore	0.69	0.69	0.04	0.62	0.77	0.15	-0.23	0.15	0.14	0.06	0.07	0.25	0.16	-1.63
S. Africa	0.62	0.62	0.02	0.60	0.66	0.60	-0.70	0.12	0.12	0.03	0.06	0.21	0.67	2.34
S. Korea	0.67	0.67	0.04	0.61	0.71	-0.33	-1.16	0.20	0.19	0.06	0.09	0.28	-0.47	-0.37
Spain	0.67	0.66	0.03	0.62	0.72	0.38	-1.06	0.22	0.25	0.09	0.03	0.35	-0.58	-0.18
Sweden	0.64	0.64	0.02	0.60	0.68	0.24	-1.07	0.17	0.16	0.05	0.11	0.29	1.00	1.57
Taiwan	0.71	0.70	0.03	0.66	0.78	0.78	0.21	0.30	0.28	0.08	0.17	0.49	0.48	1.10
Thailand	0.67	0.67	0.01	0.65	0.69	0.37	-0.34	0.22	0.22	0.05	0.14	0.31	0.15	-0.54
Turkey	0.74	0.74	0.03	0.70	0.80	0.28	-1.16	0.31	0.30	0.07	0.18	0.43	0.10	-1.04
UK	0.61	0.60	0.02	0.58	0.66	0.58	-0.78	0.11	0.10	0.03	0.06	0.18	0.91	0.99
US	0.59	0.59	0.02	0.56	0.63	0.38	0.23	0.08	0.08	0.04	0.04	0.17	0.87	0.41

Appendix 3 (Contd)

Descriptive Statistics for SPS Measures

Appendix 3 provides descriptive statistics for SPS measures. *Com* is the tendency of stock prices to move in the same direction in a particular period of time. R^2 is the percent of variation in the bi-weekly returns of a stock in a country explained by variation in that country's market returns and US market's return to control of international market effects. *SYNCH* is the first principal component of MYY's SPS measures.

Country	Panel C: <i>SYNCH</i>						
	Mean	Med	StDev	Min	Max	Skew	Kurt
Australia	-1.59	-1.68	0.26	-1.87	-1.07	0.94	0.01
Austria	-0.96	-0.81	0.49	-1.88	-0.36	-0.52	-1.05
Belgium	-1.01	-1.00	0.53	-2.43	-0.32	-1.21	2.26
Brazil	-0.46	-0.45	0.31	-1.00	-0.01	-0.12	-0.54
Canada	-1.76	-1.83	0.24	-2.19	-1.28	0.38	-0.22
Chile	-0.09	-0.12	0.60	-0.84	1.23	0.88	0.80
China	2.77	3.23	1.82	-0.11	5.21	-0.26	-1.39
Colombia	0.83	0.82	0.85	-0.67	3.01	0.77	1.92
Czech Rep.	-0.30	-0.32	1.26	-1.96	2.54	0.70	-0.03
Denmark	-0.62	-0.69	0.56	-1.34	0.31	0.41	-1.21
Finland	0.08	0.12	0.53	-0.80	1.25	0.39	0.13
France	-1.35	-1.42	0.39	-2.07	-0.76	0.03	-0.73
Germany	-1.45	-1.46	0.60	-2.40	-0.42	0.22	-0.94
Greece	1.48	0.96	1.42	-0.27	4.06	0.75	-0.80
Holland	0.01	0.02	0.57	-1.20	0.75	-0.58	-0.15
Hong Kong	-0.21	0.08	0.76	-1.84	0.58	-0.79	-0.51
India	0.96	0.55	1.00	-0.32	2.61	0.46	-1.45
Indonesia	0.00	-0.23	0.80	-0.99	1.29	0.38	-1.43
Ireland	-0.62	-0.65	0.39	-1.16	0.16	0.36	-0.79
Italy	0.49	0.38	1.04	-0.95	2.28	0.28	-1.21
Japan	0.48	0.20	0.80	-0.75	2.15	0.68	-0.17
Malaysia	1.44	1.30	1.57	-1.09	4.65	0.27	-0.41
Mexico	0.51	0.61	0.72	-0.69	1.63	-0.36	-0.99
N. Zealand	-1.07	-1.13	0.44	-1.71	-0.10	0.58	0.14
Norway	-0.28	-0.29	0.59	-1.11	1.09	0.69	0.47
Pakistan	0.22	0.18	0.70	-0.89	1.51	0.54	-0.24
Peru	-0.08	-0.23	0.82	-1.14	1.65	0.99	0.45
Philippines	-0.02	0.04	0.64	-0.90	1.32	0.51	-0.37
Poland	0.47	-0.23	1.35	-1.00	3.44	1.09	0.25
Portugal	-0.21	-0.36	0.84	-1.48	1.82	0.77	0.86
Singapore	0.31	0.35	0.68	-1.13	1.32	-0.50	-0.32
S. Africa	-0.93	-1.02	0.52	-1.66	0.01	0.23	-1.08
S. Korea	0.37	0.22	0.91	-1.00	2.12	0.38	-0.55
Spain	0.82	0.86	0.91	-1.01	2.13	-0.38	-0.58
Sweden	-0.28	-0.32	0.53	-1.38	0.96	0.41	1.74
Taiwan	1.80	1.83	0.62	0.76	3.01	0.06	-0.22
Thailand	0.69	0.65	0.70	-0.34	2.12	0.48	-0.41
Turkey	2.61	2.63	0.75	1.43	3.95	0.23	-0.30
UK	-1.30	-1.27	0.39	-1.81	-0.44	0.76	0.59
US	-1.73	-1.72	0.39	-2.32	-0.90	0.26	-0.11
Correlation	r = 0.907 (p-value ≤ 0.000)						

Appendix4 Regression Results of Com with FFI at Firm-Level

Appendix 4 displays results of Model 6 for *Com* with FFI using firm-level data. *Inter* is the regression model intercept. *LOSS* is a dummy variable of 1 if the company reports a loss otherwise 0, *STDROA* and *STDSALES* are the five-year rolling standard deviation of Return on Assets, and sales, respectively. *TOV* is the annual turnover volume; *MVE* is the natural log of annual market value of equity; *Yr* is a series of fiscal year fixed effects; and *Ind* is industry control. R^2 is the explanatory power. F is the F-statistics and N represents the number of firm-year observations for the regression model. The reported value is the coefficient of the variable with asterisk representing the respective significance level.

Country	Inter	LOSS	STDROA	STDSALES	TOV	MVE	Yr	Ind	F	R ²	N
Australia	0.59***	0.01***	0.000	0.000					23.5	8.6	6,019
Austria	0.82***	0.002	0.000	(0.06)*					5.2	10.6	805
Belgium	0.50***	0.002	0.000	(0.037)*					2.0	2.5	947
Brazil	0.64***	0.01*	0.000	0.027					9.7	7.7	2,488
Canada	0.61***	0.02***	0.000	0.001					14.8	6.8	4,891
Chile	0.90***	(0.02)*	0.000	0.023					7.2	10.5	1,309
China	0.58***	(0.001)	(0.00)**	0.002					134.6	20.8	12,728
Colombia	0.74***	0.03	0.001	(0.004)					2.5	1.2	244
Czech Rep	0.97***	(0.03)	(0.001)	0.003					3.8	20.1	269
Denmark	0.61***	(0.01)	0.000	(0.009)					7.7	11.3	1,266
Finland	0.65***	0.02***	0.00**	0.01					3.8	4.5	1,407
France	(19.2)	(18.4)	764.9	16.56					1.9	0.5	4,120
Germany	0.59***	0.02***	0.000	0.001					18.7	6.1	6,812
Greece	(80.99)	(1.32)	(1.09)	3.9					1.1	0.1	3,042
Holland	0.57***	0.001	0.01***	(0.003)					3.7	5.9	1,039
H. Kong	0.57***	0.02***	0.000	(0.002)					53.1	7.8	15,373
India	(15.64)	(25.58)**	34.2	(9.81)					0.6	-0.1	5,679
Indonesia	-12.04	13.26	26.35	26.96					0.5	-0.4	2,779
Ireland	0.59***	0.02	0.00	0.06	Controlled	Controlled	Controlled	Controlled	2.7	10.3	338
Italy	(25.10)	12.92	65.21	24.16					1.0	-0.0	2,799
Japan	14.43	(22.24)	(31.51)	12.75					0.6	-0.0	34,383
Malaysia	(12.68)	(12.11)	1.09	(39.4)					2.3	0.4	7,313
Mexico	(25.16)	56.8	37.15	18.09					0.7	-0.7	764
N. Zealand	0.64***	0.031***	0.00**	(0.02)***					4.7	9.2	909
Norway	(36.98)	86.04*	(18.07)	11.8					0.6	-0.6	1,668
Pakistan	68.20	34.275	22.97	69.9					0.6	-0.8	1,061
Peru	0.604	(0.21)	(0.02)	(1.48)					0.4	-48.8	32
Philippines	(29.55)	86.89	(16.21)	128.9					0.7	-0.4	1,582
Poland	0.60***	0.008*	0.00*	0.003					11.1	12.6	1,743
Portugal	45.48	(132.7)	(32.69)	(25.91)					0.6	-2.1	423
Singapore	0.58***	0.021***	0.00***	0.002					24.4	11.5	4,507
S Africa	38.82	(69.45)*	25.94	(9.18)					0.8	-0.9	2,469
S Korea	0.56***	0.016***	0.00**	(0.003)					7.2	6.4	2,253
Spain	0.70***	0.019**	0.000	0.03					6.2	9.3	1,323
Sweden	0.65***	0.01***	0.000	(0.01)*					4.8	3.8	2,453
Taiwan	0.57***	0.002*	0.000*	0.07*					43.2	10.2	9,264
Thailand	14.94	(17.51)	12.23	(44.56)					0.8	-0.1	4,191
Turkey	0.57***	(0.004)	0.000	(0.001)					14.3	14.1	2,032
UK	(3.85)	19.82	18.19	(76.8)*					1.6	0.2	10,763
US	(65.1)***	(26.76)	4.68	(69.88)					4.4	0.2	45,773

*, **, *** denotes p<0.10, p<0.05 and p<0.01 respectively, all two tailed

Appendix 5 Regression Results of R^2 with FFI at Firm-Level

Appendix 5 displays results of Model 6 for R^2 with FFI using firm-level data. Inter is the regression model intercept. *LOSS* is a dummy variable of 1 if the company reports a loss, otherwise 0; *STDROA* and *STDSALES* are the five-year rolling standard deviation of Return on Assets, and sales, respectively. *TOV* is the annual turnover volume; *MVE* is the natural log of annual market value of equity; *Yr* is a series of fiscal year fixed effects; and *Ind* is industry control. R^2 is the explanatory power, F is the F-statistics and N represents the number of firm-year observations for the regression model. The reported value is the coefficient of the variable with asterisk representing the respective significance level.

Country	Inter	LOSS	STDROA	STDSALES	TOV	MVE	Yr	Ind	F	R^2	N
Australia	(0.00)	0.06**	0.000	0.000					141.9	36.9	6,019
Austria	(0.1)**	(0.017)	0.000	0.042					29.9	45.3	805
Belgium	(0.07)	0.04***	0.001*	0.003					38.1	49.5	947
Brazil	(0.09)***	0.013**	0.000	(0.028)					65.5	38.3	2,488
Canada	0.18***	(0.03)***	0.000	(0.001)					38.5	16.6	4,891
Chile	(0.46)***	0.03***	0.000	0.005					31.1	36.5	1,309
China	0.47***	(0.06)***	(0.00)***	(0.01)*					364.5	41.6	12,728
Colombia	(1.14)***	(0.10)**	0.011*	0.270					7.3	42.2	244
Czech Rep	(0.21)***	0.020	0.001	(0.002)					21.3	64.6	269
Denmark	(0.12)***	0.02**	0.000	(0.003)					33.3	38.0	1,266
Finland	(0.050)	0.011	0.000	0.017*					48.6	44.8	1,407
France	(0.030)	0.02***	0.000	(0.006)					138.2	45.4	4,120
Germany	(0.05)***	0.01*	0.000	0.000					139.1	33.6	6,812
Greece	0.08***	(0.02)***	0.000	0.001					93.4	43.1	3,042
Holland	(0.23)***	0.016	0.001	0.014					41.2	48.1	1,039
H. Kong	(0.15)***	(0.01)***	0.000	(0.001)					410.7	39.9	15,373
India	0.081***	0.010	0.000	(0.04)***					117.0	33.8	5,679
Indonesia	(0.44)***	(0.01)*	(0.002)**	(0.006)					48.6	30.0	2,779
Ireland	(0.110)	(0.020)	0.001	(0.080)	Controlled	Controlled	Controlled	Controlled	18.6	53.4	338
Italy	0.052***	0.001	0.000	(0.03)**					72.3	38.9	2,799
Japan	(0.25)***	0.1***	0.000	(0.008)					562.6	29.0	34,383
Malaysia	(0.11)***	0.004	0.000	0.000					166.1	36.0	7,313
Mexico	(0.20)***	(0.010)	0.001	0.14**					26.5	41.2	764
N. Zealand	(0.013)	0.001	0.000	0.005					25.1	39.9	909
Norway	(0.030)	0.004	0.000	0.001					38.5	36.9	1,668
Pakistan	(0.20)***	(0.003)	0.01**	(0.10)***					34.1	43.8	1,061
Peru	1.78***	(0.194)	0.07**	1.919					4.4	65.2	32
Philippines	(0.15)***	0.001	0.000	(0.03)*					31.9	32.8	1,582
Poland	(0.06)**	0.005	0.000	(0.001)					24.1	24.8	1,743
Portugal	0.208	0.019	0.002	(0.109)					16.1	46.3	423
Singapore	(0.010)	(0.02)***	0.000	0.010					103.5	36.2	4,507
S. Africa	0.000	0.1***	0.000**	0.000					59.7	37.3	2,469
S. Korea	(0.18)***	(0.1)***	(0.001)**	0.01**					30.9	24.9	2,253
Spain	(0.10)**	0.005	0.000	(0.025)					40.0	43.4	1,323
Sweden	(0.12)***	0.005	0.000	0.003					74.0	43.6	2,453
Taiwan	(0.06)***	(0.05)	(0.02)***	(0.03)***					169.1	31.2	9,264
Thailand	(0.22)***	0.03***	0.000	0.017					78.4	31.6	4,191
Turkey	0.080**	(0.003)	0.000	0.001					42.6	33.9	2,032
UK	0.04**	0.004*	0.000	0.001					230.4	35.6	10,763
US	0.03**	(0.04)***	0.000	0.000					1338.0	43.1	45,773

*, **, *** denotes p<0.10, p<0.05 and p<0.01 respectively, all two tailed

Appendix 6 Regression Results of Com with AAI at Firm-Level

Appendix 6 displays results of Model 6 for *Com* with *AAI* using firm-level data. *Inter* is the regression model intercept. *AAI* is accrual accounting information and is computed as net income less cash flow from operations scaled by total assets; *TOV* is the annual turnover volume; *MVE* is the natural log of annual market value of equity; *Yr* is a series of fiscal year fixed effects; and *Ind* is industry control. R^2 is the explanatory power; F is the F-statistics and N represents the number of firm-year observations for the regression model. The reported value is the coefficient of the variable with asterisk representing the respective significance level.

Country	Inter	AAI	TOV	MVE	Yr	Ind	F	R ²	N
Australia	0.63***	0.01***					21.6	4.0	5,879
Austria	0.62***	0.071					4.4	4.9	650
Belgium	0.58***	(0.01)					1.5	0.8	777
Brazil	0.69***	0.000					23.6	11.3	1,950
Canada	0.60***	(0.01)***					6.8	1.7	4,405
Chile	0.85***	(0.03)					24.1	16.7	1,386
China	0.54***	0.004					21.0	2.0	11,492
Colombia	0.82***	(0.191)					4.2	9.2	281
Czech Rep	(0.20)***	(0.156)*					34.8	62.6	244
Denmark	0.64***	(0.009)					4.6	2.7	1,394
Finland	0.64***	(0.026)					2.1	0.9	1,316
France	0.59***	0.001					4.4	1.2	3,393
Germany	0.59***	0.003					2.5	0.3	5,247
Greece	(2.56)**	(1.055)					2.7	1.1	1,728
Holland	0.61***	(0.032)**					3.5	2.4	1,141
H. Kong	0.61***	(0.000)					8.4	0.5	15,754
India	0.58***	0.031***					4.1	0.9	4,020
Indonesia	(5.28)	(7.380)					0.4	-0.3	2,788
Ireland	0.60***	0.045	Controlled	Controlled	Controlled	Controlled	1.12	0.6	399
Italy	0.59***	(0.001)					4.5	1.6	2,619
Japan	0.59***	(0.000)					17.9	0.7	29,938
Malaysia	0.52***	0.002					9.8	1.4	7,528
Mexico	0.98	0.001					265.5	40.6	3,487
N. Zealand	0.62***	0.000					3.7	3.4	898
Norway	(5.98)	(8.04)					0.5	-0.3	1,714
Pakistan	(8.60)	(1.445)					0.8	-0.2	1,092
Peru	0.34	(1.27)*					1.8	8.1	38
Philippines	(9.55)	(3.78)					0.7	-0.2	1,711
Poland	0.60***	0.006					1.5	0.3	1,730
Portugal	(18.48)	42.33					1.4	0.8	476
Singapore	0.56	(0.007)					2.7	0.4	4,636
S Africa	53.82	(45.9)*					0.6	-0.2	2,558
S Korea	0.56***	(0.019)***					1.9	0.5	2,077
Spain	0.69***	(0.027)					6.9	9.8	701
Sweden	0.66***	(0.012)					2.6	1.4	1,467
Taiwan	0.60***	(0.010)**					5.8	6.0	9,545
Thailand	32.70	(16.510)					1.7	0.2	4,545
Turkey	0.61***	(0.008)					1.8	0.7	1,445
UK	0.67***	0.000					71.3	8.6	9,700
US	(98.1)	(67.76)					4.2	0.1	42,453

*, **, *** denotes p<0.10, p<0.05 and p<0.01 respectively, all two tailed

Appendix 7 Regression Results of R^2 with AAI at Firm-Level

Appendix 7 displays results of Model 6 for R^2 with AAI using firm-level data. Inter is the regression model intercept. AAI is accrual accounting information and is computed as net income less cash flow from operations scaled by total assets; TOV is the annual turnover volume; MVE is the natural log of annual market value of equity; Yr is a series of fiscal year fixed effects; and Ind is industry control. R^2 is the explanatory power; F is the F-statistics and N represents the number of firm-year observations for the regression model. The reported value is the coefficient of the variable with asterisk representing the respective significance level.

Country	Inter	AAI	TOV	MVE	Yr	Ind	F	R^2	N
Australia	(0.08)***	(0.000)					247.2	33.4	5,879
Austria	(0.12)***	(0.120)					63.9	49.2	650
Belgium	(0.22)*	(0.01)					58.0	44.7	777
Brazil	(0.07)***	0.000					130.3	42.2	1,950
Canada	0.16***	0.003					41.4	10.6	4,405
Chile	(0.42)***	(0.038)					75.5	39.2	1,386
China	(0.07)***	0.135***					81.4	7.75	11,492
Colombia	(0.80)***	0.440**					19.0	36.7	281
Czech Rep	(0.21)***	0.020					21.3	64.6	269
Denmark	(0.17)***	0.02**					60.8	32.1	1,394
Finland	(0.23)	(0.069)*					73.7	37.8	1,316
France	0.12***	(0.013)					60.0	17.3	3,393
Germany	(0.12)***	(0.015)*					249.0	36.2	5,247
Greece	(0.14)***	0.004					54.3	27.0	1,728
Holland	(0.23)***	0.016					41.2	48.1	1,039
H. Kong	(0.31)***	(0.006)*					773.2	37.0	15,754
India	0.32	0.070***					56.4	14.2	4,020
Indonesia	(0.43)***	(0.003)					120.6	34.0	2,788
Ireland	(0.19)***	0.098	Controlled	Controlled	Controlled	Controlled	129.1	39.2	399
Italy	(0.09)***	(0.001)					63.1	22.2	2,619
Japan	(0.25)***	0.000					984.9	28.3	29,938
Malaysia	(0.21)***	(0.007)	Controlled	Controlled	Controlled	Controlled	165.1	20.7	7,528
Mexico	(0.17)***	0.000					337.2	46.5	3,487
N. Zealand	(0.01)***	(0.000)					27.4	26.1	898
Norway	(0.04)	(0.038)*					83.4	38.5	1,714
Pakistan	(0.17)***	(0.052)*					93.6	50.5	1,092
Peru	(0.31)	(0.815)					2.2	11.6	38
Philippines	(0.31)***	0.025					97.7	40.4	1,711
Poland	(0.14)***	0.017					53.0	26.5	1,730
Portugal	(0.01)	(0.051)					33.5	42.9	476
Singapore	(0.20)***	0.006					123.7	24.1	4,636
S. Africa	(0.00)	(0.000)					112.8	34.4	2,558
S. Korea	(0.18)***	(0.1)***					30.9	24.9	2,253
Spain	(0.22)***	0.025					47.0	46.1	701
Sweden	(0.21)***	0.002					71.9	38.6	1,467
Taiwan	(0.26)***	0.026**					290.1	26.7	9,545
Thailand	(0.32)***	0.007					261.5	40.7	4,545
Turkey	(0.16)***	(0.007)					43.1	25.9	1,445
UK	(0.00)	(0.000)					362.6	32.6	9,700
US	(0.14)***	(0.000)					1607.1	32.9	42,453

*, **, *** denotes p<0.10, p<0.05 and p<0.01 respectively, all two tailed

Appendix 8 Year-wise Regression Results of SPS Measures with FFI and FFI*IP

Appendix 8 displays results of Model 5 for SPS measures with FFI using country-level data. Panels A, B and C report results for FFI with *Com*, R^2 and *SYNCH*, respectively. *STDROA* and *STDSALES* are the five-year rolling standard deviation of Return on Assets, and sales, respectively. *IP* is the investor protection variable and is the first principal component of the World Bank Governance Indicators; *SMD* is stock market development and is proxied by the natural log of the number of companies in each country. *Int1* and *Int2* are the interactions of *IP*STDROA*, and *IP*STDSALES*, respectively. The independent variables are the medians of all the companies in a country representing one observation for each country each year. F-stat is the F-statistic and Adj-R² represents the explanatory power of the regression model. The first row reports coefficients of the variables while the second value is the respective p-value given in italics.

Panel A		Com						F-Stat	Adj-R ²
Variable	Intercept	<i>STDROA</i>	<i>STDSALES</i>	<i>IP</i>	<i>SMD</i>	<i>Int1</i>	<i>Int2</i>		
1999	0.649 <i>0.000</i>	0.011 <i>0.343</i>	-0.129 <i>0.751</i>	-0.002 <i>0.828</i>	-0.003 <i>0.653</i>	0.000 <i>0.933</i>	-0.095 <i>0.540</i>	1.57	9.48
2000	0.613 <i>0.000</i>	0.007 <i>0.470</i>	0.202 <i>0.577</i>	-0.013 <i>0.242</i>	-0.000 <i>0.936</i>	0.002 <i>0.506</i>	-0.061 <i>0.679</i>	2.44	18.09
2001	0.618 <i>0.000</i>	-0.003 <i>0.702</i>	0.242 <i>0.485</i>	0.014 <i>0.171</i>	0.003 <i>0.660</i>	-0.000 <i>0.908</i>	0.048 <i>0.725</i>	1.47	6.69
2002	0.605 <i>0.000</i>	-0.005 <i>0.475</i>	0.263 <i>0.418</i>	-0.012 <i>0.276</i>	0.005 <i>0.451</i>	-0.001 <i>0.626</i>	0.084 <i>0.535</i>	1.26	3.81
2003	0.652 <i>0.000</i>	-0.000 <i>0.935</i>	0.091 <i>0.763</i>	0.006 <i>0.472</i>	-0.001 <i>0.869</i>	0.000 <i>0.817</i>	-0.187 <i>0.141</i>	2.20	15.63
2004	0.664 <i>0.000</i>	0.664 <i>0.752</i>	-0.114 <i>0.658</i>	-0.000 <i>0.936</i>	-0.000 <i>0.940</i>	0.001 <i>0.577</i>	-0.132 <i>0.192</i>	2.62	19.92
2005	0.675 <i>0.000</i>	-0.005 <i>0.370</i>	0.180 <i>0.472</i>	-0.000 <i>0.982</i>	-0.004 <i>0.326</i>	0.000 <i>0.928</i>	-0.094 <i>0.361</i>	3.52	27.96
2006	0.678 <i>0.000</i>	-0.019 <i>0.001</i>	0.471 <i>0.043</i>	0.002 <i>0.657</i>	-0.003 <i>0.443</i>	0.002 <i>0.393</i>	-0.160 <i>0.105</i>	7.39	49.58
2007	0.676 <i>0.000</i>	-0.016 <i>0.015</i>	0.352 <i>0.140</i>	-0.011 <i>0.195</i>	0.000 <i>0.890</i>	0.000 <i>0.893</i>	0.040 <i>0.654</i>	3.53	28.04
2008	0.675 <i>0.000</i>	-0.007 <i>0.365</i>	0.250 <i>0.387</i>	-0.004 <i>0.623</i>	0.001 <i>0.742</i>	0.002 <i>0.541</i>	-0.087 <i>0.487</i>	1.42	6.07
2009	0.677 <i>0.000</i>	-0.007 <i>0.324</i>	0.078 <i>0.779</i>	-0.000 <i>0.921</i>	0.000 <i>0.884</i>	-0.000 <i>0.811</i>	-0.015 <i>0.907</i>	1.56	7.97
2010	0.670 <i>0.000</i>	-0.014 <i>0.039</i>	0.313 <i>0.224</i>	-0.010 <i>0.218</i>	-0.000 <i>0.898</i>	0.002 <i>0.456</i>	0.000 <i>0.998</i>	1.75	13.31

Appendix 8 (Contd) Year-wise Regression Results of SPS Measures with FFI and FFI*IP

Appendix 8, Panel B displays results of Model 5 for R^2 measures with FFI using country-level data. *STDROA* and *STDSALES* are the five-year rolling standard deviation of Return on Assets, and sales, respectively. *IP* is the investor protection variable and is the first principal component of the World Bank Governance Indicators; *SMD* is stock market development and is proxied by the natural log of the number of companies in each country. *Int1* and *Int2* are the interactions of *IP*STDROA*, and *IP*STDSALES*, respectively. The independent variables are the medians of all the companies in a country representing one observation for each country each year. F-stat is the F-statistic and Adj- R^2 represents the explanatory power of the regression model. The first row reports coefficients of the variables while the second value is the respective p-value given in italics.

Panel B		R^2						F-Stat	Adj- R^2
Variable	Intercept	<i>STDROA</i>	<i>STDSALES</i>	<i>IP</i>	<i>SMD</i>	<i>Int1</i>	<i>Int2</i>		
1999	0.206 <i>0.015</i>	0.019 <i>0.251</i>	-0.077 <i>0.897</i>	-0.016 <i>0.319</i>	-0.016 <i>0.207</i>	0.000 <i>0.979</i>	0.004 <i>0.984</i>	2.19	18.02
2000	0.193 <i>0.010</i>	0.022 <i>0.117</i>	0.114 <i>0.813</i>	-0.010 <i>0.522</i>	-0.017 <i>0.148</i>	0.005 <i>0.237</i>	-0.185 <i>0.352</i>	2.29	16.60
2001	0.210 <i>0.011</i>	-0.004 <i>0.752</i>	0.222 <i>0.688</i>	0.001 <i>0.913</i>	-0.002 <i>0.857</i>	-0.001 <i>0.840</i>	-0.095 <i>0.663</i>	0.49	-8.51
2002	0.201 <i>0.002</i>	-0.000 <i>0.957</i>	-0.192 <i>0.678</i>	0.000 <i>0.976</i>	-0.000 <i>0.937</i>	-0.001 <i>0.706</i>	-0.050 <i>0.794</i>	0.91	-1.45
2003	0.159 <i>0.017</i>	-0.012 <i>0.311</i>	0.443 <i>0.428</i>	0.000 <i>0.960</i>	0.002 <i>0.850</i>	0.002 <i>0.619</i>	-0.244 <i>0.294</i>	1.68	9.52
2004	0.114 <i>0.065</i>	-0.005 <i>0.595</i>	-0.132 <i>0.779</i>	-0.009 <i>0.516</i>	0.013 <i>0.215</i>	0.003 <i>0.386</i>	-0.195 <i>0.290</i>	2.47	18.49
2005	0.177 <i>0.001</i>	-0.006 <i>0.490</i>	0.177 <i>0.681</i>	-0.009 <i>0.410</i>	-0.003 <i>0.711</i>	0.003 <i>0.438</i>	-0.174 <i>0.328</i>	3.20	25.32
2006	0.223 <i>0.000</i>	-0.027 <i>0.027</i>	0.693 <i>0.156</i>	-0.003 <i>0.758</i>	-0.004 <i>0.585</i>	0.008 <i>0.133</i>	-0.332 <i>0.115</i>	3.27	25.91
2007	0.259 <i>0.000</i>	-0.022 <i>0.071</i>	0.262 <i>0.540</i>	-0.009 <i>0.521</i>	-0.001 <i>0.897</i>	0.000 <i>0.980</i>	0.010 <i>0.949</i>	2.55	19.24
2008	0.311 <i>0.000</i>	-0.024 <i>0.179</i>	0.330 <i>0.586</i>	-0.014 <i>0.422</i>	-0.002 <i>0.839</i>	0.004 <i>0.533</i>	-0.123 <i>0.639</i>	2.15	15.00
2009	0.299 <i>0.000</i>	-0.037 <i>0.015</i>	0.673 <i>0.208</i>	0.006 <i>0.688</i>	-0.002 <i>0.826</i>	0.007 <i>0.241</i>	-0.364 <i>0.155</i>	2.30	16.71
2010	0.239 <i>0.000</i>	-0.030 <i>0.040</i>	0.510 <i>0.341</i>	-0.004 <i>0.801</i>	-0.000 <i>0.989</i>	0.007 <i>0.215</i>	-0.217 <i>0.367</i>	1.17	3.36

Appendix 8 (Contd) Year-wise Regression Results of SPS Measures with FFI and FFI*IP

Appendix 8, Panel C displays results of Model 5 for *SYNCH* measures with FFI using country-level data. *STDROA* and *STDSALES* are the five-year rolling standard deviations of Return on Assets, and sales, respectively. *IP* is the investor protection variable and is the first principal component of the World Bank Governance Indicators; *SMD* is stock market development and is proxied by the natural log of the number of companies in each country. *Int1* and *Int2* are the interactions of *IP*STDROA*, and *IP*STDSALES*, respectively. The independent variables are the medians of all the companies in a country representing one observation for each country each year. F-stat is the F-statistic and Adj-R² represents the explanatory power of the regression model. The first row reports coefficients of the variables while the second value is the respective p-value given in italics.

Panel C		<i>SYNCH</i>						F-Stat	Adj-R ²
Variable	Intercept	<i>STDROA</i>	<i>STDSALES</i>	<i>IP</i>	<i>SMD</i>	<i>Int1</i>	<i>Int2</i>		
1999	0.584 <i>0.619</i>	0.290 <i>0.244</i>	-2.186 <i>0.801</i>	-0.159 <i>0.502</i>	-0.179 <i>0.344</i>	0.006 <i>0.951</i>	-1.124 <i>0.734</i>	2.24	18.64
2000	0.000 <i>0.999</i>	0.291 <i>0.225</i>	3.390 <i>0.676</i>	-0.251 <i>0.341</i>	-0.160 <i>0.415</i>	0.075 <i>0.329</i>	-2.360 <i>0.477</i>	2.50	18.77
2001	-0.353 <i>0.783</i>	-0.087 <i>0.715</i>	5.130 <i>0.568</i>	-0.175 <i>0.523</i>	0.027 <i>0.901</i>	-0.013 <i>0.866</i>	-0.213 <i>0.952</i>	0.89	-1.69
2002	-0.345 <i>0.780</i>	-0.091 <i>0.690</i>	1.823 <i>0.841</i>	-0.171 <i>0.582</i>	0.075 <i>0.727</i>	-0.036 <i>0.652</i>	0.699 <i>0.854</i>	1.01	0.15
2003	-0.029 <i>0.978</i>	-0.118 <i>0.558</i>	5.526 <i>0.562</i>	0.109 <i>0.690</i>	0.003 <i>0.987</i>	0.027 <i>0.700</i>	-5.283 <i>0.187</i>	2.05	13.93
2004	-0.053 <i>0.958</i>	-0.081 <i>0.658</i>	-3.079 <i>0.706</i>	-0.096 <i>0.702</i>	0.111 <i>0.537</i>	0.049 <i>0.457</i>	-3.938 <i>0.218</i>	2.64	20.14
2005	0.862 <i>0.398</i>	-0.172 <i>0.405</i>	5.273 <i>0.553</i>	-0.108 <i>0.653</i>	-0.122 <i>0.477</i>	0.038 <i>0.646</i>	-3.644 <i>0.320</i>	3.62	28.73
2006	1.224 <i>0.172</i>	-0.637 <i>0.005</i>	15.645 <i>0.072</i>	0.007 <i>0.973</i>	-0.106 <i>0.492</i>	0.122 <i>0.198</i>	-6.309 <i>0.090</i>	5.48	40.79
2007	0.922 <i>0.368</i>	-0.540 <i>0.029</i>	9.239 <i>0.286</i>	-0.306 <i>0.323</i>	0.000 <i>0.999</i>	0.007 <i>0.936</i>	0.857 <i>0.797</i>	3.14	24.80
2008	0.282 <i>0.790</i>	-0.331 <i>0.240</i>	6.901 <i>0.457</i>	-0.190 <i>0.500</i>	0.013 <i>0.941</i>	0.073 <i>0.517</i>	-2.478 <i>0.539</i>	1.80	10.98
2009	0.937 <i>0.375</i>	-0.441 <i>0.075</i>	7.014 <i>0.428</i>	0.042 <i>0.880</i>	-0.006 <i>0.973</i>	0.052 <i>0.635</i>	-3.340 <i>0.428</i>	1.89	12.07
2010	1.098 <i>0.331</i>	-0.564 <i>0.029</i>	10.589 <i>0.251</i>	-0.226 <i>0.436</i>	-0.015 <i>0.941</i>	0.113 <i>0.288</i>	-2.030 <i>0.622</i>	1.54	9.92

Appendix9 Year-wise Regression Results of SPS Measures with AAI, IP, and AAI*IP

Appendix 9 reports results for Model 5. Panels A and B report results for *AAI* with dependent variables of *Com*, and R^2 . Inter is the regression model intercept. *AAI* is accruals accounting information and is computed as net income less cash flow from operations scaled by total assets. *IP* is the investor protection variable and is the first principal component of the World Bank Governance Indicators. *AAI*IP* is the interaction of *AAI* and *IP* variables. *SMD* is stock market development and is proxied by the natural log of the number of companies in each country. F-Stat is the regression F value and Adj- R^2 is the regression's coefficient of variation. The first row reports coefficients of the variables while the second value is the respective p-value given in italics.

Year	Panel A							Panel B						
	<i>Com</i>							R^2						
	Inter	<i>AAI</i>	<i>IP</i>	<i>AAI*IP</i>	<i>SMD</i>	F-Stat	Adj R^2	Inter	<i>AAI</i>	<i>IP</i>	<i>AAI*IP</i>	<i>SMD</i>	F-Stat	Adj R^2
1999	0.601 <i>0.000</i>	-0.140 <i>0.175</i>	-0.012 <i>0.138</i>	-0.009 <i>0.815</i>	0.002 <i>0.802</i>	2.91	16.39	0.159 <i>0.070</i>	-0.149 <i>0.330</i>	-0.028 <i>0.022</i>	-0.060 <i>0.317</i>	-0.006 <i>0.617</i>	3.58	20.95
2000	0.617 <i>0.000</i>	-0.055 <i>0.575</i>	-0.018 <i>0.009</i>	-0.033 <i>0.365</i>	0.003 <i>0.686</i>	3.62	21.17	0.177 <i>0.032</i>	-0.066 <i>0.631</i>	-0.012 <i>0.203</i>	0.011 <i>0.824</i>	-0.006 <i>0.605</i>	2.39	12.49
2001	0.618 <i>0.000</i>	-0.028 <i>0.697</i>	-0.009 <i>0.124</i>	0.004 <i>0.886</i>	0.004 <i>0.530</i>	2.18	10.77	0.154 <i>0.059</i>	-0.179 <i>0.118</i>	-0.001 <i>0.846</i>	0.024 <i>0.580</i>	0.002 <i>0.803</i>	1.37	3.69
2002	0.609 <i>0.000</i>	-0.025 <i>0.762</i>	-0.014 <i>0.032</i>	-0.036 <i>0.279</i>	0.005 <i>0.407</i>	2.08	9.96	0.170 <i>0.021</i>	-0.077 <i>0.525</i>	-0.017 <i>0.061</i>	-0.049 <i>0.303</i>	-0.000 <i>0.950</i>	1.62	5.95
2003	0.661 <i>0.000</i>	0.043 <i>0.511</i>	-0.010 <i>0.033</i>	-0.020 <i>0.420</i>	-0.001 <i>0.875</i>	2.77	15.36	0.158 <i>0.059</i>	0.057 <i>0.625</i>	-0.022 <i>0.014</i>	-0.065 <i>0.145</i>	0.002 <i>0.801</i>	2.87	16.06
2004	0.689 <i>0.000</i>	0.075 <i>0.290</i>	-0.015 <i>0.002</i>	-0.028 <i>0.128</i>	-0.005 <i>0.345</i>	4.60	26.98	0.150 <i>0.044</i>	0.116 <i>0.334</i>	-0.036 <i>0.000</i>	-0.119 <i>0.007</i>	0.005 <i>0.611</i>	6.66	36.71
2005	0.740 <i>0.000</i>	0.171 <i>0.007</i>	-0.016 <i>0.000</i>	-0.051 <i>0.058</i>	-0.011 <i>0.012</i>	7.17	38.75	0.263 <i>0.000</i>	0.257 <i>0.013</i>	-0.034 <i>0.000</i>	-0.125 <i>0.006</i>	-0.011 <i>0.109</i>	8.27	42.72
2006	0.664 <i>0.000</i>	-0.043 <i>0.527</i>	-0.013 <i>0.001</i>	-0.048 <i>0.089</i>	-0.004 <i>0.324</i>	5.38	30.98	0.195 <i>0.002</i>	0.015 <i>0.917</i>	-0.026 <i>0.000</i>	-0.125 <i>0.015</i>	-0.003 <i>0.678</i>	5.47	31.45

Year	Panel A							Panel B						
	<i>Com</i>							<i>R²</i>						
	Inter	<i>AAI</i>	<i>IP</i>	<i>AAI*IP</i>	<i>SMD</i>	F-Stat	Adj <i>R²</i>	Inter	<i>AAI</i>	<i>IP</i>	<i>AAI*IP</i>	<i>SMD</i>	F-Stat	Adj <i>R²</i>
2007	0.657 <i>0.000</i>	-0.070 <i>0.275</i>	-0.008 <i>0.018</i>	-0.003 <i>0.920</i>	-0.001 <i>0.852</i>	3.39	19.67	0.210 <i>0.002</i>	-0.162 <i>0.149</i>	-0.012 <i>0.048</i>	-0.003 <i>0.949</i>	-0.003 <i>0.682</i>	3.06	17.41
2008	0.669 <i>0.000</i>	-0.004 <i>0.954</i>	-0.009 <i>0.025</i>	-0.026 <i>0.486</i>	0.002 <i>0.618</i>	1.86	8.09	0.251 <i>0.001</i>	-0.071 <i>0.663</i>	-0.032 <i>0.000</i>	-0.185 <i>0.014</i>	-0.000 <i>0.967</i>	4.85	28.28
2009	0.659 <i>0.000</i>	-0.014 <i>0.861</i>	-0.013 <i>0.006</i>	-0.069 <i>0.075</i>	-0.000 <i>0.986</i>	2.66	14.52	0.224 <i>0.013</i>	-0.093 <i>0.566</i>	-0.025 <i>0.013</i>	-0.158 <i>0.045</i>	-0.002 <i>0.829</i>	2.21	11.07
2010	0.724 <i>0.000</i>	0.100 <i>0.220</i>	-0.012 <i>0.015</i>	-0.037 <i>0.187</i>	-0.010 <i>0.060</i>	3.26	18.82	0.354 <i>0.000</i>	0.228 <i>0.161</i>	-0.027 <i>0.008</i>	-0.127 <i>0.027</i>	-0.022 <i>0.045</i>	3.19	18.32

Appendix 9 (contd)

Panel C

SYNCH

Appendix 9, Panel C reports results for Model 5 for *SYNCH*. *AAI* is accrual accounting information and is computed as net income less cash flow from operations scaled by total assets. *IP* is the investor protection variable and is the first principal component of the World Bank Governance Indicators. *AAI*IP* is the interaction of *AAI* and *IP* variables. *SMD* is stock market development and is proxied by the natural log of the number of companies in each country. F-Stat is the regression F value and Adj-R² is the regression's coefficient of variation. The first row reports coefficients of the variables while the second value is the respective p-value given in italics.

Variable	Intercept	<i>AAI</i>	<i>IP</i>	<i>AAI*IP</i>	<i>SMD</i>	F-Stat	Adj R ²
1999	-0.363 <i>0.771</i>	-2.885 <i>0.196</i>	0.367 <i>0.038</i>	-0.594 <i>0.497</i>	0.024 <i>0.893</i>	3.81	22.38
2000	-0.094 <i>0.942</i>	-1.223 <i>0.587</i>	-0.319 <i>0.042</i>	-0.293 <i>0.730</i>	-0.013 <i>0.942</i>	3.06	17.44
2001	-0.851 <i>0.518</i>	-1.955 <i>0.297</i>	-0.136 <i>0.366</i>	0.265 <i>0.711</i>	0.089 <i>0.647</i>	1.67	6.45
2002	-0.614 <i>0.658</i>	-1.187 <i>0.618</i>	-0.396 <i>0.034</i>	-1.051 <i>0.263</i>	0.078 <i>0.688</i>	1.95	8.90
2003	0.112 <i>0.936</i>	1.227 <i>0.546</i>	-0.380 <i>0.016</i>	-0.929 <i>0.233</i>	0.009 <i>0.960</i>	3.08	17.58
2004	0.674 <i>0.605</i>	2.292 <i>0.291</i>	-0.594 <i>0.000</i>	-1.719 <i>0.029</i>	-0.045 <i>0.796</i>	5.79	32.94
2005	3.017 <i>0.009</i>	5.997 <i>0.006</i>	-0.675 <i>0.000</i>	-2.310 <i>0.014</i>	-0.346 <i>0.028</i>	8.50	43.49
2006	0.693 <i>0.555</i>	-0.651 <i>0.778</i>	-0.516 <i>0.000</i>	-2.170 <i>0.029</i>	-0.123 <i>0.458</i>	5.83	33.13
2007	0.057 <i>0.965</i>	-3.010 <i>0.192</i>	-0.283 <i>0.026</i>	-0.093 <i>0.932</i>	-0.059 <i>0.758</i>	3.36	19.51
2008	-0.283 <i>0.810</i>	-0.646 <i>0.806</i>	-0.411 <i>0.002</i>	-1.900 <i>0.107</i>	0.044 <i>0.797</i>	3.15	18.08
2009	0.008 <i>0.995</i>	-1.028 <i>0.692</i>	-0.445 <i>0.006</i>	-2.511 <i>0.048</i>	-0.023 <i>0.901</i>	2.60	14.13
2010	3.171 <i>0.038</i>	3.995 <i>0.162</i>	-0.483 <i>0.007</i>	-1.889 <i>0.060</i>	-0.410 <i>0.039</i>	3.46	20.14

Appendix 10 A Brief Chronology of the Institutional Changes in Selected Countries

Panel A Czech Republic

Year	Event
1995	WTO and OECD membership
1996	Vaclav Klaus takes office, libertarian ideology of minimal regulatory enforcement
1997	Off-market stock transactions must be published
1998	<ol style="list-style-type: none"> 1. Banks prohibited from owning non-financial corporations 2. Securities Commission Act removes restrictions in old Securities Act 3. Market maker system adopted
1999	Restrictions of foreign securities
2000	New Bankruptcy Law
2001	New Capital markets Law

Panel B Japan

Year	Event
1994	Administrative Reform Commission (ARC) inaugurated
1995	Cabinet approves Program for Promoting Deregulation (PPD) and revise PPD during next three years
1997	Thai currency collapse begins East Asian financial crisis
1998	<ol style="list-style-type: none"> 1. Deregulation Committee (DC) for the Promotion of Administrative Reform inaugurated 2. Cabinet approves Three-Year Program for Promoting Deregulation
1999	<ol style="list-style-type: none"> 1. DC reinforced and reorganized into Regulatory Reform Committee (RRC) 2. DC submits First Report on Deregulation; HQPAR revises the Three-Year Program.

Panel C**Poland**

Year	Event
1995	1. State-owned enterprises allocated to National Investment Funds (NIFs) 2. WTO entry
1996	1. Privatization Law enacted, Gdansk Shipyard declared bankrupt 2. OECD membership
1997	1. Investment in other OECD stock markets allowed, with some limitations 2. NIFs begin trading on Warsaw Stock Exchange (WSE), Securities Law amended 3. Warsaw Stock Exchange (WSE) tightens initial public offering (IPO) requirements
1998	1. New Banking Act harmonizes with EU rules; foreign banks allowed in Poland; Bankruptcy Law amended 2. Investment Fund Law enacted; Independent Monetary Policy Council formed 3. National treatment for OECD financial institutions
1999	1. New Foreign Exchange Law; new pension regulations 2. SEC announces mandatory disclosure rule 3. Zloty falls to record low
2000	1. Corporate tax law reform 2. WSE starts new WARSET trading system
2001	New Commercial legislation enacted

Panel D**South Korea**

Year	Event
1995	Forex concentration system suspended, residents may hold foreign currency without registering at banks; limits on allowable investments abroad greatly increased
1996	1. Korean stock market peaks 2. Korean government fund to buy shares so as to stabilize market
1997	1. Shareholder proposal rights enacted 2. Thai currency collapse begins East Asian financial crisis
1998	1. Listing requirements amended to require 25% independent directors: new bankruptcy laws streamline workouts, increase creditor rights, and impose a one year deadline on reorganizations 2. Financial Supervisory Commission (FSC) established to improve disclosure. 3. Certain top 30 Chaebol Companies must have outsider Committees to select auditors 4. Government orders top 30 Chaebols to increase managerial independence 5. Abolition of shadow voting regulations for financial institutions 6. Elimination of percentage ceiling on foreign ownership.

Sources: (Bekaert & Harvey, 2002; Li et al., 2003)

Appendix 11 A Brief Chronology of Institutional Changes (Accounting Standards) in Selected Countries from IAS

Country	Regulation Year	Regulatory Changes
Australia	2003 2005 2006 2007 2008 2009	<ul style="list-style-type: none"> ❖ Use of IFRS for foreign listed companies ❖ All Local Standards are virtually Word-for-Word IFRSs with effective dates which may differ from IFRSs; eliminated some accounting policy options and added some disclosures and guidance. ❖ All national standards are virtually word-for-word IFRSs with difference in effective dates and transition, elimination of some accounting policy options and some disclosures and guidance added. ❖ Proposals by the AASB for reversing the modifications made to IFRSs to make the Australian accounting the same as IFRSs. ❖ All national standards are virtually word-for-word IFRSs with difference in effective dates and transition and elimination of some accounting policy options and some disclosures and guidance added. ❖ All national standards are word-for-word IFRSs with difference in effective dates and transition. ❖ All national standards are word-for-word IFRSs with difference in effective dates and transition.
Brazil	2009	<ul style="list-style-type: none"> ❖ Banks are required to start using IFRS in 2010.
Canada	2003 2005 2006	<ul style="list-style-type: none"> ❖ There is no current plan to allow domestic companies to use IFRS in place of Canadian GAAP. The securities regulators are considering whether to allow foreign issuers to use IFRS or a number of foreign GAAPs rather than Canadian GAAP. ❖ Domestic Canadian companies listed in the United States are allowed to use US GAAP for domestic reporting, not IFRSs, but all other Canadian companies must use Canadian GAAP. Foreign issuers in Canada are permitted to use IFRSs or a limited group of non-Canadian national GAAPs. Comments invited by the Canadian Institute of Chartered Accountants for switching over to either US GAAP or IFRSs. ❖ Domestic Canadian companies listed in the United States are allowed to use US GAAP for domestic reporting but IFRSs not permitted. All other Canadian companies must use Canadian GAAP. Foreign issuers in Canada are permitted to use IFRSs or a limited group of non-Canadian national GAAPs. Announcement of the Accounting Standards Board of Canada to replace Canadian GAAP with IFRSs for listed companies over the next five years. ❖ Announcement of a plan for incorporating IFRSs into Canadian GAAP wherein 2010 was the last year for reporting under current Canadian GAAP and 2011 as the first year of reporting under a complete set

	2008	<ul style="list-style-type: none"> ❖ of IFRS-based Canadian standards. ❖ Announcement for the adoption of IFRSs as Canadian GAAP word-for-word, effective for profit-orientated publicly-accountable enterprises in 2011. ❖ Announcement for the acceptance of IFRS filings starting 2009, disclosure to the effect that financial statements conform to IFRSs as adopted by the IASB, and prohibiting Canadian companies registered in the United States from using US GAAP, rather than IFRSs, by 2013.
	2009	<ul style="list-style-type: none"> ❖ Announcement for the adoption of IFRSs for the publicly accountable entities, for the years beginning on or after January 2011, with earlier use permitted on a case to case basis with approval of the relevant securities regulator. Not-for-profit entities and pension plans are excluded and will not be required to adopt IFRSs.
Chile	2009	<ul style="list-style-type: none"> ❖ Phasing in IFRSs for listed companies starting in 2009.
China	2002	<ul style="list-style-type: none"> ❖ Amendments in the Securities Regulatory Commission rules for conducting supplementary audits if a company is issuing 300 million or more shares, and in such cases only a reconciliation of net income to IAS would be required, not supplementary IAS financial statements. Companies that issue B-Shares (shares traded in US dollars and that are available for purchase by foreign investors) are required to follow IAS at the time of the IPO and thereafter.
	2003	<ul style="list-style-type: none"> ❖ Use of IFRS for some domestic companies
	2005	<ul style="list-style-type: none"> ❖ IFRSs are looked to in developing local GAAP which is done to varying degrees but significant differences exist. Some domestic companies may use IFRSs.
	2006	<ul style="list-style-type: none"> ❖ Adoption of a new Basic Standard and 38 new Chinese Accounting Standards consistent with IFRSs with few exceptions and guidance from IFRSs for developing national GAAP. Use of IFRSs for some domestic companies.
	2007	<ul style="list-style-type: none"> ❖ Guidance from IFRSs for developing national standards. Adoption of a new Basic Standard and 38 new Chinese Accounting Standards consistent with IFRSs with few exceptions. Use of IFRSs for some domestic companies.
	2008	<ul style="list-style-type: none"> ❖ Guidance from IFRSs for developing national GAAP; some domestic listed companies are allowed to use IFRSs.
	2009	<ul style="list-style-type: none"> ❖ Some domestic listed companies may use IFRSs.
Europe	2005	<ul style="list-style-type: none"> ❖ Enforcement of IFRSs in Europe <ul style="list-style-type: none"> ▪ Standard No. 1, Enforcement of Standards on Financial Information in Europe, sets out 21 high

		<p>level principles that EU member states should adopt in enforcing IFRSs.</p> <ul style="list-style-type: none"> ▪ Proposed Standard No. 2, Coordination of Enforcement Activities, which proposes guidelines for implementing Standard No. 1. ▪ Proposed new Directive on Statutory Audit of Annual Accounts and Consolidated Accounts which will replace the current 8th Directive and amend the 4th and 7th Directives. ▪ Proposal for adoption of International Standards on Auditing throughout the EU would require Member States to form auditor oversight bodies. ▪ A new European Group of Auditors' Oversight Bodies (EGAOB) formed by the EC in late 2005. ▪ A plan for cooperation on overlapping enforcement issues, including financial reporting, agreed to in late 2005 by the European groups of bank regulators, insurance regulators and securities regulators.
	2006	<ul style="list-style-type: none"> ❖ All EU companies listed on regulated markets require IFRSs in their consolidated financial statements starting 2005; Non-EU companies listed on EU exchanges can continue to use their national GAAPs until 2007. Companies that are listed both in the EU and on a non-EU exchange and that currently use US GAAP as their primary accounting standards, and companies that have only publicly-traded debt securities were given temporary exemption until 2007. ❖ Member States may extend the IFRS requirement to non-listed companies and to company-only statements with the tentative schedule: IFRSs permitted Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Italy, Ireland, Netherlands, Norway, Portugal, Spain, Sweden and United Kingdom and IFRSs prohibited in Poland. ❖ Formation of the Roundtable for Consistent Application of IFRSs in 2006.
	2007	<ul style="list-style-type: none"> ❖ Use of IFRS for listed companies in all 27 EU countries and 3 European Economic Area from 2005, Extension by two years to foreign companies in the transitional period presenting financial statements prepared in accordance with national accounting standards for the issuing of securities on EU stock markets with extra disclosure requirements like compliance with IFRSs, Canadian GAAP, Japanese GAAP or US GAAP. Endorsement of all IASs, IFRSs 1 through 7, and all Interpretations except IFRICs 10, 11 and 12 – but with one carve-out from IAS 39 Financial Instruments: Recognition and Measurement.
	2008	<ul style="list-style-type: none"> ❖ Extension to Non-EU companies listed on regulated EU stock markets for reporting in their national GAAP till 2011. This extension is for the companies of those countries who have a clear plan for either converging their national GAAPs with IFRSs (in which case the EC will assess equivalency) or to adopt IFRSs in full as their national GAAP.

	2009	<ul style="list-style-type: none"> ❖ The companies of the United States, Japan, China, Canada, South Korea and India which are listed on an EU regulated market are permitted to use their national GAAPs for reporting the financial statements which have been declared as equivalent by the European Commission (EC). Companies from other countries must use either IFRSs as adopted by the EU or IFRSs as adopted by the IASB starting 2009. ❖ The member states have permitted some or all non-listed companies to use IFRSs in their consolidated statements and the majority of member states permit it in separate statements. ❖ Endorsements of all IFRSs except the revision of IFRS 1, IFRS 3, IFRS 7, IAS 27, IAS 32 and IAS 39 issued in 2008 and early 2009, and all Interpretations except IFRICs 15, 16, 17 and 18 and the March 2009 amendments to IFRIC 9 – but with one carve-out from IAS 39 Financial Instruments: Recognition and Measurement which allows the use of fair value hedge accounting for interest rate hedges of core deposits on a portfolio basis.
Hong Kong	2002 2003 2005 2006 2007 2008 2009	<ul style="list-style-type: none"> ❖ Amendments in the existing rules by the Council of the Hong Kong Society of Accountants to follow IAS without modifications and Hong Kong-specific guidance would be needed to supplement the IASB standards. ❖ Use of IFRS for foreign listed companies ❖ All Local Standards are virtually Word-for-Word IFRSs with effective dates which may differ from IFRSs; Elimination of some accounting policy options and some disclosures and guidance added. Some domestic companies may use IFRSs. ❖ All national standards are virtually word-for-word IFRSs with difference in effective dates and transition. Use of IFRSs for some domestic companies. ❖ All national standards are virtually word-for-word IFRSs with difference in effective dates and transition. Use of IFRSs for some domestic companies. ❖ All national standards are word-for-word IFRSs with differences in effective dates and transition. Some domestic listed companies (companies based in Hong Kong but incorporated elsewhere) are allowed to use IFRSs. ❖ All national standards are word-for-word IFRSs with differences in effective dates and transition. Some domestic listed companies (companies based in Hong Kong but incorporated elsewhere) may use IFRSs.
India	2005	<ul style="list-style-type: none"> ❖ Some Local Standards are close to Word-for-Word IFRSs; have also adopted selected IFRSs quite closely, but significant differences exist in other local standards, and there are time lags in adopting

	2006	new or amended IFRSs.
	2007	❖ Adoption of selected IFRSs quite closely but significant differences exist in other national standards, and there are time lags in adopting new or amended IFRSs.
	2008	❖ Adoption of selected IFRSs quite closely but significant differences exist in other national standards, and there are time lags in adopting new or amended IFRSs.
	2009	❖ Announcement of a plan to adopt IFRSs in full as Indian Financial Reporting Standards effective 2011. ❖ Adoption of selected IFRSs quite closely but significant differences exist in other national standards, and there are time lags in adopting new or amended IFRSs. Announcement of a plan to adopt IFRSs in full as Indian Financial Reporting Standards effective 2011.
Indonesia	2005	❖ IFRSs are looked to in developing local GAAP which is done to varying degrees but significant differences exist.
	2006	❖ Guidance from IFRSs for developing national GAAP but still significant differences exist.
	2007	❖ Guidance from IFRSs for developing national GAAP but still significant differences exist.
	2008	❖ Guidance from IFRSs for developing national GAAP.
	2009	❖ Guidance from IFRSs for developing national GAAP but significant differences exist.
Japan	2003	❖ Use of IFRS for foreign listed companies
	2005	❖ IFRSs are looked to in developing local GAAP which is done to varying degrees but significant differences exist.
	2006	❖ Guidance from IFRSs for developing national GAAP but still significant differences exist.
	2007	❖ Guidance from IFRSs for developing national GAAP but still significant differences exist.
	2008	❖ Guidance from IFRSs for developing national GAAP.
	2009	❖ Guidance from IFRSs for developing national GAAP but significant differences exist. Study initiated for the requirement of IFRSs for listed companies.
Malaysia	2005	❖ Some Local Standards are close to Word-for-Word IFRSs, have also adopted selected IFRSs quite closely, but significant differences exist in other local standards, and there are time lags in adopting new or amended IFRSs.
	2006	❖ Adoption of selected IFRSs quite closely but significant differences exist in other national standards, and there are time lags in adopting new or amended IFRSs.
	2007	❖ Adoption of selected IFRSs quite closely but significant differences exist in other national standards,

	2008	and there are time lags in adopting new or amended IFRSs.
	2009	❖ Adoption of selected IFRSs quite closely but significant differences exist in other national standards, and there are time lags in adopting new or amended IFRSs.
		❖ Adoption of selected IFRSs quite closely but significant differences exist in other national standards, and there are time lags in adopting new or amended IFRSs. Announcement by Malaysia for the adoption of IFRSs in full as Malaysian Financial Reporting Standards by 2012.
Mexico	2009	❖ The Mexican Banking and Securities Commission have announced that all listed companies are required to use IFRSs starting in 2012.
New Zealand	2003	❖ Adoption of IFRS in place of national GAAP for listed companies, compulsory in 2007, permitted starting 2005. Use of IFRS for foreign listed companies
	2005	❖ All Local Standards are virtually Word-for-Word IFRSs with effective dates which may differ from IFRSs. Elimination of some accounting policy options and some disclosures and guidance added.
	2006	❖ All national standards are virtually word-for-word IFRSs with differences in effective dates and transition and elimination of some accounting policy options and some disclosures and guidance added.
	2007	❖ All national standards are virtually word-for-word IFRSs with differences in effective dates and transition and elimination of some accounting policy options and some disclosures and guidance added.
	2008	❖ All national standards are word-for-word IFRSs with differences in effective dates and transition and elimination of some accounting policy options and some disclosures and guidance added.
	2009	❖ All national standards are word-for-word IFRSs with differences in effective dates and transition and elimination of some accounting policy options and some disclosures and guidance added.
Pakistan	2003	❖ Use of IFRS for foreign listed companies
	2005	❖ Some Local Standards are close to Word-for-Word IFRSs, have also adopted selected IFRSs quite closely, but significant differences exist in other local standards.
	2006	❖ Adoption of selected IFRSs quite closely but significant differences exist in other national standards, and there are time lags in adopting new or amended IFRSs.
	2007	❖ Adoption of selected IFRSs quite closely but significant differences exist in other national standards, and there are time lags in adopting new or amended IFRSs.
	2008	❖ Adoption of selected IFRSs quite closely but significant differences exist in other national standards, and there are time lags in adopting new or amended IFRSs.
		❖ Adoption of selected IFRSs quite closely but significant differences exist in other national standards,

	2009	and there are time lags in adopting new or amended IFRSs. Announcement for the adoption of IFRSs in full by December 2009.
Philippines	2005 2006 2007 2008 2009	<ul style="list-style-type: none"> ❖ Philippines has adopted word-for-word all IASs that were effective in 2003 but has not yet adopted the improvements or new IFRSs issued in 2003-2004. ❖ All national standards are virtually word-for-word IFRSs with differences in effective dates and transition. ❖ All national standards are virtually word-for-word IFRSs with differences in effective dates and transition. ❖ Adoption of most IFRSs word-for-word, but has made some significant modifications. ❖ Adoption of most IFRSs word-for-word, but has made some significant modifications.
Singapore	2002 2003 2005 2006 2007 2008 2009	<ul style="list-style-type: none"> ❖ Amendments in the companies Act for the use of IAS for financial years commencing on or after 1 January 2003 and establishment of an independent panel (to be known as the Council on Corporate Disclosure and Governance) to adopt the IAS as Financial Reporting Standards. ❖ Use of IFRS for foreign listed companies. ❖ Singapore has adopted most IFRSs word for word but has modified several including IASs 2, 16, 17, 28, 31, and 40. ❖ Adoption of most of the IFRSs word for word with modification of several standards including IASs 16, 17, 39 and 40. ❖ Adoption of most IFRSs word for word, but several modified. ❖ Adoption of most IFRSs word-for-word, but has made some significant modifications. ❖ Adoption of most IFRSs word-for-word, but has made some significant modifications.
South Korea	2005 2006 2007 2008 2009	<ul style="list-style-type: none"> ❖ IFRSs are looked to in developing local GAAP which is done to varying degrees but significant differences exist. ❖ Guidance from IFRSs for developing national GAAP but still significant differences exist. ❖ Guidance from IFRSs for developing national GAAP but still significant differences exist. ❖ All national standards are word-for-word IFRSs with difference in effective dates and transition. ❖ All national standards are word-for-word IFRSs with difference in effective dates and transition (effective 2011, permitted 2009).
Taiwan	2005 2006	<ul style="list-style-type: none"> ❖ IFRSs are looked to in developing local GAAP which is done to varying degrees but significant differences exist. ❖ Guidance from IFRSs for developing national GAAP but still significant differences exist.

	2007 2008 2009	<ul style="list-style-type: none"> ❖ Guidance from IFRSs for developing national GAAP but still significant differences exist. ❖ Guidance from IFRSs for developing national GAAP. ❖ Guidance from IFRSs for developing national GAAP but significant differences exist. Study initiated for the requirement of IFRSs for listed companies.
Thailand	2003 2005 2006 2007 2008 2009	<ul style="list-style-type: none"> ❖ Use of IFRS for foreign listed companies ❖ Some Local Standards are close to Word-for-Word IFRSs; have also adopted selected IFRSs quite closely, but significant differences exist in other local standards, and there are time lags in adopting new or amended IFRSs. ❖ Adoption of selected IFRSs quite closely but significant differences exist in other national standards, and there are time lags in adopting new or amended IFRSs. ❖ Adoption of selected IFRSs quite closely but significant differences exist in other national standards, and there are time lags in adopting new or amended IFRSs. ❖ Adoption of selected IFRSs quite closely but significant differences exist in other national standards, and there are time lags in adopting new or amended IFRSs. ❖ Adoption of selected IFRSs quite closely but significant differences exist in other national standards, and there are time lags in adopting new or amended IFRSs.
USA	2002 2005 2006 2008	<ul style="list-style-type: none"> ❖ Joint project of the IASB and the FASB to converge US GAAP and IFRSs to the maximum extent possible. ❖ SEC requirement of reconciliation of earnings and net assets to US GAAP if the foreign companies submit IFRS or local GAAP financial statements rather than US GAAP. SEC will examine the year 2005 filings of about 400 foreign companies with a view toward eliminating the reconciliation requirement for foreign IFRS filers by the end of the decade, or possibly earlier. ❖ SEC requirement of reconciliation of earnings and net assets to US GAAP if the foreign companies submit IFRS or local GAAP financial statements rather than US GAAP. ❖ SEC will examine the years 2005 and 2006 filings of about 400 foreign companies with a view toward eliminating the reconciliation requirement for foreign IFRS filers by 2009, or possibly earlier. ❖ Permission to foreign companies for reporting under IFRSs as issued by the IASB without including a reconciliation of the IFRS figures to US GAAP for the years ending after November 2007.