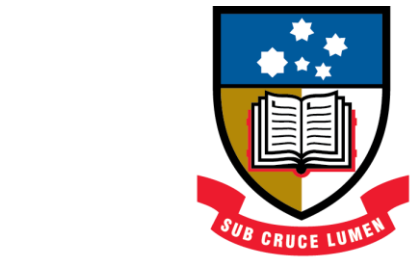

THE UNIVERSITY of ADELAIDE

Cross-Listing and Firm-Specific Information: Evidence from Chinese A-Shares and H-Shares

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A thesis submitted to The School of Accounting and Finance, The University of Adelaide, in fulfilment of the requirements for the degree of Doctor of Philosophy

November 2013

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SYNOPSIS

I examine the impact of cross-listing on firm-specific information utilizing the unique features of the Chinese capital markets. By separating the trading activity of domestic Chinese investors from that of foreign non-Chinese investors, this thesis is able to isolate each investor group's relative ability to impound firm-specific information into stock prices. I show that the cross-listed H-shares traded by foreign investors incorporate significantly more firm-specific information than their A-share counterparts traded by domestic Chinese investors. I find a similar pattern between H-shares and A-shares even after a 2007 regulatory change that allowed domestic Chinese investors to trade in the H-share market. This finding suggests that while institutional factors (e.g., stricter listing rules, stronger investor protection) can explain some of the benefits of cross-listing, foreign investors' ability to utilize firm-specific information plays a separate and distinct role in generating cross-listing benefits. The level of information improvement due to foreign investors depends on the quality of the cross-listed firm's corporate governance.

DECLARATION

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institutions and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

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ACKNOWLEDGEMENTS

I would like to extend my sincere gratitude to my principal supervisor, Professor Ralf Zurbruegg (The University of Adelaide), for his constant encouragement and supervision. He has led me into the world of finance and guided me through every step to finish my PhD. I still remember when I first came to Australia, my finance background was very weak and I was not confident at all. It is Professor Ralf, who always has confidence in me and gives me all the motivations to move on. Without his patient and expert instructions, I would never be able to complete this thesis. Deep gratitude goes to my co-supervisor, Professor Paul Brockman (Leigh University), who has provided me with illuminating guidance and taught me on how to write journal papers. His devotion to research has also inspired me a lot on pursuing an academic career.

I gratefully acknowledge an anonymous referee from the Journal of Corporate Finance, who has given me a revise and resubmit opportunity and encouraging comments. My thesis has been substantially improved after incorporating the referee's suggestions.

I also owe a debt of gratitude to all the staff of the Adelaide Business School for their kindness and would particularly like to thank Aku, Gary, Professor Dogan, Professor Ercan, Jim, Tariq, Graeme and Professor Gao for teaching me finance and quantitative knowledge at the early stage of my PhD, which has helped me lay a solid foundation for research. I personally thank all my PhD friends, who have accompanied me during hard times, especially to Amy and her husband Brian, Sasha, Emon, Juan, Kimberly, Sylvia, Yu, Yessy, Sally, Mila, Su, Sabine, Van, Ivan, Xiaoyu and Svetlana.

Finally, my thanks would go to my beloved parents, parents-in-law and younger brother for enormous support without any complaints. Special thanks to my husband, Xuan, who has been taking care of me over the last four years so that I can concentrate on my study. Without his help, the completion of this thesis would not have been possible.

CHAPTER 1

INTRODUCTION

1. INTRODUCTION

I examine the impact of cross-listing on firm-specific information using China's unique capital market framework. Beginning in 1993, Chinese-incorporated companies could simultaneously list A-shares on mainland Chinese stock markets (i.e., the Shanghai Stock Exchange (SSE) and the Shenzhen Stock Exchange (SZSE)) and H-shares on the Hong Kong Exchanges and Clearing Limited (HKEx).[1] Although many companies in other countries have dual domestic and foreign stock market listings, the Chinese regulatory framework is unique in that it separates domestic Chinese investors from foreign non-Chinese investors. From 1993 to 2007, domestic Chinese investors had full access to A-shares on the SSE and SZSE and no access to H-shares on the HKEx, while foreign non-Chinese investors had full access to H-shares and very limited access to A-shares.[2] This convenient regulatory partition allows me to contrast the ability of domestic Chinese investors to incorporate firm-specific information into A-share prices against the ability of foreign non-Chinese investors to incorporate firm-specific information into H-share prices.

Perhaps even more advantageous from a research design perspective, Chinese regulators subsequently changed these rules in 2007 to allow domestic Chinese investors to trade H-shares as well as A-shares, thereby creating a pre-2007 sample of partitioned trading and a post-2007 sample of dual trading. This setting provides an opportunity to gain a deeper understanding of the role played by foreign investors in

[1] Following market reforms in 1999, the Stock Exchange of Hong Kong Limited (SEHK) and Hong Kong Futures Exchange Limited (HKFE) demutualized their ownership structure. These two entities then combined with the Hong Kong Securities Clearing Company Limited (HKSCC) to create a single holding company, the HKEx, in 2000.

[2] In 2002 the Qualified Foreign Institutional Investors (QFII) policy allowed foreign institutional investors to trade A-shares within a limited quota system granted by the Chinese government. However, according to the China Securities Regulatory Commission, foreign shareholding through QFII only accounted for 1.1% of free float market capitalization of A-shares as of June 2012.

utilizing firm-specific information. Such information is vital for the reliable measurement of firm-level managerial performance and the efficient allocation of country-level capital. It plays a significant role in encouraging stronger corporate governance.

The first objective of this thesis is to utilize China's unique capital markets to contrast the abilities of domestic versus foreign investors to impound firm-specific information into market prices. Which of these two investor groups has a comparative advantage in processing firm-specific information is an open empirical question. On the one hand, domestic Chinese investors are likely to have greater familiarity with mainland Chinese-incorporated firms as well as with the competitive, legal, and regulatory environments in which they operate. On the other hand, foreign investors are more likely to be sophisticated institutional investors with greater knowledge of financial statement analysis and modern asset pricing models. The mixed empirical results to date (see Bae *et al*., 2012) are likely to be due, in part, to the challenge of separating domestic investor pricing effects from foreign investor pricing effects – a challenge I address through the use of A-shares and H-shares.

The second objective of this study is to identify firm characteristics that explain the comparative advantage of one set of investors (domestic versus foreign[3]) over the other, in terms of the utilization of firm-specific information. Previous research suggests that better corporate governance leads to more transparency, and more transparency leads to greater firm-specific information. If foreign investors have a comparative advantage in assessing and pricing firm-specific information, for example, then the positive spillover effects of cross-listing will be stronger among firms with good governance practices. So

[3] I use the term "domestic investors" in reference to Chinese citizens (i.e., domestic Chinese investors), and "foreign investors" in reference to non-Chinese citizens (i.e., foreign non-Chinese investors).

I intend to test for possible links between corporate governance and investors' ability to extract firm-specific information.

To investigate these two objectives, I collect a sample of 60 Chinese-incorporated firms that simultaneously trade in mainland China on the SSE or SZSE as A-shares and in Hong Kong on the HKEx as H-shares. My sample period covers six years from January, 2005 until December, 2010. This period includes a policy change by the China Securities Regulatory Commission (CSRC) that allowed domestic investors to trade H-shares on the HKEx beginning in 2007. Using accounting and financial data from several sources (e.g., Datastream, Securities Industry Research Centre of Asia-Pacific (SIRCA), the China Stock Market and Accounting Research (CSMAR) database, Bureau van Dijk's OSIRIS database, the China Securities Journal as well as company annual reports), I construct two measures of firm-specific information based on probability of informed trading (see Easley *et al.* (2002) for PIN calculation) and stock return synchronicity (see Morck *et al*., 2000) and then compare A-share PIN and synchronicity to H-share PIN and synchronicity. The univariate results suggest PIN measures of A-shares are significantly lower than those of H-shares. In addition, my univariate and multivariate results show that A-shares have significantly higher levels of stock return synchronicity than their H-share counterparts. Since the PIN and the synchronicity measures are positively and negatively related to firm-specific information respectively, these findings show that foreign non-Chinese investors have a comparative advantage over domestic Chinese investors in the processing and utilization of firm-specific information. Investor sophistication appears to dominate investor familiarity in the important financial role of price discovery.

I next examine the impact of the CSRC policy change that allowed Chinese investors (i.e., Qualified Domestic Institutional Investors (QDIIs)) to trade H-shares beginning in May, 2007. The significant decrease in PIN of H-shares suggests less firm-specific information is incorporated into H-shares after the entrance of Chinese domestic investors. My results also show the difference between synchronicities of H- and A-shares narrows significantly and there is a significant reduction in the level of firm-specific information that is impounded into H-share stock returns following this policy change. This result is consistent with my earlier finding, suggesting that domestic Chinese investors are less able to process firm-specific information than their foreign investor counterparts. The net effect of allowing both domestic and foreign investors to trade H-shares on the HKEx is an increase in stock return synchronicity (and concomitant reduction in firm-specific information). This is a significant result because it allows me to separate the roles of institution-level factors (e.g., stronger listing rules for the HKEx) from investor-level factors (i.e., foreign versus domestic) in the information utilization process. While institution-level improvements can enhance the firm's information environment, I show that the activities of foreign investors play a significant role in generating firm-specific information. To the best of my knowledge, this is the first study to document this important distinction.

My second set of empirical results investigates the determinants of foreign investors' comparative advantage in processing firm-specific information. I posit that foreign investors will gain more from high-quality corporate disclosures when processing firm-specific information than their domestic investor counterparts. Since previous research suggests that good corporate governance leads to higher disclosure quality (Karamanou and Vafeas, 2005; Gul *et al.*, 2010), I expect governance proxies to be positively correlated with foreign investor informational advantages. My empirical results broadly

confirm this expectation. I find, for example, that proxies for weak governance (e.g., ownership concentration, managers in dual roles as CEO and Chairman of the Board) reduce significantly the comparative advantage of foreign investors over domestic investors. I also find that as more qualified foreign institutional investors (QFIIs) are allowed to trade in the A-share market, it significantly reduces the difference in firm-specific information between H- and A-shares.

In summary, my empirical results confirm that foreign investors are better able to discover and process firm-specific information. They subsequently impound this information into stock returns through their trading activities. Foreign investors' ability to perform this important capital market role depends on the quality of the corporate governance practices of the cross-listed firms. Stronger governance leads to higher quality disclosures which, in turn, lead to more firm-specific information reflected in stock prices. This is a significant, if unintended, consequence of cross-listing since the accuracy of managerial performance and the allocation of scarce resources depend crucially on the informational efficiency of company stock values.

My study contributes to the cross-listing literature by exploiting the unique institutional features of China's capital markets. The regulatory partitioning of investor-type (i.e., A-share domestic investors and H-share foreign investors) allows me to measure the relative abilities of foreign and domestic investors with respect to firm-specific information. My results suggest that cross-listed Chinese firms benefit from the information spillover effects of foreign investor information processing. The size of the spillover benefit is positively correlated with the quality of the cross-listed firm's governance structure. In addition to confirming the relationship between investor-type and firm-specific information, my study has policy implications for capital market

regulators and company executives. Regulators can encourage foreign investor participation in an effort to increase market-wide informational and allocational efficiencies. Corporate executives can increase the level of firm-specific information impounded into company prices by improving corporate governance in general and disclosure quality in particular.

This study is composed of eight chapters. Chapter 1 discusses the research questions and main findings. Chapter 2 describes the overview of Chinese stock markets. In Chapter 3, I discuss related research and incorporate my study into the extant literature. In Chapter 4, I describe the data, methods of analysis and empirical results of the research question on whether domestic or foreign investors have more advantage in processing firm-specific information. In Chapter 5, I present the data, models and results of the research question on what the effects of corporate governance and the QDII policy on firm-specific information are, and in Chapter 6, I present several robustness checks. Finally I conclude this thesis in Chapter 7 and show robustness tables in Chapter 8.

CHAPTER 2

BACKGROUND

2. BACKGROUND

2.1. Development of the Chinese and Hong Kong Stock Markets

The Chinese capital markets are still at the developing stage. The market was controlled by the highly centralized financial system prior to 1979 and then slowly developed with a range of financial instruments. In the 1990s, as one of the important financial instruments, stocks started to be formally traded on two stock exchanges, the SSE and the SZSE, which were established in December 1990 and July 1991 respectively. By the end of 2012, there were over 2000 companies in the market. Securities traded in the market are divided into A-shares and B-shares. A-Shares are for domestic investors in mainland China while B shares are open to foreign investors. Also, a number of companies have been listed on overseas exchanges, such as the Hong Kong Stock Exchange (H-shares and red chips) and the New York Stock Exchange (ADRs). The shareholding structure in China is further decomposed into four categories. They are state-owned shares, domestic legal person shares, foreign legal-person shares, and negotiable shares.[4] The huge liquidity and transaction difference makes the investors have different rights and responsibilities to the same company.

The Chinese stock market has been under a series of evolutions since its establishment. In 1992, the CSRC was set up to regulate the market, followed by the introduction of Company Law in 1993 and Securities Law in 1998. These laws are important in providing investor protection such as fair information disclosure and shareholder's rights recognition. Since joining the WTO in 2001, the Chinese market has become

[4] *State-owned shares* are shares owned by state institutions based on their investment into a company. *Domestic legal-person shares* refer to shares bought by domestic legal persons using their own capital. *Foreign legal-person shares* refer to shares owned by foreign legal persons. *Negotiable shares* refer to shares held by public shareholders on the secondary market.

more open to the global market. The significant change in the security market is allowing foreign institutional investors to buy and sell A-shares. However, individual investors are still restricted to trading due to the RMB exchange policy. In addition, Chinese domestic investors have been allowed to invest in B-shares from 2001. In early 2005, the CSRC started the non-tradable shares reform. This reform successfully helped over 50% of the listed companies complete the transformation of non-tradable shares to tradable shares. The development of stock market is critical to the growth of the Chinese economy from the following perspectives. First, it helps raise funds for industrial, service and utility companies which may have difficulties obtaining capital. Second, it leads to the separation of ownership and management in State Owned Enterprises (SOEs). Third, it can reduce the ratio of state banks' non-performing loans and therefore diversify the credit risk (Xu and Oh, 2011)

The Hong Kong stock market is independent and not regulated by the Chinese government. The first formal stock market in Hong Kong called the Association of stockbrokers was established in 1891 and then changed its name to be the Hong Kong Stock Exchange in 1914. The second exchange named Hong Kong Stockbrokers' Association was established in 1921 and merged with the Hong Kong Stock Exchange in 1947. Three other exchanges were established because of the fast growth, including the Far East Exchange in 1969; the Kam Ngan Stock Exchange in 1971; and the Kowloon Stock Exchange in 1972. With the merger and years of development, today the HKEx has become the holding company of the SEHK, HKFE and HKSCC. It is directly supervised and controlled by the board of directors. Due to its market driven structure and the integration of securities and derivatives markets, HKEx has become the second largest stock exchange in terms of market capitalization in Asia, attracting investments from the whole world.

Hong Kong and mainland China have adopted two different financial systems although Hong Kong is a part of China. Apart from the tradability restriction in the Chinese stock market, it is worthwhile to emphasize the difference of short selling in the Chinese and the Hong Kong stock market. The HKEx first introduced a short-selling pilot program with 17 eligible stocks in 1994. In 1995, naked short-selling was allowed and the list of stocks that could be sold short increased to 113. However, short-selling had always been prohibited in the Chinese market before 2010. The CSRC formally announced a trial program with a list of 90 selected shares in Shanghai and Shenzhen Stock Exchanges approved on March, 2010. There was little progress until September, 2013 when the brokers allowed to participate were increased to 30 and the number of shares available for shorting was increased to 287.

2.2. The Chinese Cross-Listed Markets

The mainland Chinese stock market was born more in favor of the political environment rather than a market-oriented environment. Therefore, excessive government control on the stock market has been noticed. For instance, the total number and province distributions of IPOs every year are determined by the CSRC (Jiang *et al.*, 2009). This quota system prevents a great number of large firms from listing on the two stock exchanges. Moreover, Chinese private enterprises have to queue for many years to get listed. It is even more difficult for small and medium sized private firms to list on the SSE or SZSE. By 1998, there was only one non-state owned company, Sichuan New Hope Agriculture Stock Co., Ltd., listed on the SZSE. This highly restricted IPOs system stimulates the idea of listing overseas and thereafter the IPOs allocation system ceased in 2000 (Wong, 2006). At the early stage of listing overseas, SOEs with large capital scale and outstanding performance are generally

listed in Hong Kong and New York Stock Exchanges, such as the Tsingtao brewery, SINOPEC and Huangneng Power. In the last decade, the listing location has been extended to London AIM, NASDAQ, Frankfurt, Tokyo, Korean and Singapore. An increasing number of smaller to medium sized private Chinese companies are also attracted to these overseas stock exchanges. The cross-listing sequence is also different. Some companies have already issued shares in the domestic equity market before they go to list abroad while some have not. Sun *et al.* (2013a) suggest there are several motivations behind the Chinese firms going for cross-listings. Firstly, the growing economy in China is not able to satisfy the demand of capital given by the immature stock market nature. Secondly, the stricter disclosure requirement could enable the companies to develop a better corporate structure and modern corporate governance. Thirdly, listing overseas could help companies to gain a world-wide reputation and expand their business.

Shares issued by Chinese firms can be divided into several categories, including but not limited to A-, B-, H-shares, red chips and American depositary receipts (ADRs). In 1992, B-shares were introduced to attract foreign investments, which are denominated in Hong Kong dollars on the SZSE and US dollars on the SSE. The two types of A-shares and B-shares were completely segmented before February, 2001, because the A-share market was restricted to domestic residents and B-shares were only available to foreign investors. In addition, the B-share market, whose annual turnover rate was only 136% in 2000, relative to 477% of the A-share market (Lee *et al.*, 2008), was characterized by lower liquidity than A-shares. However, generally speaking, B-shares have been introduced to attract foreign funds for Chinese companies and help the development of the markets (Zee, 1992). Given the impossible arbitrage opportunities, the same companies in the A- and B- shares market are traded at different prices. Wang

and Jiang (2004) argue that the low liquidity and the relative trading discount make B-shares become less attractive to foreign investors. Due to the low interest in B-shares, there is an ongoing debate on whether B-shares should be transferred to the Hong Kong market. Red chips are Chinese based companies incorporated outside of mainland China and listed in Hong Kong. Usually, assets or earnings of these companies have significant exposure in China and the controlling shareholders are typically the Chinese government. Similar to Red-Chip shares, H-shares are listed in Hong Kong, but the origin of business should be mainland China. ADRs represent shares of foreign corporations that are traded in the US financial markets. ADRs were introduced in 1927 and denominated in US dollars. This introduction reduced the complexities and difficulties of buying shares in foreign countries, such as the currency and price difference (Amary and Ottoni, 2005). Table 2.1 describes the major differences among A-shares, H-shares, Red-chips and ADRs.

Starting from 1993, Chinese firms are able to be dual-listed on mainland Chinese stock exchanges and HKEx, which gives rise to the concepts of A-shares and H-shares. There are several major differences between the A-share and H-share markets. First, A- shares are only open to domestic investors and QFIIs while H shares are issued to international investors and Qualified Domestic Institutional Investors (QDII). Chinese individual investors are still unable to invest in the Hong Kong market directly. Second, A- and H-share markets have very different institutional infrastructures. For example, the A-share market is dominated by individual investors and the Hong Kong (H-share) market is a well-developed market in which major participants are institutional investors. In addition to the differences in market structures between A- and H-share markets, most firms in China are owned directly or indirectly by the Chinese government, which

allows an exploration of the influence of ownership structure on the information transmission under this unique scenario.

Different from domestic listed Chinese firms that adopt the Chinese Generally Accepted Accounting Principles (GAAP)-based disclosures, the cross-listed companies need to follow the international accounting standard (IAS). Dual-listed Chinese companies have to maintain a dual reporting system and the IAS-based disclosures need to be audited by international auditing firms. The special requirements, to some extent, force the H-share companies to follow international governance stands closely. Also, H-share companies need to obey the regulations in Hong Kong. For example, there must be at least two independent non-executive directors on the board of directors. These different legal and market systems could be a challenge to those companies listed overseas.

In my study, I examine cross-listed companies to compare the information incorporation abilities of foreign and domestic investors and specifically focus on H-shares because of their increasing importance in attracting foreign capital.

Table 2.1. Comparison of A-shares, H-shares, Red-chips and ADRs (As of February 2010)

Market	Issuer	Currency	Eligible Investors	Exchange	Companies	Market Cap (US$ in Billion)	Daily Trading Volume (US$ in Billion)
A-shares	Chinese domestic companies	RMB	Chinese domestic investors and QFII	SSE	865 listed	$1,610	$9.70
				SZSE	885 listed (Mainly SMEs)	$500	$6.90
H-shares	Companies incorporated in China	HK$	Foreign investors and QDII	HKEx	156 listed	$550	$2.60
Red Chips	Companies incorporated outside of China	HK$	Foreign investors and QDII	HKEx	97 listed	$4,908	$1.10
ADRs	Chinese companies listed in US	US$	Foreign investors and QDII	NEW YORK STOCK EXCHANGE (NYSE)	56 listed	$144	$1.6
				NASDAQ	36 listed	$40	$1.1

Source: MFC Global Investment Management, 2010. An Institutional Investor's Guide to China A-Shares, Canada.

2.3. The QFII and QDII Policies

The Chinese government has, in recent years, taken a number of steps to liberalize and de-regulate its financial markets. This is inclusive of the introduction of the Qualified Foreign Institutional Investors policy (QFII) and the Qualified Domestic Institutional Investors (QDII) policy, which both aim to reduce the segmentation of foreign and domestic investors in the Chinese stock markets.

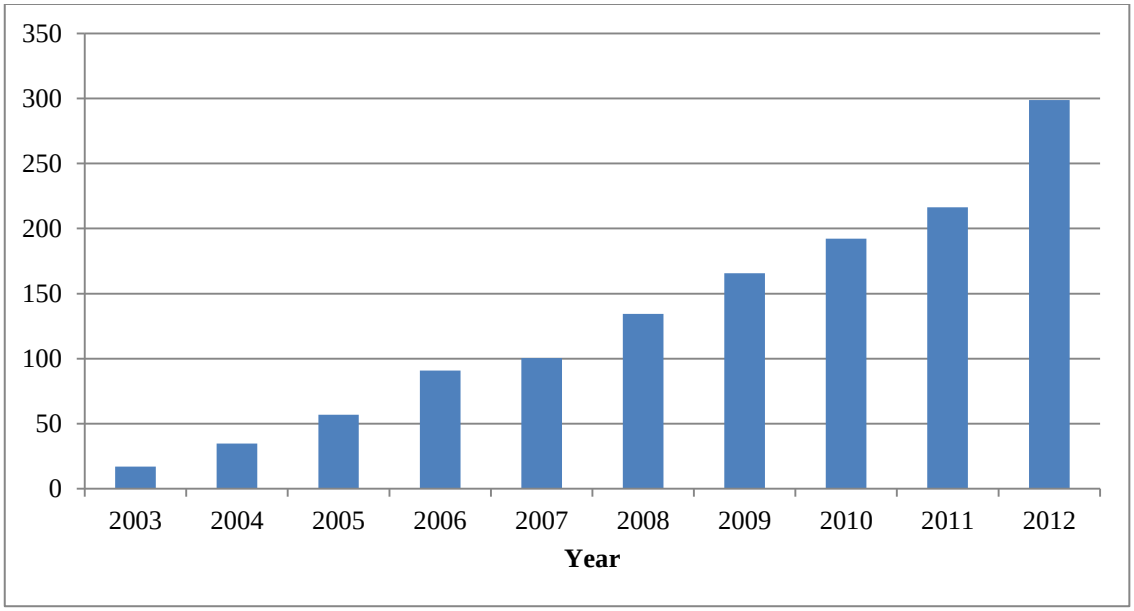
2.3.1. The QFII policy

In order to fulfill the business commitment of the WTO, the Chinese government issued a regulation called "Provisional Measures on Administration of Domestic Securities Investments of Qualified Foreign Institutional Investors (QFII)" on November 5th, 2002, which came into effect on 1st December, 2002. This reform permits eligible foreign investors to buy and sell A-shares in mainland Chinese stock markets. However, it was not until six months later, in May 2003, that the Swiss Bank Corporation (SEC) and Nomura Securities Co., Ltd. (NSC) became the first institutional investors to receive permission from the government to invest in A-shares. Later in the same year, another ten foreign investors (e.g., Morgan Stanley & Co. International Limited) were awarded the license. Thus, by the end of 2003 the number of QFII had increased to twelve and 1.7 billion dollars of investment quotas were granted by the State Administration of Foreign Exchange (SAFE).

The number of qualified foreign institutional investors as well as the investment quota granted has seen a rapid increase since the introduction of QFII. The number of licensed investors has risen from 12 in 2003 to 173 in July 2012 and the investment quota has

also increased rapidly from $1.7 billion to $29.9 billion in August 2012. As shown in Figure 2.1, the approved investment quota has risen more than twenty times over the last ten years.

Figure 2.1. Approved QFII investment quota (in $Billion)



Source: Liu, M., 2012. *Securities Times.*

There was a major move in April, 2012 that Chinese regulators announced to add another $50 billion quota for QFIIs, which made the total investment quota reach $80 billion. The previous Chairman of the CSRC, Guo Shuqing, stated at the Asian Financial Forum in January 2013 that QFIIs have held 89.1% of A-share companies, which shows QFIIs are increasingly important in the A-share market. However, he also mentioned that the QFII investment only accounted for 1.5% - 1.6% of the A-share market capitalization, which is expected to increase to 15%. His speech shows the strong determination of the Chinese authorities on opening up the A-share market to foreign investors.

2.3.2. The QDII policy

The qualified domestic institutional investors policy is also known as QDII, which is an arrangement to allow qualified domestic institutional investors to invest in the overseas capital markets. The objective of this policy is to further open capital accounts in order to create more foreign exchange demand to achieve a balanced RMB exchange rate and also to encourage domestic companies to go global in order to reduce trade surplus and capital accounts surplus. This is especially important when China's international merges and acquisitions have seen a rapid growth since 2006, which has boosted firms' exposure across the world. The QDII policy has effectively widened the overseas investment channel for domestic institutional investors and individual investors. According to the QDII policy, domestic investors are able to invest in foreign stock markets through eligible insurance companies, securities companies, fund management institutions and asset management institutions which have obtained approvals from the CSRC.

One of the key features of the QDII scheme is the divided regulation. Although investors normally consider the QDII scheme as a single unified regime, there are actually four groups under the scheme, according to the type of QDII institutions and the regulatory regime. For example, QDII securities companies and fund managers receive the largest granted quota among all QDII institutions due to a less restrictive regulation issued by the CSRC. The regulation parties for each type of QDII institutions are shown in Table 2.2 below.

Table 2.2. Regulators for four different types of QDII institutions

Type of QDII Institutions	Regulators
Commecial Bank	China Banking Regulatory Commission (CBRC)
Trust Company	China Banking Regulatory Commission (CBRC)
Fund Manager/Securities Company	China Securities Regulatory Commission (CSRC)
Insurance Company	China Insurance Regulatory Commission (CIRC)

Source: Mazzochi, R., Siu, M., Flinn, H., 2013. QDII – An Offshore Perspective. *King & Wood Mallesons*.

Specifically, the QDII policy was first proposed by the government department of the Hong Kong Special Administrative Region, which aims to open domestic capital markets under foreign exchange regulations and is similar to the QFII policy. Starting from 2004, insurance companies were enabled to invest in foreign markets. Later, on 13th April 2006, the People's Bank of China (PBOC) issued a policy, which permits qualified institutions and residents to authorize Chinese commercial banks to invest only in fixed-income and money market products overseas. In April and June 2006, the PBOC, the CBRC and the SAFE issued a regulatory regime to govern QDII commercial banks. Securities Daily reported on 11th May 2007 that the Chinese government announced it was going to widen the scope of the QDII investment, after granting 15 banks and funds a total quota of $14.2 billion to invest overseas and permitting them to offer stock related products to domestic investors with some restrictions. Afterwards in June 2007, the CSRC issued rules to regulate QDII fund managers and securities companies. In March and July 2007, the CBRC and the SAFE further enacted policies on QDII trust companies. In June 2007, the PBOC and the SAFE issued the *2007 Insurance QDII Measures* to regulate QDII insurance companies.

Three common types of QDII institutions have different sources of funds, onshore selling activities and investment criteria. The details are described in Figure 2.2, which is sourced from the report "An offshore perspective" by Mazzochi *et al.* (2013).

Figure 2.2. Difference among three types of QDII institutions

Type of QDII institution	Source of funds	Onshore selling activities	Investment criteria
Commercial bank	▪ A QDII bank may raise funds under the "offshore wealth management regime", i.e. by issuing foreign currency or Renminbi denominated wealth management products onshore.	▪ A QDII bank's selling activities are regulated as part of a commercial bank's wealth management regime, which is subject to the CBRC's rules for selling wealth management products. ▪ A QDII bank must file its QDII product plan with the CBRC before launching any new type of QDII wealth management product.	▪ A QDII bank must adopt a "suitable products to suitable clients" principle, i.e. the QDII bank will need to classify its wealth management products and clients into five risk rated categories respectively, with prohibitions on sales of complex risky products to clients without sufficient investment experience or risk appetite. ▪ Additional restrictions on QDII products invested in overseas listed equities: - the minimum investment amount for a single investor in a QDII product is RMB100,000 (or its equivalent in foreign currency); and - each investor must have experience in investing in equities and the QDII bank must formulate specific evaluation procedures to confirm suitability.
Trust company	▪ A QDII trust company may set up trust schemes for a single domestic investor or several domestic investors for offshore investments. Such offshore investments are made in the name of the trust company, according to the investment provisions set out in the relevant trust document. ▪ A QDII trust company must file its QDII trust scheme with the CBRC before launching an onshore trust scheme.	▪ A QDII trust company may "repackage" the offshore investment products through trust schemes offered to domestic institutional investors or individual investors who have the ability to bear investment risks.	▪ The minimum investment amount for a single investor (institutional or individual) is RMB1 million (or its equivalent in foreign currency). ▪ The following financial criteria apply to a "qualified individual investor" for collective trust schemes: - the individual or family financial assets must be above RMB1 million during the subscription period; or - the individual's annual income must be above RMB200,000.
Fund manager / securities company	▪ A QDII fund manager may raise funds through the public offering of fund units and invest part or all of such funds in offshore investment products. ▪ A QDII securities company may: - raise funds for offshore investments by setting up collective schemes; or - accept investment instructions from a single domestic investor and make offshore investments according to the provisions set out in the relevant asset management agreement.	▪ A QDII fund manager or securities company must apply to the CSRC for approval of any public offering of fund units (in the case of QDII fund managers) or setting up collective schemes (in the case of QDII securities companies). ▪ The following requirements apply to the initial public offering of fund units or funds raised through the offering of a collective scheme: - the minimum offering size is RMB200 million (or its equivalent in foreign currency) for fund units and RMB100 million (or its equivalent in foreign currency) for a collective scheme; and - the minimum number of unit holders is 200 for open-ended funds and 1,000 for close-ended funds; at least two investors must participate in a collective scheme.	▪ No specific investment criteria for domestic investors.

Source: Mazzochi, R., Siu, M., Flinn, H., 2013. QDII – AN OFFSHORE PERSPECTIVE. *King & Wood Mallesons*.

In addition, four groups of QDII institutions also have different permissions on overseas investments. The details are also cited from the report written by Mazzochi *et al.* (2013), which are shown in Table 2.3.

Table 2.3. Different permissible investment scopes for QDII institutions

Type of offshore investment products	Commercial bank	Fund manager / securities company	Insurance company	Trust company
Fixed income products	√ (product rated as BBB above)	√ (issuer recognised by the CSRC)	√ (issuer and product rated as BBB or above)	√ (product rated as investment grade or above)
Money market instruments	not clear from the CBRC QDII rules	√	√ (issuer rated A or above)	√ (product rated as investment grade or above)
Equity products (listed on a recognised overseas stock exchange)	√ (shares only)	√ (shares, global/American depository receipts and REITs)	√ (shares, global/American depository receipts and REITs)	√ (shares, global/American depository receipts and REITs)
Mutual funds (authorised by recognised overseas fund regulators)	√	√	√	√
Structured products	√ (issuer rated as A or above)	√ (no rating requirement)	√ (structured deposits are listed as a type of permissible fixed income products under the 2007 Insurance QDII Measures)	√ (issuer rated as investment grade or above)

Source: Mazzochi, R., Siu, M., Flinn, H., 2013. QDII – AN OFFSHORE PERSPECTIVE. *King & Wood Mallesons*.

According to the "Approval of Investment Quota Table for Qualified Domestic Institutional Investor (QDII)" published by the SAFE in 2013, as of January 2013, the total quota authorized has achieved $81.182 billion, including $11.3 billion to banks, $39.3 billion to securities companies, $25.7 billion to insurance firms and $4.9 billion to trust companies, respectively. In addition, the table shows there were 114 qualified institutions, which consisted of 29 banks, 47 securities companies, 30 insurance companies and 8 trust firms.

However, this is not the end of the story for QDII. The previous Chairman of the CSRC, Guo Shuqing, announced at the Asian Financial Forum in January 2013 that China planned to introduce a qualified domestic individual investor program (also known as

QDII2) when it was appropriate, which would allow domestic residents to inject funds directly into the HKEx. According to the Shanghai Securities News, the scheme is projected to target Hong Kong stocks first and then widen investment scope to other financial products in Hong Kong and finally, to products in the rest of the world. The future promising development of QDII further highlights the importance of conducting my research on the effects of QDII on the Hong Kong market.

CHAPTER 3

LITERATURE REVIEW

3. LITERATURE REVIEW

The following overview of related research parallels my two main objectives: (1) to compare domestic-versus-foreign investor abilities to extract firm-specific information from cross-listed firms, and (2) to examine the role of corporate governance in explaining these differential abilities.

3.1. Price Discovery of Cross-listed Firms

The importance of price discovery has captured people's attention in the literature for a long time. For example, O'Hara (2003) argues in her presidential address: "Markets have two important functions - liquidity and price discovery - and these functions are important for asset pricing." Price discovery is defined as how markets find equilibrium prices (Schreiber and Schwartz, 1986; Harris *et al.*, 1995). O'Hara (2003) also describes price discovery in her address as "incorporation of new information into asset prices" and consideration of "the role of the informed and uninformed traders".

Until now, there have been plenty of studies on price discovery for different kinds of asset classes, including stocks (Hasbrouck, 1995; Eun and Sabherwal, 2003; Frijns *et al.*, 2010), treasury (Huang *et al.*, 2002; He *et al.*, 2009), options (Chakravarty *et al.*, 2004), futures (Roope and Zurbruegg, 2002) and foreign exchanges (Yan and Zivot, 2007).

The research on price discovery for stocks can be divided into two strands: one is constructed within the intra-market framework and the other is on cross-listed stocks. The strand of intra-market analysis on price discovery mainly comprises two angles: the incorporation of new information and the role of informed traders. Studies, such as Hasbrouck (1991), focus on the sequence of trades and quotes in one market, to identify

the speed of price adjustment to new information. Hasbrouck (1991) proposes a dynamic VAR model based on the belief that trades will convey information to the market participants and continuously affect the price. Several factors are identified in his paper for determining the price impact, like trade size and trade with wide spreads. Jones and Lipson (1999) move further to examine the slow adjustment of quotes to information by two approaches: a VAR based on Hasbrouck (1991) and a partial adjustment model which is closely associated with the models of Amihud and Mendelson (1987) and Damodaran (1993).

In addition, by dividing available information into market-level and firm-specific information, studies have focused on how and the relative amount of firm-specific information and market-level information impounded into stock prices by different types of participants. There is also another measure, synchronicity, which has been widely used in previous literature to capture firm-specific information (Piotroski and Roulstone, 2004; Chan and Hameed, 2006; Gul *et al.*, 2010; An and Zhang, 2013). Piotroski and Roulstone (2004) examine how three informed market investors – financial analysts, institutional investors and insiders affect the price discovery process. They categorize information into market-level, industry-level and firm-specific information. They find all these three parties have effects on the firm's information environment, however, the effects depend on the relative information advantage of each party on the three types of information.

From a different angle of market participants, O'Hara (2003) suggests examining the role of informed and uninformed traders in price discovery. The most commonly used measure of information asymmetry is PIN (Probability of Information-based Trading), which was developed by Easley *et al*. (1996, 1997a, b). Later, Easley *et al.* (2002)

confirmed the impact of PIN on price by empirical work in the NYSE. They find a 10% difference in PIN will cause a 2.5% difference in returns. Additional insights come from the exploration of price discovery after trading hours. Barclay and Hendershott (2003), for example, calculate PIN for three periods during one day, from which they find the probability of informed-based trading is substantially lower during trading hours than after-hours trading and prices are more efficient during trading hours. Duarte and Young (2009) investigate whether PIN is priced because of information asymmetry or liquidity. They find the effect of PIN on cross-sectional returns is actually caused by liquidity unrelated to information asymmetry.

With the ongoing integration of world financial markets, price discovery for cross-listing shares have risen to prominence. Harris *et al.* (1995) and Hasbrouck (1995) drew people's attention on the price discovery contributions from multiple markets. They have investigated the price discovery of U.S. stocks which are traded on the NYSE and the regional exchanges. While Harris *et al.* (1995) focus on whether the regional exchanges are also important in the price discovery process, Hasbrouck (1995) constructs a measure[5] to estimate relative contributions of multiple markets to price discovery. By considering 30 Dow stocks, Hasbrouck (1995) finds the NYSE dominated the regional exchanges with a median contribution of 92.7%.

Furthermore, people have started to consider cross-listings outside the U.S. markets, which generates an interesting debate on which factor is more important in price discovery: the headquarter location of listed firms or the quality of markets where the firm is listed. Most of the studies find a home bias in price discovery (Ding *et al.,* 1999; Grammig *et al.,* 2005; Pascual *et al.,* 2006; Su and Chong, 2007; Chen *et al.,* 2010;

[5] People often refer to this measure as "information share", which is very widely used in the literature to measure the proportions different markets contribute to price discovery.

Frijns *et al.*, 2010; Ma *et al.*, 2010). Grammig *et al.* (2005) analyze three German firms cross-listed in New York and Frankfurt, with intraday quotes and exchange rates over a period of three months. They show the random walk component of the firm is majorly determined by the home-market. Menkveld *et al.* (2007) utilize a state space model to examine the price discovery for Dutch stocks cross-listed in U.S. in a 24-hour framework and find the New York stock exchange only plays a minor role in price discovery. While the aforementioned papers explore the price discovery for the stocks which are cross-listed in U.S., based on a sample of four Australian stocks cross-listed in New Zealand and five New Zealand stocks cross-listed in Australia, Frijns *et al.* (2010) find the home market still plays the leading role in price discovery while the relatively larger market (Australia) starts to becomes more informative and contributes more.

On the contrary, several studies find supporting evidence for market quality (Eun and Sabherwal, 2003; Kadapakkam *et al.*, 2003; Pascual *et al.*, 2006). With a sample of Canadian stocks cross-listed on the U.S. exchange, Eun and Sabherwal (2003) show the contribution of U.S. shares to price discovery ranges from 0.2% to 98.2%. Kadapakkam *et al.* (2003) show the London market has a high contribution to price discovery for Indian stocks and market quality is important in this case.

In addition, there are several studies on Chinese stock exchanges. At the beginning, research efforts are largely devoted to the information transmission between A- and B-shares[6]. Chan *et al.* (2007) examine the price discovery between the A- and B-share

[6] There are two types of stocks traded on Chinese stock exchanges: A- and B-shares. These two categories were completely segmented before February, 2001 because the A-share market was restricted to domestic residents and B-shares were only available to foreign investors. However, low interest among foreign investors in holding B-shares encouraged market reforms in 2001 that permitted domestic investors with foreign currency to invest in the B-share market.

markets covering the rule change of allowing domestic investors to invest on B-shares in February 2001. They show the A-share market dominates the price discovery throughout the whole period and the B-share market starts to contribute to the price discovery process after Feb 2001. Moreover, when more and more Chinese firms choose to be listed overseas, the contribution of overseas listing has captured people's attention recently. Su and Chong (2007) find the Hong Kong market contributes more than 80% to the Chinese stocks cross-listed on the NYSE and the Hong Kong exchange. They argue this might be because Hong Kong can be considered as a domestic market of China with economic and geographical similarities. Chen *et al.* (2010) address the issue of whether location or market quality is more important by looking into the China-backed ADRs[7] on the NYSE. They support the home bias hypothesis and show origination of information is the key to international information transmission. A working paper by Ma *et al.* (2010) looks into A- and H-shares and concludes A-shares still dominate the price discovery. They suppose the informational advantage of domestic investors might be the reason.

3.2. Firm-specific Information: Domestic versus Foreign Investors

Previous studies have focused on price discovery contribution and valuation difference between A- and B-shares. However, my study examines the price discovery abilities of foreign and domestic investors in terms of firm-specific information from the perspective of different participants (i.e., domestic versus foreign investors). Cai *et al.* (2011) raise an important point which is that most of the previous studies focus on the integration between Chinese A- and B-shares (e.g. Fung *et al*. (2000); Chan *et al*. (2007)), despite Hong Kong being considered as a more important market for capital

[7] American Depositary Receipts (ADRs) are useful tools for US investors to invest in Chinese stocks.

funding. Until recently, only a few studies have considered price discovery of A- and H-shares. Groenewold *et al*. (2004) investigate the relationship among the mainland Chinese, Hong Kong and Taiwan markets. They find the mainland Chinese A-share market is segmented from both the Hong Kong and Taiwan markets. Additionally, Cai *et al.* (2011) develop a non-linear Markov error correction to examine the general trend of the cointegration relationship between A- and H-share prices from a market-level perspective and the determinants of this relationship. In addition to studies from the market-level angle, my study emphasizes the different abilities of incorporating firm-specific information from the perspective of different types of investors into A- and H-shares.

The empirical evidence to date of whether foreign investors have an information advantage over domestic investors in the Chinese markets has been mixed. Although previous studies tend to focus more on valuation differences between A-shares and B-shares than on firm-specific information differences, their results are suggestive for my study. Chan *et al.* (2008), for example, show that the difference between A- and B-share valuations can be explained by differences between foreign and domestic investor information sets. Their results suggest that foreign investors are at an information disadvantage compared with domestic investors because of different accounting standards, poor investor protection, and insider trading in the A-shares. In contrast, Chui and Kwok (1998) argue that foreign investors have an information advantage because they receive price-sensitive news more quickly than domestic investors trading A-shares. In their view, foreign investors are not subject to the same information barriers as domestic Chinese investors. Bae *et al.* (2012) point out that these mixed findings might be caused by the relative importance of global versus local market information, obtained by foreign investors relative to domestic investors. They examine

stock price delays related to global market information and find that foreign investors have an advantage in processing global market information. They do not examine stock price delays related to firm-specific information. Similar to Bae *et al.* (2012) partitioning of global versus local information, this thesis uses a partitioning of market-wide versus firm-specific information.

In my research setting, it is possible that domestic Chinese investors have a comparative advantage in extracting firm-specific information due to several barriers faced by foreign investors. These barriers include a lack of familiarity with written and spoken Chinese, a lack of local institutional knowledge, or an inability to ascertain the prevalence of insider trading by domestic shareholders. On the other hand, previous studies suggest that foreign investors are more sophisticated in collecting and analyzing firm-specific information than emerging-market domestic investors (Froot and Ramadorai, 2008; Gul *et al.*, 2010). In addition, the Chinese stock market is especially subject to rumors and speculative trading on the part of individual investors who tend to be highly active traders (Mei *et al.*, 2005).[8] Therefore, whether domestic or foreign investors are more informed with respect to firm-specific information remains an open empirical question with respect to cross-listed Chinese firms.

3.3. Benefits of Cross-Listing

It has been long that cross-listing literature focuses on the benefits of international cross-listings, such as increase in stock prices and market valuations (Coffee Jr, 2002; Doidge *et al.*, 2004), capital-raising activity (Lins *et al.*, 2005), reduction of capital cost

[8] Guo Shuqing, the Chairman of the CSRC, stated in a speech during the Asian Financial Forum that retail investors in China accounted for 80.9% of the total trading volume in 2012.

(Alexander *et al.*, 1987), positive effect on firms' information environment (Lang *et al.*, 2003).

Coffee Jr (2002) discusses the impact of cross-listing on firms' valuation. This paper suggests cross-listing on a U.S. stock exchange is beneficial for firms to achieve high market valuations because of increased enforcement and enhanced disclosure imposed by the Securities and Exchange Commission (SEC), stronger protection of minority investors and reduction in market segmentations. Coffee Jr (2002) specifically shows two competing explanations: the bonding hypothesis and the market segmentation hypothesis. On the one hand, the bonding hypothesis suggests firms benefit from cross-listing due to reconciliation to the stricter U.S. litigations and regulations. On the other hand, the market segmentation hypothesis argues cross-listing improves market integration because more shareholders share the firm's risk after cross-listing. This hypothesis is consistent with the finding that cross-listing between two segmented markets results in a higher market price and a lower expected return suggested by Alexander *et al.* (1987). Doidge *et al.* (2004) also investigate the question that the relationship between cross-listing and market valuations. They specifically compare Tobin's *q* ratios of foreign firms cross-listed in the U.S. with *q* ratios of non-cross-listed firms on domestic markets. They show the valuation difference between these two groups is significant and reaches as high as 37%. From the perspective of shareholders, Doidge *et al.* (2004) suggest cross-listing on U.S. exchanges reduces the possibility of expropriation by controlling shareholders.

Later, Lins *et al.* (2005) test the supposition that cross-listing is associated with a reduction in market segmentation costs by employing non-U.S. firms issuing ADRs.

They find emerging market ADR firms benefit more from improvements in capital access than developed market firms.

Despite plenty of research investigates the benefits of cross-listing from the above perspectives, Lang *et al.* (2003) point out there is lack of direct evidence on the impact of cross-listing on firms' information environment. They examine the relationship between cross-listing and information environment of ADRs. They define information environment as "corporate reporting, private information acquisition and information dissemination", for which they specifically examine analyst coverage and forecast accuracy. Lang *et al.* (2003) suggest the enhancement in firms' valuation is associated with better information environments of cross-listed firms.

Until now, as far as I am aware, there have not been any relevant studies on the possible benefit of more firm-specific information incorporation into cross-listed stocks caused by information advantage of different participants in two markets.

3.4. The Role of Corporate Governance

Previous research suggests that there is a positive relationship between a firm's corporate governance structure and the quality (i.e., informativeness) of its disclosure policies.

Karamanou and Vafeas (2005) examine the relationship between corporate governance and management earnings forecasts in terms of forecast frequency, accuracy, and market response. They find that firms with stronger corporate governance are more likely to provide management forecasts and more likely to update their forecasts in a timely manner. They also find a positive relationship between corporate governance and

the accuracy of management forecasts. Given these stylized facts, it comes as no surprise that the market response to management forecasts is significanlty stronger for firms with good corporate governance than for their weak governance counterparts. They conclude that their "empirical evidence is broadly consistent with the notion that effective corporate governance is associated with higher financial disclosure quality (p. 453)."

Gul *et al*. (2010) also examine the relationship between corporate governance and the firm's information environment. They find that the amount of firm-specific information impounded into stock prices is an increasing function of auditor quality and foreign ownership. They also show that firm-specific information is a nonlinear decreasing function of concentrated ownership in general and government ownership in particular. Similar to Karamanou and Vafeas (2005), their overall conclusion is that governance mechanisms exert a significant influence on the firm's information environment. In contrast to my study, Gul *et al*. (2010) do not examine the impact of the 2007 Chinese regulatory change allowing domestic Chinese investors to invest in H-shares since their sample period ends in 2003. Given that my sample period straddles the 2007 QDII changes, I am able to isolate institutional effects (i.e., Hong Kong's investor protection and HKEx listing rules) from investor-type effects.

Armstrong *et al*. (2012) point out that while previous research establishes a signficant relationship between corporate governance and the firm's information environment, such research has not established a causal relationship. Establishing causation is complicated by the fact that both constructs (i.e., corporate governance and the firm's information environment) are likely to suffer from endogeneity. Armstrong *et al*. (2012) overcome this endogeneity concern by using the passage of state anti-takeover laws as

an exogenous governance variable, and then examining its impact on the affected firms' information environments. Their empirical results show that an exogeneous change to a firm's governance structure causes a significnt change in its information environment. Specifically, the authors find that financial statement informativeness increases following the passage of anti-takeover laws.

Overall, previous research has established a reliable link between corporate governance and the firm's information environment. In the context of my study, this link underlies my hypothesis that cross-listed Chinese firms with relatively strong corporate governance will experience the largest firm-specific information spillover gains. That is, the stronger the firm's governance, the larger the difference between its H-share and A-share synchronicity.

There have been extensive studies using firm-level corporate governance rankings, ratings or indexes to examine the relationship between corporate governance and firm valuation (Gompers *et al.*, 2003; Drobetz *et al.*, 2004; Klapper and Love, 2004; Bebchuk *et al.*, 2009; Cheung *et al.*, 2010). However, my study focuses on which aspects of corporate governance have effects on firm-specific information incorporation, instead of constructing one single measure standing for overall firm-specific corporate governance quality or examining the effect of corporate governance on firm values. I follow previous studies on examining four primary aspects of corporate governance: (1) ownership structure; (2) board characteristics; (3) CEO compensation; (4) capital structure. I investigate the relative importance of these four categories.

3.4.1. The Effect of Ownership Structure

The effect of ownership structure on firm performance has been thoroughly investigated in the corporate governance literature. My study utilizes the theories developed in corporate governance to hypothesize the effect of ownership structure on firm-specific information. I examine the percentage of the largest shareholding, institutional shareholding, percentage of H-shares on A-shares and the number of QFIIs in the top 10 shareholders, which have been extensively used in previous studies on the Chinese market to represent ownership structure (Cheung *et al.*, 2010; Gul *et al.*, 2010; Tong and Yu, 2012).

As Gul *et al.* (2010) suggest, the ownership by the largest shareholder has an inverted U-shape effect on the synchronicity of Chinese listed firms. To explain their findings, they employ two opposing hypotheses, which are managerial entrenchment and the incentive alignment effect. Under the managerial entrenchment hypothesis, ownership concentration gives controlling shareholders incentives to act for their private benefit (Shleifer and Vishny, 1989). Thus, they are more likely to disclose information selectively, which increases the difficulty and cost for outside investors to search for private information. Less firm-specific information is reflected in stock price by investors. However, the incentive alignment hypothesis (Shleifer and Vishny, 1997) argues there is an increasing incentive for owners to maximize the value as ownership concentration increases. Controlling investors tend to release better firm-specific information for the interest of minority investors, which facilitates the incorporation of firm-specific information into share prices.

My research also examines whether institutional investors incorporate more firm-specific information into share prices. Nofsinger and Sias (1999) find changes in institutional ownership have positive effects on future returns, thus suggesting that institutional investors have more information about future returns. Boehmer and Kelley (2009) go further and examine whether the informational advantage of institutional investors can contribute to more efficient pricing. They find institutional investors contribute to price efficiency because of their private information and ability to differentiate temporary price changes from permanent ones, even without informational advantage.

Regarding the effect of the percentage of number of shares issued overseas on that of domestic shares, Researchers have extended the model developed by Stulz and Wasserfallen (1995) into China's practice and this hypothesis argues that the price disparity between A- and B-shares may be due to different demand elasticity of Chinese and foreign investors. The foreign investors may have higher demand elasticity since they have more diversification alternatives. Chen *et al.* (2001), Karolyi and Li (2003) and Lee *et al.* (2008) all use the ratio of outstanding B shares to total outstanding A and B shares as a proxy for relative demand measures. However different results are presented in these papers. Chen *et al.* (2001) and Lee *et al.* (2008) find empirical results that the observed the B-share price discount relative to the A-share prices is a positive function of supply, but Karolyi and Li (2003) find an insignificant relationship exists between the discount and relative supply. The effect of relative demand on price discovery of A- and B-shares is also suggestive for my study.

Foreign investors from western countries, who are used to rigorous corporate governance structures, attach more importance to corporate governance when they enter

into emerging markets (Leuz *et al.*, 2010). The difference between attitudes of foreigners and locals on Chinese firms' governance structure is even more prominent, since most non-state shareholders are individuals in mainland China, who are not experienced or motivated to regularly attend shareholders' meetings or monitor company management performance (De Jonge, 2008). However, there has been an ongoing argument on whether foreign investors have had a positive effect on the Chinese stock markets after they were allowed to invest in China under the QFII scheme (Schuppli and Bohl, 2010).

3.4.2. The Effect of Board Characteristics

The board is considered to be important to make policy decisions and monitor daily business operations of a company. My study examines the relationship between board structure and firm-specific information, particularly from four perspectives: CEO duality, size of board of directors, supervisory board size and the fraction of independent directors on the board of directors.

If the CEO also holds the position of chairman of the board, it gives too much power to one person to make decisions that are not in the best interest of minority shareholders. The responsibilities of the chairman include monitoring the process of CEO hiring, firing, evaluation and compensation. The duality of CEO and chairman positions would make it difficult for the chairman to perform his monitoring role (Jensen, 1993; Grove *et al.*, 2011), which results in higher frequency of fraudulent activities (Chen *et al.*, 2006). In addition, Jensen (1993) suggests it is more important to separate the roles of CEO and chairman of the board if other internal corporate control systems do not work properly, such as information problems and lack of management share holdings, which

is especially severe in China because many Chinese firms tend to hide important business information (Chan *et al.*, 2008). This opacity has increased the demand for separating the leadership roles.

Chinese listed firms adopt a two-tier board system: a board of directors and a supervisory board. The board of directors is responsible for implementing the resolutions of shareholders' meetings, deciding on the company's policies and business plans and formulating the annual financial budgets, plans for profit distribution and loss making-up. The supervisory board is entitled to examine financial reports and oversee the board of directors. My study examines the effects of these two boards on firm-specific information.

The impact of board size on the effectiveness of the board has been extensively examined. Jensen (1993) recommends that firms should keep boards small since oversized boards are more likely to function inefficiently and result in an increase in decision-making time. He specifically defines boards with more than seven or eight people as being oversized. Yermack (1996) supports this argument with empirical evidence that an excessively large board will lead to loss in the effectiveness of corporate governance mechanisms. When boards become larger, it is harder for directors to reach a resolution on which type of firm-specific information to disclose since each different director has different personal interests and would prefer to disclose information in his favor. Finally, it would be more likely that only a little information is available to the public after negotiation.

Independent directors are recognized as exercising monitoring power on behalf of shareholders and working in the best interests of minority shareholders. Due to the

important role of independent directors in corporate governance, the CSRC specially issued the *Guidelines for Introducing Independent Directors to the Board of Directors*, which requires that at least one-third of directors on its board are independent. Karamanou and Vafeas (2005) show that the percentage of outside directors has a positive effect on financial disclosure quality. Firth *et al.* (2007) find companies with a higher proportion of independent directors have higher earnings informativeness. Thus, when the percentage of independent directors on the board of directors increases, the quality of firm-specific information is improved.

Although the supervisory board is presumed to improve the dislosure quality of firm-specific information due to its responsibility to monitor the firm's accounting system and the financial reports, previous studies on Chinese firms have found the supervisory board has minimal impact on supervising the board of directors and is very weak in its powers (Dahya *et al.*, 2003; De Jonge, 2008; Shan, 2013). These finding might be caused by at least two reasons. Firstly, supervisors are largely dependent on the board of directors and managers, which reduces their effectiveness on monitoring the directors. Secondly, although the *Code of Corporate Governance for Listed Companies* in China regulates 'supervisors shall have professional knowledge or work experience in areas such as law and accounting', it will take many years before the supervisory board consists of qualified manpower and most of the supervisors are not experienced and knowledgeable enough to meet the standards specified in the Code in reality.

3.4.3. The Effect of CEO Compensation

Executive compensation research outside of the United States is scarce and this is especially true for China (Wang and Xiao, 2011). While previous research focuses on

investigating the relationship between CEO compensation and firm performance (Conyon and He, 2011; Ke *et al.*, 2012), there are relatively less studies on the impact of CEO compensation on firm-specific information. I examine the impact from two different dimensions of CEO compensation: CEO cash compensation and equity holdings. Between 2001 and 2005, Chinese listed firms were only required to disclose the sum of total compensation of the three highest paid directors, which is extensively used in previous studies to represent CEO compensation (Firth *et al.*, 2006; Conyon and He, 2011; Wang and Xiao, 2011). Since 2005, the CSRC has regulated all public firms to report compensation information for individual executives. My study is one of few studies that use CEO compensation directly to utilize this policy. Conyon and He (2011) argue previous research on executive compensation of Chinese firms pays greater attention to the role of CEO cash compensation than CEO equity holdings. Thus, my study also fills the void by adopting a dummy variable to represent whether the CEO holds common shares of the company.

Performance-based incentive payment schemes are important in solving moral hazard problems between owners and managers (Shleifer and Vishny, 1997; Wang and Xiao, 2011). Contrary to the conventional findings that firms should adopt pay-for-performance mechanisms, previous studies have documented a weak sensitivity of pay-for-performance for Chinese firms (Firth *et al.*, 2006; Ke *et al.*, 2012). Firth *et al.* (2006) divide firms into three groups according to the type of controlling shareholder and find there is no relationship between CEO pay and firm performance when the major shareholder is a state agency. Ke *et al.* (2012) specifically examine the pay-performance for state-controlled H-shares and conclude neither annual cash salary nor managerial equity holding is significantly associated with firm performance. Wang and Xiao (2011) suggest the weak relationship is because of controlling shareholders' expropriation.

Considering that most of the H-shares are controlled by the government and highly concentrated, the CEO is more likely to collude with the largest shareholders, who decide the CEO's salary.

3.4.4. The Effect of Capital Structure

Jensen and Meckling (1976) find agency costs are higher in firms with proportionally more debt in their capital structures, since lenders can protect themselves by drafting rigorous debt covenants and managers have motivations to disclose more information voluntarily to reduce agency costs. Thus, a company with high leverage is expected to observe increase in the level of disclosure. In addition, creditors play important roles in monitoring managers, which results in improvement of corporate governance (Grove *et al.*, 2011). Particularly in China, the bond market is underdeveloped compared to the equities market and the dominant entities of lending are banks. Banks are perceived as having better credit analysis skills and incentives to make credit decisions, thus the award of credit alone can be a powerful signal to stakeholders (De Jonge, 2008).

CHAPTER 4

FIRM-SPECIFIC INFORMATION

BETWEEN A- AND H-SHARES

4. FIRM-SPECIFIC INFORMATION BETWEEN A- AND H-SHARES

4.1. Introduction

The number of Chinese firms choosing to cross-list overseas has increased rapidly over the last decade (Sun *et al.*, 2013a), which has raised the important question of how cross-listing benefits Chinese firms. Previous studies focus on what benefits cross-listing firms, such as institution-level factors (e.g., stronger listing rules for a more developed cross-foreign market), however, they have missed one key point which is that foreign investors might play a unique role in helping domestic firms to incorporate more firm-specific information, due to their possibly better analyzing skills. This study proposes a hypothesis that because foreign and domestic investors have different skills of analyzing firm-specific information (Froot and Ramadorai, 2008; Gul *et al.*, 2010), their trading can influence the firm's information environment and could incorporate different amounts of firm-specific information into stock prices (Brockman and Yan, 2009). The difference can benefit cross-listed firms in helping their stocks to improve information efficiency in one market, by referring to trading activities by more informed investors in the other market. The improvement is important because more and more research has recognized and attached great importance to the impact of information revealed by stock price on production and investment decisions (Chang and Yu, 2010).

This chapter starts from the examination of whether there exists any difference in firm-specific information reflected in A- and H-shares respectively, as well as the interaction between these two markets. In order to answer these questions, I investigate the price

difference between A- and H-shares and the dynamic conditional correlation between these two types of shares.

Next, to further investigate which group of investors has better information processing skills, I employ two different measures of synchronicity and probability of informed trading (PIN) to directly compare firm-specific information of A- and H-shares. This question has attracted considerable attention from both academics and policy makers (He *et al.*, 2013) due to the increasing participation of foreign investors in China. For example, the total quota of QFII[9] investment granted by the Chinese government has seen a rapid increase from 4 billion dollars in the pilot period of 2002, to 80 billion in 2012. Although it has been generally accepted that there exists difference in analyzing information between domestic and foreign investors, which type of investor is more informed is still a controversial issue. By answering this question in the setting of the largest emerging market (i.e., China), my study may help the development of the Chinese stock market. It has been always topical whether foreign investors have played a positive role in the Chinese market after they were allowed to enter into China in 2002. If foreign investors possess better skills of analyzing firm-specific information and do help price discovery in A-shares, it might be wise for the Chinese government to relax the restrictions further to allow foreign investors to invest in the Chinese market. In particular, I employ two different measures of synchronicity and probability of informed trading (PIN) to represent firm-specific information, which is incorporated into stock prices.

Finally, I utilize a significant policy QDII to determine the effect of domestic investors after they were permitted to invest in the Hong Kong market. This policy has helped me

[9] As illustrated previously, the Qualified Foreign Institutional Investor (QFII) scheme was introduced in 2002 and allows qualified foreign investors to invest in China with certain quota granted by the Chinese government.

to investigate further on which type of investors is more sophisticated after controlling institutional factors, which differentiates my study from others.

4.2. Data and Summary Statistics

My sample covers the six-year period from January 1, 2005 to December 31, 2010. By the end of 2010, there were 65 cross-listed firms issuing H-shares on the Hong Kong stock market. The intraday data of A- and H-shares are available from the Securities Industry Research Centre of Asia-Pacific (SIRCA), which includes all stock trades and quotes for every trading day. My sample of firms is limited to those that have both A- and H-shares listed throughout the period from 1 January 2005 to 31 December 2010, excluding days when either market did not trade. In particular, five criteria to filter the data were applied. First, stocks had to be listed before the end of 2009 to guarantee sufficient observations for my analysis. Second, stocks that were suspended from either market for more than a year were excluded. Third, trades and quotes with negative values were deleted. Next, negative and zero bid-ask spreads were eliminated. Finally, trades and quotes that recorded zero prices or zero volume were also excluded. My final sample therefore includes 60 cross-listed firms, details of which are provided in Table 8.1 of the Appendix. I collect daily closing stock prices and market indices from Datastream. Thirty-three percent of the sample companies are from the manufacturing industry, followed by firms from the transportation (18%) and finance (17%) industries. The appendix lists all the stocks in my final sample, along with listing dates and industry classification.

4.2.1. Price Difference between A- and H-shares

This section provides a preliminary statistic result for showing whether domestic and foreign investors have different skills in analyzing firm-specific information. The underlying rational is that the prices of A- and H-shares should be the same if these two types of participants have the same abilities to utilize the available information. Using the filtered data, I construct two price series (A- and H-shares, respectively) on a 1-minute time frequency when both markets are open[10]. The first and last 5 minutes in both the morning and afternoon sessions are deleted to avoid price irregularities during the opening and closing periods (10:05am to 11:25am in the morning session and 2:35pm to 2:55pm in the afternoon session at the local time for mainland China and Hong Kong). I follow a similar data extraction design, suggested by Grammig *et al.* (2005) and Frijns *et al.* (2010), whereby quote midpoints are employed to examine the cointegration relationship. If no quote is available during a 1-minute interval, I use the previous midpoint.

One main difference between A- and H-shares is that all transactions, including dividend payments, of A-shares are conducted in Chinese RMB, while H-share transactions are conducted in Hong Kong dollars. I therefore normalize the trade, quote and dividend payment of each pair in the same currency (RMB) by using the exchange rate of Hong Kong dollars to RMB at the end of each trading day.[11] Although A- and H-

[10] Although mainland China and Hong Kong are in the same time zone, the two markets have different trading hours. The trading in the A-share market is from 9:30am to 11:30am and 1:00pm to 3:00pm, whilst in the Hong Kong market it is from 10:00am to 12:30pm and 2:30pm to 4:00pm.

[11] There are not many fluctuations in the Hong Kong dollars to RMB exchange rate during the day, due to China's foreign exchange control. Before 21 May 2007, the exchange rate of RMB against the US dollar was controlled within ±0.3% and slightly widened to ±0.5% afterwards. Since the Hong Kong dollar is pegged to the US dollar, it is reasonable to use the exchange rate of Hong Kong dollars to RMB at the end of each trading day to normalize each pair's price.

shareholders receive the same amount of dividend yields, they are not necessarily paid at the same time, and therefore I also add dividend values back into the share prices.

Table 4.1 reports the number of stocks which are listed in both the A-share and Hong Kong markets each year, from 2005 to the end of 2010, which have increased from 31 to 65 stocks in total. Although A- and H- shareholders have the same voting rights and dividend income, there are consistent premiums of A-shares over H-shares (Chan *et al.*, 2010), which indirectly suggests the possibility of segmentation between the two markets (Cai *et al.*, 2011)[12] and therefore indicates that foreign and domestic investors have different abilities for incorporating firm-specific information into stock prices. To illustrate how prices of A- and H- shares change during the sample period, Table 4.1 also reports the cross-sectional A-H share premiums, which are computed by dividing the difference between A- and H-share prices by A-share prices in Chinese RMB. I find that the mean of premiums reach the lowest in 2006 and maintain a high level for the next three years and decrease dramatically in 2010.

Table 4.1. Number of A- and H-shares and A-H share premiums

This table reports the number of A- and H-shares from 2005 to 2010. I also report the mean and median of A-H share premiums. A-H share premiums are calculated as $(P_A-P_H)/P_A$, P_A and P_H are denoted as A- and H-share prices. Prices of H-shares are converted to the same currency as A-shares (RMB) using the exchange rate of Hong Kong dollars to RMB at the end of each trading day.

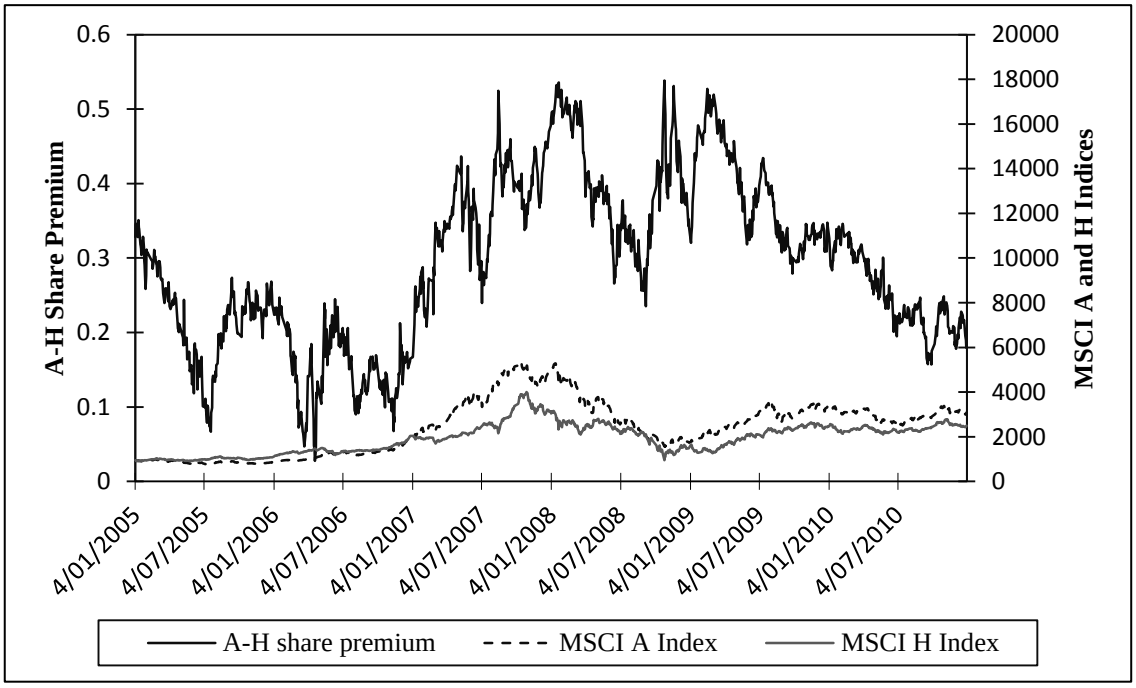
Year	Number of A- and H-shares	A-H share premiums	
		Mean	Median
2005	31	0.22	0.23
2006	38	0.15	0.15
2007	52	0.36	0.37
2008	58	0.4	0.39
2009	62	0.39	0.38
2010	65	0.25	0.24

[12] Cai *et al.* (2011) have hypothesized a decrease in H-share price discount, relative to A-share price, indicates an increase in cointegration between A- and H-shares.

Figure 4.1 exhibits the change in A-H share premiums from 2005 to 2010, which allows for a pictorial assessment of the two markets' general pricing dynamics. The premiums are the lowest at 3% in April 2006 (when the QDII scheme was introduced to allow qualified domestic institutional investors to invest in fixed-income and money market products) and highest in the months of January and October 2008. There are more fluctuations particularly between July 2007 and July 2009, which coincides with the QDII policy which further widens the investment scope of domestic institutional investors to foreign stock-related products, as well as the global financial crisis. Premiums maintain a high level of around 40%. After July 2009, I see a consecutive fall until the end of the sample period. From Figure 4.1, the trend of A-H share premiums can be divided into three periods. The first period ranges from January 2005 to March 2007, during which period A-H share premiums fluctuate around a relatively low level of 20%. The second period covers April 2007 to July 2009 when A-H share premiums move around 40%. In the third period after July 2009 until the end of 2010, A-H share premiums drop consecutively to 15%.

Figure 4.1. Time series of A-H share premiums

This figure plots A-H share premiums from 2005 to 2010. A-H share premiums are calculated as $(P_A-P_H)/P_A$, P_A and P_H are denoted as A- and H-share prices. Prices of H-shares are converted to the same currency as A-shares (RMB) using the exchange rate of Hong Kong dollars to RMB at the end of each trading day. I also plot the MSCI China A and H indices.



4.2.2. Dynamic Conditional Correlation Model

To further examine whether there is interaction between A- and H-shares and how it might change with time, I utilize a dynamic conditional, correlation model to quantify this relationship. The higher the correlation is, the higher the spillover gains from one type of investors to the other are.

The multivariate GARCH model developed by Engle (2002), which can be used to estimate dynamic conditional correlation (DCC), has the advantage of estimating correlation dynamics among assets. As argued by Chiang *et al*. (2007), the DCC approach also has the advantage of accounting for heteroskedasticity directly, by estimating correlations of standardized residuals. Despite these advantages, only a few

studies use the DCC model to examine the integration among markets in Asia (Yu *et al.*, 2010).

I employ a two-step approach of the DCC model in my study. First, I estimate the return equation as:

$$r_t = \mu + \lambda_1 r_{t-1} + \varepsilon_t \tag{1}$$

where $r_t = \begin{pmatrix} r_{1t} \\ r_{2t} \end{pmatrix}$, r_{1t} and r_{2t} are returns of Chinese A- and H-share markets respectively; $\varepsilon_t = \begin{pmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{pmatrix}$ and $\varepsilon_t | I_{t-1} \sim N(0, H_t)$.

Second, as suggested by Engle (2002), a multivariate conditional variance equation is specified as follows:

$$h_{ii,t} = \omega_i + \alpha_{i,1} \varepsilon^2_{i,t-1} + \beta_{i,1} h_{ii,t-1} \tag{2}$$

where $i = 1, 2$. Then the DCC equations are:

$$q_{ij,t} = (1 - \alpha - \beta)\bar{\rho}_{ij} + \alpha z_{i,t-1} z_{j,t-1} + \beta q_{ij,t-1} \tag{3}$$

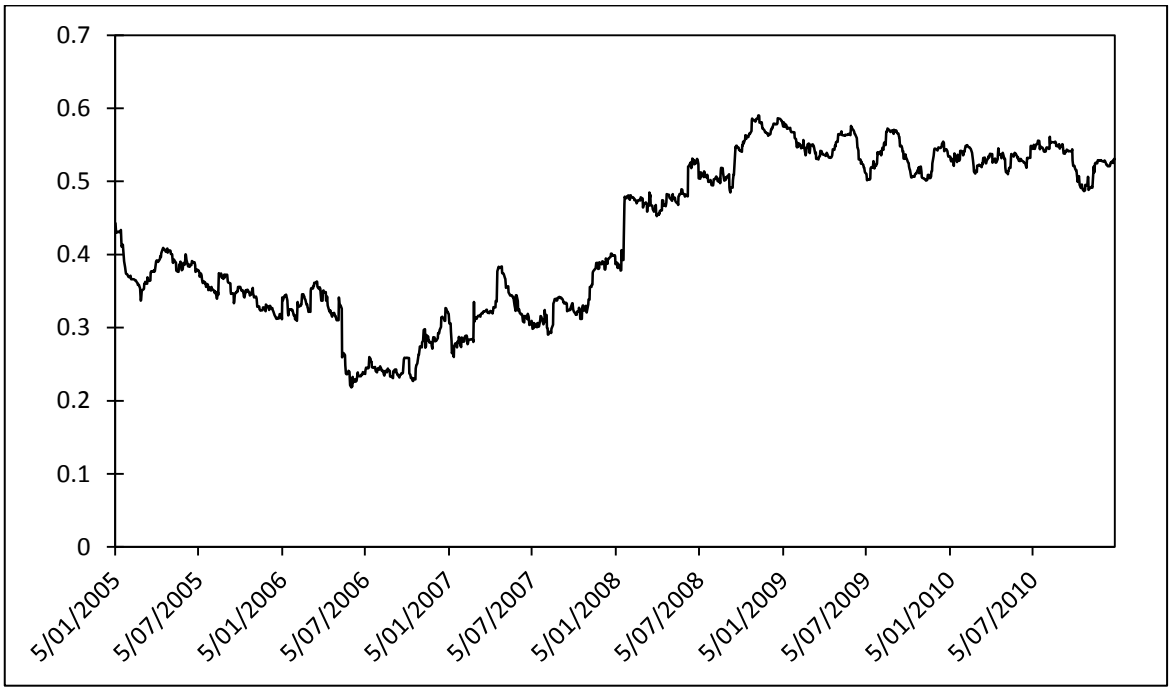
$\rho_{ij,t} = \frac{q_{ij,t}}{\sqrt{q_{ii,t}}\sqrt{q_{jj,t}}}$, where $i, j = 1, 2$, and $i \neq j$.

where q_{ij} is the off diagonal elements of the variance-covariance matrix, $\bar{\rho}_{ij}$ is the unconditional correlation and ρ_{ij} is the conditional correlation between the returns of A- and H-shares.

The dynamics of conditional correlations of A- and H-share markets are shown in Figure 4.2. The A-share and H-share markets have the lowest correlation of 20% at the beginning of 2006. After April 2006, I see a continuously upward trend until December 2008, when the correlation reached the highest level at 60%. From this time point until the end of 2010, the correlation ranges from 50% to 60%, and maintains a relatively high level. It suggests when correlations between A- and H-shares increase, cross-listed Chinese firms benefit more from the information spillover effects of more informed investors (i.e., foreign or domestic investors). Figure 4.2 implies that the spillover gains from H-shares to A-shares have risen steadily since April 2006.

Figure 4.2. Dynamic conditional correlations between Chinese A- and H-shares

This figure plots dynamic conditional correlations (DCC) based on the multivariate GARCH model developed by Engle (2002).



4.3. Methodology for Firm-specific Information Examination

In previous sections, I have shown there is price difference between A- and H-shares and a steady increase in the interaction between these two types of shares. I investigate

further on whether A- or H-shares incorporate different amount of firm-specific information, which I construct two measures to proxy for.

4.3.1. Synchronicity

My primary variable of interest is stock return synchronicity, a widely-used measure of firm-specific information.[13] To construct the synchronicity variable, I regress each stock's daily returns on the contemporaneous and lagged returns of the global and local market portfolios for each year:[14]

$$R_{i,t} = \alpha + \sum_{k=0}^{3} \beta_{i,k} R_{g,t-k} + \sum_{k=0}^{3} \gamma_{i,k} R_{m,t-k} + \varepsilon_{i,t} \quad (4)$$

where $R_{i,t}$ represents daily return of stock *i* on day t that is either A- or H-shares, R_g is the return on the global market portfolio, and R_m are the Chinese and Hong Kong market returns for A- and H-shares, respectively.

Estimating Eq. (4) has the advantage of measuring the relation between stock returns and firm-specific components after controlling for global and local market returns. However, prior studies have shown that prices of A- and H-shares also adjust to each other (Cai *et al.*, 2011; Chang *et al.*, 2013). Thus, I incorporate the returns for both markets into Eq. (4) and construct an alternative measure of stock return synchronicity based on Eq. (5):

$$R_{i,t} = \alpha + \beta_1 R_{g,t} + \beta_2 R_{g,t-1} + \beta_3 R_{A,t} + \beta_4 R_{A,t-1} + \beta_5 R_{HK,t} + \beta_6 R_{HK,t-1} + \varepsilon_{i,t} \quad (5)$$

[13] See Piotroski and Roulstone (2004); Chan and Hameed (2006); Gul *et al.* (2010); An and Zhang (2013).

[14] Chan and Hameed (2006) note that including industry returns in the market model is inappropriate in emerging countries because these markets tend to be concentrated in a few industries. Thus, I do not include industry returns in my model.

where, again, R_g is the return on the global market portfolio, $R_{A,t}$ and $R_{HK,t}$ are the Chinese and Hong Kong market returns, respectively.

Following Morck *et al.* (2000), I define synchronicity as

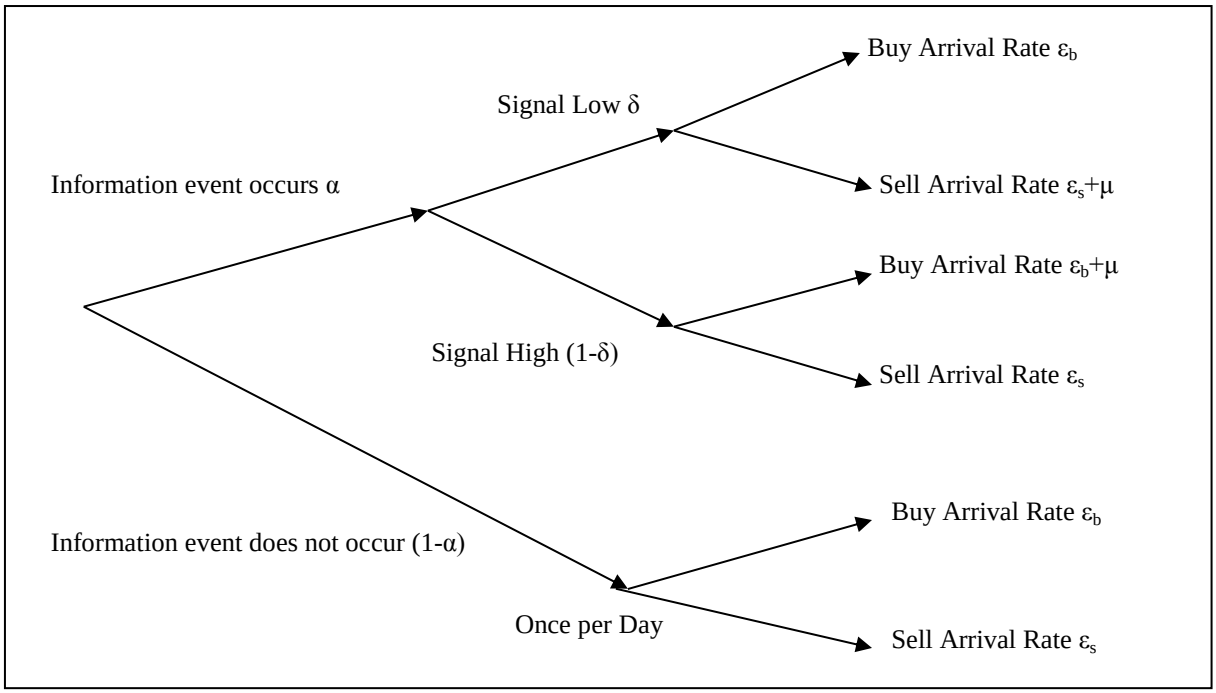
$$SYNCH_{i,t} = log(R^2_{i,t} / (1 - R^2_{i,t})) \quad (6)$$

where $R^2_{i,t}$ is the coefficient of determination from Eq. (4) or Eq. (5) for firm *i* in year *t*. Synchronicity is inversely related to firm-specific information reflected in stock prices, since the higher the R^2, the lower the firm-specific information. For my empirical analysis, I denote synchronicity measures calculated from Eq. (4) and Eq. (5) as SYNCH1 and SYNCH2, respectively.

4.3.2. Probability of Informed Trading

The probability of informed trading (PIN) measure is constructed by Easley *et al.* (1996, 1997a, b), which has also been extensively used in the previous literature (Brockman and Yan, 2009; He *et al.*, 2013). This variable is to proxy for firm-specific information. This model assumes two types of participants in the market: informed traders who enter the market based on their private information and noise traders who infer probability of informed trading on trade sequence. They denote α as the probability of an information event and δ as the probability of bad news. Thus, (1-δ) represents the probability of good news. While there is no informed trading for one day, buy (sell) orders will arrive at rate ε_b (ε_s). However, once an information event occurs, informed traders will arrive at rate μ. The description of these four parameters is detailed in Figure 4.3 as below:

Figure 4.3. Tree diagram of the trading process



Source: Easley, Kiefer, and O'Hara (2002)

The probability that the trade is based on private information is computed as:

$$PIN = \frac{\alpha\mu}{\alpha\mu + \varepsilon_b + \varepsilon_s} \tag{7}$$

This thesis follows Easley *et al.* (2002) to generate the annual estimates of PIN. To be more specific, this study utilizes transaction data with which I can classify trade direction as buyer-initiated or seller-initiated according to the study of the Lee and Ready (1991) algorithm. Then, all the above-mentioned four parameters are estimated using maximum likelihood methodology, in which the function is defined as

$$L(M/\theta) = \prod_{i=1}^{I} L(\theta / B_i, S_i)_{i=1}^{I} \tag{8}$$

Where $M=(B_i,S_i)_{i=1}^{I}$, I denotes the number of days observed on buys and sells. Then the daily likelihood equation is computed as:

$$L(\theta / B_i,S_i)=(1-\alpha)\times e^{-eT}\frac{(\varepsilon T)^B}{B!}e^{-eT}\frac{(\varepsilon T)^S}{S!}+\alpha\delta\times e^{-eT}\frac{(\varepsilon T)^B}{B!}e^{-(\mu+\varepsilon)T}\frac{\left[(\mu+\varepsilon)T\right]^S}{S!} \\ +\alpha(1-\delta)\times e^{-(\mu+\varepsilon)T}\frac{\left[(\mu+\varepsilon)T\right]^B}{B!}e^{-eT}\frac{(\varepsilon T)^S}{S!} \quad (9)$$

4.4. Empirical Results

4.4.1. Synchronicities of A- and H-shares

The results in Table 4.2 present the annual summary statistics for the firm-specific information measures of SYNCH1 and SYNCH2 estimated from Eq. (4) and Eq. (5), respectively. These figures are very important as they will determine whether there is any difference between H- and A-shares in terms of firm-specific information that is impounded in stock prices. It is therefore noteworthy that Panel A and Panel B show all minimum, mean, and median values of both synchronicity measures of H-shares are significantly lower than those of A-shares, which indicates more firm-specific information has been incorporated into H-share prices. In addition, I see that both measures reach their highest positive values in 2008, implying that both A- and H-share price movements are more synchronous with the markets during the global financial crisis. The significance of both measures in 2008 has decreased to 10%, which might also be caused by the global financial crisis.

Table 4.2. Descriptive statistics for stock return synchronicity estimations.

This table reports annual descriptive statistics for SYNCH1 and SYNCH2, which refer to stock price synchronicity measures estimated using Eq. (4) and Eq. (5), respectively. ***, **, and * represent significance at 1%, 5% and 10% levels, respectively.

Year	Group	Min.	Mean	Median	Max.	Std.	Wilcoxon Z test
Panel A: Summary statistics of SYNCH1							
2005	A	-1.686	-0.427	-0.530	0.580	0.534	5.51***
	H	-3.480	-1.802	-1.874	-0.375	0.828	
2006	A	-2.532	-1.108	-1.059	-0.135	0.541	2.61***
	H	-3.143	-1.583	-1.564	-0.330	0.753	
2007	A	-1.215	-0.311	-0.407	0.488	0.469	2.45**
	H	-1.778	-0.675	-0.707	0.542	0.680	
2008	A	-0.569	0.571	0.537	1.458	0.469	1.87*
	H	-1.242	0.373	0.282	2.096	0.799	
2009	A	-1.331	0.083	0.148	1.092	0.609	2.79***
	H	-1.932	-0.337	-0.382	1.444	0.853	
2010	A	-2.004	-0.014	-0.035	1.332	0.655	3.19***
	H	-2.356	-0.448	-0.351	0.897	0.716	
Panel B: Summary statistics of SYNCH2							
2005	A	-1.684	-0.450	-0.525	0.578	0.530	5.16***
	H	-3.661	-1.854	-1.833	-0.217	0.969	
2006	A	-2.796	-1.140	-1.059	-0.149	0.574	2.64***
	H	-3.274	-1.575	-1.553	-0.243	0.696	
2007	A	-1.254	-0.335	-0.401	0.527	0.481	2.25**
	H	-1.742	-0.650	-0.645	0.595	0.668	
2008	A	-0.575	0.560	0.539	1.482	0.482	1.81*
	H	-1.008	0.380	0.282	2.068	0.793	
2009	A	-1.213	0.068	0.155	1.071	0.613	2.53**
	H	-1.921	-0.298	-0.370	1.459	0.829	
2010	A	-1.851	-0.034	-0.035	1.321	0.659	2.90***
	H	-2.603	-0.424	-0.331	0.905	0.737	

4.4.2. Probabilities of Informed Trading (PIN) of A- and H-shares

Using intraday data of A- and H-shares, respectively, I calculate annual PIN estimates following Eq. (7) and the results are shown in Table 4.3. All PIN measures of H-shares are greater than A-shares. Since PIN measures are positively correlated with firm-specific information incorporated into stock prices, H-shares impound more information than A-shares which is consistent with the results shown in Table 4.2.

Table 4.3. Annual PIN estimates of A- and H-shares

This table reports annual descriptive statistics for probability of informed trading (PIN), which is estimated using Eq. (7). Four parameters: arrival rate of uninformed traders, arrival rate of informed traders, probability of an information event and probability that new information is bad news, which are calculated using Eq. (9). ***, **, and * represent significance at 1%, 5% and 10% levels, respectively.

Year	PIN			Arrival rate of uninformed traders μ			Arrival rate of informed traders ε			Probability of an information event α			Probability that new information is bad news δ		
	A share	H share	t-stats	A Share	H share	t-stats	A share	H share	t-stats	A share	H share	t-stats	A share	H share	t-stats
2005	0.14	0.21	-6.47***	260.06	54.42	8.43***	229.48	102.42	8.31***	0.36	0.26	2.88***	0.43	0.40	0.67
2006	0.13	0.17	-2.49**	780.15	230.12	3.45***	822.84	250.81	2.93***	0.34	0.27	2.09**	0.39	0.45	-1.28
2007	0.10	0.15	-4.00***	2561.80	406.47	6.65***	1351.43	391.72	8.28***	0.38	0.30	1.90*	0.30	0.33	-0.51
2008	0.13	0.15	-1.51	1789.21	507.11	8.77***	1197.99	403.31	9.99***	0.43	0.32	2.87***	0.35	0.37	-0.59
2009	0.11	0.15	-2.81***	2624.29	583.93	8.88***	1301.73	538.02	9.53***	0.41	0.29	2.76***	0.45	0.32	3.25***
2010	0.10	0.16	-4.50***	1727.42	490.32	13.44***	1129.53	449.49	9.50***	0.33	0.30	0.84	0.37	0.38	-0.11

4.4.3. Impact of the Qualified Domestic Institutional Investor Policy

One concern for my analysis is that the difference observed in Table 4.2 and Table 4.3 between domestic and foreign traders to incorporate firm-specific information may be caused by different stages of market development (Morck *et al.*, 2000), or even different investor protection mechanisms of the Chinese and the Hong Kong markets (Gul *et al.*, 2010) instead of different investor sets. I check for this possibility by utilizing the introduction of the QDII policy as a means of segmenting my sample from a period of time when domestic investors were barred from trading in the HKEx, to when they were allowed to trade in Hong Kong. The impact of the QDII policy is important for my study, since I can directly observe the effects of domestic investors on the incorporation of firm-specific information into H-shares, after they were allowed to invest overseas.

The QDII policy is one of the first financial steps that was taken by China to allow domestic institutional investors to compete with other institutional investors directly in international markets, and therefore provides a unique study of how H-shares have responded to the de-regulation and what the effects of domestic investors' on firm-specific information reflected in the Hong Kong market are. Although previous studies have examined the policy change that allowed domestic investors to trade in B-shares in February 2001 (Chan *et al.*, 2007, 2008), little focus has been placed on the QDII policy allowing domestic investors to trade in H-shares.

The QDII scheme was introduced in April 2006, and allowed qualified domestic institutional investors[15] to invest in fixed-income and money market products. On May 11, 2007 the investment scope was widened to stock-related products. I therefore partition my sample at this date and examine how my synchronicity and PIN measures behave before and after QDII.

4.4.3.1. Synchronicities of A- and H-shares Before and After QDII

If it is true that domestic investors are not impounding firm-specific information as well as foreign investors, then I should see a corresponding increase in price synchronicity in H-shares after the introduction of QDII. Further, the difference in synchronicities between H- and A-shares should narrow, given that now the relative ability of H-shares over A-shares to incorporate firm-specific information may be diluted by the introduction of domestic traders in the Hong Kong market.

The results in Table 4.4 render support to my hypothesis. I find both synchronicity measures rise significantly from an average of -1.58 to -0.35 and -1.52 to -0.30, for SYNCH1 and SYNCH2 of H-shares, respectively. Also, I find both DIF_SYNCH measures significantly narrow in value from -0.84 to -0.34 and -0.76 to -0.29. This would suggest that although cross-listing may, indeed, lead to better corporate disclosure and governance practice through having to meet more mature institutional governance features to list in the HKEx (Gul *et al.*, 2010), it is in fact the foreign traders that benefit the cross-listing as they have a better ability to impound firm specific information. The benefit to cross-listing is directly linked to the exposure a company

[15] To be a qualified institutional investor, the company is required to meet certain conditions relating to corporate governance and risk control structures, plus evidence of experienced investment teams, licenses to invest overseas, and a minimum asset requirement (net assets exceeding RMB 200 million).

has to foreign traders, possibly over that of the institutional requirements and disclosure for listing.

Table 4.4. The impact of the QDII policy on synchronicities of A- and H-shares.

This table reports univariate results for the difference in SYNCH1 and SYNCH2 between H- and A-shares, as well as SYNCH1 and SYNCH2 of H-shares before and after the QDII policy. ***, **, and * represent significance at the 1%, 5% and 10% level, respectively.

	DIF_SYNCH1				DIF_SYNCH2		
	Mean	Median	Wilcoxon Z Test		Mean	Median	Wilcoxon Z Test
Before QDII	-0.836	-0.835	-3.70***	Before QDII	-0.755	-0.719	-3.76***
After QDII	-0.336	-0.320		After QDII	-0.285	-0.281	
	SYNCH1_H				SYNCH2_H		
	Mean	Median	Wilcoxon Z Test		Mean	Median	Wilcoxon Z Test
Before QDII	-1.584	-1.569	-5.44***	Before QDII	-1.518	-1.491	-5.42***
After QDII	-0.348	-0.308		After QDII	-0.299	-0.307	

4.4.3.2. Probabilities of Informed Trading Before and After QDII

The logic outlined in section 4.4.3.1 applies to the measures of PIN as well. If domestic investors are not as good as foreign investors at processing firm-specific information, I should observe a decrease in firm-specific information incorporated in H-shares after the introduction of the QDII policy. In other words, there should be a drop in PIN of H-shares after domestic investors were allowed to invest in overseas markets, since PIN is positively correlated with firm-specific information. Table 4.5 confirms my hypothesis exactly. Before QDII, the average of PIN estimates is 0.222. However, after QDII, the mean of PIN estimates significantly reduces to 0.172. The results obtained using this alternative measure of firm-specific information are consistent with what are shown in Table 4.4.

Table 4.5. The impact of the QDII policy on probabilities of informed trading of H-shares.

This table reports univariate results for the PIN measures of H-shares before and after the QDII policy. This study follows ((Easley *et al.*, 2002)) to generate the estimates of PIN. ***, **, and * represent significance at the 1%, 5% and 10% level, respectively.

		Min.	Mean	Median	Max.	Std.	Wilcoxon Z test
μ	Before QDII	30.921	353.71	191.048	1999.983	493.484	3.50***
Arrival Rate of Informed Traders	After QDII	65.38	524.842	361.33	1999.99	512.075	
ε	Before QDII	7.364	253.568	114.589	1999.129	454.951	4.12***
Arrival Rate of Uninformed Traders	After QDII	14.376	491.548	274.348	1999.917	533.203	
α	Before QDII	0.105	0.304	0.292	0.857	0.135	0.93
Probability of an Information Event	After QDII	0.001	0.324	0.334	0.992	0.215	
δ	Before QDII	0.006	0.381	0.417	1	0.203	-2.51**
Probability that New Information is bad news	After QDII	0.001	0.314	0.332	0.944	0.175	
PIN	Before QDII	0.085	0.222	0.216	0.473	0.066	-3.64***
	After QDII	0	0.172	0.183	0.37	0.082	

4.5. Conclusion

This chapter examines the different information advantage between foreign and domestic investors, in which I use synchronicity and PIN in the cross-listed markets of mainland China and Hong Kong to represent information difference between domestic and foreign investors.

I find that foreign investors in the H-share market incorporate more firm-specific information than domestic investors in the A-share market. In addition, after domestic investors were allowed to trade in Hong Kong, there was a significant decrease in firm-specific information of H-shares.

CHAPTER 5

THE ROLE OF CORPORATE GOVERNANCE ON FIRM-SPECIFIC INFORMATION

5. THE ROLE OF CORPORATE GOVERNANCE ON FIRM-SPECIFIC INFORMATION

5.1. Introduction

So far, I have shown that foreign investors possess better skills in analyzing firm-specific information and there exists spillover gains from H-shares to A-shares, due to the steady increase in the interactions between these pairs. These results motivate me to investigate further which kinds of firms benefit the most from cross-listing. This thesis specifically examines the relation between corporate governance and firms' information environment, which has been of interest to policy makers, academics, managers and investors. My research has implications for investors analyzing corporate governance information. In particular, if more firm-specific information on better governance firms is available, investors might rationally engage in stock picking. My study also provides implications for policy makers to improve corporate governance and information transparency. Although China is the largest emerging market, its firms are known for poor governance.[16] Improving corporate governance has been a pressing issue for the Chinese government. My findings also have implications for the design of appropriate corporate governance systems and the construction of better firm information environments before firms seek to be listed on developed markets. This is because improvements in corporate governance practices are likely to attract more foreign investors (Leuz *et al.*, 2010) and the availability of firm-specific information has been found to have an effect on financing externally and capital market efficiency (Durnev *et*

[16] Moody's issued a red-flag report in July 2011 warning investors about poor corporate governance of Chinese firms which are listed on the US market.

al., 2004; Chan and Hameed, 2006), especially when more and more Chinese companies have tended to list in overseas markets recently (Sun *et al.*, 2013a).

Numerous studies have investigated the impact of corporate governance on firm performance. In contrast, there is considerably less research examining the impact of corporate governance on the firm's information environment. The relation between these two constructs is still not clear (Armstrong *et al.*, 2012).

In order to answer the question as to how corporate governance affects firm-specific information, I build a regression model using difference in synchronicities of H- and A-shares as my dependent variable. I follow Gul *et al.* (2010) to just use synchronicity as the dependent variable instead of PIN, due to recent criticisms of PIN's validity. For example, Yan and Zhang (2012) argue there might be a downward bias in the PIN estimate because of boundary restrictions. Duarte and Young (2009) also find it is the illiquidity component of PIN that is priced in stocks' price instead of the information. In addition, I can only use the algorithm method suggested by Lee and Ready (1991) to approximate trade classification, which might result in PIN estimation bias. In this chapter, I show data and descriptive statistics first and talk about the regression model I employ. Then, I explain the empirical results and conclude.

5.2. Data and Summary Statistics

I obtain company characteristics for A- and H-shares from the China Stock Market and Accounting Research (CSMAR) database. This database includes listing dates for the shares, industry codes, shareholder structure, board characteristics, CEO salary as well as other firm-specific information, such as total assets, leverage, and daily trading volume. Information on foreign subsidiary offices and foreign sales for the companies

are extracted from Bureau van Dijk's OSIRIS database and checked against CSMAR data, plus annual company reports. I also manually collate earnings announcement dates from the China Securities Journal, which is designated by the CSRC to disclose information on listed companies.[17]

All results documented in section 4 have shown foreign investors have more information advantage in utilizing firm-specific information than domestic Chinese investors and the spillover effects from H-shares to A-shares have increased over my sample period. It highlights the importance of investigating which type of firms benefit the most from cross-listing on the HKEx and whether the policy introduced by the Chinese government (here it specifically refers to the QDII policy) does help the price discovery process in the A-share market. My study examines these two questions from the perspective of corporate governance as well as policy level.

Most previous studies use corporate governance rankings or indexes to examine the relationship between corporate governance and firm value. My study is different from theirs in at least two ways: (1) I focus on which elements are important instead of a broad measure, thus, providing implications for firms on how to improve corporate governance; (2) I examine the effects of corporate governance on firm-specific information. Gillan (2006) provides a comprehensive review of corporate governance research and develops corporate governance framework. He divides governance into two main categories: internal and external governance. Both governance categories include five groups, such as the board of directors in the internal governance category

[17] The cross-listed A- and H-share firms are required to provide financial reports in accordance with domestic accounting standards (DAS) and Hong Kong Generally Accepted Accounting Principles (HK-GAAP), respectively, on the Chinese and Hong Kong stock exchanges. However, Chinese domestic investors and Hong Kong investors can freely access each other's financial reports (Gul *et al.*, 2010). In addition, a report issued by the Chinese Ministry of Finance in 2011 shows the differences between these two accounting standards have gradually diminished. I therefore focus on the annual reports in compliance with DAS.

and ownership structure in the external one.[18] Considering my study is on one single market and some specific rules imposed on H-shares, some measures are not applicable (e.g., law/regulation[19], or auditing because all firms listed in Hong Kong must be audited by international Big 4 auditors). Four primary aspects of corporate governance are examined: (1) ownership structure; (2) board characteristics; (3) CEO compensation; (4) capital structure, which are detailed below.

Table 5.1 reports summary statistics for the-firm specific characteristics and corporate governance variables on an annual basis. The largest shareholder (TOPOWN) generally holds more than 44% of shares consistently throughout my sample period, which supports the finding that Chinese listed firms are dominated by a single shareholder (Chen *et al.*, 2009; Conyon and He, 2011). In China, it is difficult to obtain shareholdings of all institutional investors, such as security companies, insurance companies, retirement funds and investment funds. In my thesis, I utilize the shareholding of investment funds to represent institutional investors, since fund is the major component of institutional investors in China. Further, the ownership of shares by domestic mutual funds (FUND) averages around 4% for the sample period, which would suggest institutional investors are much less of a force in China compared with developed capital markets in other countries, limiting their likely impact on corporate decision-making. The mean of SHARERATIO is bigger than 1, which suggests cross-listed firms issue more shares in Hong Kong than the domestic market, although the difference has declined over time. It does, though, highlight the importance of the Hong Kong market in raising foreign capital for Chinese firms. The annual average number of

[18] Please refer to Gillan (2006) for detailed categories on corporate governance.

[19] Although Hong Kong has better corporate governance standards, the Chinese legislation still determines major decision making when firms are cross-listed on mainland China and Hong Kong (De Jonge, 2008). Sun *et al.* (2013b) also point out firms from China of low corporate governance quality do not fully implement high corporate governance standards of Hong Kong.

qualified foreign institutional investors (QFII) within the top ten shareholders of a company is generally less than 1, indicative of these investors holding significant shareholdings in these companies for less than a whole year and not, on average, maintaining significant long-term exposures.

Approximately 10% of my sample firms have their CEO as the chairman of the board. China has a dual board system, including a board of directors and a supervisory board. There are around 12 directors on the board and 5 members on the supervisory board for the average firm across my sample period. The ratio of independent directors on the director board (INDEP) is approximately 36% over the sample period, which is consistent with the guidelines stipulated by the CSRC for independent directors.[20]

The average CEO salary reaches its highest in 2007 at 2,105,794 RMB (roughly $342,991) and sees a significant drop in 2008, clearly indicating it was affected by the global financial crisis. The percentage of CEOs receiving equity compensation (STOCK) is around 20%. However, it is notable that this number has decreased over time. In terms of capital structure, the mean leverage ratio has risen from 0.46 to 0.6.

I also include several controlling variables shown in Panel B of Table 5.1. Mean total assets have increased substantially from $6.7 billion to $150 billion. The average market-to-book ratio has fluctuated during the period, with a low of 1.76 in 2005, to a high of 7.33 in 2007. This would correspond to the rapid increase in the market index itself for A-shares, having risen by over 4 times between 2005 and 2007. In regards to the mean turnover ratio, it is always bigger than 1, which suggests H-shares are more

[20] In 2001, the CSRC stipulated the *Guidelines for Introducing Independent Directors to the Board of Directors*, which require firms to have at least one-third of the board of directors as independent directors.

liquid than their counterparts. I also notice there is a steady growth in the average number of foreign subsidiaries a firm has, rising from 1.3 to 2 over the sample period.

Table 5.1. Descriptive statistics of corporate governance and firm characteristics.

This table shows descriptive statistics for the independent variables used in the regression analysis. TOPOWN is the percentage of shares held by the largest shareholder. FUND represents the percentage of shares held by domestic funds. SHARERATIO is calculated as the ratio of outstanding H-shares by outstanding A-shares. QFII is the annual average number of qualified foreign institutional investors in the top ten shareholdings of a company. CEO_CHAIR denotes a dummy variable equal to one, if the CEO is also the chairman of the board, and zero otherwise. DIRECTOR is the number of directors on the board. INDEP represents the percentage of independent directors on the board. SUPERVISORY is the number of members on the supervisory board. SALARY is the annual emolument and allowance of the CEO. STOCK is a dummy variable equal to one if the CEO holds shares, and zero otherwise. LEVERAGE is computed as total liability divided by total assets. SIZE is the log of total assets. M_B is the market value of total equity divided by its book value. TURN is the turnover of H-shares divided by that of A-shares and STDROA is estimated as volatility of return on assets over the last five quarters, including the current quarter. EXPOSURE is the number of foreign subsidiaries a firm has.

Variables	2005	2006	2007	2008	2009	2010
Panel A: Corporate governance variables						
Ownership structure variables						
TOPOWN	0.484	0.483	0.444	0.458	0.455	0.442
FUND	0.031	0.031	0.05	0.041	0.034	0.036
SHARERATIO	3.19	3.157	2.839	2.125	1.549	1.205
QFII	0.716	1.183	0.407	0.333	0.276	0.425
Board characteristics variables						
CEO_CHAIR	0.069	0.1	0.163	0.148	0.14	0.133
DIRECTOR	11.414	11.267	12	12.019	11.912	11.383
INDEP	0.36	0.357	0.361	0.379	0.393	0.382
SUPERVISORY	4.931	4.7	5.326	5.296	5.368	5.083
Compensation variables						
SALARY (RMB)	343435	606800	2105794	987774	860956	1337082
STOCK	0.276	0.233	0.186	0.185	0.175	0.169
Capital structure						
LEVERAGE	0.459	0.498	0.571	0.584	0.593	0.602
Panel B: Firm characteristics						
SIZE	23.286	23.659	24.538	24.899	24.997	25.242
M_B	1.759	2.71	7.328	2.067	3.698	2.863
TURN	4.237	2.771	2.366	4.371	2.304	2.681
STDROA	0.025	0.024	0.022	0.029	0.028	0.019
EXPOSURE	1.345	1.367	1.233	1.648	1.895	1.983

The correlation matrix for my key variables is tabulated in Table 5.2. The dependent variables, DIF_SYNCH1 and DIF_SYNCH2 are significantly and highly correlated with each other (ρ=0.976). Both measures are also significantly positively correlated with TOPOWN. Further, the positive correlation between shares owned by domestic mutual funds (FUND) and the two dependent variables suggests the difference in firm-specific information between A- and H-shares should narrow as the number of institutional investors holding shares in the stock increases. Additionally, SHARERATIO is positively correlated with the dependent variables, which lends some basic support for the differential demand hypothesis if I utilize the parameter as an indicator of relative demand between A- and H- shares, following Domowitz *et al.* (1997). DIF_SYNCH1 and DIF_SYNCH2 are also positively correlated with the variables representing board characteristics, CEO compensation and leverage.

Table 5.2. Correlation matrix.

This table shows descriptive statistics for the independent variables used in the regression analysis. TOPOWN is the percentage of shares held by the largest shareholder. FUND represents the percentage of shares held by domestic funds. SHARERATIO is calculated as the ratio of outstanding H-shares by outstanding A-shares. QFII is the annual average number of qualified foreign institutional investors in the top ten shareholdings of a company. CEO_CHAIR denotes a dummy variable equal to one if the CEO is also the chairman of the board, and zero otherwise. DIRECTOR is the number of directors on the board. INDEP represents the percentage of independent directors on the board. SUPERVISORY is the number of members on the supervisory board. SALARY is the annual emolument and allowance of the CEO. STOCK is a dummy variable equal to one if the CEO holds shares, and zero otherwise. LEVERAGE is computed as total liability divided by total assets. SIZE is the log of total assets. M_B is the market value of total equity divided by its book value. TURN is the turnover of H-shares divided by that of A-shares and STDROA is estimated as volatility of return on assets over the last five quarters, including the current quarter. EXPOSURE is the number of foreign subsidiaries a firm has. ***, **, and * represent significance at the 1%, 5% and 10% levels, respectively.

VARIABLE	DIF_SYNCH1	DIF_SYNCH2	TOPOWN	PER_FUND	SHARERATIO	QFII	CEO_CHAIR	DIRECTOR	INDEP
DIF_SYNCH1	1	0.976***	0.114*	0.118*	0.124**	0.062	0.179***	0.187***	0.008
DIF_SYNCH2		1	0.103*	0.098	0.122**	0.034	0.199***	0.179***	0.005
TOPOWN			1	-0.284***	0.256***	0.072	-0.123**	-0.309***	0.172***
PER_FUND				1	-0.284***	-0.019	-0.021	0.159***	-0.019
SHARERATIO					1	0.053	0.011	0.169***	-0.134**
QFII						1	-0.056	-0.044	-0.040
CEO_CHAIR							1	0.111*	-0.077
DIRECTOR								1	-0.382***
INDEP									1
	SUPERVISORY	SALARY	STOCK	LEVERAGE	SIZE	M_B	TURN	STDROA	EXPOSURE
DIF_SYNCH1	0.165***	-0.017	-0.030	0.143**	0.447***	0.096	0.274***	0.104*	0.134**
DIF_SYNCH2	0.182***	0.001	-0.024	0.108*	0.414***	0.109*	0.263***	0.101	0.125**
TOPOWN	-0.003	-0.212***	-0.114*	-0.044	0.250***	-0.021	0.439***	0.058	-0.043
PER_FUND	-0.040	0.063	0.232***	0.196***	0.110*	0.183***	-0.215***	-0.091	0.510***
SHARERATIO	0.182***	-0.075	-0.030	-0.012	0.195***	0.053	0.345***	0.097	-0.115*
QFII	-0.174***	-0.151**	0.090	-0.018	-0.005	-0.015	0.059	0.076	-0.046
CEO_CHAIR	0.084	-0.021	0.106*	-0.059	-0.023	0.043	-0.065	0.155**	0.036
DIRECTOR	0.557***	0.135**	0.100	0.333***	0.448***	-0.052	0.204***	0	0.129**
INDEP	-0.250***	-0.048	0.020	-0.039	-0.060	0.057	-0.121**	-0.002	0.019

SUPERVISORY	1	0.115*	0.068	0.200***	0.398***	-0.041	0.280***	-0.028	-0.023
SALARY		1	-0.059	0.049	0.039	-0.151**	0.018	-0.059	0.044
STOCK			1	-0.035	-0.082	0.007	-0.103*	-0.004	0.260***
LEVERAGE				1	0.588***	0.210***	0.007	-0.321***	0.100
SIZE					1	-0.066	0.382***	-0.267***	0.119*
M_B						1	-0.069	0.143**	-0.032
TURN							1	0.092	0.008
STDROA								1	-0.032
EXPOSURE									1

5.3. Methodology

In order to capture the potential determinants of foreign investors' comparative advantage in processing firm-specific information, I examine a number of firm characteristics. I start by including four commonly-used variables (Brockman and Yan, 2009; Gul *et al.*, 2010) that I will also treat as controls; size, market to book ratio, turnover ratio, and volatility of return on assets. I define SIZE as the log of total assets, M_B as the market value of total equity divided by its book value, TURN ratio as the turnover of H-shares divided by that of A-shares, and STDROA as the volatility of asset returns over the previous five quarters, inclusive of the current quarter. In addition to the above, I also control for the level of international exposure a company has, as research shows that the visibility of a company increases foreign interest in a stock (Kang and Stulz, 1997; Ammer *et al.*, 2012). I measure international EXPOSURE through the number of foreign subsidiaries a company has.

To proxy for corporate disclosure, I incorporate a set of governance variables that I group into four primary categories: shareholder structure, board characteristics, management compensation, and capital structure.

In the shareholder structure category, a number of measures that are usually employed include ownership concentration, shareholding of institutional investors, and management ownership (see, e.g., Cheung *et al.* (2010); Gul *et al.* (2010)). However, for Chinese firms in general and my sample in particular, some of these variables are not meaningful. For example, management ownership of cross-listed A- and H-share firms is essentially zero. I therefore look for measures that take into account the special capital market setting in China and settle for four variables: TOPOWN is the percentage

of shares held by the largest shareholder; TOPOWN_SQ is the square of TOPOWN; FUND is the percentage of shares held by mutual funds; and SHARERATIO is the ratio of outstanding H-shares to outstanding A-shares; and QFII is the number of qualified foreign institutional investors that are in the top ten shareholders for a company. This latter variable controls for any effect the increasing number of foreign investors who are allowed to trade A-shares may have on the synchronicity measures. Despite foreign shareholding representing only 1% of free float capitalization of A-shares, the CSRC reports that the actual number of authorized QFIIs have increased from 12 in 2003 to 106 by 2010.

For the category of board characteristics, I employ the following variables: CEO_CHAIR is a dummy variable equal to one if the CEO is also the chairman of the board and zero otherwise; DIRECTOR is the number of directors on the board; INDEP is the percentage of independent directors on the board; SUPERVISORY is the number of members on the supervisory board.

In the compensation category, I use SALARY, which is the log value of the CEO's total annual compensation, and STOCK, which is a dummy variable equal to one if the CEO holds shares and zero otherwise. Finally, to take into account the capital structure of the firm, I also utilize the variable LEVERAGE, measuring total liabilities divided by total assets. Previous research suggests that creditor monitoring should increase with leverage. My final model is:

$$
\begin{aligned}
DIF\_SYNCH_{i,t} = {} & \alpha + \beta_1 TOPOWN\_SQ_{i,t} + \beta_2 TOPOWN_{i,t} + \beta_3 FUND_{i,t} + \beta_4 SHARERATIO_{i,t} \\
& + \beta_5 QFII_{i,t} + \gamma_1 CEO\_CHAIR_{i,t} + \gamma_2 DIRECTOR_{i,t} + \gamma_3 INDEP_{i,t} \\
& + \gamma_4 SUPERVISORY_{i,t} + \theta_1 SALARY_{i,t} + \theta_2 STOCK_{i,t} + \delta_1 LEVERAGE_{i,t} \\
& + \mu_1 SIZE_{i,t} + \mu_2 M\_B_{i,t} + \mu_3 TURN_{i,t} + \mu_4 STDROA_{i,t} + \mu_5 EXPOSURE_{i,t} \\
& + (INDUSTRY) + (YEAR) + \varepsilon_{i,t}
\end{aligned}
\tag{10}
$$

where my dependent variable, DIF_SYNCH, is the difference between the stock return synchronicities of H- and A-shares. I add INDUSTRY dummies to account for potential synchronicity differences due to industry membership. Furthermore, I include YEAR dummies to control for systematic time variations.

In Chapter 4, I have shown foreign investors do possess better skills in analyzing firm-specific information. Since Synchronicity is negatively correlated with the amount of firm-specific information incorporated into stock prices, I expect α to be negative. More intuitively, the more negative the dependent variable is, the more advantage foreigners have over domestic investors.

Following Gul *et al.* (2010), I hypothesize ownership concentration has a concave effect on the difference between firm-specific information of H- and A-shares. When the largest shareholding increases, less firm-specific information is available to both domestic investors and foreign investors. The advantage of one type of investors over the other at collecting and processing value-relevant information diminishes, thus, difference in firm-specific information would decrease. However, after the percentage of shares held by the largest shareholder is beyond a certain point, the incentive alignment effect starts to dominate the managerial entrenchment effect and more firm-specific information is available to investors. The advantage of one investor set over the other would become useful and difference in firm-specific information incorporated in

H-shares from A-shares would be larger. Therefore, I anticipate β_1 and β_2 to be negative and positive respectively.

As described in the literature review section, Nofsinger and Sias (1999) and Boehmer and Kelley (2009) all show institutional investors have more information advantage over individual investors. I hypothesize fund ownership in mainland China facilitates the incorporation of firm-specific information in A-shares, thus firm-specific information increases more in A-shares than H-shares when the percentage of A-shares held by funds increases. More specifically, I should observe β_3 to be positive.

I calculate the ratio of outstanding H-shares to outstanding A-shares to represent relative demand based on the study of Domowitz *et al.* (1997). When foreign demand is stronger, they become less concerned about the availability of firm-specific information. Thus, firm-specific information reflected in H-shares should be less with the increase in share ratio and β_4 would be positive.

Given the fact that foreign investors are more concerned about corporate governance quality and should be able to help listed firms to improve their corporate governance, I assume QFII investments reduce the information disadvantage of domestic investors over foreign ones. Therefore, β_5 should be positive.

Regarding the effects of board characteristics, I am about to briefly discuss the variables one by one. Previous studies have shown it is difficult for CEO to perform his monitoring role if CEO also holds the position of chairman of the board (Jensen, 1993; Grove *et al.*, 2011), which indicates the amount of firm-specific information available to the public would decrease. Because of this decrease, the advantage of foreign investors at analyzing firm-specific information diminishes, which suggests the difference between A- and H-shares in firm-specific information would be smaller.

Therefore, I should observe a positive sign for γ_1. Jensen (1993) and Yermack (1996) both show large board size is associated with ineffective corporate governance mechanisms. When board size increases, it becomes more difficult for directors to decide which kind of information to disclose, which leads to less information available. The same logic of CEO duality effects applies here, hence, γ_2 is expected to be positive. Karamanou and Vafeas (2005) show that when the percentage of outside directors increases, the financial disclosure quality improves. So when the percentage rises, the advantage of foreign investors over their counterparts would be manifested in firm-specific information and the information difference would increase, which implies a negative γ_3. Given the unique operating environment in China that the supervisory board is ineffective in monitoring and ineffective in facilitating more firm-specific information available to investors (Dahya *et al.*, 2003; De Jonge, 2008), there should not be a significant difference in firm-specific information between foreign and domestic investors and γ_4 should be insignificant.

Due to the short history of disclosing CEO compensation information required by the CSRC, I hypothesize that neither CEO cash salary nor equity holding provides an effective mechanism to align interests of CEOs and minority shareholders. Thus CEOs do not have incentives to improve firms' information environment and their compensation does not significantly impact firm-specific information difference between H- and A-shares. θ_1 and θ_2 should be both insignificant.

Previous research shows creditors are effective in monitoring managers (Grove *et al.*, 2011) and the award of credit by banks is a positive sign for shareholders (De Jonge, 2008) due to better credit analysis skills of banks. When the quantity or quality of firm-specific information increases, foreign investors' information advantage is more likely

to be magnified, which suggests the higher the leverage is, the larger the difference between H- and A-shares in firm-specific information. Thus δ should be negative.

5.4. Empirical Results

5.4.1. Regression Results from the Perspective of Corporate Governance

Table 5.3 presents the multivariate regression results based on Eq. (10) using different sets of explanatory variables. Although I always control for a basic set of firm characteristics (i.e., firm size, market to book ratio, trading volume, asset return volatility and the level of firm international exposure), the first four regressions in columns 1 to 4 include different groupings of corporate governance factors, starting with the ownership structure variables, followed by examining board characteristics, CEO compensation parameters, and then finally my proxy for capital structure – LEVERAGE. Column 5 presents the entire set of variables within the same regression. The dependent variable is always DIF_SYNCH1, which is the difference between H-share SYNCH1 and A-share SYNCH1, as defined in Eq. (4). The t-statistics reported in parentheses have all been adjusted using robust standard errors to correct for firm-level clustering.

Table 5.3. Regression results for DIF_SYNCH1

The dependent variable is DIF_SYNCH1, which is the difference between SYNCH1 of H- and A-shares where SYNCH1 is estimated using Eq. (4). All results are from ordinary least square regressions where standard errors are adjusted for clustering at the firm level. Industry and year dummies are also included but not reported for brevity. ***, **, and * represent significance at the 1%, 5% and 10% level, respectively. TOPOWN is the percentage of shares held by the largest shareholder. FUND represents the percentage of shares held by domestic funds. SHARERATIO is calculated as the ratio of outstanding H-shares by outstanding A-shares. QFII is the number of qualified foreign institutional investors that are in the top ten shareholders for a company. CEO_CHAIR denotes a dummy variable equal to one if the CEO is also the chairman of the board, and zero otherwise. DIRECTOR is the number of directors on the board. INDEP represents the percentage of independent directors on the board. SUPERVISORY is the number of members on the supervisory board. SALARY is the annual emolument and allowance of the CEO. STOCK is a dummy variable equal to one if the CEO holds shares, and zero otherwise. LEVERAGE is computed as total liability divided by total assets. SIZE is the log of total assets. M_B is the market value of total equity divided by its book value. TURN is the turnover of H-shares divided by that of A-shares. STDROA is estimated as volatility of return on assets over the last five quarters, including the current quarter and EXPOSURE is the number of foreign subsidiaries a firm has.

Variables	Difference of SYNCH1 between H- and A-shares				
	(1)	(2)	(3)	(4)	(5)
INTERCEPT	-4.477***	-3.591***	-3.632***	-3.957***	-4.626***
	(-5.24)	(-4.64)	(-4.46)	(-5.09)	(-5.27)
TOPOWN_SQ	-4.192*				-4.553**
	(-1.99)				(-2.59)
TOPOWN	3.168				3.686**
	(1.49)				(2.06)
FUND	0.977				1.816*
	(0.97)				(1.76)
SHARERATIO	0.009				0.005
	(0.68)				(0.41)
QFII	0.059*				0.058**
	(1.99)				(2.03)
CEO_CHAIR		0.257***			0.297***
		(3.09)			(3.72)
DIRECTOR		-0.004			0
		(-0.21)			(0.02)
INDEP		0.234			0.399
		(0.42)			(0.79)
SUPERVISORY		-0.013			-0.003
		(-0.5)			(-0.12)
SALARY			-0.004		-0.006
			(-0.37)		(-0.86)
STOCK			0.002		-0.024
			(0.01)		(-0.23)
LEVERAGE				-0.513***	-0.455***
				(-2.71)	(-2.67)
SIZE	0.14***	0.123***	0.125***	0.149***	0.147***
	(3.83)	(4.25)	(3.81)	(4.32)	(4.31)
M_B	0.01	0.01	0.009	0.023	0.016
	(0.69)	(0.65)	(0.67)	(1.29)	(1.07)
TURN	0.036***	0.02***	0.016**	0.012	0.036***
	(3.92)	(2.77)	(2.32)	(1.6)	(4.48)
STDROA	5.18**	5.378**	5.95**	5.388**	4.108**
	(2.55)	(2.39)	(2.63)	(2.58)	(2.39)
EXPOSURE	-0.01	0.003	0.004	0.005	-0.005
	(-1.63)	(0.7)	(0.76)	(0.96)	(-0.84)
Adjusted R^2	0.453	0.435	0.426	0.437	0.470

Starting with column 1, I find that the difference between H- and A-share synchronicities is a concave function of the largest shareholder's percentage ownership. Specifically, the coefficient estimate of TOPOWN_SQ is significantly negative at the level of 5%, whereas TOPOWN is statistically insignificant. I also notice that the QFII coefficient is positive and significant, indicating that having a larger number of qualified foreign investors within the top ten shareholders of a company improves the incorporation of firm-specific information within the A-share market, leading to a decline in the difference between synchronicities of H- and A-shares. None of the other ownership structure coefficients are statistically significant at conventional levels. In column 2 I note that the coefficient on CEO_CHAIR is significantly positive, implying that when the CEO is also the chairman of the board of directors, firm-specific information in H-shares decreases significantly more than in A-shares. This result is consistent with the argument that the duality of chairman and CEO positions leads to a reduction in firm-specific information since the dual role makes it difficult for the chairman to perform his/her monitoring role (Jensen, 1993; Grove *et al.*, 2011). The rest of the board characteristic variables – namely, the size of the board of directors, the supervisory board size, and the percentage of independent directors – are not significantly related to DIF_SYNCH1. In column 3, none of the CEO compensation factors come through as being significant either. However, in column 4 I see that LEVERAGE is significantly negative, indicating firm-specific information increases for H-shares relative to A-shares as leverage increases. This supports the argument that a company with high leverage is expected to provide increased levels of disclosure, most likely in response to creditor demands.

When I examine the results for the full model in column 5, I find that they are mostly consistent with the previous regressions, although some changes do occur. The

coefficient for TOPOWN_SQ is still significantly negative, but now the coefficient for TOPOWN turns out to be significantly positive. This finding is consistent with Gul *et al.* (2010), who find an inverted U-shape relationship between synchronicity and the ownership size of the largest shareholder. In my study, this finding implies that when the percentage of shares held by the largest shareholder increases, less firm-specific information is available, thus the advantage of foreign investors over locals at processing value-relevant information diminishes, and firm-specific information reflected in H-shares decreases faster than in A-shares and the difference in synchronicities becomes smaller. However, after the ownership concentration level exceeds a certain threshold, firm-specific information impounded in H-shares increases faster than in A-shares since the advantage of foreign investors at analyzing the firm-specific information is magnified, leading to a larger difference between firm-specific information incorporation into H- and A-shares. I find the synchronicity difference reaches its greatest when the percentage of the largest shareholder is around 40% (3.686/(2*4.553)), which is similar to the result of Gul *et al.* (2010) who show synchronicity is at its peak when the ownership of the largest shareholder is about 50%.

The coefficient on FUND ownership is positive and significant at the 10% level. This result suggests when fund ownership of A-shares increases, more firm-specific information is capitalized into A-shares by domestic institutional investors, which leads to a smaller difference in firm-specific information. The ratio of shares issued in Hong Kong compared to those issued in China (SHARERATIO) does not seem to have any effect on firm-specific information incorporated into stock prices. QFII remains significant, reaffirming that an increase in the number of qualified foreign institutional investors holding shares in a company, improves the impounding of firm-specific information into the A-share market.

Consistent with the results in column 2, when the CEO is also the chairman of the board of directors, firm-specific information in H-shares significantly decreases more than in A-shares. None of the remaining governance variables under examination are significant. This may be partly due to the unique institutional features within China. For example, there is some question about how effective supervisory boards are in Chinese firms, which may also explain why I do not see a contribution from these factors. Chinese supervisory boards tend to play a role only when there are suspected irregular activities and the supervisors would then be expected to report in shareholders' meetings. However, resolutions of the shareholders' meetings are generally controlled by one or two major shareholders, which relegates the supervisory board to a de facto nominal organ (De Jonge, 2008). The same can be partly said in regards to having independent directors on a board. According to an August 2012 information factsheet from the SSE, only 1.23% of independent directors on the Exchange had formal objections noted during 2011. The report points out that independent investors still do not have a significant effect on decisions made by the board of directors.

In regards to CEO compensation, the result that cash salary and equity holdings are not significant might be due to the fact that disclosures of compensation for individual executives only started in 2005. It might take some time for investors to incorporate this type of information into stock prices. It is also noteworthy that equity incentives were introduced only from 2005 (Conyon and He, 2012). As shown in Table 5.1, only about one in five CEOs held any stock in their firms, and this figure steadily declined throughout my sample period. The small stock holdings of CEOs probably also explains why this variable does not come out as more significant.

Regarding the effect of capital structure on firm-specific information, I find a negative and significant relationship for LEVERAGE as with the regression in column (4). Examining the control variables, I find the coefficient of SIZE is significantly positive, which indicates stock prices for larger firms tend to move with general market movements (Gul *et al.*, 2010). I observe that the coefficient on TURN is positive, which suggests that when H-shares are more actively traded, less firm-specific information is incorporated into stock prices compared with A-shares. One reason for this finding might be that actively traded stocks react faster to market information, and these price movements are more synchronous with market movements (Chan and Hameed, 2006). Asset return volatility (STDROA) is significantly positively correlated with DIF_SYNCH1, suggesting that foreign investors prefer firms with less volatile earnings. The coefficient estimates for the market-to-book ratio and international exposure are both insignificant.

Table 5.4 shows the regression results using DIF_SYNCH2 as the dependent variable, which is the difference between SYNCH2 of H-shares and A-shares, with SYNCH2 being estimated using Eq. (5). All coefficients remain qualitatively identical to the results presented and discussed in Table 5.3 in terms of sign and significance. For example, column (5) confirms there is an inverted U-shape relationship between the percentage of shares held by the largest shareholder (TOPOWN) and firm-specific information difference between H- and A-shares. The variable of interest, CEO, remains significant at 5% and has a positive sign.

Table 5.4. Regression results for DIF_SYNCH2

The dependent variable is DIF_SYNCH2, which is the difference between SYNCH2 of H- and A-shares where SYNCH2 is estimated using Eq. (5). All results are from ordinary least square regressions where standard errors are adjusted for clustering at the firm level. Industry and year dummies are also included but not reported for brevity. ***, **, and * represent significance at the 1%, 5% and 10% level, respectively. TOPOWN is the percentage of shares held by the largest shareholder. FUND represents the percentage of shares held by domestic funds. SHARERATIO is calculated as the ratio of outstanding H-shares by outstanding A-shares. QFII is the number of qualified foreign institutional investors that are in the top ten shareholders for a company. CEO_CHAIR denotes a dummy variable equal to one if the CEO is also the chairman of the board, and zero otherwise. DIRECTOR is the number of directors on the board. INDEP represents the percentage of independent directors on the board. SUPERVISORY is the number of members on the supervisory board. SALARY is the annual emolument and allowance of the CEO. STOCK is a dummy variable equal to one if the CEO holds shares, and zero otherwise. LEVERAGE is computed as total liability divided by total assets. SIZE is the log of total assets. M_B is the market value of total equity divided by its book value. TURN is the turnover of H-shares divided by that of A-shares. STDROA is estimated as volatility of return on assets over the last five quarters, including the current quarter and EXPOSURE is the number of foreign subsidiaries a firm has.

Variables	Difference of SYNCH2 between H- and A-shares				
	(1)	(2)	(3)	(4)	(5)
INTERCEPT	-3.999***	-2.993***	-3.134***	-3.451***	-4.286***
	(-4.57)	(-3.92)	(-3.93)	(-4.29)	(-5.01)
TOPOWN_SQ	-4.104**				-4.777***
	(-2.03)				(-2.77)
TOPOWN	3.036				3.948**
	(1.5)				(2.26)
FUND	0.699				1.612*
	(0.74)				(1.68)
SHARERATIO	0.013				0.007
	(0.99)				(0.61)
QFII	0.044				0.05*
	(1.48)				(1.68)
CEO_CHAIR		0.282***			0.314***
		(3.39)			(3.89)
DIRECTOR		-0.004			0.002
		(-0.23)			(0.15)
INDEP		0.173			0.301
		(0.31)			(0.61)
SUPERVISORY		0.001			0.01
		(0.03)			(0.41)
SALARY			0.001		-0.001
			(0.05)		(-0.22)
STOCK			0.024		-0.012
			(0.19)		(-0.12)
LEVERAGE				-0.635***	-0.576***
				(-3.21)	(-3.21)
SIZE	0.123***	0.097***	0.103***	0.132***	0.129***
	(3.36)	(3.49)	(3.18)	(3.63)	(3.95)
M_B	0.012	0.011	0.011	0.027*	0.022*
	(1.02)	(0.94)	(1)	(1.84)	(1.88)
TURN	0.038***	0.022***	0.019**	0.014*	0.035***
	(4.23)	(2.89)	(2.58)	(1.78)	(4.55)
STDROA	4.878**	4.914**	5.69**	4.987**	3.476**
	(2.43)	(2.37)	(2.63)	(2.55)	(2.23)
EXPOSURE	-0.011*	0.001	0	0.003	-0.008
	(-1.69)	(0.29)	(0.06)	(0.55)	(-1.19)
Adjusted R^2	0.458	0.444	0.432	0.450	0.480

5.4.2. Regression Results from the Perspective of The QDII Policy

It has been always topical whether foreign investors have played a positive role in the Chinese market after they were allowed to enter into China in 2002, with certain quotas regulated by the Chinese government (Schuppli and Bohl, 2010). The introduction of the QDII policy provides a good opportunity to examine this question. By directly observing the effect of domestic institutional investors on the H-share market, I can infer whether foreign investors have information advantage and help price discovery in A-shares. In addition, I can also check the possibility that the above regression results are affected by the QDII policy instead of corporate governance.

In Table 5.5, I first incorporate a QDII dummy into the regression, which is equal to 1 for the years 2007 and onwards, and zero otherwise. I find in columns 1 and 2 of Table 5.5, regardless of which synchronicity measure is used, the difference in synchronicities does indeed narrow, even after accounting for the various corporate governance and control variables. The QDII dummy is significant and positive (0.39 and 0.44), whereas the intercept is negative (-4.99 and -4.83). Additionally, I also try to control for the possible impact of the global financial crisis, which may have affected the synchronicity levels in the Chinese and Hong Kong markets differently. I add a further dummy variable which is equal to 1 for the years 2008 onwards, and zero otherwise. The results tabulated in columns 3 and 4, show no change in the significance of the QDII dummy as well as an insignificant crisis dummy.

Table 5.5. The impact of the QDII policy on synchronicities of A- and H-shares.

This table shows the multivariate regression results. The dependent variables are DIF_SYNCH1 and DIF_SYNCH2, which are the difference between SYNCH1 and SYNCH2 of H- and A-shares where SYNCH1 and SYNCH2 are estimated using Eq. (4) and Eq. (5) respectively. All results are from ordinary least square regressions where standard errors are adjusted for clustering at the firm level. Industry and year dummies are also included but not reported for brevity. ***, **, and * represent significance at the 1%, 5% and 10% level, respectively. TOPOWN is the percentage of shares held by the largest shareholder. FUND represents the percentage of shares held by domestic funds. SHARERATIO is calculated as the ratio of outstanding H-shares by outstanding A-shares. QFII is the number of qualified foreign institutional investors that are in the top ten shareholders for a company. CEO_CHAIR denotes a dummy variable equal to one if the CEO is also the chairman of the board, and zero otherwise. DIRECTOR is the number of directors on the board. INDEP represents the percentage of independent directors on the board. SUPERVISORY is the number of members on the supervisory board. SALARY is the annual emolument and allowance of the CEO. STOCK is a dummy variable equal to one if the CEO holds shares, and zero otherwise. LEVERAGE is computed as total liability divided by total assets. SIZE is the log of total assets. M_B is the market value of total equity divided by its book value. TURN is the turnover of H-shares divided by that of A-shares. STDROA is estimated as volatility of return on assets over the last five quarters, including the current quarter and EXPOSURE is the number of foreign subsidiaries a firm has. QDII_DUMMY and GFC_DUMMY are dummy variables which are equal to 1 for 2007 onwards and 2008 onwards, respectively, and zero otherwise.

Variables	DIF_SYNCH1	DIF_SYNCH2	DIF_SYNCH1	DIF_SYNCH2
	(1)	(2)	(3)	(4)
INTERCEPT	-4.991***	-4.832***	-4.985***	-4.796***
	(-5.9)	(-5.67)	(-5.86)	(-5.6)
TOPOWN_SQ	-4.26**	-4.367**	-4.262**	-4.38**
	(-2.37)	(-2.51)	(-2.37)	(-2.5)
TOPOWN	3.436*	3.56**	3.443*	3.598**
	(1.91)	(2.05)	(1.91)	(2.05)
FUND	1.771*	1.39	1.781*	1.441
	(1.84)	(1.59)	(1.88)	(1.66)
SHARERATIO	0.005	0.006	0.005	0.007
	(0.39)	(0.48)	(0.41)	(0.54)
QFII	0.09***	0.084***	0.091***	0.085***
	(2.94)	(2.82)	(2.92)	(2.79)
CEO_CHAIR	0.308***	0.323***	0.308***	0.323***
	(3.69)	(3.87)	(3.68)	(3.85)
DIRECTOR	-0.002	0	-0.002	0
	(-0.1)	(-0.03)	(-0.09)	(0)
INDEP	0.358	0.281	0.352	0.248
	(0.73)	(0.59)	(0.71)	(0.51)
SUPERVISORY	-0.002	0.01	-0.002	0.011
	(-0.09)	(0.45)	(-0.09)	(0.48)
SALARY	-0.004	0.001	-0.004	0.001
	(-0.45)	(0.15)	(-0.45)	(0.18)
STOCK	-0.044	-0.034	-0.044	-0.034
	(-0.43)	(-0.35)	(-0.42)	(-0.35)
LEVERAGE	-0.434***	-0.552***	-0.439***	-0.577***
	(-2.89)	(-3.49)	(-2.68)	(-3.38)
SIZE	0.15***	0.139***	0.15***	0.137***
	(4.48)	(4.17)	(4.42)	(4.07)
M_B	0.017	0.023**	0.017	0.026*
	(1.28)	(2.13)	(1.11)	(1.89)
TURN	0.032***	0.03***	0.032***	0.03***
	(3.71)	(3.75)	(3.71)	(3.69)
STDROA	4.512***	3.958***	4.483***	3.806**
	(2.99)	(2.76)	(2.85)	(2.63)
EXPOSURE	-0.005	-0.007	-0.005	-0.007
	(-0.85)	(-1.06)	(-0.85)	(-1.08)
QDII_DUMMY	0.393***	0.436***	0.386***	0.399***
	(3.51)	(3.95)	(3.17)	(3.44)
GFC_DUMMY			0.009	0.049
			(0.11)	(0.56)
Adjusted R^2	0.360	0.359	0.358	0.356

5.5. Conclusion

The primary purpose of my thesis is to expand the cross-listing literature by relating corporate governance to firm-specific information environment from the different perspectives of foreign and domestic investors. I hypothesize that corporate governance has an impact on the disclosure of firm-specific information and thus, there is difference in value-relevant information incorporated into H-shares and A-shares due to different abilities of analyzing firm-specific information of foreign and domestic investors. I specifically find that there are several corporate governance variables which have effects on firm-specific information.

First, I find a concave relationship between ownership concentration and firm-specific information. When the percentage of shares held by the largest shareholder increases, less firm-specific information is available to both domestic investors and foreign investors. The advantage of domestic investors over the other, at analyzing firm-specific information diminishes, thus the difference in firm-specific information decreases. However, after the percentage of shares held by the largest shareholder exceeds a certain point, the synchronicity difference between H-shares and A-shares becomes larger. Fund ownership in mainland China facilitates the incorporation of firm-specific information in A-shares. In addition, the number of H-shares issued has no effect on my dependent variable, i.e., the difference in firm-specific information between H- and A-shares. My results also show the allowance of qualified foreign investors has improved the firm-specific information in the A-share market. Second, the duality of the CEO has a significantly negative effect on firm-specific information. Independent directors, the size of the board of directors and the size of the supervisory board do not significantly influence firm-specific information. Although there are

several policies specifically aimed at improving the effectiveness of independent directors and the two-tier board system, so far they are still ineffective. Third, despite disclosure requirements of CEO compensation since 2005, CEO compensation has had no effect on firm-specific information. This may be caused by the weak sensitivity of pay-for-performance for CEOs. Finally, capital structure matters and investors consider leverage as a useful tool for improving corporate governance.

CHAPTER 6

ROBUSTNESS CHECKS

6. ROBUSTNESS CHECKS

6.1. Endogeneity Checks

So far, I have examined the effect that corporate governance structures have on firm-specific information. However, one could argue that the direction of causation between corporate governance and firm-specific information may be reversed. There is no reason why I should assume that more firm-specific information leads to better corporate governance. In particular, foreign investors, who I show incorporate more firm-specific information, cannot necessarily directly influence the design of firm-level corporate governance (De Jonge, 2008). However, I still address this endogeneity issue by two additional tests.

One approach is to use lagged corporate governance values as explanatory variables. Thus, I regress and present the results in Table 6.1 using lagged corporate governance values, instead of contemporaneous ones. Due to compensation data only being available from 2005, I drop these two variables in my model. The results are consistent with findings I report earlier. I also run the regression using DIF_SYNCH2 as the dependent variable and the results are reported in Table 8.2 of the Appendix, which are qualitatively similar to the results in Table 6.1.

Table 6.1. Regression on lagged corporate governance variables.

The dependent variable is DIF_SYNCH1, which is the difference between SYNCH1 of H- and A-shares where SYNCH1 is estimated using Eq. (4). All results are from ordinary least square regressions where standard errors are adjusted for clustering at the firm level. Industry and year dummies are also included but not reported for brevity. ***, **, and * represent significance at the 1%, 5% and 10% level, respectively. All corporate governance variables are lagged in running regressions. TOPOWN is the percentage of shares held by the largest shareholder. FUND represents the percentage of shares held by domestic funds. SHARERATIO is calculated as the ratio of outstanding H-shares by outstanding A-shares. QFII is the number of qualified foreign institutional investors that are in the top ten shareholders for a company. CEO_CHAIR denotes a dummy variable equal to one if the CEO is also the chairman of the board, and zero otherwise. DIRECTOR is the number of directors on the board. INDEP represents the percentage of independent directors on the board. SUPERVISORY is the number of members on the supervisory board. SALARY is the annual emolument and allowance of the CEO. STOCK is a dummy variable equal to one if the CEO holds shares, and zero otherwise. LEVERAGE is computed as total liability divided by total assets. SIZE is the log of total assets. M_B is the market value of total equity divided by its book value. TURN is the turnover of H-shares divided by that of A-shares. STDROA is estimated as volatility of return on assets over the last five quarters, including the current quarter and EXPOSURE is the number of foreign subsidiaries a firm has.

Variables	Difference of SYNCH1 between A- and H-shares				
	(1)	(2)	(3)	(4)	(5)
INTERCEPT	-4.554***	-3.907***	-3.818***	-4.139***	-4.979***
	(-5.96)	(-5.3)	(-4.19)	(-5.23)	(-6.35)
TOPOWN_SQ	-3.167*				-3.858**
	(-1.68)				(-2.46)
TOPOWN	2.28				3.248**
	(1.19)				(2.01)
FUND	0.21				0.921
	(0.2)				(0.9)
SHARERATIO	0.024				0.018
	(1.34)				(1.17)
QFII	0.066*				0.073**
	(1.81)				(2.04)
CEO_CHAIR		0.272***			0.286***
		(3.31)			(3.18)
DIRECTOR		0.007			0.012
		(0.33)			(0.62)
INDEP		0.227			0.342
		(0.43)			(0.68)
SUPERVISORY		-0.009			0
		(-0.44)			(-0.02)
SALARY			0.005		
			(0.35)		
STOCK			-0.005		
			(-0.04)		
LEVERAGE				-0.604***	-0.56***
				(-3.14)	(-3.47)
SIZE	0.152***	0.131***	0.133***	0.159***	0.159***
	(4.35)	(4.57)	(3.69)	(4.49)	(4.69)
M_B	0.01	0.01	0.011	0.025	0.024
	(0.72)	(0.7)	(0.86)	(1.48)	(1.45)
TURN	0.025***	0.014*	0.015*	0.009	0.021**
	(2.71)	(1.99)	(1.85)	(1.25)	(2.47)
STDROA	4.809**	5.116**	5.381**	4.718**	3.162*
	(2.47)	(2.34)	(2.51)	(2.22)	(1.86)
EXPOSURE	-0.006	0.003	0.002	0.005	-0.005
	(-0.93)	(0.62)	(0.27)	(0.84)	(-0.86)
Adjusted R^2	0.436	0.424	0.325	0.430	0.456

Another method to address endogeneity concerns, is to employ a fixed or random effects model. Endogeneity might be caused by a correlation between unobservable firm heterogeneity and the observable variables, which results in estimating mis-specified equations. Hence, it is important to control for such unobserved firm heterogeneities. To investigate this issue, I report my second robustness test using a firm random effects model. Firstly, I conduct a Hausman test to compare the random effects model to the fixed effects model. The test cannot reject the null hypothesis that random effects estimates are consistent and efficient. Therefore, the random effects models are the appropriate specifications. In Table 6.2, I report the results using a random effects model, which confirm the results of previous regressions. I also show results using DIF_SYNCH2 as the dependent variable in Table 8.3 of the Appendix.

Table 6.2. Regressions using random effects models

The dependent variable is DIF_SYNCH1, which is the difference between SYNCH1 of H- and A-shares where SYNCH1 is estimated using Eq. (4). All results are from random effects models where standard errors are adjusted for clustering at the firm level. Industry and year dummies are also included but not reported for brevity. ***, **, and * represent significance at the 1%, 5% and 10% level, respectively. TOPOWN is the percentage of shares held by the largest shareholder. FUND represents the percentage of shares held by domestic funds. SHARERATIO is calculated as the ratio of outstanding H-shares by outstanding A-shares. QFII is the number of qualified foreign institutional investors that are in the top ten shareholders for a company. CEO_CHAIR denotes a dummy variable equal to one if the CEO is also the chairman of the board, and zero otherwise. DIRECTOR is the number of directors on the board. INDEP represents the percentage of independent directors on the board. SUPERVISORY is the number of members on the supervisory board. SALARY is the annual emolument and allowance of the CEO. STOCK is a dummy variable equal to one if the CEO holds shares, and zero otherwise. LEVERAGE is computed as total liability divided by total assets. SIZE is the log of total assets. M_B is the market value of total equity divided by its book value. TURN is the turnover of H-shares divided by that of A-shares. STDROA is estimated as volatility of return on assets over the last five quarters, including the current quarter and EXPOSURE is the number of foreign subsidiaries a firm has.

Variables	Difference of SYNCH1 between A- and H-shares				
	(1)	(2)	(3)	(4)	(5)
INTERCEPT	-4.463***	-3.395***	-3.377***	-3.761***	-4.503***
	(-4.73)	(-3.18)	(-3.23)	(-3.08)	(-3.60)
TOPOWN_SQ	-4.274**				-4.469**
	(-2.52)				(-2.27)
TOPOWN	3.257**				3.579*
	(2.12)				(1.86)
FUND	0.963*				1.730**
	(1.85)				(2.27)
SHARERATIO	0.009				0.006
	(0.89)				(0.54)
QFII	0.044*				0.046**
	(1.68)				(2.31)
CEO_CHAIR		0.223**			0.281***
		(2.31)			(2.79)
DIRECTOR		-0.006			-0.004
		(-0.34)			(-0.25)
INDEP		0.242			0.336
		(0.87)			(1.33)
SUPERVISORY		-0.014			-0.004
		(-0.28)			(-0.09)
SALARY			-0.007		-0.008
			(-0.67)		(-1.09)
STOCK			0.006		-0.017
			(0.10)		(-0.28)
LEVERAGE				-0.484	-0.461
				(-1.40)	(-1.46)
SIZE	0.138***	0.116***	0.116***	0.140***	0.148**
	(3.79)	(2.92)	(3.10)	(2.61)	(2.43)
M_B	0.013	0.012	0.012	0.021	0.016
	(0.92)	(0.79)	(0.80)	(1.47)	(1.12)
TURN	0.036***	0.022*	0.019**	0.015	0.036**
	(2.88)	(1.95)	(2.41)	(1.56)	(2.58)
STDROA	4.372***	4.548***	4.804***	4.574***	3.889***
	(3.47)	(3.04)	(2.90)	(3.86)	(4.79)
EXPOSURE	-0.010	0.002	0.004	0.005	-0.005
	(-0.99)	(0.24)	(0.51)	(0.41)	(-0.50)
Adjusted R^2	0.410	0.387	0.382	0.390	0.428

6.2. Other Sensitivity Checks

To check whether my results are affected by the choice of proxies, or market index used in my regressions, as well as the impact of the QDII policy introduction and the global financial crisis (2007-8), I perform three additional tests. Table 6.3 reports results when using alternative proxies for the effects of controlling shareholders, the influence of QFII and international exposure for DIF_SYNCH1. I now use the sum of the square of the percentage of the ten largest shareholders HERFINDAHL_10 to represent ownership concentration instead of the percentage of shares held by the largest shareholder. To capture the effects of QFII, I use the proportion of shares owned by qualified foreign institutional investors within the top ten shareholders for each company. For EXPOSURE, I use a dummy with the value of one if the company reports foreign sales, and zero otherwise. The rational is the higher the concentration level is, the easier for the large shareholder to expropriate the interests of minority shareholders.

Table 6.3. Regressions using alternative proxies

The dependent variable is DIF_SYNCH1, which is the difference between SYNCH1 of H- and A-shares where SYNCH1 is estimated using Eq. (4). All results are from ordinary least square regressions where standard errors are adjusted for clustering at the firm level. Industry and year dummies are also included but not reported for brevity. ***, **, and * represent significance at the 1%, 5% and 10% level, respectively. This table reports the results using alternative proxies. TOPOWN is a Herfindahl value measured as the sum of the squared holding, in percentage, of the ten largest shareholders. FUND represents the percentage of shares held by domestic funds. SHARERATIO is calculated as the ratio of outstanding H-shares by outstanding A-shares. QFII is the proportion of shares owned by qualified foreign institutional investors within the top ten shareholders for a company. CEO_CHAIR denotes a dummy variable equal to one if the CEO is also the chairman of the board, and zero otherwise. DIRECTOR is the number of directors on the board. INDEP represents the percentage of independent directors on the board. SUPERVISORY is the number of members on the supervisory board. SALARY is the annual emolument and allowance of the CEO. STOCK is a dummy variable equal to one if the CEO holds shares, and zero otherwise. LEVERAGE is computed as total liability divided by total assets. SIZE is the log of total assets. M_B is the market value of total equity divided by its book value. TURN is the turnover of H-shares divided by that of A-shares. STDROA is estimated as volatility of return on assets over the last five quarters, including the current quarter and EXPOSURE is a dummy variable equal to one if the firm reports foreign sales, and zero otherwise.

Variables	Difference of SYNCH1 between H- and A-shares				
	(1)	(2)	(3)	(4)	(5)
INTERCEPT	-3.622***	-3.355***	-3.397***	-3.741***	-3.65***
	(-4.89)	(-4.96)	(-4.54)	(-5.43)	(-4.74)
TOPOWN_SQ	-4.257**				-4.384**
	(-2.28)				(-2.18)
TOPOWN	2.239				2.388
	(1.55)				(1.56)
FUND	0.791				1.722
	(0.77)				(1.54)
SHARERATIO	0.01				0.007
	(0.75)				(0.64)
QFII	3.575				4.027*
	(1.44)				(1.76)
CEO_CHAIR		0.232**			0.276***
		(2.6)			(3.6)
DIRECTOR		-0.006			-0.004
		(-0.28)			(-0.23)
INDEP		0.178			0.187
		(0.32)			(0.37)
SUPERVISORY		-0.021			-0.007
		(-0.77)			(-0.29)
SALARY			-0.005		-0.009
			(-0.41)		(-1.19)
STOCK			-0.003		-0.016
			(-0.02)		(-0.16)
LEVERAGE				-0.551***	-0.502***
				(-3)	(-2.98)
SIZE	0.112***	0.116***	0.115***	0.14***	0.129***
	(3.13)	(4.41)	(3.83)	(4.57)	(3.71)
M_B	0.011	0.009	0.009	0.023	0.017
	(0.72)	(0.59)	(0.62)	(1.24)	(1.08)
TURN	0.037***	0.021***	0.018**	0.013*	0.038***
	(4.16)	(2.93)	(2.42)	(1.77)	(4.39)
STDROA	5.205**	5.427**	5.831***	5.231***	4.262**
	(2.59)	(2.47)	(2.74)	(2.7)	(2.45)
EXPOSURE	0.126	0.125	0.127	0.155*	0.125
	(1.57)	(1.45)	(1.5)	(1.89)	(1.34)
Adjusted R^2	0.448	0.440	0.431	0.445	0.466

In Table 6.4, I show the results for a regression where I employ Morgan Stanley Capital International (MSCI) indices, which are extensively used in other studies (e.g., Bae *et al.* (2012)). Lastly, in Table 6.5, I again examine the possible impact of the QDII policy and the global financial crisis on my results. I follow An and Zhang (2013) to define 2007 and 2008 as the global financial crisis period. This time, I exclude these two years, 2007-8, to take into account the potential concern that the Chinese and Hong Kong stock markets were affected differently by the QDII policy as well as the crisis and therefore this unduly influences the final set of coefficient results. In all the above cases, the coefficient signs and significance remain the same. Also, no matter I use DIF_SYNCH1 or DIF_SYNCH2 as the dependent variable, the results remain qualitatively the same. The results on DIF_SYNCH2 are shown in Table 8.5 and Table 8.6 of the Appendix.

Table 6.4. Regressions using MSCI indices

The dependent variable is DIF_SYNCH1, which is the difference between SYNCH1 of H- and A-shares where SYNCH1 is estimated using Eq. (4). All results are from ordinary least square regressions where standard errors are adjusted for clustering at the firm level. Industry and year dummies are also included but not reported for brevity. ***, **, and * represent significance at the 1%, 5% and 10% level, respectively. This table reports the results using MSCI indices. TOPOWN is the percentage of shares held by the largest shareholder. FUND represents the percentage of shares held by domestic funds. SHARERATIO is calculated as the ratio of outstanding H-shares by outstanding A-shares. QFII is the number of qualified foreign institutional investors that are in the top ten shareholders for a company. CEO_CHAIR denotes a dummy variable equal to one if the CEO is also the chairman of the board, and zero otherwise. DIRECTOR is the number of directors on the board. INDEP represents the percentage of independent directors on the board. SUPERVISORY is the number of members on the supervisory board. SALARY is the annual emolument and allowance of the CEO. STOCK is a dummy variable equal to one if the CEO holds shares, and zero otherwise. LEVERAGE is computed as total liability divided by total assets. SIZE is the log of total assets. M_B is the market value of total equity divided by its book value. TURN is the turnover of H-shares divided by that of A-shares. STDROA is estimated as volatility of return on assets over the last five quarters, including the current quarter and EXPOSURE is the number of foreign subsidiaries a firm has.

Variables	Difference of SYNCH1 between H- and A-shares				
	(1)	(2)	(3)	(4)	(5)
INTERCEPT	-5.098***	-4.348***	-4.657***	-4.944***	-5.194***
	(-6.49)	(-5.98)	(-6.42)	(-6.64)	(-6.12)
TOPOWN_SQ	-3.057				-3.112*
	(-1.57)				(-1.75)
TOPOWN	2.346				2.55
	(1.2)				(1.45)
FUND	0.77				1.364
	(0.74)				(1.29)
SHARERATIO	0.017				0.012
	(1.05)				(0.84)
QFII	0.065**				0.067**
	(2.38)				(2.42)
CEO_CHAIR		0.217**			0.245***
		(2.43)			(2.84)
DIRECTOR		-0.015			-0.011
		(-0.7)			(-0.64)
INDEP		-0.164			-0.047
		(-0.29)			(-0.09)
SUPERVISORY		-0.01			0.001
		(-0.38)			(0.04)
SALARY			0		-0.001
			(-0.02)		(-0.08)
STOCK			-0.011		-0.03
			(-0.08)		(-0.28)
LEVERAGE				-0.57***	-0.527***
				(-3.11)	(-3.03)
SIZE	0.157***	0.15***	0.153***	0.178***	0.173***
	(4.53)	(5.41)	(5.15)	(5.38)	(5.16)
M_B	0.014	0.014	0.015	0.029	0.024
	(0.93)	(1.01)	(1.08)	(1.64)	(1.56)
TURN	0.038***	0.027***	0.024***	0.02**	0.034***
	(3.74)	(3.68)	(3.22)	(2.54)	(3.5)
STDROA	4.737**	5.32**	5.555**	4.946**	3.981**
	(2.3)	(2.31)	(2.43)	(2.34)	(2.24)
EXPOSURE	-0.006	0.005	0.004	0.006	0
	(-0.94)	(1.14)	(0.76)	(1.23)	(0.02)
Adjusted R^2	0.483	0.472	0.465	0.479	0.494

Table 6.5. Regressions of deleting 2007-8 observations.

The dependent variable is DIF_SYNCH1, which is the difference between SYNCH1 of H- and A-shares where SYNCH1 is estimated using Eq. (4). All results are from ordinary least square regressions where standard errors are adjusted for clustering at the firm level. Industry and year dummies are also included but not reported for brevity. ***, **, and * represent significance at the 1%, 5% and 10% level, respectively. This table reports the results of deleting 2007-8 observations. TOPOWN is the percentage of shares held by the largest shareholder. FUND represents the percentage of shares held by domestic funds. SHARERATIO is calculated as the ratio of outstanding H-shares by outstanding A-shares. QFII is the number of qualified foreign institutional investors that are in the top ten shareholders for a company. CEO_CHAIR denotes a dummy variable equal to one if the CEO is also the chairman of the board, and zero otherwise. DIRECTOR is the number of directors on the board. INDEP represents the percentage of independent directors on the board. SUPERVISORY is the number of members on the supervisory board. SALARY is the annual emolument and allowance of the CEO. STOCK is a dummy variable equal to one if the CEO holds shares, and zero otherwise. LEVERAGE is computed as total liability divided by total assets. SIZE is the log of total assets. M_B is the market value of total equity divided by its book value. TURN is the turnover of H-shares divided by that of A-shares. STDROA is estimated as volatility of return on assets over the last five quarters, including the current quarter and EXPOSURE is the number of foreign subsidiaries a firm has.

Variables	Difference of SYNCH1 between H- and A-shares				
	(1)	(2)	(3)	(4)	(5)
INTERCEPT	-5.097***	-3.606***	-3.462***	-4.387***	-5.442***
	(-4.71)	(-3.77)	(-3.45)	(-4.63)	(-4.95)
TOPOWN_SQ	-6.1***				-6.748***
	(-2.76)				(-3.19)
TOPOWN	4.847**				5.663**
	(2.17)				(2.62)
FUND	0.409				1.348
	(0.25)				(0.78)
SHARERATIO	0				-0.008
	(-0.03)				(-0.67)
QFII	0.093***				0.076**
	(2.7)				(2.08)
CEO_CHAIR		0.219*			0.252**
		(1.87)			(2.49)
DIRECTOR		0.003			0.02
		(0.12)			(1.06)
INDEP		0.308			0.394
		(0.46)			(0.62)
SUPERVISORY		-0.044			-0.031
		(-1.31)			(-1.06)
SALARY			-0.018		-0.012
			(-1.35)		(-1.13)
STOCK			-0.052		-0.031
			(-0.34)		(-0.24)
LEVERAGE				-0.701**	-0.667**
				(-2.63)	(-2.45)
SIZE	0.149***	0.123***	0.122***	0.166***	0.169***
	(3.1)	(3.48)	(3.01)	(4.04)	(3.4)
M_B	0.034	0.032	0.03	0.063	0.055
	(0.86)	(0.9)	(0.77)	(1.63)	(1.39)
TURN	0.049***	0.03***	0.019*	0.015	0.05***
	(4.31)	(2.73)	(1.93)	(1.48)	(4.53)
STDROA	6.758***	8.464***	8.881***	6.235***	4.407**
	(3.54)	(4.23)	(4.58)	(3.17)	(2.21)
EXPOSURE	-0.016**	-0.004	0.004	0	-0.011
	(-2.44)	(-0.68)	(0.55)	(-0.08)	(-1.35)
Adjusted R^2	0.440	0.404	0.401	0.411	0.453

6.3. Cumulative Abnormal Returns Around Earnings Announcements

Rather than using stock trade data to analyze firm-specific information, another method is to utilize event study. Since earnings are considered to be the most important value-relevant firm-specific information (Gul *et al.*, 2010), we explore the relationship between stock price synchronicity and market reactions to earnings announcements on two markets respectively.

Based on the hypothesis that firms with lower synchronicities should have stronger return-earnings association, Gul *et al.* (2010) regress market adjusted returns on the interaction term of the previous year's net income and decile scores, which are ranked according to firms' synchronicities. Although I also use earnings announcements, my methodology is different. Their approach uses annual data. Considering that it usually only takes a few days for investors to incorporate information into stock prices after its release, my study directly calculates cumulative abnormal returns around the exact earnings announcement dates, manually collected from the China Securities Journal to minimize the impact of any other information release not directly related to earnings. Furthermore, I sort my sample into three groups according to synchronicity and compare market reactions around earnings announcements among these groups to observe the relationship between earnings announcement information and synchronicity.

I use market adjusted and market model abnormal returns surrounding earnings announcement dates to measure market reactions. The market adjusted return is calculated as the difference between the stock return and market return. The market-model abnormal return is:

$$AR_{i,t} = R_{i,t} - (\hat{\alpha}_{i,t} + \hat{\beta}_{i,t} R_{m,t}) \quad (11)$$

where $R_{i,t}$ is the return of stock *i* on day *t*, $\hat{\alpha}_{i,t}$ and $\hat{\beta}_{i,t}$ are OLS estimates of the market model, and $R_{m,t}$ are the mainland China and Hong Kong market returns respectively for A- and H-shares.

I follow previous studies to examine cumulative returns over windows of 10 trading days, centered on the event date. Cumulative returns over the event window [t, T], $CAR_{i,[t,\ T]}$, are estimated to be the sum of the abnormal return for that period. Existing research suggests if the market is efficient, firm-specific information should have already been reflected in stock prices prior to earnings announcements, thus leading to no significant cumulative abnormal returns. Bhattacharya *et al.* (2000) examine market reactions to corporate news announcements in the emerging market of Mexico. They find the market does not react to the news and argue this is because informed traders have incorporated the information prior to the public news release. Intuitively, when more firm-specific information is incorporated into H-shares, I should observe insignificant abnormal returns of H-shares with significant returns of A-shares around earnings announcements.

I sort my sample into three groups according to the difference between synchronicities of H- and A-shares. Q1 represents firms which have the most negative difference between synchronicities of H- and A-shares, while Q3 includes those with the least negative difference. In other words, the firm-specific information advantage on H-shares over A-shares is the largest in Q1 and the smallest in Q3. If stock price synchronicity is a good measure of firm-specific information, H-shares in Q1 should

see insignificant reactions while there should be significant reactions to earnings announcements in the A-share market. In addition, I should observe the significance level of H-share cumulative abnormal returns increases from Q1 to Q3, and a corresponding decline for A-shares.

Panel A of Table 6.6, shows cumulative market adjusted abnormal returns surrounding the event dates conditional on different levels of information advantage between foreign and domestic investors. For the group with the largest information advantage, there are significant cumulative abnormal returns for A-shares for periods [-1, 0] while I can only observe very weak cumulative abnormal returns for H-shares during the same event window, and insignificant returns before day -1. In Q3, there are no significant cumulative abnormal returns after the event dates for A-shares, but instead very significant returns are observed for H-shares. This pattern of market reactions to earnings announcements is consistent with the hypothesis that there are not significant cumulative abnormal returns when market participants are informed. Panel B reports cumulative market model abnormal returns surrounding earnings announcement dates. The pattern is similar to Panel A, which again describes an increase in the significance of H-share market abnormal returns while a decrease in the significance of A-shares.

I also sort my data each year into three groups and obtain qualitatively similar results, which are shown in Table 8.7 of the Appendix.

Table 6.6. Analysis of earnings announcements.

Panel A reports the relationship between firm-specific information and cumulative market adjusted returns. Market adjusted returns are the difference between stock returns and market returns around announcement dates. Panel B shows cumulative market-model abnormal returns of A- and H-shares surrounding earnings announcements. Market-model abnormal returns are estimated using Eq. (11). Q1 represents firms with the highest information advantage for foreign investors over domestic investors, while Q3 includes firms with the least information advantage. ***, **, and * represent significance at the 1%, 5% and 10% levels, respectively.

Panel A: Cumulative market adjusted returns by the difference between synchronicity of A- and H-shares

			$CAR_{[-10,10]}$	$CAR_{[-10,-2]}$	$CAR_{[-1,0]}$	$CAR_{[0,1]}$	$CAR_{[-1,1]}$	$CAR_{[2,10]}$
Q1	A	Mean	-0.009	-0.001	-0.011***	-0.007	-0.001*	0.001
		t-stat	(-0.74)	(-0.09)	(-3.08)	(-1.35)	(-1.83)	(-0.12)
	H	Mean	-0.001	0.002	-0.010*	-0.008	-0.007	0.005
		t-stat	(-0.06)	(-0.25)	(-1.73)	(-1.16)	(-1.01)	(-0.48)
Q2	A	Mean	-0.001	-0.004	0	-0.005	-0.004	0.007
		t-stat	(-0.09)	(-0.56)	(-0.01)	(-1.38)	(-0.80)	(-1.02)
	H	Mean	-0.012	-0.002	-0.010*	-0.022***	-0.017***	0.008
		t-stat	(-0.92)	(-0.29)	(-1.79)	(-3.72)	(-2.71)	(-0.95)
Q3	A	Mean	0.020*	0.01	-0.001	0.001	0.001	0.009
		t-stat	(-1.74)	(-1.57)	(-0.40)	(-0.31)	(-0.19)	(-1.08)
	H	Mean	0.039***	0.018**	-0.004	0.002	0	0.021***
		t-stat	(-3.65)	(-2.23)	(-0.84)	(-0.33)	(-0.03)	(-2.73)

Panel B: Cumulative market model returns by difference between synchronicity of A- and H shares

			$CAR_{[-10,10]}$	$CAR_{[-10,-2]}$	$CAR_{[-1,0]}$	$CAR_{[0,1]}$	$CAR_{[-1,1]}$	$CAR_{[2,10]}$
Q1	A	Mean	-0.015	-0.001	-0.009**	-0.004	-0.009	-0.006
		t-stat	(-1.03)	(-0.06)	(-2.35)	(-0.84)	(-1.55)	(-0.70)
	H	Mean	0.004	-0.001	-0.006	-0.005	-0.004	0.009
		t-stat	(-0.32)	(-0.18)	(-1.04)	(-0.77)	(-0.51)	(-1.02)
Q2	A	Mean	-0.014	-0.008	-0.003	-0.008*	-0.005	-0.001
		t-stat	(-1.08)	(-0.98)	(-0.70)	(-2.06)	(-1.19)	(-0.09)
	H	Mean	-0.024*	0.005	-0.013**	-0.026***	-0.024***	-0.005
		t-stat	(-1.88)	(-0.65)	(-2.56)	(-4.73)	(-3.93)	(-0.65)
Q3	A	Mean	0.014	0.005	-0.001	-0.001	0.000	0.010
		t-stat	(-1.1)	(-0.6)	(-0.28)	(-0.23)	(-0.07)	(-1.08)
	H	Mean	-0.002	0.001	-0.007*	-0.003	-0.005	0.002
		t-stat	(-0.19)	(-0.14)	(-1.72)	(-0.48)	(-0.89)	(-0.26)

In Table 6.7, I examine whether I can directly observe a change in the ability for the H-share market to impound earnings information before and after QDII. Starting with market adjusted returns, prior to QDII none of the cumulative abnormal returns after the earnings announcements are significant. However, after QDII I notice a very strong pattern of significance across all of my CAR estimates after the earnings announcements. This result highlights that a shift has occurred in trading H-shares that

has left the market not incorporating all earnings information prior to its release. In other words, the H-share market has seen an increase in the amount of firm-specific information not being impounded in its price prior to the release date. The timeline in observing this shift matches up to when domestic investors started trading on the H-share market and is congruent with the prior synchronicity results. I also estimate market model returns in Panel B and the results do not change.

Table 6.7. Analysis of earnings announcements around QDII.

Panel A reports the relationship between firm-specific information and cumulative market adjusted returns. Market adjusted returns are the difference between stock returns and market returns around announcement dates. Q1 represents firms with the highest information advantage for foreign investors over domestic investors, while Q3 includes firms with the least information advantage. ***, **, and * represent significance at the 1%, 5% and 10% levels, respectively. Panel B shows cumulative market adjusted returns of A- and H-shares before and after QDII.

Panel B: Cumulative market adjusted returns before and after the QDII policy

			$CAR_{[-10,10]}$	$CAR_{[-10,-2]}$	$CAR_{[-1,0]}$	$CAR_{[0,1]}$	$CAR_{[-1,1]}$	$CAR_{[2,10]}$
Before QDII	A	Mean	0.011	0.014	0.000	-0.004	0.001	-0.004
		t-stat	(0.54)	(0.91)	(-0.11)	(-0.55)	(0.11)	(-0.28)
	H	Mean	0.030	0.035***	-0.007	0.001	0.001	-0.006
		t-stat	(1.56)	(2.97)	(-1.04)	(0.10)	(0.09)	(-0.47)
After QDII	A	Mean	0.001	-0.001	-0.005**	-0.004	-0.005*	0.008*
		t-stat	(0.20)	(-0.29)	(-2.02)	(-1.42)	(-1.77)	(1.66)
	H	Mean	0.004	0.000	-0.008**	-0.011***	-0.010***	0.015***
		t-stat	(0.53)	(-0.08)	(-2.37)	(-3.17)	(-2.68)	(2.78)

Panel B: Cumulative market model returns before and after the QDII policy

			$CAR_{[-10,10]}$	$CAR_{[-10,-2]}$	$CAR_{[-1,0]}$	$CAR_{[0,1]}$	$CAR_{[-1,1]}$	$CAR_{[2,10]}$
Before QDII	A	Mean	0.010	0.014	-0.002	-0.004	0.001	-0.005
		t-stat	(0.45)	(0.92)	(-0.38)	(-0.56)	(0.07)	(-0.36)
	H	Mean	0.013	0.027**	-0.007	0.000	0.000	-0.014
		t-stat	(0.71)	(2.38)	(-1.09)	(0.02)	(-0.02)	(-1.09)
After QDII	A	Mean	-0.008	-0.005	-0.005***	-0.004*	-0.006**	0.002
		t-stat	(-1.03)	(-1.13)	(-2.10)	(-1.76)	(-2.01)	(0.45)
	H	Mean	-0.012	-0.004	-0.009***	-0.014***	-0.013***	0.005
		t-stat	(-1.56)	(-0.81)	(-2.82)	(-3.80)	(-3.44)	(1.01)

CHAPTER 7

CONCLUSION

7. CONCLUSION

In this thesis, I examine the impact of cross-listing on firm-specific information and investigate any intermediating role played by corporate governance. I utilize China's unique capital markets to separately measure the abilities of domestic versus foreign investors to generate firm-specific information and to impound such information into stock prices. My univariate analysis shows that the PIN measures of H-shares are significantly higher than those of A-shares, which indicates more firm-specific information is reflected in H-shares. My empirical results also show that H-shares have significantly lower levels of stock return synchronicity than their A-share counterparts. Since the synchronicity is inversely related to firm-specific information, these findings confirm that foreign non-Chinese investors have a comparative advantage in the utilization of firm-specific information. I then examine the impact of the CSRC policy change that allowed Chinese investors (i.e., QDIIs) to trade H-shares, beginning in May, 2007. The results reveal a significant reduction in the level of firm-specific information following the policy change and a narrower difference in synchronicities between H- and A-shares. Furthermore, I also investigate market reactions to earnings announcements before and after the QDII policy. The results suggest significantly less earnings information is incorporated into H-shares prior to earnings announcements after the QDII policy, consistent with earlier results showing that domestic Chinese investors are less able to process firm-specific information. More significantly, this finding shows that investor-type plays an independent and significant role in determining the firm's information environment. To the best of my knowledge, this is the first study that is able to separate institution-level effects from investor-level effects.

Next, I attempt to identify firm characteristics that might explain the comparative advantage of foreign investors in generating firm-specific information. Since previous research shows that corporate governance is positively related to disclosure quality, I examine the degree to which firms with stronger governance practices benefit from greater foreign investor participation. My empirical results broadly confirm this hypothesized connection between foreign investor information processing and corporate governance. I show that proxies for weak governance (e.g., ownership concentration, managers in dual roles as CEO and Chairman of the Board) reduce the degree to which foreign investors collect and impound firm-specific information. This result is also robust in the presence of controlling for a number of factors, including QFII and the level of firm internationalization.

Specifically, I find a concave relationship between ownership concentration and information advantage of foreigners over domestic investors. When the percentage of shares held by the largest shareholder increases, less firm-specific information is available to both domestic investors and foreign investors. The advantage of foreign investors over the other at collecting and processing value-relevant information diminishes, thus the difference in firm-specific information decreases. However, after the percentage of shares held by the largest shareholder exceeds a certain point, the synchronicity difference between H-shares and A-shares becomes larger. Fund ownership in mainland China facilitates the incorporation of firm-specific information in A-shares. The number of H-shares issued seems to have no significant effects on the synchronicity difference. In addition, the presence of QFII in the top 10 shareholders has improved the information incorporation in A-shares. The duality of CEOs has a significant effect on firm-specific information. However, independent directors, the size of the board of directors and the size of the supervisory board do not significantly

influence firm-specific information. Although there are several policies specifically aimed at improving the effectiveness of independent directors and the two-tier board system, so far they are still ineffective. Fourth, despite disclosure requirements of CEO compensation since 2005, CEO compensation has had no effect on firm-specific information. This may be caused by the weak sensitivity of pay-for-performance for CEOs. Finally, capital structure matters and investors consider leverage as a useful tool for improving corporate governance.

In summary, these findings contribute to the cross-listing literature by exploiting several features of the Chinese capital markets. The regulatory partitioning of investor-type prior to 2007 allows me to measure the information-processing abilities of foreign investors relative to domestic investors. The QDII regulatory change also provides a unique opportunity to separate institution-level factors from investor-level factors in explaining the firm-specific information differences between H-shares and A-shares. I show that positive information spillover effects are the direct result of foreign investor participation. In addition to documenting such relationships, my study has policy implications for capital market regulators and company executives. The efficient allocation of scarce capital is important to regulators in emerging markets, which can be achieved by facilitating more firm-specific information into stock prices (Gul *et al.*, 2010). Regulators can design market rules to encourage foreign investor participation, and corporate executives can focus on the disclosure quality dimension of corporate governance structures. More particularly, the governments and listed firms in emerging countries should attach greater importance to ownership concentration, the development of institutional investors, foreign investors' participation, CEO duality and capital structure designs, which can be the first steps to improve governance.

In addition to the contribution to the existing literature by separating institution-level effects from investor-level effects and documenting the distinct role played by foreign investors in generating cross-listing benefits, it may also be beneficial to consider the different short-selling regulations on A- and H-shares and examine the effect of short sales on firm-specific information incorporation.

There has been continuous debate, especially during the global financial crisis, over whether short-selling should be allowed among various market participants. While policy makers believe short-sellers destabilize or manipulate the market,[21] many researchers suggest that short-selling leads to more efficient prices since negative information can be incorporated into market prices (Miller, 1977; Chen and Rhee, 2010). However, as Chen and Rhee (2010) have pointed out, the research on short-selling has limitations since it is difficult to compare price discovery among stocks with and without short-selling restrictions because almost every stock can be short in the U.S. The issue of whether short-selling could potentially contribute to price discovery and how this may change during the global financial crisis is a relatively unexplored area. The unique short-selling schemes in mainland China and Hong Kong provide a near-perfect setting for testing these research questions.

Before March 2010, short-sale was not permitted in mainland China,[22] while Hong Kong allowed short-selling for designated stocks. The fact that not every H-share is shortable allows an interesting analysis to compare the effects of short-selling on price discovery under the same and different market structures. To be more advantageous from a research perspective, the unique setting in Hong Kong that shares are removed

[21] During the global financial crisis, many developed countries banned short-selling with the justification that short sellers actually destabilise the stock markets.

[22] From March, 2010, some designated A-shares are allowed to be short.

from or added into the D-list each quarter,[23] allows for a further analysis to compare the price discovery before and after the changes of the D-list. In addition, the regulation change on A-shares that allows certain shares to be short sold also provides a great opportunity to examine the effects of short-selling regulations on price discovery change.

[23] Only the stocks on the D-list can be short and the Hong Kong Exchange will adjust this list from time to time. As shown in Chen and Rhee (2010), there were 16 revisions on the D-list from 2001 to 2004.

CHAPTER 8

APPENDIX

8. APPENDIX

Table 8.1. Description of the 60 pairs of A-shares and H-shares.

No.	Company Name	A-share Code	A-share listing date	H-share Code	H-share listing date	Industry
1	ZTE Corp	000063.SZ	18/11/1997	763	09/12/2004	Information Technology
2	Weichai Power Co Ltd	000338.SZ	30/04/2007	2338	11/03/2004	Manufacturing
3	Chenming Paper	000488.SZ	20/11/2000	1812	18/06/2008	Manufacturing
4	Northeast Electric Dev.	000585.SZ	13/12/1995	42	06/07/1995	Manufacturing
5	Jingwei Textile Machinery	000666.SZ	10/12/1996	350	02/02/1996	Manufacturing
6	Shandong Xinhua Pharmaceutical	000756.SZ	06/08/1997	719	31/12/1996	Manufacturing
7	Angang Steel	000898.SZ	25/12/1997	347	24/07/1997	Manufacturing
8	Huaneng Power Int'l	600011.SS	06/12/2001	902	21/01/1998	Utilities
9	Anhui Expressway	600012.SS	07/01/2003	995	13/11/1996	Transportation
10	Minsheng Bank	600016.SS	19/12/2000	1988	26/11/2009	Finance
11	China Shipping Development	600026.SS	23/05/2002	1138	11/11/1994	Transportation
12	Huadian Power Int'l	600027.SS	03/02/2005	1071	30/06/1999	Utilities
13	Sinopec Corp.	600028.SS	08/08/2001	386	19/10/2000	Mining
14	China Southern Airlines	600029.SS	25/07/2003	1055	31/07/1997	Transportation
15	China Merchants Bank	600036.SS	09/04/2002	3968	22/09/2006	Finance
16	China Unicom	600050.SS	17/09/2002	762	22/06/2000	Information Technology
17	China Eastern Airlines	600115.SS	05/11/1997	670	05/02/1997	Transportation
18	Yanzhou Coal Mining	600188.SS	01/07/1998	1171	01/04/1998	Mining
19	Guangzhou Pharm	600332.SS	06/02/2001	874	30/10/1997	Manufacturing
20	Jiangxi Copper	600362.SS	11/01/2002	358	12/06/1997	Manufacturing
21	Jiangsu Expressway	600377.SS	16/01/2001	177	27/06/1997	Transportation
22	Shenzhen Expressway	600548.SS	25/12/2001	548	12/03/1997	Transportation
23	Anhui Conch Cement	600585.SS	07/02/2002	914	21/10/1997	Manufacturing
24	Tsingtao Brewery	600600.SS	27/08/1993	168	15/07/1993	Manufacturing
25	Guangzhou Shipyard Int'l	600685.SS	28/10/1993	317	06/08/1993	Manufacturing
26	Sinopec Shanghai Petrochem	600688.SS	08/11/1993	338	26/07/1993	Manufacturing
27	Nanjing Panda Electric	600775.SS	18/11/1996	553	02/05/1996	Information Technology
28	Kunming Machine Tool	600806.SS	03/01/1994	300	07/12/1993	Manufacturing
29	Maanshan Iron & Steel	600808.SS	06/01/1994	323	03/11/1993	Manufacturing
30	Beiren Printing Machinery	600860.SS	06/05/1994	187	06/08/1993	Manufacturing
31	Sinopec Yizheng Chemical Fibre	600871.SS	11/04/1995	1033	29/03/1994	Manufacturing
32	Tianjin Capital Envir Protection	600874.SS	30/06/1995	1065	17/05/1994	Services
33	Dongfang Electric Corp	600875.SS	10/10/1995	1072	06/06/1994	Manufacturing

34	Chongqing Iron & Steel	601005.SS	28/02/2007	1053	17/10/1997	Manufacturing
35	China Shenhua Energy	601088.SS	09/10/2007	1088	15/06/2005	Mining
36	Sichuan Expressway	601107.SS	27/07/2009	107	07/10/1997	Transportation
37	Air China	601111.SS	18/08/2006	753	15/12/2004	Transportation
38	China Rail Construction	601186.SS	10/03/2008	1186	13/03/2008	Construction
39	Ping An of China	601318.SS	01/03/2007	2318	24/06/2004	Finance
40	Bank of Communications	601328.SS	15/05/2007	3328	23/06/2005	Finance
41	Guangshen Railway	601333.SS	22/12/2006	525	14/05/1996	Transportation
42	China Railway	601390.SS	03/12/2007	390	07/12/2007	Construction
43	Ind & Com Bank of	601398.SS	27/10/2006	1398	27/10/2006	Finance
44	Beijing North Star	601588.SS	16/10/2006	588	14/05/1997	Real estate
45	Aluminum Corp of China	601600.SS	30/04/2007	2600	12/12/2001	Mining
46	CPIC	601601.SS	25/12/2007	2601	23/12/2009	Finance
47	MCC	601618.SS	21/09/2009	1618	24/09/2009	Construction
48	China Life	601628.SS	09/01/2007	2628	18/12/2003	Finance
49	Shanghai Electric	601727.SS	05/12/2008	2727	28/04/2005	Manufacturing
50	CSR	601766.SS	18/08/2008	1766	21/08/2008	Manufacturing
51	China Oilfield Services	601808.SS	28/09/2007	2883	20/11/2002	Mining
52	PetroChina	601857.SS	05/11/2007	857	07/04/2000	Mining
53	China Shipping Container Lines	601866.SS	12/12/2007	2866	16/06/2004	Transportation
54	China Coal Energy	601898.SS	01/02/2008	1898	19/12/2006	Mining
55	Zijin Mining	601899.SS	25/04/2008	2899	23/12/2003	Mining
56	China COSCO	601919.SS	26/06/2007	1919	30/06/2005	Transportation
57	China Construction Bank	601939.SS	25/09/2007	939	27/10/2005	Finance
58	Bank Of China	601988.SS	05/07/2006	3988	01/06/2006	Finance
59	Datang Power	601991.SS	20/12/2006	991	21/03/1997	Utilities
60	China CITIC Bank	601998.SS	27/04/2007	998	27/04/2007	Finance

The A-share code symbol '.SS' indicates the stock is listed on the Shanghai Stock Exchange and '.SZ' indicates the stock is listed on the Shenzhen Stock Exchange.

Table 8.2. Regression on lagged corporate governance variables.

The dependent variable is DIF_SYNCH2, which is the difference between SYNCH2 of H- and A-shares where SYNCH2 is estimated using Eq. (5). All results are from ordinary least square regressions where standard errors are adjusted for clustering at the firm level. Industry and year dummies are also included but not reported for brevity. ***, **, and * represent significance at the 1%, 5% and 10% level, respectively. All corporate governance variables are lagged in running regressions. TOPOWN is the percentage of shares held by the largest shareholder. FUND represents the percentage of shares held by domestic funds. SHARERATIO is calculated as the ratio of outstanding H-shares by outstanding A-shares. QFII is the number of qualified foreign institutional investors that are in the top ten shareholders for a company. CEO_CHAIR denotes a dummy variable equal to one if the CEO is also the chairman of the board, and zero otherwise. DIRECTOR is the number of directors on the board. INDEP represents the percentage of independent directors on the board. SUPERVISORY is the number of members on the supervisory board. SALARY is the annual emolument and allowance of the CEO. STOCK is a dummy variable equal to one if the CEO holds shares, and zero otherwise. LEVERAGE is computed as total liability divided by total assets. SIZE is the log of total assets. M_B is the market value of total equity divided by its book value. TURN is the turnover of H-shares divided by that of A-shares. STDROA is estimated as volatility of return on assets over the last five quarters, including the current quarter and EXPOSURE is the number of foreign subsidiaries a firm has.

Variables	Difference of SYNCH2 between A- and H-shares				
	(1)	(2)	(3)	(4)	(5)
INTERCEPT	-4.144***	-3.354***	-3.184***	-3.574***	-4.639***
	(-5.24)	(-4.5)	(-3.51)	(-4.29)	(-5.73)
TOPOWN_SQ	-2.97				-3.831**
	(-1.59)				(-2.47)
TOPOWN	2.031				3.199**
	(1.08)				(2.03)
FUND	-0.482				0.388
	(-0.46)				(0.38)
SHARERATIO	0.023				0.018
	(1.2)				(1.1)
QFII	0.051				0.06*
	(1.5)				(1.87)
CEO_CHAIR		0.295***			0.297***
		(3.59)			(3.34)
DIRECTOR		0.003			0.011
		(0.17)			(0.6)
INDEP		0.312			0.404
		(0.57)			(0.78)
SUPERVISORY		0.008			0.015
		(0.37)			(0.84)
SALARY			0.009		
			(0.66)		
STOCK			0.005		
			(0.04)		
LEVERAGE				-0.681***	-0.627***
				(-3.46)	(-3.69)
SIZE	0.14***	0.105***	0.108***	0.139***	0.145***
	(3.91)	(3.81)	(3)	(3.64)	(4.42)
M_B	0.012	0.011	0.013	0.028**	0.027**
	(1.03)	(0.94)	(1.16)	(2.03)	(2.09)
TURN	0.027***	0.018**	0.018**	0.013	0.022**
	(2.96)	(2.14)	(2.08)	(1.61)	(2.57)
STDROA	4.588**	4.871**	4.773**	4.337**	2.796*
	(2.33)	(2.34)	(2.31)	(2.16)	(1.7)
EXPOSURE	-0.005	0.001	-0.001	0.003	-0.004
	(-0.75)	(0.27)	(-0.17)	(0.44)	(-0.69)
Adjusted R^2	0.442	0.436	0.320	0.442	0.468

Table 8.3. Regressions using random effects models.

The dependent variable is DIF_SYNCH2, which is the difference between SYNCH2 of H- and A-shares where SYNCH2 is estimated using Eq. (5). All results are from random effects models where standard errors are adjusted for clustering at the firm level. Industry and year dummies are also included but not reported for brevity. ***, **, and * represent significance at the 1%, 5% and 10% level, respectively. TOPOWN is the percentage of shares held by the largest shareholder. FUND represents the percentage of shares held by domestic funds. SHARERATIO is calculated as the ratio of outstanding H-shares by outstanding A-shares. QFII is the number of qualified foreign institutional investors that are in the top ten shareholders for a company. CEO_CHAIR denotes a dummy variable equal to one if the CEO is also the chairman of the board, and zero otherwise. DIRECTOR is the number of directors on the board. INDEP represents the percentage of independent directors on the board. SUPERVISORY is the number of members on the supervisory board. SALARY is the annual emolument and allowance of the CEO. STOCK is a dummy variable equal to one if the CEO holds shares, and zero otherwise. LEVERAGE is computed as total liability divided by total assets. SIZE is the log of total assets. M_B is the market value of total equity divided by its book value. TURN is the turnover of H-shares divided by that of A-shares. STDROA is estimated as volatility of return on assets over the last five quarters, including the current quarter and EXPOSURE is the number of foreign subsidiaries a firm has.

Variables	Difference of SYNCH2 between A- and H-shares				
	(1)	(2)	(3)	(4)	(5)
INTERCEPT	-3.985***	-2.825***	-2.888***	-3.264***	-4.203***
	(-4.86)	(-3.75)	(-3.64)	(-3.49)	(-4.06)
TOPOWN_SQ	-4.299***				-4.790**
	(-2.68)				(-2.47)
TOPOWN	3.218**				3.938**
	(2.35)				(2.15)
FUND	0.736				1.591**
	(1.10)				(2.01)
SHARERATIO	0.012				0.008
	(1.05)				(0.56)
QFII	0.030				0.042
	(0.87)				(1.63)
CEO_CHAIR		0.248***			0.302***
		(2.94)			(3.39)
DIRECTOR		-0.006			0.000
		(-0.44)			(0.01)
INDEP		0.161			0.255
		(0.76)			(1.14)
SUPERVISORY		0.000			0.009
		(0.00)			(0.22)
SALARY			-0.002		-0.003
			(-0.18)		(-0.34)
STOCK			0.026		-0.006
			(0.39)		(-0.10)
LEVERAGE				-0.613*	-0.580**
				(-1.93)	(-2.08)
SIZE	0.121***	0.090***	0.094***	0.124***	0.129***
	(4.25)	(3.71)	(4.25)	(3.34)	(2.62)
M_B	0.015	0.014	0.015	0.026**	0.022*
	(1.23)	(1.08)	(1.17)	(2.08)	(1.81)
TURN	0.039***	0.023**	0.021***	0.017*	0.036***
	(2.97)	(2.27)	(2.64)	(1.86)	(2.72)
STDROA	4.094***	4.240**	4.602***	4.274***	3.371***
	(3.00)	(2.38)	(2.68)	(3.32)	(3.82)
EXPOSURE	-0.012	0.001	0.000	0.003	-0.008
	(-1.26)	(0.08)	(0.08)	(0.35)	(-0.91)
Adjusted R^2	0.422	0.408	0.397	0.411	0.456

Table 8.4. Regressions using alternative proxies.

The dependent variable is DIF_SYNCH2, which is the difference between SYNCH2 of H- and A-shares where SYNCH2 is estimated using Eq. (5). All results are from ordinary least square regressions where standard errors are adjusted for clustering at the firm level. Industry and year dummies are also included but not reported for brevity. ***, **, and * represent significance at the 1%, 5% and 10% level, respectively. This table reports the results using alternative proxies. TOPOWN is a Herfindahl value measured as the sum of the squared holding, in percentage, of the ten largest shareholders. FUND represents the percentage of shares held by domestic funds. SHARERATIO is calculated as the ratio of outstanding H-shares by outstanding A-shares. QFII is the proportion of shares owned by qualified foreign institutional investors within the top ten shareholders for a company. CEO_CHAIR denotes a dummy variable equal to one if the CEO is also the chairman of the board, and zero otherwise. DIRECTOR is the number of directors on the board. INDEP represents the percentage of independent directors on the board. SUPERVISORY is the number of members on the supervisory board. SALARY is the annual emolument and allowance of the CEO. STOCK is a dummy variable equal to one if the CEO holds shares, and zero otherwise. LEVERAGE is computed as total liability divided by total assets. SIZE is the log of total assets. M_B is the market value of total equity divided by its book value. TURN is the turnover of H-shares divided by that of A-shares. STDROA is estimated as volatility of return on assets over the last five quarters, including the current quarter and EXPOSURE is a dummy variable equal to one if the firm reports foreign sales, and zero otherwise.

Variables	Difference of SYNCH2 between H- and A-shares				
	(1)	(2)	(3)	(4)	(5)
INTERCEPT	-3.062***	-2.749***	-2.821***	-3.194***	-3.275***
	(-4.07)	(-4.03)	(-3.76)	(-4.56)	(-4.35)
TOPOWN_SQ	-3.947**				-4.61**
	(-2.34)				(-2.54)
TOPOWN	2.03				2.649*
	(1.56)				(1.91)
FUND	0.484				1.523
	(0.51)				(1.5)
SHARERATIO	0.014				0.009
	(1.06)				(0.83)
QFII	2.758				3.246
	(1.11)				(1.37)
CEO_CHAIR		0.261***			0.295***
		(2.97)			(3.81)
DIRECTOR		-0.007			-0.002
		(-0.36)			(-0.1)
INDEP		0.114			0.098
		(0.21)			(0.2)
SUPERVISORY		-0.005			0.007
		(-0.2)			(0.29)
SALARY			-0.002		-0.004
			(-0.13)		(-0.61)
STOCK			0.007		-0.009
			(0.06)		(-0.09)
LEVERAGE				-0.687***	-0.629***
				(-3.62)	(-3.57)
SIZE	0.091**	0.089***	0.091***	0.122***	0.109***
	(2.52)	(3.53)	(3)	(3.86)	(3.28)
M_B	0.013	0.01	0.01	0.027*	0.023*
	(1.04)	(0.89)	(0.95)	(1.78)	(1.85)
TURN	0.038***	0.023***	0.021**	0.015*	0.037***
	(4.48)	(2.99)	(2.64)	(1.92)	(4.58)
STDROA	4.889**	4.969**	5.535***	4.791**	3.598**
	(2.47)	(2.46)	(2.7)	(2.66)	(2.24)
EXPOSURE	0.138*	0.114	0.131	0.17**	0.115
	(1.69)	(1.34)	(1.55)	(2.06)	(1.28)
Adjusted R^2	0.453	0.448	0.438	0.460	0.476

Table 8.5. Regressions using MSCI indices.

The dependent variable is DIF_SYNCH2, which is the difference between SYNCH2 of H- and A-shares where SYNCH2 is estimated using Eq. (5). All results are from ordinary least square regressions where standard errors are adjusted for clustering at the firm level. Industry and year dummies are also included but not reported for brevity. ***, **, and * represent significance at the 1%, 5% and 10% level, respectively. This table reports the results using MSCI indices. TOPOWN is the percentage of shares held by the largest shareholder. FUND represents the percentage of shares held by domestic funds. SHARERATIO is calculated as the ratio of outstanding H-shares by outstanding A-shares. QFII is the number of qualified foreign institutional investors that are in the top ten shareholders for a company. CEO_CHAIR denotes a dummy variable equal to one if the CEO is also the chairman of the board, and zero otherwise. DIRECTOR is the number of directors on the board. INDEP represents the percentage of independent directors on the board. SUPERVISORY is the number of members on the supervisory board. SALARY is the annual emolument and allowance of the CEO. STOCK is a dummy variable equal to one if the CEO holds shares, and zero otherwise. LEVERAGE is computed as total liability divided by total assets. SIZE is the log of total assets. M_B is the market value of total equity divided by its book value. TURN is the turnover of H-shares divided by that of A-shares. STDROA is estimated as volatility of return on assets over the last five quarters, including the current quarter and EXPOSURE is the number of foreign subsidiaries a firm has.

Variables	Difference of SYNCH2 between H- and A-shares				
	(1)	(2)	(3)	(4)	(5)
INTERCEPT	-3.999***	-2.993***	-3.134***	-3.451***	-4.286***
	(-4.57)	(-3.92)	(-3.93)	(-4.29)	(-5.01)
TOPOWN_SQ	-4.104**				-4.777***
	(-2.03)				(-2.77)
TOPOWN	3.036				3.948**
	(1.5)				(2.26)
FUND	0.699				1.612*
	(0.74)				(1.68)
SHARERATIO	0.013				0.007
	(0.99)				(0.61)
QFII	0.044				0.05*
	(1.48)				(1.68)
CEO_CHAIR		0.282***			0.314***
		(3.39)			(3.89)
DIRECTOR		-0.004			0.002
		(-0.23)			(0.15)
INDEP		0.173			0.301
		(0.31)			(0.61)
SUPERVISORY		0.001			0.01
		(0.03)			(0.41)
SALARY			0.001		-0.001
			(0.05)		(-0.22)
STOCK			0.024		-0.012
			(0.19)		(-0.12)
LEVERAGE				-0.635***	-0.576***
				(-3.21)	(-3.21)
SIZE	0.123***	0.097***	0.103***	0.132***	0.129***
	(3.36)	(3.49)	(3.18)	(3.63)	(3.95)
M_B	0.012	0.011	0.011	0.027*	0.022*
	(1.02)	(0.94)	(1)	(1.84)	(1.88)
TURN	0.038***	0.022***	0.019**	0.014*	0.035***
	(4.23)	(2.89)	(2.58)	(1.78)	(4.55)
STDROA	4.878**	4.914**	5.69**	4.987**	3.476**
	(2.43)	(2.37)	(2.63)	(2.55)	(2.23)
EXPOSURE	-0.011*	0.001	0	0.003	-0.008
	(-1.69)	(0.29)	(0.06)	(0.55)	(-1.19)
Adjusted R^2	0.458	0.444	0.432	0.450	0.480

Table 8.6. Regressions of deleting 2007-8 observations.

The dependent variable is DIF_SYNCH2, which is the difference between SYNCH2 of H- and A-shares where SYNCH2 is estimated using Eq. (5). All results are from ordinary least square regressions where standard errors are adjusted for clustering at the firm level. Industry and year dummies are also included but not reported for brevity. ***, **, and * represent significance at the 1%, 5% and 10% level, respectively. This table reports the results of deleting 2007-8 observations. TOPOWN is the percentage of shares held by the largest shareholder. FUND represents the percentage of shares held by domestic funds. SHARERATIO is calculated as the ratio of outstanding H-shares by outstanding A-shares. QFII is the number of qualified foreign institutional investors that are in the top ten shareholders for a company. CEO_CHAIR denotes a dummy variable equal to one if the CEO is also the chairman of the board, and zero otherwise. DIRECTOR is the number of directors on the board. INDEP represents the percentage of independent directors on the board. SUPERVISORY is the number of members on the supervisory board. SALARY is the annual emolument and allowance of the CEO. STOCK is a dummy variable equal to one if the CEO holds shares, and zero otherwise. LEVERAGE is computed as total liability divided by total assets. SIZE is the log of total assets. M_B is the market value of total equity divided by its book value. TURN is the turnover of H-shares divided by that of A-shares. STDROA is estimated as volatility of return on assets over the last five quarters, including the current quarter and EXPOSURE is the number of foreign subsidiaries a firm has.

Variables	Difference of SYNCH2 between H- and A-shares				
	(1)	(2)	(3)	(4)	(5)
INTERCEPT	-4.712***	-2.944***	-3.014***	-3.936***	-5.155***
	(-4.75)	(-3.32)	(-3.17)	(-4.44)	(-5.55)
TOPOWN_SQ	-5.943***				-6.916***
	(-2.79)				(-3.39)
TOPOWN	4.602**				5.821***
	(2.15)				(2.79)
FUND	-0.051				1.011
	(-0.03)				(0.64)
SHARERATIO	0.004				-0.006
	(0.31)				(-0.49)
QFII	0.081**				0.068*
	(2.37)				(1.78)
CEO_CHAIR		0.26**			0.283***
		(2.28)			(2.86)
DIRECTOR		-0.004			0.014
		(-0.15)			(0.75)
INDEP		-0.01			-0.002
		(-0.02)			(0)
SUPERVISORY		-0.028			-0.018
		(-0.84)			(-0.61)
SALARY			-0.013		-0.006
			(-0.97)		(-0.63)
STOCK			-0.045		-0.023
			(-0.3)		(-0.19)
LEVERAGE				-0.807***	-0.803***
				(-3.06)	(-2.99)
SIZE	0.138***	0.099***	0.102**	0.151***	0.161***
	(3.08)	(3.06)	(2.65)	(3.9)	(3.7)
M_B	0.027	0.025	0.023	0.059	0.056
	(0.73)	(0.75)	(0.64)	(1.66)	(1.53)
TURN	0.05***	0.031***	0.022**	0.017	0.049***
	(4.2)	(2.7)	(2.19)	(1.6)	(4.2)
STDROA	7.255***	8.73***	9.262***	6.416***	4.099**
	(3.73)	(4.11)	(4.68)	(3.56)	(2.09)
EXPOSURE	-0.018**	-0.006	-0.002	-0.003	-0.014*
	(-2.55)	(-1.08)	(-0.21)	(-0.54)	(-1.72)
Adjusted R^2	0.465	0.431	0.425	0.445	0.478

Table 8.7. Analysis of earnings announcements.

Panel A reports the relationship between firm-specific information and cumulative market adjusted returns. Market adjusted returns are the difference between stock returns and market returns around announcement dates. Panel B shows cumulative market-model abnormal returns of A- and H-shares surrounding earnings announcements. Market-model abnormal returns are estimated using Eq. (11). Q1 represents firms with the highest information advantage for foreign investors over domestic investors, while Q3 includes firms with the least information advantage. ***, **, and * represent significance at the 1%, 5% and 10% levels, respectively.

Panel A: Cumulative market adjusted returns by the difference between synchronicity of A- and H-shares

			$CAR_{[-10,10]}$	$CAR_{[-10,-2]}$	$CAR_{[-1,0]}$	$CAR_{[0,1]}$	$CAR_{[-1,1]}$	$CAR_{[2,10]}$
Q1	A	Mean	0.000	0.005	-0.008*	-0.002	-0.007	0.002
		t-stat	(0.00)	(0.70)	(-1.98)	(-0.50)	(-1.21)	(0.27)
	H	Mean	0.003	-0.002	-0.006	-0.005	-0.004	0.009
		t-stat	(0.22)	(-0.28)	(-1.05)	(-0.80)	(-0.56)	(0.99)
Q2	A	Mean	-0.005	-0.006	-0.002	-0.007*	-0.004	0.005
		t-stat	(-0.46)	(-0.73)	(-0.46)	(-1.90)	(-0.97)	(0.66)
	H	Mean	-0.008	0.009	-0.011**	-0.022***	-0.019***	0.003
		t-stat	(-0.58)	(0.98)	(-2.12)	(-4.11)	(-3.20)	(0.35)
Q3	A	Mean	0.015	0.006	-0.002	-0.001	-0.001	0.011
		t-stat	(1.25)	(0.78)	(-0.73)	(-0.27)	(-0.34)	(1.22)
	H	Mean	0.032***	0.011	-0.006	0.000	-0.001	0.022***
		t-stat	(2.96)	(1.43)	(-1.31)	(0.00)	(-0.22)	(2.76)

Panel B: Cumulative market model returns by difference between synchronicity of A- and H shares

			$CAR_{[-10,10]}$	$CAR_{[-10,-2]}$	$CAR_{[-1,0]}$	$CAR_{[0,1]}$	$CAR_{[-1,1]}$	$CAR_{[2,10]}$
Q1	A	Mean	-0.015	0.000	-0.009**	-0.004	-0.008	-0.006
		t-stat	(-1.03)	(-0.06)	(-2.35)	(-0.84)	(-1.55)	(-0.70)
	H	Mean	0.004	-0.001	-0.006	-0.005	-0.004	0.009
		t-stat	(0.32)	(-0.18)	(-1.04)	(-0.77)	(-0.51)	(1.02)
Q2	A	Mean	-0.014	-0.008	-0.003	-0.008**	-0.005	-0.001
		t-stat	(-1.08)	(-0.98)	(-0.70)	(-2.06)	(-1.19)	(-0.10)
	H	Mean	-0.024*	0.005	-0.013**	-0.026***	-0.024***	-0.005
		t-stat	(-1.88)	(0.65)	(-2.56)	(-4.73)	(-3.93)	(-0.65)
Q3	A	Mean	0.014	0.004	-0.001	-0.001	0.000	0.010
		t-stat	(1.10)	(0.60)	(-0.28)	(-0.23)	(-0.07)	(1.08)
	H	Mean	-0.002	0.001	-0.007*	-0.003	-0.005	0.002
		t-stat	(-0.19)	(0.14)	(-1.72)	(-0.48)	(-0.89)	(0.26)

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