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The long-run effect of cross-listing on firms:

Evidence from China

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ATTESTATION OF AUTHORSHIP

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

John Fan Zhang

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ABSTRACT

This study investigates the long-run stock market and operating performance of Chinese firms cross-listed on the Hong Kong stock exchange over the period of 1993-2012. First, this study finds abnormal returns of cross-listing stocks have generally been negative and decreased in three years after cross-listing for the full sample-period. However, in the most recent sub-period samples, abnormal returns have been positive. The result indicates post-cross-listing abnormal returns could be time-dependent. Second, profitability of cross-listed firms also decreases and does not outperform their purely domestic-listed peers in three years after cross-listing in the full sample-period. Nevertheless, in the most recent sub-period samples, the dynamic changes in operating performance show that cross-listed firms have also performed better than their purely domestic-listed peers. The results seem to suggest that post-cross-listing performance of Chinese firms could be subject to the structural improvement of the Chinese financial market.

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Chapter 1 Introduction

During the last three decades, capital flows and financial transactions increased across the international borders. As global financial markets become more integrated, more companies employ an overseas equity offering method as a way to raise capital globally (Foerster & Karolyi, 2000). These firms come from both developed and emerging countries (Geranio, 2012; Zhang & King, 2010). However, to date, the existing literature mainly focuses on firms from developed markets (Geranio, 2012; Su & Chong, 2007). As Dodd (2013) has recently pointed out, stock performance from emerging markets, in particular Asian markets, is a field that requires further investigation in cross-listing studies. Thus, the main target of this study is to investigate the impact of cross-listing on the market/operating performances of the companies from emerging markets, by examining a group of 78 Chinese cross-listed firms on the Hong Kong stock market from 1993 to 2012.

This study is motivated for various reasons. Firstly, in recent years we have witnessed a different trend of cross-listing between the firms from developed and the firms from emerging countries. On the one hand, Geranio (2012) shows that there was a significant declining trend in overseas listings for firms from developed countries during the late twentieth century. Pagano et al. (2002) also find that the number of U.S. companies cross-listed on the European stock exchange declined, as a consequence of foreign sales and average growth did not improve after cross-listing in Europe. Moreover, Geranio (2012) claims that due to the consolidation among the U.S. and European stock exchanges, there are fewer incentives for European firms to cross-list on the U.S. market. Furthermore, Geranio (2012) points out that technological development leads to a mutual trading system and a reduction in trading cost, thus reducing the necessity to cross-list in another stock market.

On the other hand, the number of foreign listings from emerging markets has grown significantly (Geranio, 2012; Zhang & King, 2010). Geranio (2012) reveals that over the period 2000 to 2010, there was an increase in the number of American Depository Receipts (ADRs)¹ from Asian countries in the US market, and firms from Eastern

¹ American depository receipts (ADRs) are securities of a non-US company that trades in the US financial markets. Each ADR is issued by a domestic custodian bank when the underlying shares are deposited in a foreign depository bank (Bancel & Kalimipalli, 2009; Dey & Wang, 2012).

European countries increased their presence in the UK market. The trend of increase in the number of cross-listing activities in developing countries indicates that cross-listing, as a financial strategy, plays a particularly critical role for firms from emerging markets (Doidge, Karolyi, & Stulz, 2004). Furthermore, Tay and Oladi (2011) claim that as economic and financial integration is accelerating and developing countries are opening their markets to attract foreign investors, it is reasonable to expect that the expansion of capital flows and cross-listing activities between countries will continue in the future.

Secondly, as one of the biggest developing countries in today's world, China has shown an active role in overseas listing activities. According to Ritter (2013), there were 142 Chinese firms that cross-listed in the U.S. stock market, and the proportion of "Chinese concept stock"² was 18.23% of all the foreign listed companies as at the end of 2012. Moreover, since 2001 the proportion of "Chinese concept stock" have always made up more than 20% of total foreign listings in the U.S. market, and the figure reached its peak at 75% in 2009 (See Appendix A).

Thirdly, given a consensus on a positive short-run market return for the firms from emerging markets that cross-listed in developed markets (Chong & Su, 2006; Ng, Yong, & Faff, 2013; Roosenboom & van Dijk, 2009), the long-run effect of cross-listing is still an unsettled issue. For example, several studies have documented that cross-listing shares undergo an under-performance in the initial 3-5 years after the Initial Public Offering (IPO) (Loughran & Ritter, 1995; Luo et al., 2012; Ritter, 1991). Nevertheless, O'Connor (2009) finds that there are positive valuation gains for firms from emerging markets cross-listing in a market with high-disclosure requirement, and these valuation gains can only be realized after at least five years of listing. Intrigued by this seemingly contradictory phenomenon, this study provides an out-of-sample test in regard to existing empirical evidence by focusing on Chinese firms.

This study investigates the market performance and operating performance of 78 Chinese cross-listed firms on the Hong Kong stock market from 1993 to 2012. By doing so, this study contributes to the literature on the following aspects.

² China Concept Stock is a set of stocks of companies whose assets or earnings have significant activities in Mainland China, no matter these companies officially incorporated in Mainland China or overseas (Luo, Fang, & Esqueda, 2012).

First, through investigating the post-listing behaviour of Chinese firms, this study provides a perspective to help identify the motivations for cross-listings. Prior literature has proposed multiple theories to describe how cross-listings can benefit a firm. To summarize, there are basically five hypotheses justifying the reasons of cross-listing: market segmentation hypothesis (Alexander, Eun, & Janakiramanan, 1987; Errunza & Losq, 1985), liquidity hypotheses (Foerster & Karolyi, 1998; Smith & Sofianos, 1997, June), bonding hypothesis (Coffee, 1999, 2002; Stulz, 1999), investor recognition hypothesis (Merton, 1987), and business strategy hypothesis (Bancel & Mittoo, 2001; Lins, Strickland, & Zenner, 2005; Pagano, Röell, & Zechner, 2002). However, concerning the cross-listing motivation of Chinese companies, the existing studies seem to only provide a partial explanation. On the one hand, because of the improvement in reputation and investor recognition after cross-listing, the market value of Chinese cross-listed firms would increase (Coffee, 2002; King & Segal, 2009). Also, the accounting performance advantage of cross-listed firms over purely domestic-listed firms would also become clear over time. This is because global competition has an ongoing impact on the fundamental condition of a firm (Khurana, Martin, & Periera, 2008), which would be helpful for the firm to strengthen its basis of financial growth, and thus increase its degree of competitive advantages (Valero & Melvin, 2009). On the other hand, not all traditional hypotheses can be applied to Chinese cross-listed companies. As will be seen, cross-listings do not reduce but increase the cost of capital for Chinese companies. Also, it could not be denied that cross-listing is helpful for improving corporate governance of Chinese companies, but this is only a by-product, since in practice cross-listings are a consequence of government mandate. In other words, the original motivation of Chinese cross-listings is not to improve corporate governance as the bonding theory suggests (Sun, Tong, & Wu, 2013). Therefore, based on a framework of existing cross-listing theories, this study identifies a theoretical explanation for the motivation of Chinese cross-listings.

More specifically, this study contributes to the cross-listing literature by providing new evidence on the trade-off between benefit and cost of cross-listed firms from emerging markets. As the largest emerging market in the world, China has experienced enormous economic growth in the past three decades. Claessens, Klingebiel, and Schmukler (2006) claim that countries with higher growth opportunities are more likely to globalize, and the companies from these countries are more likely to issue shares and raise capital overseas. Since the first official overseas listing Chinese stock – Tsingtao

Brewery – issued shares in the Hong Kong stock market in 1993, the number of overseas listing Chinese stocks has grown rapidly, in the form of either Overseas Listed Foreign Shares or Red-chips (see section 2.4 “Background of Chinese cross-listing stocks” for a detailed explanation). Since more and more Chinese companies conduct cross-listing activities these days, Chinese firms are an ideal sample to investigate cross-listing effects.

Second, this study also contributes to the literature on the mechanism or channel through which the above performances are realized. On the one hand, under the assumption that markets are partially segmented, non-fundamental factors may drive returns of a cross-listed company, these non-fundamental factors include, but are not limited, to listing location and market liquidity (Chen, Tse, & Williams, 2009; Schmukler & Levine, 2006). On the other hand, under the assumption that markets are perfectly integrated, the fundamental factors drive cross-listing stock returns. This study mainly focuses on examining whether fundamental factors matter. Among prior China related studies, Chi and Padgett (2006) find higher ROA is able to cause higher long-run market returns for Chinese domestic IPOs. However, Luo et al. (2012) do not find the same effect for Chinese stocks listed in the U.S. market, whereas some other non-China related studies document that operating performance is positively related to current market returns but negatively related to future market returns (Inci, 2011; Lamont, 2000). Based on the above findings, this study complements the existing literature not only by examining both firms’ market and operating performances after cross-listing, but also by detecting the changes of firms’ other fundamental factors through three variables: leverage, size and sales growth.

Moreover, to our best knowledge, this study is among the few studies to associate the long-run post-listing market abnormal return with operating performance of Chinese cross-listed firms. There are several studies that examine the market performance and operating performance of Chinese firms after cross listing, but the majority of existing studies considers two performances separately. For example, Luo et al. (2012), Su and Chong (2007) and Ji (2005) mainly focus on market performance of Chinese cross-listing stocks, whereas Zhou, Zhang, and Cui (2011) and Sun and Tong (2000) mainly concentrate on operating performance of Chinese cross-listed companies. Chi and Padgett (2006) test the relationship between operating performance and market performance of Mainland China stock market IPOs. However, their study does not extend to Chinese overseas listings. To date, it seems that Zhang and King (2010) is the

only study that examine both post-listing market abnormal return and operating performance of Chinese companies in abroad markets. Hence, this study provides supplementary evidence to Chinese cross-listing studies.

Third, this study provides complementary evidence of global IPO to existing literature. In spite of the fact that the popularity of overseas listing increases, only few studies that conduct research on global IPO (Wu & Kwok, 2007). According to Wu and Kwok (2007), the first study to test the effect of global IPO was conducted by Wu and Kwok (2003), who find that when the U.S. stock market outperform other markets, U.S. firms are more likely to issue their shares globally. Chinese cross-listed companies, in fact, are good example of global IPO, since the majority of cross-listings lists abroad first then lists back to Chinese domestic market. In addition, as Chinese domestic market has flaws and is underdeveloped, conducting research on overseas listed Chinese companies seems more meaningful (Luo et al., 2012).

Fourth, this study applies different sub-sample periods to test market performance as well as operating performance. Based on Y. Wang (2013), The development of Chinese financial market experiences three broadly different stages (from 1990 to 1999, from 2000 to 2004, and since 2005 to present). This study reveals that the behaviours of cross-listing stocks are also different in each stage, suggesting market and operating performance of cross-listed firms are time-dependent. Therefore, the findings of this study contribute to Chinese cross-listing literature with consideration of the structure change of Chinese financial environment.

Last but not least, from a practical perspective, this study provides an overview of the Chinese market and offers a clue for foreign investors to invest in the Chinese market. Due to the culture and geography distance, many overseas investors have not recognized the channels of investing in Chinese stock market, especially in consideration that the Mainland China market is restricted to foreign investors and several Chinese companies delisted from the U.S. market. Even if knowing the means to get access to the Chinese stock market, many overseas investors are still unwilling to make an investment due to unfamiliarity. Thus, the difficulty of understanding of Chinese cross-listed companies may lead foreign investors ignore the opportunities to share the gain of one of the world's fastest economic growth. Through long-run market and operating performance of Chinese cross-listing stocks, this study offers a primary concept of Chinese stock market to investors.

There are two main findings in this study. First, this study shows that there is a decrease in firms' market performance in the initial three years after cross-listing based on the full-period sample, which is consistent with the findings of the majority of prior literature (Campbell & Shiller, 1988; Foerster & Karolyi, 2000; Luo et al., 2012; Wu & Kwok, 2007). However, the abnormal returns vary with sample periods, as different sub-period samples may offer different abnormal return patterns. The result indicates that the behaviour of abnormal returns could be time-dependent. Moreover, based on the samples of post-2000 cross-listed firms, the cumulative abnormal returns turn into positive returns sooner than that of pre-2000 listed firms and keep increasing to a relatively high level. The result seems to indicate that the relative valuation advantage for Chinese cross-listed firms does exist, but this valuation advantage may be subject to the structural changes of Chinese stock market.

Second, this study finds that the operating performance of cross-listed firms may deteriorate after listing based on the full-period sample. Moreover, cross-listed firms do not appear to have better performance than their domestic peers in the initial three years after listing. These findings are in line with Zhang and King (2010) who accordingly raise doubts as to whether there is a benefit for Chinese firms to list overseas. However, based on samples of post-2000 listing firms, the dynamic increment in operating performance of cross-listed firms appear superior to their domestic peers in the three years after cross-listing. This finding is in line with Wu and Kwok (2007), suggesting potential financial advantage of cross-listed firms over their purely domestic-listed peers seems prone to the structural changes of Chinese stock market.

The remaining sections are organized as follows. Section 2 provides some discussion of existing literature on the related findings in the context of theories and the effects of cross-listing, and introduces two hypotheses that will be tested subsequently. Section 3 presents the data and sample selection related to the cross-listed firms. Section 4 describes the methodology. Section 5 and Section 6 present empirical results for marketing performance and operating performance respectively. Section 7 discusses the results and concludes the paper.

Chapter 2 Literature review

2.1 Overview of Cross-listing theory and practice

This section briefly discusses five traditional theories and the general effect of cross-listing that documented in prior literature, to provide an overall picture of cross-listing.

2.1.1 The traditional theory of cross-listing

According to Geranio (2012), there are five of the most common conventional theories to justify the motivations of cross-listing, they are: Market segmentation hypothesis (Alexander et al., 1987; Errunza & Losq, 1985), Liquidity hypotheses (Foerster & Karolyi, 1998; Smith & Sofianos, 1997, June), Bonding hypothesis (Coffee, 1999, 2002; Stulz, 1999), Investor recognition hypothesis (Merton, 1987), and Business strategy hypothesis (Bancel & Mittoo, 2001; Lins et al., 2005; Pagano et al., 2002).

2.1.1.1 Market segmentation hypothesis

Earlier studies conducted by Errunza and Losq (1985) and Alexander et al. (1987) argue that higher barriers between stock markets would lead to a higher risk premium the investors required, and thus lead to a higher cost of capital. By cross-listing overseas, firms could reduce the barriers between markets and reduce the required returns by investors, this is because then the risk can be shared by investors from various countries, and therefore the cost of capital can be reduced. As evidence, Foerster and Karolyi (2000) show that there are positive and significant longer run market returns in the U.S. market for companies from low accounting standards, when deposit receipts (DRs) issued by these companies benchmark against global equity issuing. Karolyi (2006) further documents that when foreign investors are restricted to invest in a company's domestic market, cross-listing of companies in these investors' home market can provide diversification benefits to these investors and thus reduce the cost of capital.

2.1.1.2 Liquidity hypotheses

Smith and Sofianos (1997, June) and Foerster and Karolyi (1998) argue that cross-listing could promote trading volume and increase competitiveness of the listing market. Hence this would drive down the bid-ask spread in a company's home market, and consequently improve market performance of the firm. Stulz (1999) further documents that the higher the liquidity of a cross-listed firm, the faster the firm's stock to

incorporate new information and the firm's shareholder to execute trades, thus improve the market value of the firm. However, some recent studies have challenged the liquidity hypothesis. Venkataraman (2001) shows that different capital markets have different liquidity characteristics, suggesting liquidity cannot be the most important factor for a company to determine cross-listing. Roosenboom and van Dijk (2009) further document that the relation between market liquidity and cross-listing market abnormal returns does not seem to exist.

2.1.1.3 Bonding hypothesis

Coffee (1999, 2002) and Stulz (1999) claim that abnormal returns of the foreign listed firms can be explained by "legal bonding" and "reputational bonding". In the former, the cross-listed firms are bound to the higher requirements of security law and regulation in the destination market; in the latter, the cross-listed firms are bound to stricter scrutiny of underwriters, securities analysts and rating agencies in the developed markets. Both bonding mechanisms improve corporate governance and investor protection of cross-listed firms, and therefore increase the firms' value. Bonding hypothesis is supported by Doidge et al. (2004), who find that the U.S. cross-listing firms show a significant valuation premium, compared with non-cross-listing domestic peers. Le and Miller (2008) also find that cross-listed firms have more possibility to terminate contracts with poor-performing top managers. However, recent empirical studies have questioned the validity of the bonding theory. For instance, Sarkissian and Schill (2009) cannot find a direct relation between an improvement in investor protection and an increase in market value. In the case of the U.S. market, the passage of SOX³ does not considerably increase the benefits of adopting better corporate governance compared with the costs (Bris, Cantale, & Nishiotis, 2007). Marosi and Massoud (2008) further claim that small foreign cross-listed firms may suffer more from the adoption of SOX.

³ SOX: The Sarbanes-Oxley Act of 2002 (enacted July 30, 2002), is a United States federal law that sets new or enhanced standards for all U.S. public company boards, management and public accounting firms. It is named after sponsors U.S. Senator Paul Sarbanes and U.S. Representative Michael G. Oxley. The consequence and requirement of SOX include: individual certification of the accuracy of financial information from top management, the increment severity of penalties for fraudulent financial activity, increased the independence of the outside auditors, increased the oversight role of boards of directors (Kimmel, Weygandt, & Kieso, 2011).

2.1.1.4 Investor recognition hypothesis

This hypothesis is based on the modified CAPM (Capital Assets Pricing Model) that was developed by Merton (1987). This modified CAPM incorporates the assumption of information symmetry, hypothesizing that investors are more willing to invest in a firm that they are familiar with. The model demonstrates that the number of investors is negatively related to required return, and thus positively related to market value. This result is supported by Baker, Nofsinger, and Weaver (2002) who demonstrate that firms listing on the New York Stock Exchange (NYSE) attract more analysts coverage and media attention. As a result, cross-listed firms show better positive market return in the short-run and less negative market return in the long-run, compared with their relatively unknown domestic peers (Chemmanur & Fulghieri, 2006; Foerster & Karolyi, 1999; Lang, Lins, & Miller, 2004).

2.1.1.5 Business strategy hypothesis

Geranio (2012) summarises that there are three characteristics of cross-listing as a strategic decision of firms: firm specific cost-benefit analysis, operating related evaluation, and the long-run perspective. For firm specific cost-benefit analysis, Bancel and Mittoo (2001) point out whether or not a firm cross-list overseas depends on the specific strategy of the firm's development and the balance of benefit and cost/risks by the managers of the firm. For operating related evaluation, Pagano et al. (2002) argue that one of the important reasons for a company to list overseas is to increase its operating profits and thus enhance its global competitive strategy, rather than stock market gain. For the long-run perspective, Lins et al. (2005) claim that a firm which is conducting cross-listing mainly aims at its long run growth opportunity, which is particularly important for companies from an emerging market.

The above five hypotheses provide theoretical rationale for cross-listing. The following section shows the effect of cross-listing documented by empirical studies.

2.1.2 The general effect of cross-listing on firm performance

There is a large body of literature that has documented the general effect of cross-listing. Collectively, prior literature appears to reach a consensus that cross-listing in a developed market generates a short-term positive benefit. However, it is not clear whether this benefit could endure for a long-term.

There is an overall agreement that cross-listing can produce positive announcement day returns in the short-run. For example, Torabzadeh, Berlin, and Zivney Maxon (1992) investigates 92 U.S. stocks listed in London or Tokyo stock market, finding a post-listing abnormal return of 3.93%. Foerster and Karolyi (1993) research on 56 Canadian stocks listed in the U.S, finding a 2% abnormal return on listing day. Foerster and Karolyi (1999) also find a listing week abnormal return of 1% in light of a sample of 183 ADRs and ordinary listings in the U.S. Several other studies (Huang & Song, 2005; Ko, Lee, & Yun, 1997; Shen, Liao, & Liao, 2010) also find a positive abnormal listing return of foreign stocks that list on the U.S. stock exchanges. The only study that can be found to document a negative abnormal return was conducted by Chong and Su (2006), who find a -0.29% return during the listing day. However, their study mainly investigates 123 U.S. firms listing on 23 overseas exchanges, rather than foreign firms listing in the U.S. market. In the most recent study, Roosenboom and van Dijk (2009) find an announcement day return of 0.5% on the Tokyo Stock Exchange, 0.6% in continental Europe markets, 1.1% on the London Stock Exchange and 1.3% on the U.S. exchanges. Also, Ng et al. (2013) find a return of 1.91% in a study of Australian firms that cross-listed over the sample period from September 1989 to August 2005.

The results on the long-run effect, however, are mixed. Some studies conclude that cross-listing in a developed market actually produces higher risks and costs, such as agency conflicts, investment bank service charges, transparency concerns, etc. These risks and costs outweigh the cross-listing benefits (Karolyi, 2006). As evidence, Foerster and Karolyi (2000) find that there is 8–15% underperformance of firms cross-listed on the U.S. stock market relative to the local markets in the three years after cross-listing. Moreover, Sarkissian and Schill (2009) find there are no permanent valuation gains for firms from various countries after 10-year cross listing. In addition, Ng et al. (2013) find the benefits for 80 Australia companies that cross-listed on international stock markets are only temporary.

In contrast to the findings of the above research, several studies find a positive long-run cross-listing effect. For example, C. X. Cai, McGuinness, and Zhang (2011) document IPOs and SEOs of 168 Chinese government share issuances generate significantly 50% positive returns in three years. Lang, Lins, and Miller (2003) find that cross-listing to a developed market lead to an increase in analyst coverage, which reduces the cost of capital and thus enhances firm value for at least one year. Moreover, based on a sample of firms from 37 countries cross-listed on the US market, Khurana et al. (2008)

conclude that cross-listed firms experience a sustainable financial growth after their cross-listing in the long-term. Furthermore, O'Connor (2009) finds that level 2/3 ADRs in the U.S. market enjoy the positive abnormal return after 5 years of listing. Also, King and Segal (2009) show that when cross-listed firms attract and maintain investor recognition over time, there is a permanent valuation improvement. In addition, Luo et al. (2012) find that Chinese ADRs in the U.S. market outperform single-listing stocks in the long-run.

As for operating performance, existing literature also shows a disagreement related to the long-run profitability of firms' after cross listing. For example, Huang and Song (2005) find that ROS (return on sales), ROA (return on assets) and ROE (return on equity) of typical H-firms (companies that are incorporated in Mainland China and listed in Hong Kong, see section 2.4 "Background of Chinese cross-listing stocks" for a detailed explanation) decrease significantly in the period from three years before to three years after cross-listing. Zhang and King (2010) also find that ROA and ROCAA (return on cash-adjusted assets) decrease after listing. In contrast, Zhou et al. (2011) document that cross-listing promotes corporate governance, which further promotes operating performance. Wu and Kwok (2007) also find cross-listed firms appear to have a better operating performance compared to domestic-listed firms in the three years subsequent to the listing. This study uses three variables – ROA, ROE and CFE (cash flow to equity) – to examine operating financial performance. In particular, in order to identify the cross-listing effect by controlling the IPO effect, this study compares the post-listing operating performance of cross-listed firms with purely domestic listed firms.

The above evidence about long-run effect of cross-listing is a general summary that is drawn from firms from various markets. However, Bancel and Kalimipalli (2009) point out that companies cross-listed on a developed market are subject to different motivation and valuation effects in terms of countries and geographical regions, that is, firms from developed economies are not comparable to firms from emerging economies. Therefore, in order to evaluate the long-run effect of cross-listing on the operating performance, it is necessary to weigh the balance between potential gains and costs of cross-listing for companies from emerging markets.

2.2 Potential gains of cross-listing for emerging market companies

There are various aspects a company can gain from after cross-listing. These resources include: the depth and liquidity of developed stock markets, the improvement of the reputation and corporate governance, the preparation for foreign sale expansion, more restricted shareholder protection, and the reduction in cost of capital (Karolyi, 2006; Pagano et al., 2002; Sarkissian & Schill, 2004). These aspects have even more particular significances for the long-term growth of firms from an emerging market.

First of all, the direct benefit for a company listing overseas is that cross-listing could drive down the cost of capital (Karolyi, 2006; Pagano et al., 2002). Based on the study of Karolyi (2006), the decrease in cost of capital for non-U.S companies listed in the U.S. stock market ranged from around 33 basis points (non-U.K. European companies) to 207 basis points (Asian Companies). This reduction in cost of capital after cross-listing could be interpreted as an increase in local markets risk premium relative to global markets (Arauner, 1996). This result has two implications for firms from emerging markets: (1). Firm value could increase after cross-listing, provided generally decreased the cost of capital after cross-listings (Arauner, 1996; Coffee, 2002; Hail & Leuz, 2009). (2). A firm could more easily access capital at lower cost when there are profitable projects, which will further facilitate firm development (Khurana et al., 2008). Recently, several studies have documented the reduced cost of capital of cross-listed firms from the perspective of mergers and acquisitions (Halling, Pagano, Randl, & Zechner, 2008; Lel & Miller, 2008; Stulz, 1999). These studies argue that one of the advantages of cross-listing is obtaining local currency to acquire companies in cross-listing destination market. More specifically, cross-listing also enables foreign companies to acquire local firms by paying in the form of equity (Alexander et al., 1987).

Furthermore, cross-listing could consolidate the “soft-power” of the companies from emerging markets, such as improving the reputation and corporation governance (Pagano et al., 2002). In the big developed markets, analysts actively scrutinize the situations of listed companies and force these companies to be more responsible for their behaviours, which include not only business issues, but also social responsibility. Hence, this scrutiny could promote a company’s reputation, which is a foundation for a firm’s long-term development (Chuang & Lee, 2011). Moreover, in a developed market, the disclosure requirement for listed companies is more strict (Adhikari & Tondkar,

1992), especially from the perspective of corporate governance, as a result, firms would enjoy positive abnormal returns (Ferrell, 2007). For example, the UK Corporate Governance Code has been instrumental in spreading the best boardroom practice throughout the listed firms, since it was first issued as the Cadbury Report in 1992. Experienced long-term development, the UK Corporate Governance Code is helpful for improving corporate governance for listed companies, in particular for firms from an emerging market, which normally lack of such code (Hemraj, 2002; Zhou et al., 2011).

Moreover, liquidity is also critical for the companies from emerging markets (Korczak & Bohl, 2005). It is documented in several studies that high liquidity can drive the bid-ask spread narrow (Foerster & Karolyi, 1999; Kadlec & McConnell, 1994; Noronha, Sarin, & Saudagaran, 1996; Pulatkonak & Sofianos, 1999, March), this especially benefits companies from an emerging market. Because in the emerging markets, the securities are generally thinly traded, and the bid-ask spread is normally wider, so the stock price easily deviates from its true intrinsic value and thus hurts shareholders (Vaihekoski, 2004). Also, high trading volume could facilitate the transfer of ownerships for shareholders, especially for those block-holders. Due to low liquidity natural in the emerging market, it is difficult to transfer their ownership effectively; by listing the firms in a big market with sufficient liquidity, however, they can sell their ownership more easily, thus reducing the systematic risk that they face (Pratt, 2010).

In addition, foreign sale expansion of firms from an emerging market would be promoted by listing overseas (Pagano et al., 2002). Generally speaking, consumers and investors are not familiar with firms and their products from an emerging market. By cross-listing, these companies would be better known by destination market consumers and investors. Also, cross-listing could either facilitate an increase in trading volume (Foerster & Karolyi, 1999) or decrease in trading cost (Mittoo, 2003). In fact, it could be difficult to be accepted by local people if a company abruptly enters into a market, especially when companies from different cultural backgrounds enter into developed markets. Under the above consideration, cross-listing could not only provide an opportunity for both local customer to know the company, but also provide an opportunity for a company to understand local customs and cultures (Sarkissian & Schill, 2009). Thus, this mutually communication opportunity could dissipate misunderstanding each other and facilitate a better development for the company.

Last but not least, the market value of companies from emerging countries listed on more developed markets may also be improved from increased visibility. Coffee (1999) claims that the valuation of a stock is higher if it was recognized by more investors, and Coffee (2002) further argues that this kind of reorganization could be obtained by attracting increased number of analysts and media attention through cross-listing. This is particularly true when companies from emerging markets cross-list in developed markets. For example, Coffee (2002) and Lang et al. (2003) study the coverage and accuracy of analysts forecast the performance of cross-listed companies in the U.K. and U.S. respectively. They find that the intensity of analyst and media coverage would enhance the firm's visibility and investor recognition. Doidge (2004) further claims that these enhancements will be finally transferred into the wealth benefits.

2.3 Potential risks/costs of cross-listing for emerging market companies

On the other hand, even taking into account the importance of the role of cross-listing for a company's development, there are still numerous firms from emerging markets that are reluctant to list overseas. Especially the number of cross-listing appears to have decreased recently and many firms have delisted from the U.S. market. Apart from their own financial and regulation constraints, firms in emerging markets could also be concerned with the risks when they list on the overseas markets (O'Connor, 2009). These risks could be attributed to both direct and indirect cost.

Firstly, the direct costs include legislation and administration cost, in particular listing charges and fees for investment banking service (Ribstein, 2005). Some studies argue that the competition between stock exchanges may lead to a "race to the bottom" in listing cost (Foucault & Parlour, 2004; Ramos & von Thadden, 2008). However, Chemmanur and Fulghieri (2006) point out that instead of reducing the cost, exchanges are more likely to increase their listing standards as a means of attracting foreign companies; moreover, the increased number of mergers between stock exchanges indicate a trend of cooperation between stock exchanges. The cooperation between stock exchanges would further prevent a decrease in listing cost (Chemmanur & Fulghieri, 2006). As a result, the direct listing cost for firms from an emerging market would remain high in proportions to their budget.

Secondly, compared with direct cost, indirect cost could be more significant for cross-listing firms from an emerging market (Pagano et al., 2002). For example, the disclosure cost is substantial and prevailing, this arises from the fact that different countries have

different discourse standards. According to the survey by Fanto and Karmel (1997), the cost of complying with U.S. GAAP accounting standards and the risk of lawsuits are actually the main costs regarding potential cross-listings in the United States. It is clear that the higher the possibility for a company that is difficult to meet overseas market requirements, the more likely it is to underperform in the long-run.

Thirdly, the unfamiliarity cost could also hinder a company from emerging market listing on a big developed market. Sarkissian and Schill (2004) point out that four factors could be proxies to reflect the proximity between countries, they are geographic, economic, cultural and industrial proximity. The more proximate the two markets, the more companies cross-list with each other. Obviously, unfamiliarity can create the communication barriers and may further create the agent problem between management and shareholders (Karolyi, 2006). Consequently, as Stulz (1990) suggests, agency costs of managerial discretion have a negative impact on the growth opportunities of a firm. All in all, since cross-listing incurs both direct and indirect costs, many companies from emerging markets could not be able to carry these huge costs.

Taken as a whole, the existing literature documents the long-run effect of cross-listing in general. From a company's point of view, cross-listing carries both risk and opportunity, which are greater for companies from an emerging market. This study balances the positive and negative effects of cross-listing documented in existing literature, which offers valuable insight into the fundamentals of cross listing. However, most of the existing studies have been conducted in large and developed markets, and the long run effect of cross-listing in these markets seems to be still inconclusive. By comparison, there appears to be little literature documenting the long-run impact of cross-listing on the emerging market firms. Therefore, this study is a complement to the existing literature by focusing on Chinese markets.

2.4 Background and theory relative to Chinese cross-listing stocks

2.4.1 Background of Chinese cross-listing stocks

As more and more Chinese firms list overseas, there are increasing numbers of researchers have studied these foreign listing activities. Among the existing literature related to Chinese cross-listings, Sun, Tong, and Zhang (2013) analysed the effect of cross-listed Chinese companies on the Hong Kong stock market. Sun, Tong, and Wu (2013) argued that the Chinese state-owned enterprises (SOEs) cross-listed on the Hong

Kong stock market is the result of government policy, rather than the voluntary choice of these SOEs. Shen et al. (2010) and Ho and Zhang (2012) found that the returns of cross-listing Chinese stocks are more affected by the destination market. Luo et al. (2012) examined the operating performance and market performance for cross-listing Chinese stocks in the U.S. market. Zhou et al. (2011) investigated the effect of Chinese-Hong Kong cross-listings on corporate governance and corporate performance. Su and Chong (2007) investigated the role that Chinese-Hong Kong cross-listings play on the integration of the Chinese and Hong Kong stock market. Zhang and King (2010) revealed that Hong Kong remains the first choice for Chinese cross-listings owing to language barriers, geological preference and the costs of offering. Su and Chong (2007) disclosed price discovery mechanism by studying Chinese cross-listing stocks on the New York Stock Exchange and the Hong Kong Stock Exchange. Ji (2005) examined market performance by investigating A-shares and B-shares cross-listing of Chinese stocks. Sun and Tong (2000) compared the operating performance of Chinese firms before and after cross-listing in the Hong Kong stock market.

The primary reason that the increasing number of Chinese firms cross-list in developed markets is the rapid growth of the Chinese economy. Claessens et al. (2006) point out that the higher income and growth opportunities of an economy, the more internationalization of the firms such as capital raising, foreign trading and cross-listing in international exchanges. Aside from economic growth, there are several specific reasons that could contribute to the increase trend of Chinese companies cross-listing overseas. First, Zhang and King (2010) suggest that the average length of time for Chinese firms to list on a domestic exchange is 5 years. It does not seem possible that rapid growth companies can wait for such a long period of time to obtain the required capital (Luo et al., 2012). Second, the domestic exchanges are still inefficient. Zhang and King (2010) point out that while China's GDP has grown by 8% annually since the 1990s, the stock markets suffered from poor performances during the same period. This phenomenon indicates the stock market performance does not reflect the performance of the firms. Third, Luo et al. (2012) suggest that the domestic Chinese markets of new issuances were frequently frozen by government in recent years. Gao (2002, September) also shows that the Chinese government sets strict regulations for initial public offerings. Hence, Chinese firms have to seek overseas-listings to obtain capital that is needed for supporting their growth. Fourth, several articles suggest that the Chinese government is eager to modernize the corporate structure for SOEs during the transition

process of the Chinese market from central planning to market oriented economy, and listing overseas is regarded as a policy tool to improve corporate governance of state-owned enterprises (Sun, Tong, & Wu, 2013). Fifth, Luo and Jackson (2012) suggest that Chinese firms hardly even get bank loans, since the privatization of government-owned banks takes away the cheap and easy access to bank loans, which leads to limiting the sources of capital for Chinese firms. Based on this condition, more and more Chinese firms are willing to list overseas in order to meet their urgent capital needs.

Studying of the Chinese cross-listing market is an interesting issue. This is not only because of the exceptional motivations for Chinese firms listing overseas, but also due to the special structure of the Chinese stock market. Generally speaking, there are four categories of public shares related to Chinese listed companies: A-shares, B-shares, Overseas Listed Foreign Shares and Red-chips. The former two categories (A-shares and B-shares) refer to those stocks that are listed in Mainland China (Shanghai Stock Exchange and Shenzhen Stock Exchange). The difference is that A-shares are predominantly in Chinese Yuan (RMB), and only open to domestic investors and Qualified Foreign Institutional Investors (QFII⁴). A-shares are the mainstream of the Chinese stock market, but foreign individual investors are not allowed to invest in A-shares. B-shares are predominantly in U.S. dollars and HK dollars, and were not open to Chinese domestic investors until 2001. As investing in B-shares is rather inconvenient for foreign investors, so far B-shares are still a less attractive and illiquid market.

The latter two categories (Overseas Listed Foreign Shares and Red-chips) refer to those stocks that are listed overseas. The difference is that Overseas Listed Foreign Shares refer to “issuance of foreign currency denominated shares and listing on an overseas market by joint stock limited companies incorporated in Chinese mainland” (China Securities Regulatory Commission, 2012) (p.94). Overseas Listed Foreign Shares are mainly listed in Hong Kong (H-shares, and the firms that issue H-shares are called H-firms), but there are a few also listed in New York (N-shares), London and Singapore

⁴ The Qualified Foreign Institutional Investor (QFII) is a program that was launched in 2002 in the People's Republic of China to allow licensed foreign investors to buy and sell Yuan-denominated "A" shares in China's mainland stock exchanges (in Shanghai and Shenzhen). Chinese mainland stock exchanges were previously closed off to foreign investors due to China's exercise of tight capital controls which restrict the movement of assets in-and-out of the country (Tam, Li, Zhang, & Yu, 2010).

(S-shares)⁵. Overseas Listed Foreign Shares are administered by both Chinese regulation and listing destination regulation, and only open to foreign investors and Qualified Domestic Institutional Investors (QDII⁶). Red-chips are “overseas listing of joint stock companies controlled by Chinese shareholders which are incorporated outside Chinese mainland” (China Securities Regulatory Commission, 2012) (p.94). Thus, Red-chip companies normally avoid the supervision of Mainland China regulation and the lack of official statistics. The same with Overseas Listed Foreign Shares, Red-chips are only legally open to non-Chinese individual investors and Qualified Domestic Institutional Investors (QDII).

The special structure of the Chinese stock market results in a different definition of cross-listing for Chinese firms. For example, Ji (2005) studied stocks dual listing of both A-shares and B-shares; Su and Chong (2007) concentrated on eight overseas Listed foreign shares cross-listed in the Hong Kong and New York stock market. Zhang and King (2010) employed a sample that consists of 33 ADRs and 218 foreign IPOs. Zhou et al. (2011) selected both domestically listed B-shares and overseas listed H-shares as a cross-listing sample to compare with A-shares. Luo et al. (2012) mainly studied Chinese cross-listing ADRs in the U.S. market. Given studies mentioned above, most of the existing literature still applies A+H shares – stocks list in both the Mainland China domestic markets and Hong Kong stock market – as cross-listing samples (C. X. Cai et al., 2011; Chong & Su, 2006; Shen et al., 2010; Su & Chong, 2007; Sun, Tong, & Wu, 2013). Following the majority of studies, this study also mainly focuses on stocks that cross-list as A-shares and H-shares (A+H shares), the reasons are as the follows. First, A+H shares have a reliable database on both the China Securities Regulatory Commission (CSRC) and the Hong Kong Stock Exchange (SEHK). Comparatively, it seems hard to identify reliable data for Red-chip listings, because these companies have

⁵ According China Securities Regulatory Commission (2012), as of the end of 2012, 179 domestic companies were listed overseas, raising a total of USD 190.66 billion. Among them, 148 were listed on the HKEX's Main board (including 10 companies simultaneously listed in Hong Kong and New York, 4 in Hong Kong and London, and 1 in Hong Kong, New York and London); 28 were on the HKSX's Growth Enterprise Market (GEM). Of the 179 H-share companies, 81 also issued A-shares, one issued B share and one issued both A and B shares (p.54).

⁶ Qualified Domestic Institutional Investor (QDII) is a scheme relating to the capital market set up to allow financial institutions to invest in offshore markets such as securities and bonds. Similar to QFII (Qualified Foreign Institutional Investor), it is a transitional arrangement which provides limited opportunities for domestic investors to get to access foreign markets at a stage where a country/territory's currency is not traded or floated completely freely and where capital is not able to move completely freely in and out of the country (Keith & Derek, 2008).

various disclosure standards, incorporating locations and listing locations. Second, both the Chinese stock market and Hong Kong stock market are highly liquid. Comparatively, the B-shares market is fairly illiquid and it is in fact a domestic market. Third, A+H shares provide enough samples to carry out a study. At the end of 2012, there were 82 A+H cross-listed companies. Comparatively, there are only ten Chinese Companies cross-listed in Hong Kong and the U.S., and four Chinese companies cross-listed in Hong Kong and London. Fourth, since securities regulations in different listing locations are fairly distinct, these uncertain factors due to location may affect stock performance. Concentrating on a certain listing destination is helpful in mitigating these noise factors in the analysis. Last but not least, the Hong Kong market itself is an ideal location to study Chinese cross-listing activities. Even though Hong Kong is officially a part of China, the Hong Kong stock market remains isolated from the Chinese mainland market (Zhang & King, 2010), as well as less correlated with the Chinese mainland market (Ho & Zhang, 2012). Meanwhile, Hong Kong is a listing centre for Chinese SOEs (Sun, Tong, & Wu, 2013), and H-shares are also an excellent channel for foreign investors to invest in Chinese firms (Sun & Tong, 2000).

2.4.2 Traditional cross-listing theories related to Chinese stocks

This section mainly focuses on discussing which traditional cross-listing theories the Chinese related empirical results support. First, it seems there is a consensus that the market segmentation hypothesis hardly applies to Chinese cross-listed firms. Ji (2005) claims that even barriers indeed exist between Chinese and overseas markets, Chinese firms would raise 40% less capital when they issue shares overseas than when they issue shares to purely domestic investors, this indicates the cost of capital actually increases after cross-listing. Tay and Oladi (2011) further argue that the reason of this is that in order to attract foreign buyers, the shares of a Chinese company sold to foreign investors are intentionally priced with a significant discount – foreigners have generally paid only about one-quarter of the price that paid by domestic residents for identical shares. Furthermore, Sun, Tong, and Wu (2013) also document that the cost of capital is in practice higher for Chinese companies that cross-listed on the Hong Kong stock market.

Second, the bonding hypothesis, however, is supported by a number of Chinese related cross-listing studies. Ji (2005) finds that by adhering to more sound accounting standard, Chinese cross-listed firms would have a better corporate governance structure,

which can bring a market premium to these firms. Shen et al. (2010) and also document that Chinese cross-listed firms enjoy bonding benefits, as Hong Kong market contains a greater number of reputational intermediaries, which provide better investor protection through strict scrutiny Hong Kong listing companies. However, in the most recent studies, Luo et al. (2012) and Sun, Tong, and Wu (2013) argue that the traditional bonding hypothesis cannot offer a complete explanation of cross-listing motivation of Chinese firms. They point out that the traditional bonding hypothesis postulates that firms are free to cross list a market with higher accounting and disclosure standard to facilitate corporate governance structure improvement, whereas most of H-share companies are forced to cross list overseas by the Chinese government, to confirm modern corporate governance mechanism. Therefore, the authors believe that although corporate governance can be improved after cross-listing, Chinese firms have different motivations of cross-listing from what the traditional bonding hypothesis proposed.

Third, there seems to be few studies directly test whether the liquidity hypothesis can explain the motivation of cross-listing of Chinese firms. Existing studies mainly focus on testing the change in liquidity of Chinese firms after cross-listing and find an increase in liquidity. Nevertheless, the liquidity increase fails to transfer to market value improvement. First and foremost, it is worth noting that the Chinese stock market per se has a relatively high liquidity. Based on the statistics of the World Federation of Exchanges (2013), the year to date trading total values of the Shanghai Stock exchange and the Shenzhen stock exchange were ranked fourth and fifth in the world on 31 December 2012, with \$2599 million and \$2369 million U.S. dollar, respectively, just behind the NYSE, NASDAQ and the Tokyo stock exchange. In comparison to this, the Hong Kong Stock Exchange only had \$1106 million U.S. dollar total year to date trading value trading volume on 31 December 2012 (See Appendix B). Secondly, the above fact indicates that from the perspective of market level, it cannot be denied that Chinese domestic market has a characteristic of high liquidity. However, from the perspective of the firm level, Wei and Zeng (2011) claim that the Hong Kong stock market still facilitates increase in liquidity for Chinese cross-listed firms over time. Nevertheless, they find that relation between liquidity and market return is negative in the short term, and unstable in the long term. Thirdly, Dey and Wang (2012) also document that liquidity does impact on return variation of H-shares, however the patterns of this impaction change over time.

Fourth, empirical results seem to generally support the investor recognition hypothesis to explain the motivation of cross-listing of Chinese companies. For example, Yang and Lau (2006) find that Hong Kong listed Chinese firms have more analyst coverage than U.S. listed Chinese firms, as a consequence, Hong Kong listed firms have stronger ability to access external capital from foreign investors. Moreover, Zhou et al. (2011) claim that the number of institutional investors is an important determinant of behaviours of the board of directors, and thus positively related to ROA of Chinese cross-listed firms. Furthermore, Ho and Zhang (2012) document that the Hong Kong stock exchange, with higher analyst coverage and a better information environment, offers financial benefits for cross-listed Chinese firms.

Fifth, it seems that the business strategy hypothesis also obtains general supports by empirical studies related to Chinese cross-listings. For instance, Cheng and Kung (2012) claim that cross-listing could facilitate reorganization of business processes, managerial frameworks, accounting systems, incentives and business ideas, and thus establish a platform for further growth for Chinese companies. Moreover, Zhou et al. (2011) argue that Chinese firms should not only focus on physical overseas expansion strategy, such as foreign direct investment (FDI) and establishing forging subsidiaries, but also should take cross-listing as a foreign expansion strategy. Their study finds that cross-listing is able to facilitate improvement in corporate governance structure and ability to obtain international capital. These improvements are eventually embodied in operating performance of Chinese cross-listed firms. In addition, Ding, Nowak, and Zhang (2010) compare Chinese domestic listed- and Hong Kong listed-Chinese entrepreneurial firms, finding that cross-listing could facilitate Chinese firm growth in the long-run. They further argue that the main motivation of Chinese firms listing overseas is to pursue long-run growth opportunity. Therefore, an evaluation of the long run market and operating performances of cross-listed firms is necessary.

2.5 Effect of cross-listing on Chinese firms

A few studies have been conducted to test the long-run market and financial performance of the Chinese stock market. However, the results are inconclusive as well.

For market performance, Ji (2005) finds that cross-listed Chinese companies experienced a higher valuation than non-cross-listed domestic peers by measuring Tobin's Q based on A-share and B-share cross-listed stocks from 1998 to 2001. In line with Ji (2005), Luo et al. (2012) show that there is a long-run outperformance of the

cross-listing Chinese ADRs in the U.S. market compared with the single-listing Chinese IPOs. On the other hand, Luo et al. (2012) document that Chinese cross-listing ADRs underperform benchmarks in the three-year post-IPO periods. In line with Luo et al. (2012), Zhang and King (2010) find that cross-listed firms show an underperformance relative to the market over three days to three years after listing, which suggests that there are negative returns over the short and long run after listing.

For operating performance, Zhou et al. (2011) argue that cross-listing promotes corporate governance, which further promotes operating performance of firms. Furthermore, by investigating 80 Chinese cross-listed H-shares from 1993 to 2000, Huang and Song (2005) document that both real sales and sale per employee increase in the three years after listing. This result is in line with Zhang and King (2010) who find a positive sales growth, though it is statistically insignificant. On the other hand, several studies conclude that Chinese issuers generally experience lower profitability, a drop in the tangible assets ratio, and deteriorating asset turnover in the three years after listing (Huang & Song, 2005; Luo & Jackson, 2012; Zhang & King, 2010).

With the consideration of the recent phenomenon “flow back” (the net flow of cross-listing shares list back to their home market), the long-run gains and losses of cross-listed Chinese firms are worthwhile to further investigate. In particular, on the condition that the impact of cross-listings on firms’ long-run performance is controversial in the existing literature, the issue is still needed to unravel. This study extends the prior literature by looking at the post-listing performance of Chinese cross-listed firms with the latest market and financial data that have not yet been attempted in the literature. Therefore, the updating of this information forms part of the focus of this study.

Hypotheses:

Based on the above theories, the following hypotheses are tested in this study:

H1: The long-run market value of Chinese firms could increase after cross-listing.

H2: The long-run operating performance of Chinese firms could improve after cross-listing.

Chapter 3 Data

3.1 Data selection

The primary data on firms' market price and financial fundamentals are obtained from DataStream. Bloomberg and Reuters are used to identify market information. Osiris and Mergent Online are used to identify and complement firms' financial information.

Existing studies have different definitions for Chinese cross-listed firms as discussed in the Literature Review section. In this study, to be defined as cross-listed firms, the Chinese firms must satisfy the four conditions. First, firms must be incorporated in Mainland China. Second, firms must list overseas. Third, firms must also list on the Chinese stock market. Finally, if firms have more than one overseas listing destination, only the location of the firms' first listing is considered. Following the aforementioned rules, all the firms in the sample are cross-listed on the Hong Kong Stock Exchange (HKSE). Therefore, statistics data about listing activities can be confirmed from both the China Securities Regulatory Commission (CSRC) and Hong Kong stock exchanges (HKSE) websites directly. Based on the statistics of the CSRC and HKSE, there are 82 cross-listing A+H shares as at the end of 2012 (See Appendix C).

The sample in this study includes Chinese cross-listed companies from 1993 to 2011. The reason for starting from 1993 is straightforward – the first Chinese cross-listing company, TsingTao Brewery, was listed on the Hong Kong stock exchange in July 1993. Companies listed in 2012 are excluded because at least one year is needed to observe the firm's performance after listing to represent the long-run⁷. After this filter, the sample size in this study consists of 78 companies in total.

Table 1 offers statistics of the A+H cross-listed Chinese firms across the years and the listing order. The first two columns represent the number of stocks newly cross-listed on the Hong Kong and Mainland China stock exchange in each given year. The last two columns indicate in which market the stocks firstly listed in each given year.

⁷ The four companies listed in 2012 are: Haitong International Securities Group, listed on 27/04/2012; Shanghai Fosun Pharmaceutical Group, listed on 30/10/2012; Zhengzhou Coal Industry & Electric Power Co, listed on 5/12/2012; China International Marine Containers Group, listed on 19/12/2012 (China Securities Regulatory Commission, 2012) .

Table 1: Number of Chinese cross-listing shares over years (1993 - 2012)

year	H-shares		A-shares		H-shares First		A-shares First	
1993	6	(6)	3	(3)	6	(6)	0	(0)
1994	5	(11)	5	(8)	5	(11)	0	(0)
1995	1	(12)	5	(13)	1	(12)	0	(0)
1996	6	(18)	2	(15)	6	(18)	0	(0)
1997	13	(31)	4	(19)	13	(31)	0	(0)
1998	2	(33)	2	(21)	2	(33)	0	(0)
1999	1	(34)	1	(22)	1	(34)	0	(0)
2000	2	(36)	3	(25)	2	(36)	0	(0)
2001	1	(37)	5	(30)	1	(37)	0	(0)
2002	2	(39)	4	(34)	2	(39)	0	(0)
2003	4	(43)	3	(37)	4	(43)	0	(0)
2004	6	(49)	0	(37)	5	(48)	1	(1)
2005	5	(54)	1	(38)	5	(53)	0	(1)
2006	7	(61)	6	(44)	6	(59)	1	(2)
2007	3	(64)	17	(61)	2	(61)	1	(3)
2008	3	(67)	5	(66)	0	(61)	3	(6)
2009	4	(71)	2	(68)	1	(62)	3	(9)
2010	4	(75)	4	(72)	1	(63)	3	(12)
2011	3	(78)	4	(76)	1	(64)	2	(14)
2012	4	(82)	6	(82)	0	(64)	4	(18)
Total	82		82		64		18	

This table represents figures that show the number of new listing stocks at the end of each year from 1993 to 2012. The numbers in parentheses represent total listing stocks at the end of the year. “H-shares First” means the number of firms conduct IPO on Hong Kong before they list to Chinese mainland market in the given year. “A-shares First” indicates the number of firms conduct IPO on Chinese mainland market before they list to Hong Kong stock market in the given year.

There are several points that are worth noting. First, the largest number of firms listing in Hong Kong in 1997, the year China resumed sovereignty over Hong Kong from British control. Second, the largest number of firms listed back to China in 2007, the year of China’s stock market bubble and the year the benchmark Shanghai Composite Index hit its historical peak at 6124.04. Third, in each year before 2004, all the companies had issued H-shares before issuing A-shares. Fourth, in each year before 2007, there were more companies firstly issued H-shares than companies that firstly issued A-shares. Fifth, since 2008 there have been increasing numbers of initial A-shares listed companies that tended to subsequently list on the Hong Kong stock market.

In general, the prior literature mainly focuses on the impact of cross-listing on the firms’ performance within no more than five years after cross-listing to stand for the long-run. The majority of studies applies three years as an event period to test the long-run performance of a firm after cross-listing (Alexander, Eun, & Janakiramanan, 1988; Huang & Song, 2005; Luo et al., 2012; Mittoo, 2003; Wu & Kwok, 2007; Zhang & King, 2010). Also, a few studies examine five-year period, such as O’Connor (2009) and You, Parhizgari, and Srivastava (2012). This study follows the majority of existing studies, applying three years as an event period to identify the long-run performance.

3.2 Variable description

This study presumed that a firm's post-cross-listing market performance has a relation with its operating performance, as operating measures capture firms' current and past performance and market measures reflect the firm's future potential (Keats & Hitt, 1988). However, it is also possible that the market performance of a cross-listed firm is associated with the firm's other fundamental characteristics. Thus, this study includes leverage, firm size and sales growth as control variables. Put all together, the following variables are included in the analysis of this study.

For measuring market performance, this study employed abnormal returns. Following the approach that used by Foerster and Karolyi (2000), this study calculated an average abnormal return across firms based on the Holding-Period method (AR). As the AR is counted monthly and annually, it is viable to reflect market performance pattern. As an additional test, this study also employs the Calendar-Time approach to calculate abnormal returns in terms of the CAPM (MAR), the Fama-French-Three-Factor model (FFAR) and the International CAPM (IMAR).

The selection of benchmark is an important issue when calculating abnormal returns. Lulu and Reed (2013) claim that the different benchmark can be influenced by different information environment and market segmentation. For global IPOs, Wu and Kwok (2007) further find that overseas issuances not only underperform listing local market index, but also underperform their domestic peers in the three years after listing. Firstly, this study benchmarks returns of cross-listing firms against Chinese domestic market index to compare with performance of purely domestically listing stocks. For Chinese cross-listing stocks, this is especially important, since domestic investors are not allowed to invest overseas, even though all cross-listed firms are registered in Mainland China. Therefore, benchmarking domestic stock index can capture the advantage or disadvantage of cross-listing relative to domestic-listing stocks. Secondly, Hong Kong stock market index is also used as a benchmark. According to Foerster and Karolyi (2000), a benchmark that is applied to measure stock performance can reflect local investors' attitude towards cross-listing stocks. Therefore, benchmarking Hong Kong stock index can reflect the perspective of foreign investors who can directly invest in Chinese overseas listing firms.

For operating performance variables, this study employs a return on assets (ROA), return on equity (ROE) and cash flow to equity (CFE). ROA equals net income over

total assets, ROA could provide a concept of how effectively the company is converting both its debt and equity to net income (Huang & Song, 2005). ROE equals net income over shareholder's equity. ROE reflects a firm's efficiency at generating profits for shareholders' investment (Huang & Song, 2005). CFE equals operating cash flow over shareholder's equity. CFE measures cash generated by the company for shareholder's investment, offering a better measurement of economic wealth, as it indicates the capability of a company to control cash for operating process, and thus increase the possibility of paying out in dividends, which represent a sooner payback on capital investment (Luo et al., 2012).

For control variables, Leverage (debt to assets ratio), Size (log assets) and Growth (sales growth) are selected based on existing literature to stand for the firms' fundamental characteristics. First, several studies document that leverage is also a potential factor that may influence stock returns (J. Cai & Zhang, 2011; Ozdagli, 2012). Leverage could also influence the behaviour of cross-listing stocks. According to Jensen (1986) and Sun, Tong, and Wu (2013), leverage is related to capital structure which would be changed after the firms cross-listed on overseas markets, since the opportunity to raise capital would increase, and the long-run performance could be enhanced accordingly (Luo et al., 2012). Following Huang and Song (2005), this study employs a total debt to assets ratio as a measure of leverage.

Second, the firm's size is also an important fundamental factor that may influence firms' performances as well as in determining firms' market returns (Fama & French, 1992, 1993). As for cross-listing, size plays an even more significant role. On one hand, larger firms are more likely to be monitored by analysts and media and be profitable (Bhushan, 1989; Lang & Lundholm, 1996). On the other hand, larger firms are likely to spend more costs associated with listing abroad (Zhang & King, 2010). Following other studies in the literature, this study applies a log of total assets to control the firm's size effect (Fama & French, 1992, 1993; Zhang & King, 2010).

Third, sales growth is used to control the effect of production on investment (Luo et al., 2012; Zhang & King, 2010). Sales growth is calculated as annual revenue change. Interestingly, several studies document that there is a negative relation associated sales growth with cross-listing stock returns (Lau, Lee, & McInish, 2002; Ng et al., 2013). The possible explanation is that cross-listing could lead to an increase in overseas sales, which is a signal of revenue diversification. Shareholders may view revenue

diversification as a source of risk and thus lower the required returns (Ng et al., 2013). This phenomenon is also investigated in this study.

3.3 Comparison of firm properties in different periods

The development of the Chinese financial market has experienced three broadly different stages, the performance of cross-listing stocks is also likely to be influenced by features in each stage (Y. Wang, 2013). The first stage was from 1990 to 1999, during this stage the prices of newly issued shares were determined by the fixed pricing mechanism, and the Chinese government capped a quota on the number of IPOs each year. The second stage was from 2000 to 2004, during this period the prices of newly issued stocks were determined by an auction system in which individual investors competed to buy stocks, and a channel system replaced the quota system. Under the channel system, underwriters rather than the government recommended listing firms, but the limited number of channels that the underwriters held restricted the number of IPOs. The third stage started from 2005, when the price inquiry mechanism and the sponsor system were established. Under the sponsor system, there is no explicit limit on the number of IPO, though CSRC still has to give the final permission for listing.

Apart from regulation progressing, it is also worth noting that the listing of a vast volume of giant state-owned enterprises (SOEs) in recent years, in particular Chinese national natural resource firms and banks, could result in a potential influence in evaluating post-listing performance. In 2000, Petro China and China Petroleum and Chemical listed on the HKSE, they were the top IPOs among their contemporaries⁸. Later during the period between 2005 and 2011, the four largest Chinese national banks were listed on the HKSE in succession⁹. According to the statistics of Renaissance Capital Investment (2013), the four Chinese cross-listing banks ranked in the top 25 of the ever largest IPOs in the world as at the end of 2012 (see Appendix D). Among them, the Agriculture Bank of China (ABC) and Industry and Commercial

⁸ Petro China listed at 7/04/2000, raising capital US\$ 2.9 billion. China Petroleum and Chemical listed at 19/10/2000, raising capital US\$ 3.5 billion (China International Capital Corporation, 2013).

⁹ China Construction Bank (CCB) listed at 20/10/2005, raising capital US\$9.227 billion. Bank of China (BOC) listed at 24/05/06, raising capital US\$11.186 billion. Industrial and Commercial Bank of China (ICBC) listed at 20/10/06, raising capital US\$19.092 billion. Agricultural Bank of China (ABC) listed at 07/07/10, raising capital US\$19.228 billion (Renaissance Capital Investment, 2013).

Bank of China (ICBC) rank in the top two of the largest global IPOs in history, with rising capital US\$19,228 million and US\$19,092 million respectively.

Based on study of Sun, Tong, and Zhang (2013), the increasing number of large Chinese SOEs listed on the Hong Kong stock market pushed up the whole market size and trading volume. There were 29 Chinese cross-listed firms on the Hong Kong stock market from 2005 to 2011. The figure was only 38.18% of the total 78 listing firms. However, based on data at the end of 2012, the average market value of 2005-2011 listing firms was 4.6 times that of 1993-2004 listing firms. The average value of total assets of the 2005-2011 listing firms was nearly 12 times that of the 1993-2004 listed firms (see Appendix E).

Table 2 compares the differences of properties of Chinese cross-listed firms with sub-samples of cross-listings before 2000 and after 2000, as well as cross-listings before 2005 and after 2005. The financial data of each cross-listed firm are based on the average value in the given sub-periods. Several characteristics are worth noting. As expected, size effect is the most conspicuous. It can be seen that the mean (median) of total assets of pre-2000 listings is RMB 8.29 billion (RMB 4.76 billion) whereas the figure of post-2000 listings is RMB 826.05 billion (RMB 58.82 billion). The difference between pre-2005 and post-2005 listings is even higher, with the mean of RMB 37.11 billion to RMB 1200.3 billion and the median of RMB 5.69 to RMB 137.83 million respectively.

Interestingly, sales growth decreased based on the mean value, from 27.9% of pre-2000 listings to 26.4% of post-2000 listings, and from 30.56% of pre-2005 listings to 21.15% of post-2005 listings; while it increased based on the median value, from 9.9% of pre-2000 listings to 24.55% of post-2000 listings, and from 11.09% of pre-2005 listings to 25.87% of post-2005 listings. Since outliers more easily affect the mean value than the median, the change in sales growth seems to embody the potential impact of extreme performance of specific companies. As far as leverage concerned, it was seen that both mean and median values increase, when comparing pre-2000 with post-2000 listings and comparing pre-2005 with post-2005 listings. This suggests that the more recent cross-listed firms are generally characterized with higher debt.

Table 2: Selected properties and descriptive statistics of cross-listed firms

	Mean	Median	Maximum	Minimum	Standard deviation	Skewness	Kurtosis	Jarque-Bera	N
Pre-2000									
Leverage	0.4397	0.2746	2.4009	0.0123	0.4744	2.4478	10.252	105.269***	34
Size	8.2914	4.7620	38.142	0.7082	9.0336	1.8843	6.0352	33.1716***	34
Growth	0.2790	0.0990	2.2882	-0.2633	0.5739	2.2622	7.6466	59.5879***	34
Post-2000									
Leverage	0.5826	0.4633	2.1542	0.0093	0.5777	1.2338	3.7436	11.3466***	44
Size	826.05	58.822	10305.9	0.1675	2094.9	3.2735	13.202	269.415***	44
Growth	0.2640	0.2455	2.2844	-0.8165	0.4591	1.7653	10.423	123.872***	44
Pre-2005									
Leverage	0.4412	0.2575	2.4009	0.0093	0.5035	2.2413	8.4687	93.7482***	49
Size	37.111	5.6936	428.08	0.1675	94.117	3.1447	11.501	228.292***	49
Growth	0.3056	0.1109	2.2882	-0.2633	0.5917	2.1540	7.1486	73.0280***	49
Post-2005									
Leverage	0.6394	0.4927	2.1542	0.0145	0.5693	1.0456	3.3296	5.41553*	29
Size	1200.3	137.83	10305.9	0.4366	2510.4	2.4949	8.2938	63.9484***	29
Growth	0.2115	0.2587	0.8800	-0.8165	0.3257	-1.2289	5.5469	15.1368***	29
Full sample									
Leverage	0.5189	0.3206	2.4009	0.0093	0.5354	1.6599	5.5386	53.8512***	78
Size	469.59	15.246	10305.9	0.1675	1617.8	4.5678	24.303	1746.17***	78
Growth	0.2706	0.1990	2.2882	-0.8165	0.5089	2.1095	9.0890	178.344***	78

This table depicts the summary of descriptive statistics of three selected properties of 78-cross-listed firms in terms of full period (from 1993 to 2012) and four sub-periods. Leverage is debt to equity ratio. Size is total assets in billion RMB at the end of each year. Growth is sales growth. N is the number of sample firms. Jarque-Bera is the value of the testing null hypothesis that series is normally distributed (Jarque & Bera, 1980).***represent 1% significance level, * represent 10% significance level.

Table 3: Selected properties of cross-listed firms comparing with purely domestic-listed firms

	Leverage	Size	Growth
Pre-2000			
Cross-listing firms	43.97%	8.29	27.90%
Domestic peers	44.06%	3.78	17.25%
Difference	-0.09%	4.51	10.66%
Post-2000			
Cross-listing firms	58.26%	826.05	26.40%
Domestic peers	44.41%	95.56	25.89%
Difference	13.85%	730.49	0.51%
Pre-2005			
Cross-listing firms	44.12%	37.11	30.56%
Domestic peers	39.97%	5.11	26.76%
Difference	4.14%	32.00	3.79%
Post-2005			
Cross-listing firms	63.94%	1200.34	21.15%
Domestic peers	59.15%	355.57	18.35%
Difference	4.80%	844.76	2.80%
Full sample			
Cross-listing firms	51.89%	469.59	27.06%
Domestic peers	44.37%	84.70	24.85%
Difference	7.52%	384.89	2.20%
Times of Post-2000 to Pre-2000	—	162.04	0.048
Times of Post-2005 to Pre-2005	1.16	25.401	0.738

This table depicts the differences in the mean value of the three selected properties between 78-cross-listed firms and their domestic-listed peers in terms of full period (from 1993 to 2012) and four sub-periods. Leverage is debt to equity ratio. Size is total assets in billion RMB at the end of each year. Growth is sales growth. Times of Post-2000 to Pre-2000 are calculated by dividing Post-2000 difference between cross-listed firms and domestic peers to that of Pre-2000. Times of Post-2005 to Pre-2005 are calculated by dividing Post-2005 difference between cross-listed firms and domestic peers to that of Pre-2005.

Table 3 represents the comparison of the mean value of three firm fundamentals between cross-listed firms and their domestic-listed peers. Purely Chinese domestic-listed companies were selected in the following way. First, all accounting data for Chinese domestic-listed companies (in both Shenzhen stock market and Shanghai stock market) were obtained in DataStream, the total sample size was 2215 firms. Second, to make sure original data for each variable were available throughout the testing period, firms were deleted from the sample if their particular accounting data could not be obtained in certain years. After filtering out 718 firms with omitted data, there remained 1497 firms. Third, to ensure the sample only included purely domestic listing firms, 56 cross-listed firms were further deleted. The reason that only 56 rather than 78 cross-listed firms were deleted is that 22 cross-listing firms had already been deleted in the second step. Therefore, the sample size of comparative domestic listing companies involved 1441 firms. To make sure outliers do not affect results, each variable based on these 1441 firms was again winsorized at 10% in each year.

The different characteristics in different periods can also be observed. The size of cross-listed firms is always larger than that of domestic-listed firms, and the increase in size is far greater for cross-listed firms than for their domestic-listed peers in both the periods from pre-2000 to post-2000 and from pre-2005 to post-2005. The result indicates that there have been an increasing number of giant SOEs conducting cross-listing in recent years. Furthermore, leverage appears to be higher for cross-listed companies relative to their purely domestic-listed peers for comparing post-2000 to pre-2000 listings and comparing post-2005 to pre-2005 listings. In contrast, the differences in growth decreased over time.

To summarize, the comparison of Chinese cross-listing firms' properties between the different sub-periods suggests that there could be fundamental changes throughout the history of Chinese cross-listings. It is reasonable to argue that these fundamental changes are likely to influence the market and operating performance in the different periods. Therefore, to confirm the validity of the result, this study also examines the market and operating performance based on sub-period samples that divide the full sample by 2000 and 2005, in addition to conducting full sample tests.

Chapter 4 Methodology

4.1 Long-run market performance test

This study employs an abnormal return to measure market performance. Abnormal returns are event returns that are the difference between the raw returns of a stock and the benchmark returns (Barber, 1997).

In accordance with Ritter (1991) and Foerster and Karolyi (2000), this study evaluates long-run performance based on Holding-Period returns. Firstly, an average Raw Return (R) in the Hong Kong market is calculated across firms in each month (year) after issuance. Then, raw returns are cumulated geometrically subsequent to issuance month (year) to obtain Cumulative Returns (CR). Afterwards, the monthly (annual) return of each cross-listing stock is benchmarked against Chinese domestic market index return and Hong Kong local market index respectively, to obtain an abnormal return for each individual firm, and then the abnormal returns across firms are averaged monthly (yearly) to obtain cross-listing Abnormal Returns (AR) for each firm. Finally, the Abnormal Returns are cumulated geometrically subsequent to issuance month (year) to obtain Cumulative Abnormal Returns (CAR). Abnormal returns based on monthly data as well as annual data are calculated to robustly test the market performance patterns.

There are two important issues related to abnormal return calculation: return weight and specific approach. As for return weight, this study mainly employs equal weight in examining market performance. The reasons are as follows. First, Mitchell and Stafford (2000) document that the regressions based on equally weighted portfolios generate higher adjusted R^2 than those based on value weighted portfolios. Furthermore, several studies document that regressions in examining post-IPOs and SEOs market returns are more reliable when they are based on equally weighted portfolios (Fama, 1998; Loughran & Ritter, 1995). One may argue that equally weighted portfolio may produce bias toward small stocks (Fama, 1998). However, Fama (1998) points out that in light of cognitive psychology – a branch of behavioral finance theory, large stocks are more likely to be subjected to judgement biases because these stocks are more likely to attract the interest of security analysts, who normally dominate and influence stock pricing, rather than discovering stock prices (Fama, 1998). Furthermore, Barberis, Shleifer, and Vishny (1998) also claim that judgement biases are less serious for small stocks.

As for specific approach, it is worth noting that some studies criticize the fact that abnormal returns based on the Holding-Period method may suffer from a number of problems, and thus the Calendar-Time approach is recommended to measure long-term returns for cross-listed firms (Fama, 1998; Mitchell & Stafford, 2000; Ng et al., 2013; Wu & Kwok, 2007). However in this study, in order to observe market performance each month or each year, abnormal returns based on the Holding-Period method would be more appropriate. This is because abnormal returns from the Holding-Period method (AR) are computed on a monthly or annual basis. That is, AR measures post-listing performances of the first, second, and third years. Moreover, AR can also be cumulated to measure Cumulative abnormal returns (CAR). Comparatively, abnormal returns from the Calendar-Time approach only show cumulative returns. That is, they only measure successive post-listing performances of one-, two-, and three-year periods. Based on this reasoning, this study mainly applies abnormal returns based on the Holding-Period method. However, abnormal returns based on the Calendar-Time approach are also computed as an additional test to confirm the market performance patterns.

The Calendar time approach is based on the CAPM, the Fama-French-Three-Factor model and the International CAPM as follows, and the long-term post-listing abnormal returns are interpreted by alpha:

$$R_i - R_{f,CN} = \alpha_i + \beta_1(R_{m,CN} - R_{f,CN}) + \varepsilon_i \quad (1)$$

$$R_i - R_{f,CN} = \alpha_i + \beta_1(R_{m,CN} - R_{f,CN}) + \beta_2SMB + \beta_3HML + \varepsilon_i \quad (2)$$

$$R_i - R_{f,CN} = \alpha_i + \beta_1(R_{m,CN} - R_{f,CN}) + \beta_4(R_{m,world} - R_{f,world}) + \varepsilon_i \quad (3)$$

In the formula above, R_i is the average return of the cross-listed firms. $R_{f,CN}$ is risk-free rate proxied by China demand deposit rate, which is set by Chinese central bank – People's Bank of China. $R_{m,CN}$ is return on market index proxied by the MSCI China. SMB is the relative performance of small stocks over big stocks. HML is the relative performance of value stocks over growth stocks. Data for SMB and HML is based on Historical Benchmark Returns of Kenneth R. French - Data Library at its website (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html). $R_{f,world}$ is global risk-free rate proxied by the yield on the Merrill Lynch Global Government Index. $R_{m,world}$ is the return based on world stock index proxied by The MSCI World Index. Thus, $R_i - R_{f,CN}$ is stock i returns in excess of the Chinese risk free rate, $R_{m,CN} - R_{f,CN}$ is Chinese market excess return, $R_{m,world} - R_{f,world}$ is the world market excess return.

When benchmarking against the Hong Kong market index, the above equations can be rewritten as follows:

$$R_i - R_{f,HK} = \alpha_i + \beta_1(R_{m,HK} - R_{f,HK}) + \varepsilon_i \quad (4)$$

$$R_i - R_{f,HK} = \alpha_i + \beta_1(R_{m,HK} - R_{f,HK}) + \beta_2SMB + \beta_3HML + \varepsilon_i \quad (5)$$

$$R_i - R_{f,HK} = \alpha_i + \beta_1(R_{m,HK} - R_{f,HK}) + \beta_4(R_{m,world} - R_{f,world}) + \varepsilon_i \quad (6)$$

In the formula above, $R_{f,HK}$ is Hong Kong base rate and $R_{m,HK}$ is return on market index proxied by the MSCI Hong Kong. Thus, $R_i - R_{f,HK}$ is stock i returns in excess of the Hong Kong risk free rate, $R_{m,HK} - R_{f,HK}$ is Hong Kong market excess return. The Newey-West procedure is applied to correct for potential autocorrelation and heteroskedasticity in the regression.

4.2 Long-run operating performance test

The Literature Review section has briefly summarised the potential gains and costs of cross-listings. From the investors' perspective, the change in valuation would be a major interest; while from the managers' perspective, the effect of cross-listing on the firms' operating performance would be of more concern. As mentioned in Data section, this study uses ROA, ROE and CFE to measure the profitability of cross-listing firms.

This study employs annual data to measure operating performance. The reasons are as follows. Firstly, unlike data used to measure market performance, data for operating performance show a comparatively low frequency. That is to say, the market prices change continuously, whereas reliable accounting data are only available annually. Secondly, quarterly financial data disclosure is not mandatory in the HKSE; and semi-annual data prior to 1999 cannot be confirmed online through the HKSE website. Therefore, annual data are more reliable and accurate from annual reports. Thirdly, DataStream only offers annual accounting data. This means that accounting variables are the same throughout each year. This makes the measurement of quarterly and semi-annual changes in operating performance unlikely. For these reasons, annual data are applied in this study to analyse firm's post-cross-listing operating performance.

In addition to analysing the operating performance of Chinese cross-listed firms per se, this study also compares the operating performance of cross-listings to domestic listing peers in the same time interval, to detect the outperformance or underperformance of

cross-listed firms relative to purely domestic-listed firms. To do this, this study calculates the differences in mean (median) between profitability measures (ROA, ROE and CFA) of cross-listed firms and that of purely domestic-listed peers. The relative measure of operating performance in this study may differ from several other studies, such as Huang and Song (2005) and Zhang and King (2010), which only examine the operating performance of cross-listed firms. The reasons that this study applies a relative measure of operating performance of cross-listed firms to domestic new listed firms are as the following. First, cross-listing in different years may face different operating environment, comparing performance of cross-listed firms to purely domestic-listed firms can be controlled for the market conditions in different year. Second, outperformance or underperformance of firms may be driven by factors other than the event of cross-listing. For instance, the decrease of profitability of a company after cross-listing may be caused by the recession of the whole economy, rather than the cross-listing event. By applying relative measure of operating performance of cross-listed firms to purely domestic listed firms, it might be easier to observe the change in operating performance caused by cross-listing.

Furthermore, this study also computes the dynamic performance effect for both cross-listed firms and purely domestic-listed firms. The dynamic performance is calculated as the percentage change in profitability. As Gómez-mejía and Palich (1997) argue, level operating performances could contain the potential problem of lag effects, which means operating performances in different period may not be comparable. Comparatively, the comparison of dynamic measurement may be more reasonable. Following Jain and Kini (1994), this study measures operating performance dynamic changes by calculating the percentage change in the median of cross-listed firms and purely domestic-listed firms in each of three years after listing relative to the year of listing, i.e. year +1, +2 and +3, relative to year 0.

For both operating and market performance, full-period sample and sub-period samples are employed. The full sample-period covers period from 1993 to 2012, sub-periods are divided full period by year 2000 and year 2005. As mentioned in the Data section, the cross-listing of giant SOEs may cause an impact on the whole cross-listing characteristic. By dividing the whole sample into different periods, this potential effect is expected to be detected.

Chapter 5 Empirical results for market performance

5.1 Market performance based on monthly returns

This section employs Holding period return method to examine monthly post-cross-listing returns over the event period. Table 4 summarizes both raw and abnormal monthly returns for full sample and five sub-period samples. Results are also presented as cumulative raw returns (CRs) and cumulative abnormal returns (CARs) by benchmarking against the Chinese domestic market index and Hong Kong market index, respectively.

The result based on full sample shows that the CR is -13.27% over 36 months after cross-listing, and the 36-month CAR is also negative in terms of both Chinese domestic market and Hong Kong market index, indicating cross-listing stocks underperform both Chinese domestic and Hong Kong markets. However, the magnitude and significance of underperformances is different. It can be seen that the CAR is more negative when it benchmarks against Hong Kong local market index. The return is -25.11% in 36 months following cross-listing and it is significant at the 5% level. However, the CAR is merely at -5.56% and statistically insignificant in comparison with Chinese domestic market. The above results seem in line with Foerster and Karolyi (2000), who document an underperformance of cross-listing stocks comparing with listing destination local market in three years following issuance, and they argue that the underperformance can be attributed to the foreign investment barriers, global corporate governance challenge and additional information asymmetry. Overall, the results based on the full sample suggest that cross-listing stocks experience a poor performance in the event period.

The patterns of market performance, however, could be different when the full-period sample is divided into different sub-period samples. As for cumulative raw returns (CRs), Panel B shows that the pre-2005 cross-listing firms have negative CRs in 12, 24 and 36 months after issuance, with -24.01%, -31.71% and -24.47%, respectively. In contrast, for the sample of post-2005 cross-listing firms, the CRs are positive in 12, 24 and 36 months after issuance, with 10%, 0.22% and 3.31%, respectively. Moreover, when comparing pre-2000 listings to post-2000 listings, the difference of return patterns is even more notable. The raw return cumulates to -55.43% over three years after listing based on pre-2000 listings, while the raw return cumulate to 46.18% based on post-2000 listings. The difference is more than 100%.

Table 4: Holding-Period monthly returns of Chinese cross-listed firms

Panel A: full sample over 1993 to 2011

Months	Number of firms	Raw(R)	Cumulative(CR)	Domestic Index Benchmark		Local Index Benchmark	
				Abnormal(AR)	Cumulative(CAR)	Abnormal(AR)	Cumulative(CAR)
12	78	3.14% (1.65)	-11.54% (-1.50)	1.69% (1.48)	-4.33% (-1.01)	0.13% (0.08)	-10.26%* (-1.90)
24	75	2.32% (1.10)	-20.37%* (-1.89)	0.21% (0.19)	-10.89%* (-1.81)	1.62% (0.98)	-22.87%*** (-2.68)
36	71	1.97% (1.02)	-13.27% (-0.91)	1.06% (0.68)	-5.56% (-0.54)	1.36% (0.80)	-25.11%** (-2.07)

Panel B: pre-2005 cross listing firms

Months	Number of firms	Raw(R)	Cumulative(CR)	Domestic Index Benchmark		Local Index Benchmark	
				Abnormal(AR)	Cumulative(CAR)	Abnormal(AR)	Cumulative(CAR)
12	49	-0.22% (-0.07)	-24.01%* (-1.96)	0.80% (0.50)	-3.13% (-0.55)	-3.41% (-1.49)	-19.00%** (-2.28)
24	49	2.96% (1.06)	-31.71%** (-2.45)	0.20% (0.13)	-8.95% (-1.19)	1.78% (0.76)	-33.74%*** (-2.93)
36	49	3.63% (1.48)	-24.47% (-1.50)	2.23% (1.12)	-0.12% (-0.01)	3.16% (1.44)	-35.52%** (-2.62)

Panel C: post-2005 cross listing firms

Months	Number of firms	Raw(R)	Cumulative(CR)	Domestic Index Benchmark		Local Index Benchmark	
				Abnormal(AR)	Cumulative(CAR)	Abnormal(AR)	Cumulative(CAR)
12	29	6.71%*** (2.93)	10.00% (1.09)	2.50% (1.50)	-7.28% (-1.02)	4.34%** (2.41)	2.39% (0.31)
24	26	1.27% (0.39)	0.22% (0.01)	0.37% (0.23)	-14.50% (-1.38)	1.31% (0.64)	-2.53% (-0.17)
36	22	-3.93% (-1.61)	3.31% (0.14)	-3.48%** (-2.13)	-17.25% (-1.29)	-3.53%** (-2.16)	-7.57% (-0.51)

Table 4: (Continued)

Panel D: pre-2000 cross listing firms

Months	Number of firms	Raw(R)	Cumulative(CR)	Domestic Index Benchmark		Local Index Benchmark	
				Abnormal(AR)	Cumulative(CAR)	Abnormal(AR)	Cumulative(CAR)
12	34	-1.34% (-0.32)	-34.38%* (-1.96)	0.66% (0.31)	-3.96% (-0.50)	-5.08% (-1.67)	-0.25** (-2.26)
24	34	0.79% (0.21)	-49.26%** (-3.02)	-0.99% (-0.56)	-12.06% (-1.44)	0.33% (0.11)	-47.07%*** (-3.28)
36	34	-0.64% (-0.26)	-55.43%** (-3.36)	0.05% (0.03)	-10.46% (-1.43)	-0.25% (-0.12)	-58.40%*** (-4.76)

Panel E: post-2000 cross listing firms

Months	Number of firms	Raw(R)	Cumulative(CR)	Domestic Index Benchmark		Local Index Benchmark	
				Abnormal(AR)	Cumulative(CAR)	Abnormal(AR)	Cumulative(CAR)
12	44	5.19%*** (3.02)	8.57% (1.48)	1.94% (1.52)	-4.90% (-0.99)	3.09% (0.54)	1.19% (0.05)
24	41	3.73% (1.55)	11.76% (0.77)	1.34% (0.92)	-9.57% (-1.15)	2.86% (0.44)	2.65% (0.07)
36	37	3.33% (1.19)	46.18%** (2.20)	0.93% (0.38)	-1.32% (-0.08)	2.40% (0.39)	19.08% (0.44)

Panel F: 2000-2004 cross listing firms

Months	Number of firms	Raw(R)	Cumulative(CR)	Domestic Index Benchmark		Local Index Benchmark	
				Abnormal(AR)	Cumulative(CAR)	Abnormal(AR)	Cumulative(CAR)
12	15	2.25% (0.97)	5.18%* (1.76)	0.87% (0.44)	-0.22% (-0.04)	0.66% (0.09)	-1.75% (-0.07)
24	15	8.00%** (2.56)	32.88%* (1.99)	3.02% (1.05)	-0.04% (0.00)	5.56% (1.59)	11.07% (0.63)
36	15	13.98%** (2.90)	143.79%*** (4.77)	7.39% (1.45)	29.87% (0.97)	11.08%** (2.25)	0.72%** (2.34)

The table represents post-listing Holding-Period Returns of Chinese cross-listed Firms over 36-month period. Numbers by month in the above table stand for firms' listing duration after the issuance. Number of firms represent sample firm size in according listing periods. Returns for each cross-listing firm are compound returns. Raw returns (R) are computed as average annual returns across firms in the given month. Abnormal returns (AR) are calculated as the average of the difference between stock return and (1) domestic benchmark – MSCI China or (2) local benchmark – MSCI Hong Kong. Cumulative returns (CR) and cumulative abnormal returns (CAR) are a geographic product of raw return and abnormal return respectively. The t-statistics for raw return and abnormal return are calculated as $R_t \cdot \sqrt{n_t} / \sigma_t$, where R_t is the average raw return or average abnormal return, n_t is the number of firms in year t, σ_t is the cross-sectional standard deviation of average raw return series and abnormal returns series for year t. The t-statistic for cumulative raw return and abnormal return are calculated as $CR_t \cdot \sqrt{n_t} / \sigma_t^*$, where $\sigma_t^* = \sqrt{t \cdot \text{var} + 2 \cdot (t-1) \cdot \text{cov}}$, where var is cross-sectional variance over the post-issuance period, cov is the first-order auto-covariance of the return series. The t-statistics are in parentheses. ***, **, * suggest level of significance at 1%, 5% and 10% respectively.

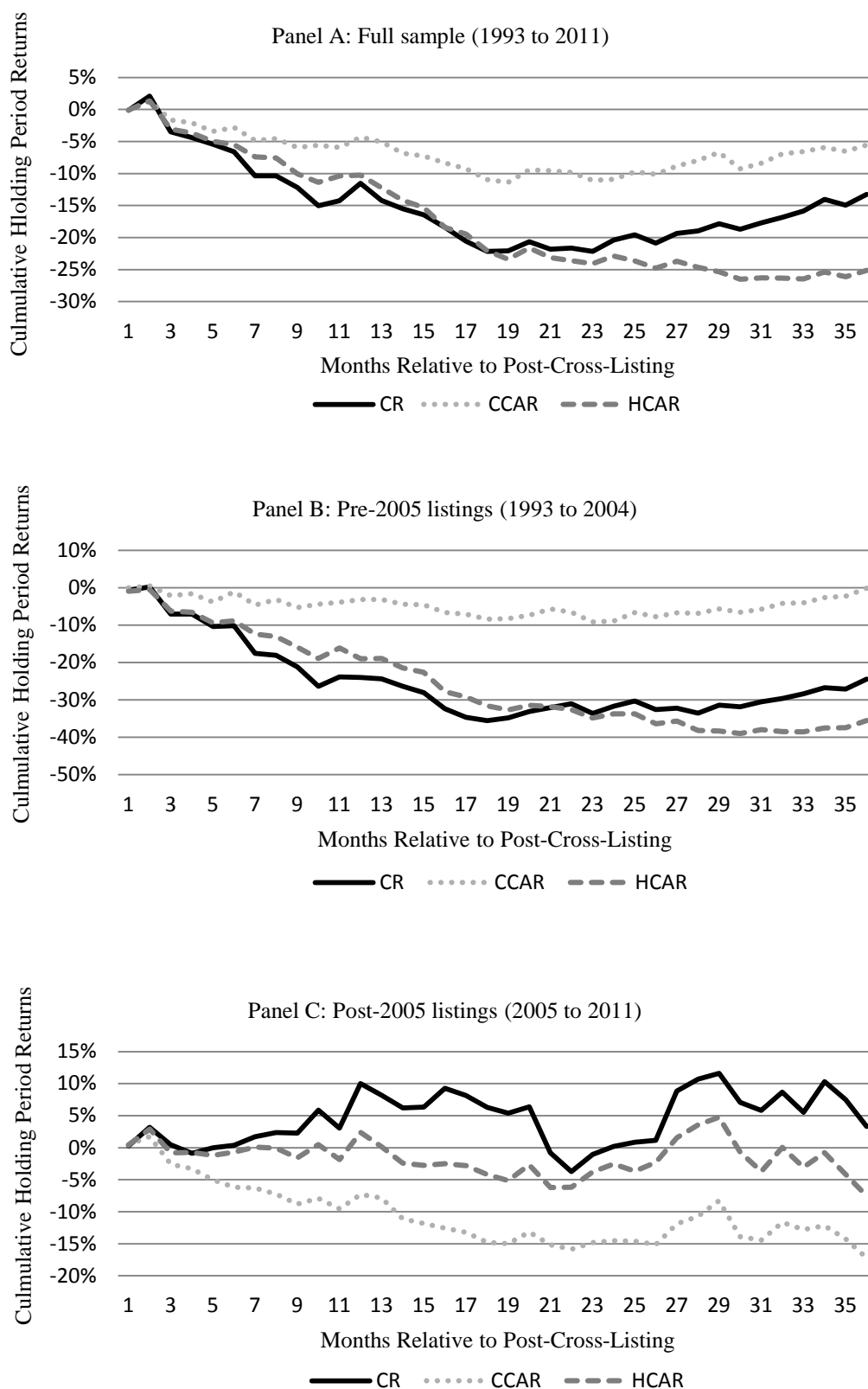
Cumulative abnormal returns (CARs) are also significantly affected by sample periods. First, when employing pre-2005 listing sample, the CAR based on the Chinese domestic index is -0.12% over 36 months after listing, which is higher than the CAR of -35.52% based on the Hong Kong local index. However, when employing post-2005 cross-listing sample, the CAR based on the Chinese domestic index is -17.25% over 36 months after listing, which is lower than the CAR of -7.57% based on the Hong Kong local index. Second, for pre-2000 listing stocks, the CAR is -10.46% based on the Chinese domestic index over 36 months after listing, which performs better than CAR of -58.40% based on the Hong Kong local index. In contrast, for post-2000 listing stocks, the CAR based on the domestic market index is -1.32% in 36 months post-listing period, which is less than 19.08% of the CAR benchmarked against the Hong Kong local index.

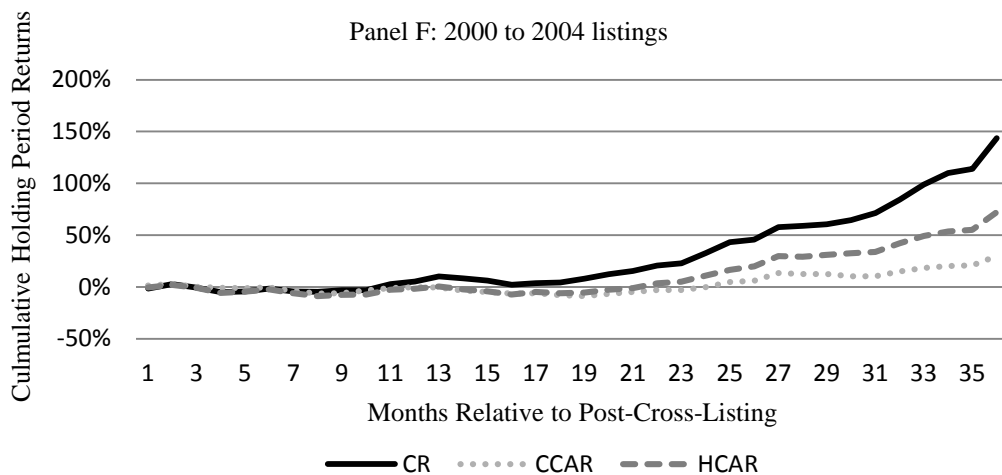
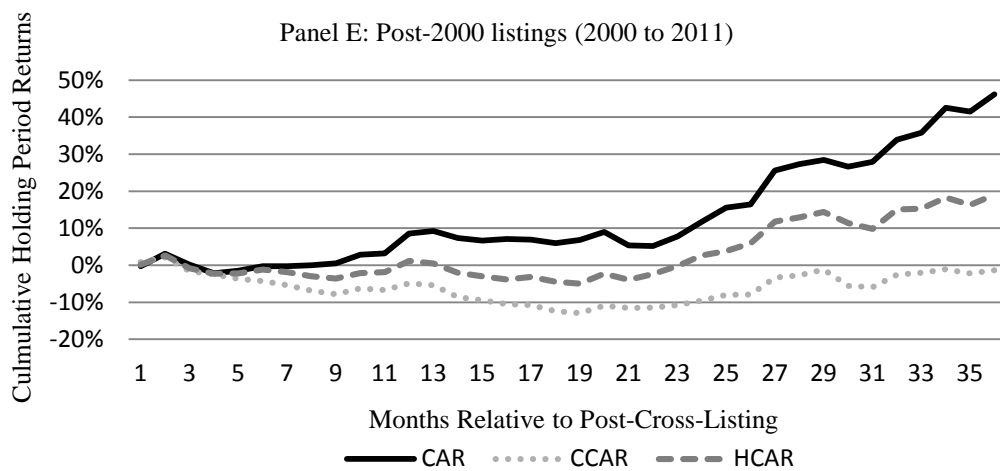
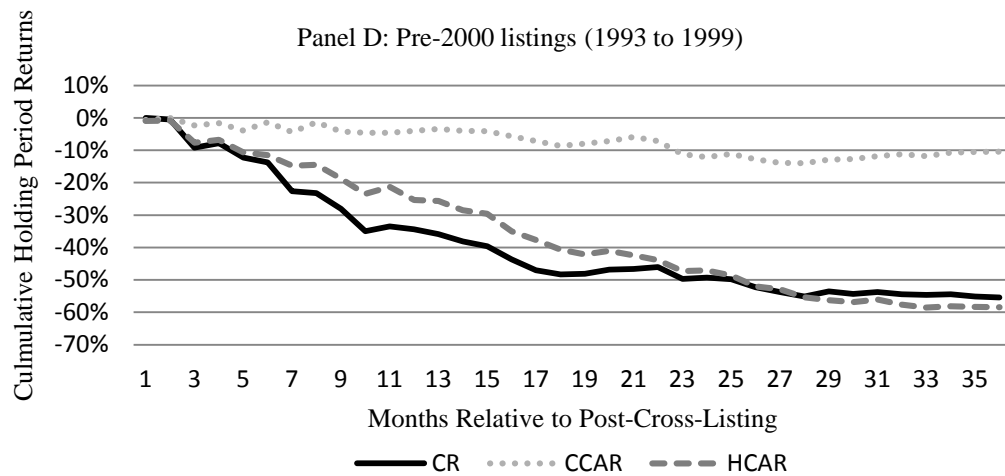
The market performance of cross-listing stocks in some sub-periods may extremely be different from what it has been observed in the full-sample period. For example, Panel F shows that according to sample from 2000 to 2004 cross-listing firms, the raw return cumulates to 143.79% over 36 months after cross-listing, which is significantly higher than the CR of -13.27% that based on full sample. Moreover, with benchmarking against Chinese domestic and Hong Kong local index, the 36-month CARs for 2000 to 2004 cross-listed firms are 29.87% and 0.72%, respectively, which obviously performed better than the CARs of -5.56% and -25.11% that based on full sample.

The above result confirms the claim of Carpentier, L'Her, and Suret (2007, November) that the choice of benchmark can significantly influence the measure of abnormal return. Furthermore, this study finds that the selection of sample period could also influence the measure of post-cross-listing returns.

Figure 1 illustrates the trends of CRs and CARs based on two benchmarks – Chinese domestic benchmark (CCAR) and Hong Kong local benchmark (HCAR). The return patterns are illustrated according to a full-period sample (Panel A) and five sub-period samples (Panel B to F). It can be seen from the full-period sample (Panel A) that all three cumulative returns are negative, though cross-listing stocks more significantly underperform the Hong Kong local index than the Chinese domestic index. The results from pre-2005 listings (Panel B) and pre-2000 listings (Panel D) show similar patterns. However, when post-2005 (Panel C) and post-2000 (Panel E) sub-periods are observed, the post-cross-listing return patterns are apparently different from that of the full-sample period.

Figure 1: Post-Issuance monthly return of Chinese cross-listed firms





The figures illustrate post-issuance performance of Chinese cross-listed stocks for 36 months after listing. Returns for each cross-listing firm are compounded monthly returns. Raw return is computed as average monthly returns across firms in the given month, and Cumulative return (CR) is a geographic product of raw return. Abnormal returns are calculated as the average of the difference between stock return and (1) domestic benchmark – MSCI China or (2) local benchmark – MSCI Hong Kong. CCAR and HCAR are the cumulative abnormal returns benchmark against MSCI China and MSCI Hong Kong respectively.

Although post-2005 (Panel C) and post-2000 (Panel E) sub-periods still show cross-listed stocks slightly underperform domestic index over 36 months after listing, cross-listing stocks do not underperform Hong Kong local index. This could be because the Chinese domestic market index and Hong Kong local index perform differently in certain time periods. The result again suggests that market performance of cross-listing firms is benchmark-dependant.

Panel F can be regarded as an extreme case, which demonstrates that in some periods, cross-listing stocks can perform extremely different from what it has been observed from the full sample. The result again suggests the performance of cross-listing stocks is sample-period dependent. The following section will further robust test the above result.

5.2 Market performance based on annual returns

This section employs annual data to examine three years post-listing returns. Table 5 again summarizes both raw and abnormal annual returns for full sample and five sub-period samples. Results are also presented cumulative raw returns (CRs) and cumulative abnormal returns (CARs) by benchmarking against the Chinese domestic market index and Hong Kong market index respectively.

The result based on the full sample (Panel A) shows that the CARs benchmarking against the Hong Kong index are significantly lower than the CARs benchmarking against Chinese domestic market index in three years after cross-listing, with the figure of -18.72% and 5.59% respectively. The evidence based on pre-2005 (Panel B) and pre-2000 (Panel D) listings shows the similar pattern, though the return magnitudes vary.

Again, different benchmarks and different sample periods may determine different post-cross-listing return patterns. The results that based on the full sample, pre-2005 listings and pre-2000 listings suggest a better performance of cross-listings when compared with the Chinese domestic market than when compared with the Hong Kong local market. However, for post-2005 (post-2000) cross-listed firms, the CAR benchmarking against Hong Kong local index is -5.12% (24.34%) in three years after listing, which outperforms the CAR of -11.23% (3.07%) benchmarking against the Chinese domestic index. Apparently, the result that based on post-2005 (post-2000) cross-listing firms indicates a worse performance of cross-listings when compared with the Chinese domestic market than when compared with the Hong Kong local market. On the whole, these results are basically in line with the findings by using monthly data.

Table 5: Holding-Period annual returns of Chinese cross-listed firms

Panel A: full sample over 1993 to 2011

year	number of firms	Raw(R)	Cumulative(CR)	Domestic Index Benchmark		Local Index Benchmark	
				Abnormal(AR)	Cumulative(CAR)	Abnormal(AR)	Cumulative(CAR)
1	78	-18.22%*** (-2.76)	-18.22%*** (-2.76)	-8.11%* (-1.85)	-8.11%* (-1.85)	-19.07%*** (-3.64)	-19.07%*** (-3.64)
2	75	-0.35% (-0.05)	-18.51%* (-1.94)	0.75% (0.15)	-7.42% (-1.12)	-9.19% (-1.51)	-26.51%*** (-2.92)
3	71	15.26%* (1.95)	-6.07% (-0.54)	14.05%** (2.53)	5.59% (0.63)	10.59%* (1.74)	-18.72%* (-1.75)

Panel B: pre-2005 cross listing firms

year	number of firms	Raw(R)	Cumulative(CR)	Domestic Index Benchmark		Local Index Benchmark	
				Abnormal(AR)	Cumulative(CAR)	Abnormal(AR)	Cumulative(CAR)
1	49	-36.00%*** (-5.58)	-36.00%*** (-5.58)	-9.24%* (-1.73)	-9.24%* (-1.73)	-31.16%*** (-5.21)	-31.16%*** (-5.21)
2	49	1.92% (0.24)	-34.77%*** (-2.87)	0.59% (0.09)	-8.71% (-0.97)	-15.25%* (-1.87)	-41.66%*** (-3.46)
3	49	25.72%*** (2.86)	-17.99% (-1.14)	23.21%*** (3.40)	12.48% (1.09)	19.13%** (2.47)	-30.49%** (-2.07)

Panel C: post-2005 cross-listing firms

year	number of firms	Raw(R)	Cumulative(CR)	Domestic Index Benchmark		Local Index Benchmark	
				Abnormal(AR)	Cumulative(CAR)	Abnormal(AR)	Cumulative(CAR)
1	29	11.82% (0.96)	11.82% (0.96)	-6.19% (-0.81)	-6.19% (-0.81)	1.35% (0.16)	1.35% (0.16)
2	26	-4.63% (-0.34)	6.64% (0.41)	1.04% (0.14)	-5.21% (-0.56)	2.25% (0.28)	3.63% (0.31)
3	22	-8.05% (-0.55)	-1.94% (-0.31)	-6.35% (-0.78)	-11.23% (-1.16)	-8.45% (-1.01)	-5.12% (-0.46)

Table 5: Holding-Period annual returns of Chinese cross-listed firms**Panel D: pre-2000 cross listing firms**

year	number of firms	Raw(R)	Cumulative(CR)	Domestic Index Benchmark		Local Index Benchmark	
				Abnormal(AR)	Cumulative(CAR)	Abnormal(AR)	Cumulative(CAR)
1	34	-49.56%*** (6.66)	-49.56%*** (6.66)	-7.35% (-1.08)	-7.35% (-1.08)	-40.02%*** (-5.57)	-40.02%*** (-5.57)
2	34	-14.15% (1.68)	-56.70%*** (-4.83)	-3.45% (-0.46)	-10.55% (-1.07)	-33.64%*** (-3.88)	-60.20%*** (5.30)
3	34	4.12% (0.46)	-54.92%*** (-4.25)	20.31%** (2.36)	7.62% (0.51)	5.51% (0.65)	-58.00%*** (-3.88)

Panel E: post-2000 cross-listing firms

year	number of firms	Raw(R)	Cumulative(CR)	Domestic Index Benchmark		Local Index Benchmark	
				Abnormal(AR)	Cumulative(CAR)	Abnormal(AR)	Cumulative(CAR)
1	44	6.00% (0.70)	6.00% (0.70)	-8.69% (-1.50)	-8.69% (-1.50)	-2.88% (-0.44)	-2.88% (-0.44)
2	41	11.09% (1.07)	17.76% (1.36)	4.23% (0.66)	-4.83% (-0.53)	11.09% (1.56)	7.89% (0.76)
3	37	25.50%** (2.05)	47.78%*** (2.81)	8.31% (1.17)	3.07% (0.30)	15.25%* (1.74)	24.34%* (1.68)

Panel F: 2000-2004 cross listing firms

year	number of firms	Raw(R)	Cumulative(CR)	Domestic Index Benchmark		Local Index Benchmark	
				Abnormal(AR)	Cumulative(CAR)	Abnormal(AR)	Cumulative(CAR)
1	15	-5.24% (-0.61)	-5.24% (-0.61)	-13.53% (-1.59)	-13.53% (-1.59)	-11.05% (-1.21)	-11.05% (-1.21)
2	15	38.34% (2.77)	31.08% (1.54)	9.76% (0.84)	-5.10% (-0.27)	26.40% (2.05)	12.43% (0.61)
3	15	74.69% (4.98)	128.99% (6.00)	29.79% (2.69)	23.18% (1.45)	50.01% (3.64)	68.66% (3.32)

The table represents post-listing Holding-Period Returns of Chinese cross-listed firms over the 3-year period. Numbers of year in the above table stand for firms' listing period after the issuance. Number of firms represent sample firm size in according listing periods. Returns for each cross-listing firm are compound returns. Raw returns (R) are computed as average annual returns across firms in the given year. Abnormal returns (AR) are calculated as the average of the difference between stock return and (1) domestic benchmark – MSCI China or (2) local benchmark – MSCI Hong Kong. Cumulative returns (CR) and cumulative abnormal returns (CAR) are a geographic product of raw return and abnormal return respectively. The t-statistics for raw return and abnormal return are calculated as $R_t \cdot \sqrt{n_t} / \sigma_t$, where R_t is the average raw return or average abnormal return, n_t is the number of firms in year t, σ_t is the cross-sectional standard deviation of average raw returns series and abnormal return series for year t. The t-statistic for cumulative raw return and abnormal return are calculated as $CR_t \cdot \sqrt{n_t} / \sigma_t^*$, where $\sigma_t^* = \sqrt{t \cdot \text{var} + 2 \cdot (t-1) \cdot \text{cov}}$, where var is cross-sectional variance over the post-issuance period, cov is the first-order auto-covariance of the return series. The t-statistics are in parentheses. ***, **, * suggest level of significance at 1%, 5% and 10% respectively.

5.3 Market performance based on Calendar-time approach

As mentioned in the Methodology section, this section further checks market abnormal returns pattern in terms of the full sample by applying the Calendar-Time approach. The Calendar-Time approach has been recommended to measure long-term return for cross-listed firms by several studies (Fama, 1998; Mitchell & Stafford, 2000; Ng et al., 2013; Wu & Kwok, 2007). The reasons are as the following. First, abnormal returns from the Holding-Period method are likely to be biased owing to skewness of multi-year returns, thus test statistic would be upward biased; whereas abnormal returns from the Calendar-Time approach is more approximate to normal distribution, thus the test statistic would be more reasonable (Barber, 1997; Kothari, 1997; Lyon, Barber, & Tsai, 1999). Second, abnormal returns from the Holding-Period method assume independence of cross-sectional returns; whereas abnormal returns from the Calendar-Time approach automatically takes into account cross-correlations, thus mitigate the problem that arise from portfolio re-balancing (Mitchell & Stafford, 2000; Wu & Kwok, 2007). Based on the above reasons, it is necessary to calculate abnormal returns based on the Calendar-Time approach.

According to Mitchell and Stafford (2000) and Ng et al. (2013), the Calendar-Time approach needs to form portfolios to involve firms that experience cross-listing event in each testing period. In this study, portfolios are rebalanced each year to include all companies that have conducted cross-listing in the year, whereas drop all companies that have been in portfolio for more than 3 years. Then excess returns are regressed on the market model (CAPM), the Fama-French-Three-Factor model and the International market model (ICAPM) respectively. The reasons that study also introduces an international market model (ICAPM) are as the follows. First, share price of a cross-listing firm can be significantly influenced by global risk factors (Carpentier et al., 2007, November; Ng et al., 2013). Second, as Hong Kong is well recognized as an international financial centre, its stock market is more sensitive to global financial risk, comparing with the Mainland China domestic stock market (Nontapunthawat, 1992).

In line with the Holding-period method, both Chinese domestic stock market index and Hong Kong stock market index are applied to calculate the market premium, and Chinese domestic risk free rate and Hong Kong risk free rate are applied to calculate excess returns. In each regression, the alpha is regarded as the long-run post-event abnormal return.

Table 6: Abnormal returns of Chinese cross-listed firms relative to Chinese market

Panel A: Market Model–CAPM [Model (1)]						
	<i>Coefficient</i>					<i>Adjusted R²</i>
	α_i	β_1	β_2	β_3	β_4	
Post-listing year (0, +1)	-0.0754 (0.1567)	0.9505*** (0.0000)				0.7580
Post-listing year (0, +2)	0.0098 (0.8771)	1.0209*** (0.0000)				0.7539
Post-listing year (0, +3)	0.0274 (0.6566)	1.1288*** (0.0000)				0.8247
Panel B: Fama-French- Three-Factor Model [Model (2)]						
	<i>Coefficient</i>					<i>Adjusted R²</i>
	α_i	β_1	β_2	β_3	β_4	
Post-listing year (0, +1)	-0.0991 (0.1091)	1.0216*** (0.0000)	-0.0046 (0.3714)	0.0071 (0.1034)		0.7913
Post-listing year (0, +2)	-0.0397 (0.4517)	1.0487*** (0.0000)	0.0014 (0.7193)	0.0113*** (0.0093)		0.8460
Post-listing year (0, +3)	-0.0109 (0.8467)	1.1485*** (0.0000)	0.0013 (0.7683)	0.0087** (0.0286)		0.8670
Panel C: International Market Model–ICAPM [Model (3)]						
	<i>Coefficient</i>					<i>Adjusted R²</i>
	α_i	β_1	β_2	β_3	β_4	
Post-listing year (0, +1)	-0.0689 (0.2414)	1.0371*** (0.0000)			-0.2964 (0.3783)	0.7555
Post-listing year (0, +2)	0.0217 (0.7265)	1.1790*** (0.0000)			-0.5409 (0.1806)	0.7746
Post-listing year (0, +3)	0.0376 (0.5305)	1.2635*** (0.0000)			-0.4606 (0.2066)	0.8371

The tables report abnormal returns of Chinese cross-listed firms benchmark against Chinese domestic market index – MSCI China – over 1- to 3-year period respectively by calendar-time approach. Panel A, B and C employ Market Model—CAPM, Fama-French-Three-Factor Model and International Market Model—ICAPM respectively, as the following:

$$R_i - R_{f,home} = \alpha_i + \beta_1(R_{m,home} - R_{f,home}) + \varepsilon_t$$

$$R_i - R_{f,home} = \alpha_i + \beta_1(R_{m,home} - R_{f,home}) + \beta_2SMB + \beta_3HML + \varepsilon_t$$

$$R_i - R_{f,home} = \alpha_i + \beta_1(R_{m,home} - R_{f,home}) + \beta_4(R_{m,world} - R_{f,world}) + \varepsilon_t$$

The values shown in the table report the estimated coefficients and the numbers in the parentheses report the p-value of the associated Wald test. ***, **, * suggest level of significance at 1%, 5% and 10% respectively. Newey-West heteroskedasticity and autocorrelation consistent standard error and covariance adjustment is applied in the regression.

Table 7: Abnormal returns of Chinese cross-listed firms relative to Hong Kong market

Panel A: Market Model–CAPM [Model (1)]						
	Coefficient					Adjusted R ²
	α_i	β_1	β_2	β_3	β_4	
Post-listing year (0, +1)	-0.1337 (0.1273)	1.0181*** (0.0001)				0.5048
Post-listing year (0, +2)	-0.0572 (0.5454)	1.0398*** (0.0002)				0.4457
Post-listing year (0, +3)	-0.0376 (0.7125)	1.1361*** (0.0000)				0.4728
Panel B: Fama-French- Three-Factor Model [Model (2)]						
	Coefficient					Adjusted R ²
	α_i	β_1	β_2	β_3	β_4	
Post-listing year (0, +1)	-0.1899** (0.0416)	1.2905*** (0.0000)	-0.0028 (0.6638)	0.0145 (0.0001)		0.6475
Post-listing year (0, +2)	-0.1349 (0.1204)	1.2889*** (0.0000)	0.0034 (0.5940)	0.0180*** (0.0000)		0.6714
Post-listing year (0, +3)	-0.1087 (0.2459)	1.3376*** (0.0000)	0.0047 (0.5732)	0.0161*** (0.0002)		0.6209
Panel C: International Market Model–ICAPM [Model (3)]						
	Coefficient					Adjusted R ²
	α_i	β_1	β_2	β_3	β_4	
Post-listing year (0, +1)	-0.1177 (0.1058)	1.5019*** (0.0002)			-1.9418** (0.0345)	0.5451
Post-listing year (0, +2)	-0.0385 (0.6094)	1.6059*** (0.0001)			-1.1021** (0.0236)	0.4948
Post-listing year (0, +3)	-0.0200 (0.8150)	1.6677*** (0.0001)			-1.0350** (0.0338)	0.5050

The tables report abnormal returns of Chinese cross-listed firms benchmark against Hong Kong Local market index – MSCI Hong Kong – over 1- to 3-year period respectively by calendar-time approach. Panel A, B and C employ Market Model—CAPM, Fama-French-Three-Factor Model and International Market Model—ICAPM respectively, as the following:

$$R_i - R_{f,HK} = \alpha_i + \beta_1(R_{m,HK} - R_{f,HK}) + \varepsilon_t$$

$$R_i - R_{f,HK} = \alpha_i + \beta_1(R_{m,HK} - R_{f,HK}) + \beta_2SMB + \beta_3HML + \varepsilon_t$$

$$R_i - R_{f,HK} = \alpha_i + \beta_1(R_{m,HK} - R_{f,HK}) + \beta_4(R_{m,world} - R_{f,world}) + \varepsilon_t$$

The values shown in the table report the estimated coefficients and the numbers in the parentheses report the p-value of the associated Wald test. ***, **, * suggest level of significance at 1%, 5% and 10% respectively. Newey-West heteroskedasticity and autocorrelation consistent standard error and covariance adjustment is applied in the regression.

Table 6 and Table 7 report post-listing abnormal returns of Chinese cross-listed firms benchmarking against Chinese domestic benchmark and Hong Kong local benchmark, respectively. Market abnormal return (MAR) represents alpha from CAPM, Fama-French abnormal return (FFAR) represents an abnormal return from the Fama-French-Three-Factor model, and the International market abnormal return (IMAR) represent alpha from the International CAPM. β_1 stands for the home market beta (for return related to Chinese domestic market) or the local market beta (for return related to Hong Kong local market), β_2 stands for the coefficient for the size effect (SMB), β_3 stands for the coefficient for growth/value effect (HML), and β_4 stands for the coefficient for international market beta.

The results are consistent with and extend the findings from the full-period sample based on the Holding-Period method. First, the abnormal returns in the initial year after cross-listing are generally negative. Second, the magnitude of negative abnormal returns associated with Hong Kong benchmark is larger than that of the Chinese domestic benchmark. These results are also consistent with Foerster and Karolyi (2000), suggesting the underperformance of cross-listed firms are far greater when compared with their listing destination market than when compared with their domestic market. In addition, it is worth noting that almost all of the alphas (except for Hong Kong FFAR in one year after cross-listing) are statistically insignificant. This result is in line with the prior studies, which have documented that alpha based on the Calendar-Time approach is less significant than the Holding-Period method (Carpentier et al., 2007, November; Durand, Gunawan, & Tarca, 2006; Ng et al., 2013).

Second, market betas statistically significant at 1% level for all the models. This result demonstrates that cross-listed companies are subject to both domestic and destination market systematic risk. This finding is in line with S. S. Wang and Jiang (2004), implying that the Hong Kong stock market can provide diversification opportunities for foreign investors. This is to say, since foreign individuals are not allowed to invest in the Chinese domestic stock market, they can obtain exposures in Chinese stock market by investing in Hong Kong listed Chinese companies.

Third, β_2 and β_3 show that there is evidence of Growth/Value effects in the two and three years after cross-listing, the results suggest that fundamentals do play certain roles in determining abnormal returns. Forth, β_4 s for Chinese domestic market are insignificant while for Hong Kong local market are significant at the 5% level. This

finding is in line with Carpentier et al. (2007, November) and Ng et al. (2013). They argue that when benchmarking against domestic index, post-listing abnormal returns are not considerably affected by global risk factors. However, when abnormal returns are measured relative to overseas listing destination market, the world market systematic risk seems to matter.

Last but not least, models based on the Chinese domestic market have higher adjusted R^2 , comparing with models based on Hong Kong local market. This result indicates that Chinese domestic market still shows more explanatory power for the abnormal return of cross-listing stocks, even though these cross-listing stocks are also traded overseas. Furthermore, the Fama-French-Three-Factor Model has highest adjusted R^2 compare with other two models for each year, this indicates that the Fama-French Three Factor Model could explain the dependent variable – excess return—more effectively than other models. This again indicates that fundamental factors (size and book to market value) contain explanatory power for market performance of cross-listed firms.

Overall, based on the full sample, the result cannot agree with Hypothesis 1 that this study proposed, but is generally consistent with Foerster and Karolyi (2000) and Loughran and Ritter (1995) who document that cross-listing stocks experience an underperformance in the three year event period after the listing. However, this study argues that this underperformance cannot be regarded as a general conclusion. According to the most recent listing samples (post-2000, post-2005 and 2000 to 2005 listings), the evidence further indicates that the positive abnormal returns do exist, in particular when benchmarking returns of cross-listing stocks against returns of the Hong Kong local index. Altogether, this result suggests that the benchmark selected and the testing period employed could be important factors in determining the post-listing abnormal returns.

Chapter 6 Empirical results for operating performance

Based on prior literatures, this study measures operating performance by using return on assets (ROA), return on equity (ROE), cash flow to equity (CFE) (Huang & Song, 2005; Luo et al., 2012). This study also employs leverage, size and sales growth to observe the changes in fundamentals after firm listing overseas. Outliers are winsorized at 10% in each year to make sure that the test is not affected by extreme values, and thus better reflects the characteristics of each sample period.

6.1 Operating performance of cross-listed firms

This section again employs a full-period sample and five sub-period samples to observe operating performance and uses the mean value to measure operating performance. Jain and Kini (1994) argue that the mean value can be sensitive to outliers, thus a measure based on the median is also conducted. The outcome suggests that operating measures in light of the mean and median offer the similar results after data are winsorized at 10% (See Appendix F). Therefore, it can be argued that the result is meaningful.

Table 8 shows post-issuance operating performance for both cross-listed firms and their domestic-listed peers. This section mainly focuses on the left column under each variable, which shows post issuance operating performance for cross-listed firms. In terms of the full-period sample, the results suggest that there is a decrease in profitability. It can be seen that ROA decrease from 5.7% in the listing year to 4.15% in year three after listing, and ROE decrease from 12.37% in listing year to 10.35% in year three after listing. This result is in constant with several existing studies (Luo et al., 2012; Zhang & King, 2010). Zhang and King (2010) believe this is because when a firm cross-list overseas, it has to face serious global competition, which may weaken the firm's profitability.

The deterioration in operating performance can also be observed in all sub-period samples in terms of ROA. For pre-2000 cross-listed firms, an ROA decrease from 5.92% in listing year to 3.20% in year three after listing. For post-2000 cross-listed firms, an ROA decrease from 5.66% in listing year to 5.34% in year three after listing. It also can be seen that the level of ROA based on post-2005 sample is lower than the level of ROA based on pre-2005 sample, but both demonstrate a reduction trend, with the value of ROA decreasing from 6.78% to 4.57% and from 4.23% to 3.5% respectively. Comparing with ROA based on other samples, ROA based on 2000 to

2004 sample is apparently higher, but it also decreases from 8.87% in the listing year to 8.35% in three after listing.

When measured by ROE, however, the operating performance behaves differently in different sub-period samples. For pre-2000 and pre-2005 period samples, there is also a decrease trend in ROE. However, for post-2000, post-2005 and 2004 – 2005 samples, there is an increase trend in ROE. It also can be observed that ROE on post-2000 and post-2005 samples are higher than ROE on pre-2000 and pre-2005 samples. The result again indicates that the sample period and the variable used to measure operating performance are important factors that may affect test outcomes.

Several existing studies related to Chinese cross-listings have conducted researches based on samples that are the same with some sub-periods in this study. Zhang and King (2010) take sample period from 1993 to 2005 to examine long-run operating performance of 26 ADRs and 148 foreign IPOs of Chinese firms listed in Hong Kong, Singapore, U.S. and U.K. By employing ROA (return on assets) and ROCAA (return on cash adjusted assets) as a measure of operating performance, the authors find that the profitability of Chinese companies experiences an obvious decrease after overseas listing over a period from three days to three years.

Huang and Song (2005) take sample period from 1993 to 2000 to test long-run operating performance of 44 H-firms listed in Hong Kong. In their study, ROS, ROA and ROE measure the operating performance. By using both non-parametric and panel analysis, they find that all the three measures experience a statistically significant decrease in the subsequent three years after cross-listing, compared with the profitability level of the year before listing. Moreover, Huang and Song (2005) argue that the change in sales of Chinese firms could be mainly explained by macro-economic factors, rather than cross-listing events. As evidence, their study shows the median growth rate of H-firms in the subsequent three years after listing is 11.1% over the period 1993-2000, and the average Chinese real GDP growth rate was 10.7% in the same period.

The results of this study are generally in line with the above studies. As mentioned above, both ROA and ROE decrease in terms of samples from pre-2005 and pre-2000 listings. Moreover, this study shows the winsorized mean sales growth rate of H-firms in the subsequent three years after listing is 13.53% in pre-2000 sub-sample, the figure is slightly higher than finding of Huang and Song (2005), but it is still likely to claim that GDP growth (10.7%) is able to explain the most part of sales growth.

Table 8: Operating performance of Chinese cross-listed firms relative to purely domestic-listed firms

Panel A: full sample over 1993 to 2011

year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0	5.70%	5.90%	12.37%	8.47%	14.24%	14.42%	50.24%	27.30%	10.35	9.08		
1	4.88%	5.36%	11.00%	8.25%	15.97%	13.03%	50.44%	31.12%	10.41	9.13	21.89%	21.88%
2	4.14%	4.62%	10.28%	7.87%	15.00%	14.22%	51.59%	36.16%	10.45	9.19	15.75%	20.41%
3	4.15%	4.44%	10.35%	8.44%	15.56%	16.66%	51.11%	42.43%	10.43	9.22	20.59%	23.95%

Panel B: pre-2005 newly listing firms

year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0	6.78%	5.03%	11.93%	7.88%	14.69%	14.73%	40.74%	33.47%	9.84	8.99		
1	5.42%	4.58%	9.63%	7.82%	14.79%	13.78%	40.39%	38.19%	9.87	9.05	24.42%	22.66%
2	4.51%	3.93%	8.83%	7.38%	15.60%	15.10%	42.03%	42.13%	9.92	9.11	12.12%	22.33%
3	4.57%	3.79%	9.03%	7.61%	16.05%	16.37%	42.71%	45.28%	9.99	9.18	22.68%	25.14%

Panel C: post-2005 newly listing firms

year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0	4.23%	6.36%	13.05%	8.81%	12.54%	14.26%	67.18%	24.16%	11.25	9.12		
1	3.92%	5.78%	13.12%	8.45%	19.84%	12.68%	66.49%	27.47%	11.32	9.18	22.77%	21.70%
2	3.42%	5.14%	13.47%	8.26%	13.96%	13.63%	67.60%	31.97%	11.43	9.25	23.43%	19.07%
3	3.50%	5.39%	13.96%	9.71%	13.89%	17.11%	70.13%	38.54%	11.53	9.28	16.98%	22.54%

Table 8: (Continued)

Panel D: pre-2000 newly listing firms

year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0	5.92%	6.18%	10.08%	9.86%	5.65%	15.55%	38.06%	35.26%	9.70	9.04		
1	4.61%	5.52%	6.95%	9.29%	9.13%	14.34%	36.47%	38.98%	9.74	9.10	20.79%	16.70%
2	3.44%	4.35%	5.05%	7.52%	9.39%	14.22%	38.35%	41.97%	9.76	9.16	6.01%	17.40%
3	3.20%	3.28%	5.22%	6.08%	8.81%	13.36%	39.44%	43.94%	9.80	9.21	13.80%	17.33%

Panel E: post-2000 newly listing firms

year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0	5.66%	5.89%	14.48%	8.38%	18.99%	14.36%	59.69%	26.81%	10.88	9.08		
1	5.12%	5.35%	13.93%	8.18%	24.42%	12.95%	60.34%	30.63%	10.96	9.14	22.90%	22.17%
2	4.71%	4.66%	15.00%	7.92%	19.17%	14.21%	61.79%	35.74%	11.04	9.19	24.39%	20.49%
3	5.34%	4.60%	15.90%	8.75%	21.86%	17.08%	62.96%	42.23%	11.13	9.23	26.25%	24.78%

Panel F: 2000-2004 newly listing firms

year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0	8.87%	4.79%	16.16%	7.46%	35.19%	14.57%	47.19%	33.00%	10.22	8.98		
1	7.74%	4.38%	15.48%	7.51%	32.30%	13.68%	48.36%	38.07%	10.30	9.04	36.57%	23.46%
2	7.51%	3.86%	16.75%	7.35%	33.17%	15.28%	50.67%	42.20%	10.40	9.10	29.11%	23.18%
3	8.35%	3.93%	19.92%	8.00%	33.97%	16.99%	51.92%	45.45%	10.55	9.18	68.56%	26.97%

This table presents the summary of mean values of operating performance for cross-listings and relative purely domestic-listings in three years subsequent to the listing. ROA is return on assets; ROE is return on equity; CFE is cash flow to total equity ratio; Size is measured by log of total assets; Leverage is measured by debt to assets ratio; Growth is measured by sales growth. All the values are winsorized at 10% each year.

Table 9: T-statistic and Wilcoxon/Mann-Whitney testing the yearly equality of distributions between the cross-listed and purely domestic-listed firms

Panel A: full sample over 1993 to 2011

year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
0	0.78	1.16	-24.04***	12.14***	0.24	0.98	-12.92***	8.61***	-32.77***	13.32***		
1	1.53	1.99**	-16.78***	9.13***	-3.87***	0.98	-9.91***	6.83***	-32.18***	13.32***	-0.00	0.62
2	1.35	1.61	14.13***	7.19***	-0.85	0.19	-7.39***	5.13***	-28.92***	12.90***	1.70*	1.29
3	0.72	0.97	-13.07***	7.46***	0.97	1.00	-4.03***	2.96***	-25.15***	12.12***	1.44	0.88

Panel B: pre-2005 newly listing firms

year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
0	-5.56***	2.89***	-9.36***	5.33***	0.04	0.43	-3.77***	2.68***	-19.87***	10.23***		
1	-2.24**	1.53	-3.21***	1.69*	-0.93	0.35	-1.04	0.53	-19.00***	9.88***	-0.45	1.38
2	-1.40	0.57	-1.97**	0.27	-0.40	0.22	0.04	0.11	-18.12***	9.68***	2.87***	2.57***
3	-1.77*	1.17	-1.71*	0.86	0.23	0.52	1.11	0.84	-17.47***	9.69***	0.72	0.48

Panel C: post-2005 newly listing firms

year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
0	5.20***	3.55***	-8.08***	5.67***	-1.59	1.05	-15.18***	8.26***	-35.74***	9.18***		
1	3.53***	3.67***	-6.44***	4.68***	-5.43***	1.04	-12.54***	7.36***	-35.17***	9.18***	-0.26	0.79
2	2.72***	2.57***	-5.25***	4.51***	-0.24	0.36	-10.12***	6.28***	-30.29***	8.66***	-0.97	1.20
3	2.34***	2.34***	-3.30***	3.06***	1.65	0.74	-7.61***	5.33***	-24.86***	7.87***	1.05	0.68

Table 9: (Continued)

Panel D: pre-2000 newly listing firms

year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
0	0.60	0.53	-0.40	0.59	5.22***	3.51***	-1.04	0.71	-10.95***	7.15***		
1	-1.56	1.44	3.14***	2.63***	3.63***	2.64***	0.92	0.91	-10.42***	6.88***	-0.69	0.11
2	1.47	1.54	2.81***	2.77***	3.11***	2.43**	1.28	1.00	-10.16***	6.79***	2.33**	1.92*
3	0.17	0.45	1.09	1.28	2.81***	1.84*	1.58	1.31	-10.03***	6.77***	0.91	0.51

Panel E: post-2000 newly listing firms

year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
0	-0.68	1.45	-14.24***	7.80***	-5.26***	1.36	-14.23***	8.44***	-37.43***	10.98***		
1	-0.55	1.59	-9.92***	7.06***	-11.04***	2.88***	-11.61***	7.48***	-37.53***	11.30***	-0.21	0.21
2	0.12	0.00	-9.13***	6.67***	-4.23***	1.93*	-9.37***	6.35***	-34.15***	10.88***	-1.07	1.43
3	1.26	0.93	-7.31***	6.37***	-3.11***	1.75*	-6.94***	5.01***	-30.59***	10.05***	-0.37	0.66

Panel F: 2000-2004 newly listing firms

year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
0	-7.36***	2.36**	-11.65***	4.15***	-10.08***	3.76***	-4.30***	2.71***	-15.39***	4.92***		
1	-5.32***	2.99***	-8.53***	4.92***	-8.51***	3.42***	-2.76***	1.81*	-15.58***	5.22***	-1.90*	0.44
2	-5.14***	3.17***	-7.56***	4.37***	-7.28***	3.62***	-2.14**	1.37	-15.52***	5.36***	-0.95	0.84
3	-5.44***	3.80***	-7.62***	4.90***	-7.01***	3.69***	-1.55	1.13	-15.94***	5.46***	-5.54***	2.32**

This table presents the significant test for the difference in operating performance between cross-listings and relative purely domestic-listings in three years subsequent to the listing. ROA is return on assets; ROE is return on equity; CFE is cash flow to total equity ratio; Size is measured by log of total assets; leverage is measured by debt to assets ratio; growth is measured by sales growth. The numbers reported in this table are values of t-test for the means and values of Wilcoxon/Mann-Whitney test for medians. ***, **, * suggest level of significance at 1%, 5% and 10% respectively.

For other fundamental factors, there is a general increase trend in the CFE, leverage and size after cross-listing, no matter which period samples are used. The result indicates that cross-listing is able to facilitate an increase in the inflow of capital, the use of borrowing and the expansion of scale. However, the increases in resources that cross-listed company can employ do not transfer into the improvement of their profitability.

6.2 Operating performance compared to purely domestic-listed peers

This section compares operating performance of cross-listed firms with that of the purely domestic-listed firms. The findings of existing literature generally document that although overseas listed companies experience a decrease in operating performance, they still show advantages over domestic listed firms. For example, Wu and Kwok (2007) compare U.S. global IPO and domestic IPO companies from 1986 to 1997. By applying EBITDA/Asset, net profit margin, and ROA as measures of operating performance, they find that in three years after cross listing, the medians of EBITDA/Asset, net profit margin, and ROA of cross-listed firms decline by 17.83%, 33.01% and 21.23% respectively, while the figures of domestic-listed firms are 29.41%, 68.96% and 67.83% respectively. Their conclusion is, both cross-listed firms and domestic-listed firms experience a decrease in operating performance after listing, but the cross-listed firms perform relatively better than their domestic counterparts does.

One possible explanation would be the existence of negative IPO effects, which are documented by Jain and Kini (1994). The negative IPO effect means that firms generally experience a worse operating performance after their initial issuance. According to Huang and Song (2005), although there is a general decrease in operating performance after IPO for both overseas listings and domestic listings, the positive effect of cross-listing is possible to offset this negative IPO effect to some extent. Consequently, deteriorate in performance of cross-listed firms may less than that of their domestic peers.

Table 8 shows the event period operating performances for Chinese cross-listed as well as domestic-listed firms based on a full sample and five sub-period samples. Based on full sample test, ROA and ROE show that both cross-listed and domestic-listed firms experience deterioration in operating performance. This result is in line with findings of other studies mentioned above (Huang & Song, 2005; Jain & Kini, 1994; Wu & Kwok, 2007). However, cross-listed firms do not show an absolute advantage over domestic-listed firms, as the former shows higher ROEs but lower ROAs than the latter.

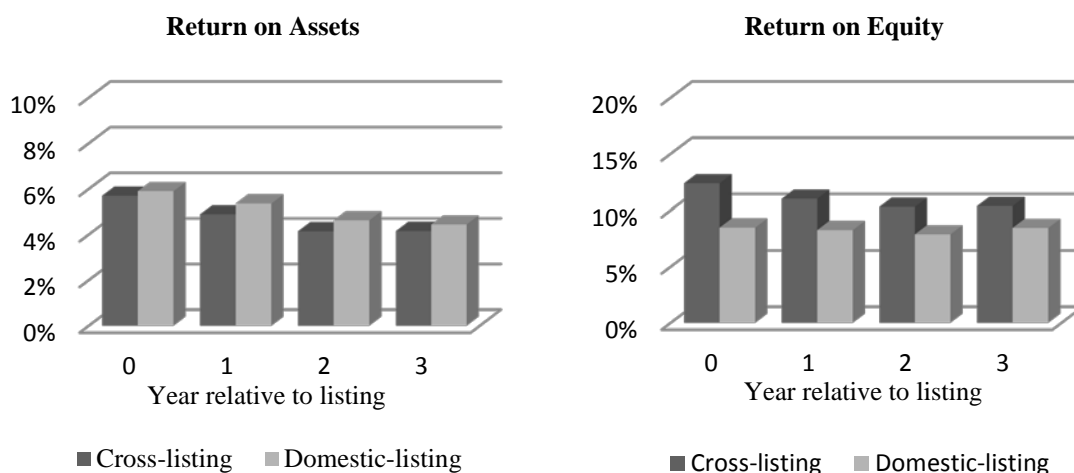
As for CFE, Table 8 shows that the relative performances of cross-listed firms to purely domestic-listed firms are distinctly different based on sample before and after 2000. In light of the pre-2000 sample, cross-listed firms are significantly underperform domestic-listed firms in each of three years subsequent to the listing; while in light of the post-2000 sample, cross-listed firms are significantly outperform purely domestic-listed firms. When applying sample from 2000 to 2004, CFEs of cross-listed firms are even twice higher as that of purely domestic-listed firms. The above results of relative operating performance confirm the following characteristics that have documented in section 6.1 “Operating performance of cross-listed firms”: First, the result depends on variables used to measure operating performance; Second, the relative operating performance also varies with testing period employed.

For other fundamental variables, the results show high consistency throughout the different sample period, compared with ROA, ROE and CFE. First, leverage of cross-listed firms is generally higher than comparative purely domestic-listed firms. This result is in line with Luo et al. (2012), suggesting that firms with the abundant fund are more likely to list overseas, as they are able to burden associated listing cost, though their operating performance is poor. Second, size of cross-listed firms is obviously larger than that of their domestic-listed peers. This result seems to support the claim of Zhang and King (2010) that larger firms are more likely to list abroad. This is in particular true for Chinese cross-listed firms, as they are dominated by giant SOEs. Third, sales growth of cross-listed firms is positive, but it is not significantly higher or lower than that for purely domestic-listed firms. This result cannot confirm the findings of Ng et al. (2013), but in line with Zhang and King (2010), who claim that sales growth mainly depends on industry trend rather than cross-listing effect. In addition, the results show that change in sales growth of cross-listings are more unstable than that of purely domestic-listing firms. The result may suggest that sales growth of cross-listed firms is prone to the uncertainty of the external operating environment.

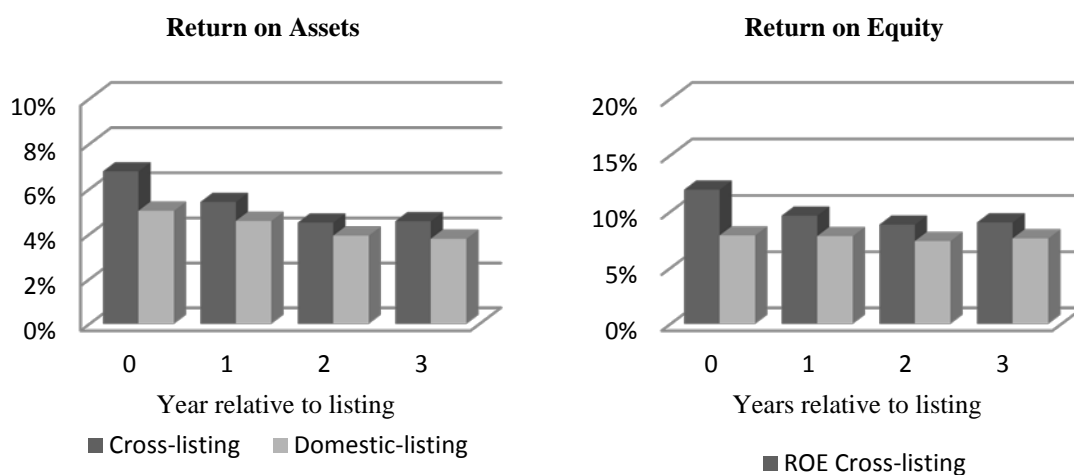
Table 9 reports year-by-year statistical significance test, with t-test for the means and Wilcoxon/Mann-Whitney test for the medians respectively. Results from all the samples suggest that firm size is significantly different between cross-listed firms and purely domestic-listed firms. The result again suggests that huge companies are more likely to list overseas, in particular Chinese giant SOEs (Zhang & King, 2010). However, except for firm size, it is hard to draw a conclusion that performances and fundamentals between cross-listed firms and purely domestic-listed firms are statistically different.

Figure 2: Post-Issuance operating performance of Chinese cross-listed firms

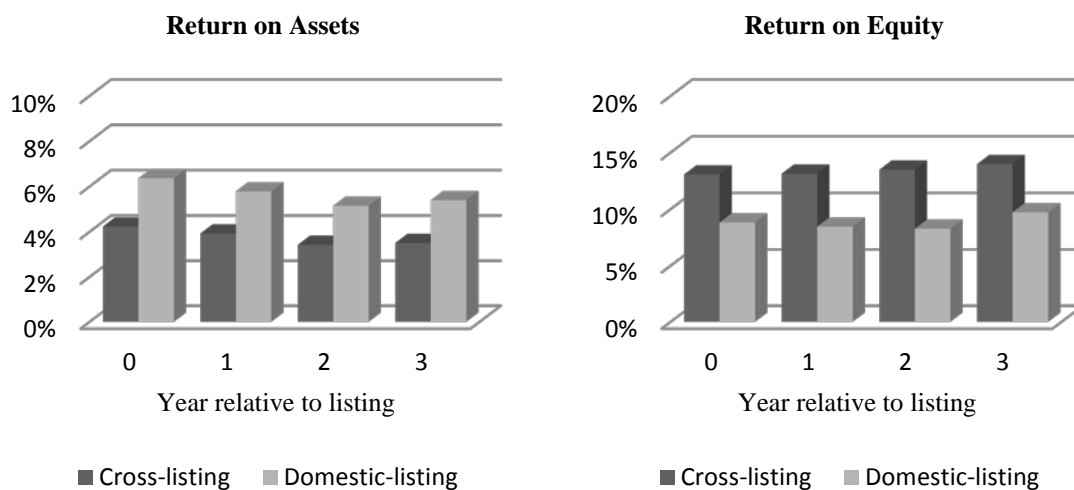
Panel A: Full sample (1993 to 2011)



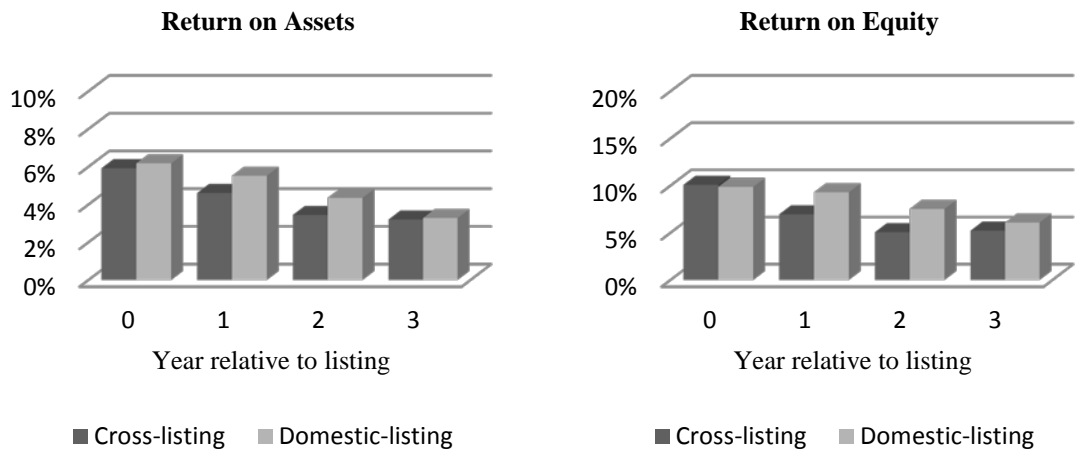
Panel B: Pre-2005 listings (1993 to 2004)



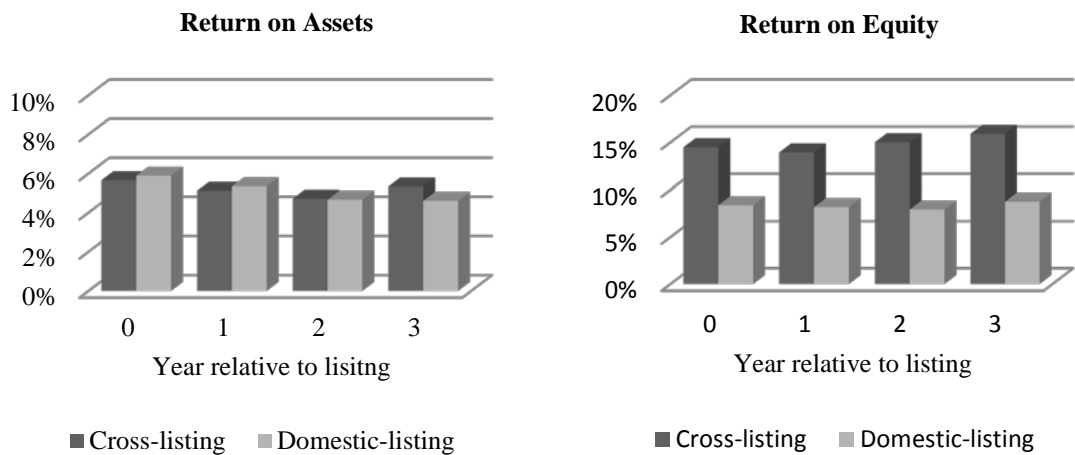
Panel C: Post-2005 listings (2005 to 2011)



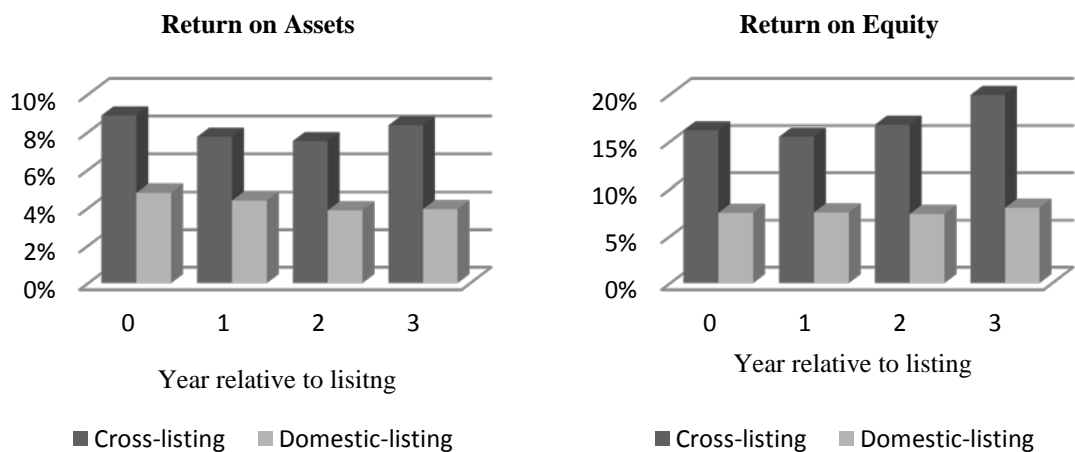
Panel D: Pre-2000 listings (1993 to 1999)



Panel E: Post-2000 listings (2000 to 2011)



Panel F: 2000-2004 listings



The figures illustrate post-issuance operating performances (represented by Return on Assets and Return on Equity) of Chinese cross-listed stocks and purely domestic listed stocks for 3 years after listing. The percentage is calculated as the mean value of each measure annually. The full sample covers 78 cross-listing firms and 1441 purely domestic listing firms each year. Full sample is also divided into five sub-samples according to sub-period. The solid bars represent cross-listed firms, whereas the shaded bars represent the comparatively purely domestic listed firms. The numbers in the graphs above are related to those reports in the first two columns of Table 9.

Figure 2 provides further information. It can be seen that ROE of cross-listed firms do exhibit general advantage over purely domestic-listed firms in the full-period sample and four sub-period samples (an exception is the sample of pre-2000 listings). However, in terms of ROA, cross-listed firms do not demonstrate an absolute advantage over purely domestic IPOs in the event period, although both cross-listings and domestic listings experience deterioration in ROA after issuance. This result is in line with findings of existing literature (Huang & Song, 2005; Wu & Kwok, 2007; Zhang & King, 2010). The different results of relative operating performances between ROA and ROE may suggest that debt plays an important role in profitability measures. That is, with consideration of debt (ROA), cross-listings generally perform worse than their domestic peers; while without consideration of debt (ROE), cross-listings generally perform better. Indeed, Table 8 shows that cross-listed firms generally have more debt in the full sample and four sub-period samples (except for the sample of pre-2000 listings). The results again suggest that the relative operating performance of cross-listing firms to domestic listing firms depend on measurement variables employed.

6.3 Operating performance dynamic changes

Table 10 shows a dynamic change in operating performance of Chinese cross-listed firms, in comparison with their domestic peers in the three years after listing. Three points are worth noting. To begin with, operating performance does not absolutely improve in three years after the cross-listing and cross-listed firms does not absolutely outperform purely domestic-listed firms, in terms of the full sample, and samples from pre-2000 and pre-2005 listings. For example, ROA (ROE) based on a sample of pre-2000 cross-listings decreased by -48.26% (-52.65%), whereas ROA (ROE) of their domestic peers decreased by -50.90% (-35.63%). These results are in line with the findings of prior studies that employed pre-2000 and pre-2005 financial data, suggesting there is no absolute advantage of cross-listings over domestic-listings in three years after issuance (Huang & Song, 2005; Zhang & King, 2010). Nevertheless, based on samples from the most recent period (post-2000 listings, post-2005 listings and 2000-2004 listings), cross-listed firms have significantly outperformed their domestic peers. For example, ROA (ROE) of post-2000 cross listing firms increased by 2.31% (4.38%), comparatively, ROA (ROE) of their domestic peers decreased by -28.46% (-6.06%). In addition, the results further suggest that in the most recent period, domestic listed firms keep deteriorating in operating performance measured by ROA and ROE, while cross-listed firms demonstrate an increase in ROA and ROE in three years after listing.

Table 10: Operating performance change of Chinese firms subsequent to listing

Panel A: full sample over 1993 to 2011

year	Δ ROA		Δ ROE		Δ CFE		Δ Leverage		Δ Log (Assets)		Δ Sales	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0 to +1	-5.15%	-5.02%	-7.17%	1.27%	2.13%	-8.24%	0.59%	11.42%	0.60%	0.67%	19.90%	19.19%
0 to +2	-18.79%	-20.71%	-3.02%	-4.31%	-1.93%	-3.17%	1.12%	23.42%	1.22%	1.23%	38.40%	42.37%
0 to +3	-16.78%	-31.14%	-12.11%	-10.76%	3.01%	1.92%	-0.13%	30.53%	1.50%	2.09%	66.93%	76.97%

Panel B: pre-2005 cross listing firms

year	Δ ROA		Δ ROE		Δ CFE		Δ Leverage		Δ Log (Assets)		Δ Sales	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0 to +1	-16.41%	-6.62%	-10.92%	1.47%	2.52%	-4.16%	-2.26%	11.07%	0.13%	0.58%	11.09%	18.47%
0 to +2	-33.61%	-23.68%	-28.87%	-4.38%	5.68%	3.18%	-0.73%	22.00%	0.68%	1.29%	22.49%	40.46%
0 to +3	-32.97%	-33.44%	-18.18%	-13.44%	14.04%	6.68%	-5.65%	31.13%	1.27%	2.10%	52.06%	73.64%

Panel C: post-2005 cross listing firms

year	Δ ROA		Δ ROE		Δ CFE		Δ Leverage		Δ Log (Assets)		Δ Sales	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0 to +1	2.32%	-4.83%	8.15%	1.05%	18.20%	-9.72%	0.54%	9.74%	0.58%	0.62%	25.88%	19.90%
0 to +2	9.43%	-18.28%	9.61%	-4.71%	-18.73%	-7.15%	2.42%	25.07%	1.39%	1.17%	59.27%	44.16%
0 to +3	8.84%	-25.00%	25.76%	-4.80%	4.31%	-3.76%	5.47%	32.95%	2.30%	2.24%	100.18%	82.19%

Table 10: (Continued)

Panel D: pre-2000 cross listing firms

year	Δ ROA		Δ ROE		Δ CFE		Δ Leverage		Δ Log (Assets)		Δ Sales	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0 to +1	-17.83%	-7.10%	-15.80%	-1.95%	44.15%	-5.60%	-4.60%	8.35%	0.04%	0.67%	9.90%	11.58%
0 to +2	-48.92%	-33.26%	-50.52%	-24.48%	12.02%	-10.34%	-1.65%	16.88%	0.30%	1.26%	18.68%	26.35%
0 to +3	-48.26%	-50.90%	-52.65%	-35.63%	40.77%	-16.97%	5.36%	19.51%	0.65%	1.64%	33.11%	40.09%

Panel E: post-2000 cross listing firms

year	Δ ROA		Δ ROE		Δ CFE		Δ Leverage		Δ Log (Assets)		Δ Sales	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0 to +1	-0.67%	-5.02%	-4.07%	1.82%	15.26%	-8.77%	0.48%	11.33%	0.62%	0.63%	24.55%	20.28%
0 to +2	-3.74%	-19.47%	5.51%	-3.12%	-16.97%	-2.67%	2.50%	24.59%	1.59%	1.21%	55.72%	44.61%
0 to +3	2.31%	-28.46%	4.38%	-6.06%	-0.76%	3.30%	2.54%	31.91%	2.80%	2.14%	97.53%	82.18%

Panel F: 2000-2004 cross listing firms

year	Δ ROA		Δ ROE		Δ CFE		Δ Leverage		Δ Log (Assets)		Δ Sales	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0 to +1	-5.59%	-5.91%	-9.01%	3.39%	-11.89%	-3.94%	0.04%	13.72%	0.59%	0.59%	12.34%	20.59%
0 to +2	-10.95%	-22.04%	0.15%	0.17%	-8.56%	5.11%	1.91%	22.00%	1.01%	1.30%	36.39%	44.74%
0 to +3	1.47%	-27.54%	1.07%	-3.59%	-0.76%	10.24%	-2.89%	32.01%	2.80%	2.14%	75.69%	82.16%

This table presents the summary of the median changes in operating performance between cross-listings and relative purely domestic-listings in three years subsequent to the listing. Δ ROA is a yearly change in return on assets; Δ ROE is a yearly change in return on equity; Δ CFE is a yearly change in cash flow to total equity ratio; Δ Size is a yearly change in in firm size, which is measured by log of total assets; Δ leverage is a yearly change in leverage, which is measured by debt to assets ratio; growth is measured by sales growth.

Table 11: T-statistic and Wilcoxon/Mann-Whitney testing the equality of change between the cross-listed and purely domestic-listed firms

Panel A: full sample over 1993 to 2011

year	ROA		ROE		CFE		Leverage		Log (Assets)		ΔSales	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
0 to +1	-0.82	0.22	1.50	1.54	-8.02***	3.10***	3.75***	5.92***	1.07	1.32	-0.71	0.50
0 to +2	-1.54	0.46	0.77	1.19	-8.92***	1.10	4.58***	6.87***	1.16	1.08	0.37	0.92
0 to +3	-1.96**	1.25	0.64	0.86	-6.73**	0.24	5.05***	7.06***	3.68***	3.99***	-0.01	0.82

Panel B: pre-2005 newly listing firms

year	ROA		ROE		CFE		Leverage		Log (Assets)		ΔSales	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
0 to +1	1.25	1.73*	2.32**	2.48**	-6.69***	1.88*	3.56***	5.12***	2.86***	4.15***	-0.95	1.16
0 to +2	0.31	1.74*	1.22	2.33**	-5.19***	1.63	3.94***	5.48***	2.88***	3.94***	0.56	1.85*
0 to +3	-0.37	0.32	0.90	1.80*	-5.25***	1.21	4.39***	5.75***	2.31**	2.99***	-0.11	1.27

Panel C: post-2005 newly listing firms

year	ROA		ROE		CFE		Leverage		Log (Assets)		ΔSales	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
0 to +1	-1.74*	2.07**	-1.17	1.42	5.62***	2.31**	2.68***	4.03***	-0.03	0.20	0.39	0.85
0 to +2	-2.23**	2.48**	-1.35	1.78*	-8.79***	0.36	3.28***	5.00***	-0.08	0.64	-0.19	1.21
0 to +3	-1.94*	2.59***	-1.52	1.78*	-4.13***	0.02	3.29***	4.63***	0.63	0.33	0.18	0.66

Table 11: T-statistic and Wilcoxon/Mann-Whitney testing the equality of change between the cross-listed and purely domestic-listed firms(Continued)

Panel D: pre-2000 newly listing firms

year	ROA		ROE		CFE		Leverage		Log (Assets)		ΔSales	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
0 to +1	1.12	1.31	3.13***	2.73***	-3.66***	1.51	3.27***	3.99***	1.79*	2.72***	-1.70*	0.16
0 to +2	0.65	1.13	2.32**	2.21**	-2.90***	2.09**	3.41***	3.56***	3.07***	3.64***	-0.21	0.34
0 to +3	-0.69	0.13	0.69	0.76	-2.98***	2.22**	3.38***	3.69***	3.03***	2.94***	-0.49	0.15

Panel E: post-2000 newly listing firms

year	ROA		ROE		CFE		Leverage		Log (Assets)		ΔSales	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
0 to +1	-3.06***	2.45**	-0.85	0.74	-7.92***	2.99***	2.61***	3.87***	-1.02	1.06	-0.29	0.42
0 to +2	-4.19***	2.87***	-1.90*	1.99**	-8.31***	0.54	3.36***	4.91***	-1.31	2.02**	-0.65	0.96
0 to +3	-4.67***	3.58***	-1.96*	2.46**	-4.61***	0.42	3.45***	4.68***	-1.29	1.92*	-1.50	1.25

Panel F: 2000-2004 newly listing firms

year	ROA		ROE		CFE		Leverage		Log (Assets)		ΔSales	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
0 to +1	-4.46***	0.72	-4.16***	0.35	-3.79***	0.70	1.07	2.22**	-1.29	0.06	0.11	0.21
0 to +2	-5.58***	1.32	-4.67***	1.08	-0.68	0.49	1.45	2.80***	-1.63	0.78	-0.21	0.34
0 to +3	-6.66***	2.43**	-5.10***	1.84*	-1.90*	0.21	1.40	2.46**	-2.50**	1.57	-0.49	0.15

This table presents the significant test for the difference between cross-listing and relative purely domestic-listing operating performance in three years subsequent to the listing. ROA is return on assets; ROE is return on equity; CFE is cash flow to total equity ratio; Size is measured by log of total assets; leverage is measured by debt to assets ratio; growth is measured by sales growth. The numbers reported in this table are values of t-test for the means and values of Wilcoxon/Mann-Whitney test for medians. ***, **, * suggest level of significance at 1%, 5% and 10% respectively.

Second, domestic companies show a more significant increase in leverage than cross-listed companies in three years after listing, no matter which sample period employed. The possible explanation would be that listing on the stock market could significantly promote the capital raising ability for domestic firms. Comparatively, cross-listed firms are mainly SOEs, which already have higher level of debt as indicated in the previous sections of this study, thus their capital raising speed might be hard to increase further.

Third, firm size and sales increase in three years after cross-listing. Especially, in the most recent period samples (post-2000, post-2005 and 2000-2004 listings), firm size and sales growth have increased more rapidly for cross-listed firms than for purely domestic-listed firms. This result reflects that the fact that the number of giant Chinese SOEs listing overseas increases after 2000. The result based on dynamic change further implies that the size and sales could be factors that affect profitability.

Table 11 shows the results of statistical significance tests for the equality of operating performance changes between the cross-listed and purely domestic-listed firms. First, there is no consistent equality of changes in ROA, ROE and CFE between cross-listed and domestic-listed companies. Second, the results again suggest that the leverage increase is statistically significantly different between cross-listed and domestic-listed firms. However, there is no statistically significant difference in sales growth between cross-listed and domestic-listed firms, no matter which sample periods employed. In brief, the results imply that in spite of cross-listed firms with a characteristic of higher debt in absolute numbers, domestic-listed firms tend to employ leverage at a faster rate than cross-listed firms do after share issuance. Nonetheless, the increased debt that purely domestic-listed firms employed does not embody in the sales growth.

Overall, there is no evidence that cross-listed firms absolutely outperform their domestic-listed peers in the event period based on full sample and samples of pre-2000 and pre-2005 listings. This result seems in contradiction with Hypothesis 2 that this study proposed, but in line with the findings of Zhang and King (2010), who call into question the real motivation of overseas listing of Chinese firms. However, based on the most recent listing samples (post-2000, post-2005 and 2000 to 2005 listings), the evidence indicates that the profitability advantage of Chinese cross-listed firms to purely domestic listed firms does exist. On the whole, it seems that the operating performance of cross-listing stocks is also time-dependent and subject to the structural change of the Chinese financial market.

Chapter 7 Conclusion and Discussion

This study sheds new lights on the effect of cross-listing on the long-run market and operating performance of firms from an emerging market, by studying a group of 78 Chinese firms cross-listed in the Hong Kong exchanges over the period from 1993 to 2012. The results of this study show that both market performance and operating performance do not absolutely improve after cross-listing in terms of the full sample-period. However, in terms of the most recent period samples (post-2000, post-2005 and 2000-2004 listings), the advantage of cross-listing appears to exist. There are three main findings in this study as follows.

For market performance, the result based on the full sample reveals that cross-listed firms have no absolute advantage over domestic new listing peers in the event period (initial three years subsequent to the listing events). This finding is in line with Wu and Kwok (2007), suggesting that investors are usually over optimistic regarding the future prospect of cross-listing firms and therefore willingly to add premiums to the IPO prices. After cross-listing activities are fulfilled, the market adjusts this over-optimism to the fair values. However, the above findings should be explained with caution, because different testing periods and different benchmarks offer different results. For example, the market performances from samples of post-2000, post-2005 and 2000-2004 listings show that the comparative cumulative abnormal returns pick up in three years after cross-listing. This result extends the existing literature and shows that cross-listing is likely to offer a relatively higher return in the most recent periods, when many well-known Chinese SOEs started to list in the Hong Kong stock market. This result also seems to support the investor recognition hypothesis, indicating that cross-listed firms show better market return than their purely domestic-listed peers, when foreign investors have become familiar with these cross-listed firms (Chemmanur & Fulghieri, 2006; Foerster & Karolyi, 1999; Lang et al., 2004).

For operating performance, the result based on full sample shows that both cross-listed and purely domestic-listed firms are subject to the negative IPO effect that may weaken their operating performance (Huang & Song, 2005). However, it can be seen from the dynamic change that operating performance of cross-listed companies still gradually improved, in terms of the most recent sub-period samples (post-2000, post-2005 and 2000-2004 listings). A possible explanation for this finding is that although only those firms with promising and feasible development opportunities are more likely to be

successful to list on overseas exchanges, these firms still need time to further adjust themselves to adapt to global competition. This adaptive process can help cross-listed firms to establish competitive advantages. This fact seems to support the strategic hypothesis, which claims that firms conducting cross-listing mainly aim at their long-run growth opportunity. In order to achieve their long-run strategic target, cross-listed firms are willing to accept short-term deterioration in performance (Lins et al., 2005; Pagano et al., 2002). For companies from emerging markets, exposure to global competition provides the sustainable advantage in operating perspective for cross-listings over domestic-listings (Khurana et al., 2008; Valero & Melvin, 2009).

The different market and operating performance of cross-listed firms in different sub-period samples may reflect the structural changes of Chinese financial market. As mentioned in Data section, the Chinese financial market development broadly experienced three different stages so far: from 1993 to 1999, from 2000 to 2004 and from 2005 to present (Y. Wang, 2013). Meanwhile, the characters of cross-listed firms also changed – large Chinese national resource companies have begun to cross-list since 2000, and even larger Chinese banks have started to cross-list from 2005 on. As Sun, Tong, and Zhang (2013) point out, the increasing number of large Chinese SOEs listed on the Hong Kong stock exchange is likely to influence the whole pattern of cross-listings. Consequently, the different periodical feature of Chinese financial market development could be an important reason that results in different performances of cross-listed firms at each stage.

For other fundamental factors, the increase in size and sale of Chinese firms in three years after cross-listing suggests the fundamentals are likely to be consolidated after cross-listing. According to Khurana et al. (2008), the benefit of cross-listing to a firm mainly comes outside the firm, it can be argued that firms may lay more emphasis on protecting their reputation and improving investor recognition after cross-listing. As a result, fundamental framework of a firm would be promoted (Bancel & Kalimipalli, 2009; King & Segal, 2009). Therefore, it can be argued that when cross-listed firms make adjustments to adapt to the environment of global competition, their financial standing could be enhanced and firm value could be improved eventually.

The findings of this study have two main implications. First, the result suggests that cross-listing is still generally favourable for Chinese firms. From market performance perspective, despite of the negative CARs in the initial three years after listing based on

the full sample, the CARs are positive and continuously increasing based on the most recent sample of post-2000 listing firms. From operating performance perspective, even though Huang and Song (2005) mentioned that listing overseas is also subject to short-term deterioration, cross-listing firms still outperform their domestic peers based on the most recent sample of the post-2000 listing firms after controlling the debt and IPO effect.

Second, the Hong Kong stock exchange seems to provide a better listing environment than Chinese domestic stock markets. Although the original motivation for Chinese firms listing overseas is driven by policy tool, cross-listed firms may still benefit from a higher standard of disclosure requirement, rigorous legal protection for investors and broader media and analyst coverage (Sun, Tong, & Wu, 2013). Moreover, cross-listing is able to offer abundant resources, which are expected to provide external support to help cross-listed firms seize the opportunities when the profitable projects are available, and thus to ensure their sustainable growth. (Arauner, 1996; Coffee, 2002; Hail & Leuz, 2009). In addition, the structural improvement of the Mainland China financial environment seems to have a positive impact on Chinese cross-listed firms. The improved listing mechanism and financial system could promote the quality of Chinese firms, make these firms to have the standards and requirements of developed overseas financial markets, such as HKSE, and hence improve the firms' performance in the destination market.

Appendix A: The market share of foreign companies among U.S. listings (1980-2012)

Year	All (1)	U.S. (2)	Foreign		% foreign / All (4)/(1)	China		% China / All (6)/(1)	% China / Foreign (6)/(4)
			ADRs (3)	Total (4)		ADRs (5)	Total (6)		
1980	73	71	0	2	2.74%	0	0	0.00%	0.00%
1981	197	192	0	5	2.54%	0	0	0.00%	0.00%
1982	79	79	0	1	1.27%	0	0	0.00%	0.00%
1983	449	445	0	4	0.89%	0	0	0.00%	0.00%
1984	177	173	1	4	2.26%	0	0	0.00%	0.00%
1985	183	181	0	2	1.09%	0	0	0.00%	0.00%
1986	395	395	0	0	0.00%	0	0	0.00%	—
1987	284	283	1	1	0.35%	0	0	0.00%	0.00%
1988	110	100	8	10	9.09%	0	0	0.00%	0.00%
1989	119	110	6	9	7.56%	0	0	0.00%	0.00%
1990	111	107	1	4	3.60%	0	0	0.00%	0.00%
1991	290	279	3	11	3.79%	0	0	0.00%	0.00%
1992	416	393	5	23	5.53%	0	0	0.00%	0.00%
1993	528	488	19	40	7.58%	1	1	0.19%	2.50%
1994	421	386	18	35	8.31%	2	3	0.71%	8.57%
1995	474	432	17	42	8.86%	1	1	0.21%	2.38%
1996	707	643	32	64	9.05%	1	1	0.14%	1.56%
1997	506	428	33	78	15.42%	3	4	0.79%	5.13%
1998	296	258	13	38	12.84%	1	2	0.68%	5.26%
1999	504	451	28	53	10.52%	0	1	0.20%	1.89%
2000	421	336	40	85	20.19%	4	7	1.66%	8.24%
2001	84	74	5	10	11.90%	2	2	2.38%	20.00%
2002	68	63	2	5	7.35%	1	1	1.47%	20.00%
2003	65	59	3	6	9.23%	2	2	3.08%	33.33%
2004	191	161	17	30	15.71%	9	9	4.71%	30.00%
2005	173	143	13	30	17.34%	8	8	4.62%	26.67%
2006	172	138	15	34	19.77%	7	9	5.23%	26.47%
2007	191	138	31	53	27.75%	27	29	15.18%	54.72%
2008	25	18	4	7	28.00%	4	4	16.00%	57.14%
2009	50	38	12	9	24.00%	7	9	18.00%	75.00%
2010	126	81	34	45	35.71%	32	33	26.19%	73.33%
2011	93	71	12	22	23.66%	11	13	13.98%	59.09%
2012	100	86	6	14	14.00%	3	3	3.00%	21.43%
1980- 2012	8078	7300	376	779	9.64%	126	142	1.76%	18.23%

Notes: This table presents all the American Depositary Receipts (ADRs) and other IPOs in U.S. markets during 1980 to 2012. Any IPOs with an offer price below \$5.00 per share, unit offers, REITs, closed-end funds, partnerships, banks and savings and loan institutions (S&Ls), and IPOs not listed on The Centre for Research in Security Prices (CRSP) within six months of the offer date are excluded from the statistics. The deleted listings can be found in “SDC Corrections” on Ritter’s IPO Data page from the IPO counts. Among all the foreign countries, Bermuda, Canada, China, Greece, Israel, the Netherlands, and the United Kingdom are the most common countries for IPOs that list in the U.S. For Bermuda-domiciled companies, the statistic includes them as foreign companies, irrespective of the main country of operations. For Chinese IPOs, The count does not include those from Hong Kong, and excludes “reverse mergers” and best efforts IPOs. The count of foreign IPOs from before 1988 may be incomplete, and we revise calculated numbers based on original statistics.

Source: Initial Public Offerings: Updated Statistics (June 30, 2013). See “IPO Statistics for 2012 and Earlier Years” at Ritter’s website: <http://bear.warrington.ufl.edu/ritter>.

Appendix B: Value of share trading in terms of stock exchanges (As at 31/12/2012)

Exchange	December 2012			Trading days Dec 2012	Year-to-date			Trading days YTD 2012
	Total	Domestic	Foreign		Total	Domestic	Foreign	
Americas								
Bermuda SE	8.0	4.0	4.0	19	37.9	29.3	8.7	243
BM&FBOVESPA	66 151.8	65 941.4	210.4	18	875 417.5	872 378.0	3 039.4	246
Buenos Aires SE	196.0	151.4	44.6	18	2 190.6	1 584.7	605.9	241
Colombia SE	1 794.2	1 580.1	214.1	19	39 432.9	31 616.9	7 816.0	244
Lima SE	2 241.2	2 198.7	42.6	20	6 102.3	5 177.3	924.9	251
Mexican Exchange	10 169.7	9 561.1	608.7	18	126 139.0	118 162.0	7 977.3	248
NASDAQ OMX	657 391.6	604 234.0	53 158.0	20	9 784 206.2	8 992 180.0	792 024.0	250
NYSE Euronext (US)	1 024 103.1	953 681.0	70 422.4	20	13 442 719.6	12 383 100.0	1 059 620.0	250
Santiago SE	4 386.4	4 385.6	0.8	19	45 653.0	45 631.0	21.9	247
TMX Group	117 976.3	116 927.0	1 049.6	18	1 357 293.0	1 343 830.0	13 459.0	250
Total region	1 884 418.4				25 679 191.9			
Asia - Pacific								
Australian SE	58 990.7	57 014.2	1 976.5	19	935 987.5	904 632.0	31 355.1	253
BSE India	9 065.4	9 065.4	NA	20	110 345.9	110 346.0	NA	251
Bursa Malaysia	8 276.2	8 258.7	17.6	20	124 332.9	122 958.0	1 374.5	245
Colombo SE	96.7	96.7	NA	19	1 679.1	1 679.1	NA	242
GreTai Securities Market	9 127.8	8 710.7	417.2	21	99 840.6	96 077.4	3 763.2	250
Hong Kong Exchanges	93 563.1	89 850.6	3 712.5	19	1 106 068.5	1 076 080.0	29 989.0	247
Indonesia SE	7 605.4	7 605.4	0.0	18	94 585.7	94 585.7	0.0	246
Japan Exchange Group - Osaka	13 135.2	13 133.2	2.1	19	142 498.2	142 463.0	34.8	248
Japan Exchange Group - Tokyo	315 671.6	315 652.0	19.6	19	3 463 094.8	3 462 930.0	166.3	248
Korea Exchange	95 938.2	95 660.2	278.0	18	1 517 896.9	1 513 840.0	4 057.9	248
National Stock Exchange India	43 613.9	43 613.9	NA	20	526 162.7	526 163.0	0.0	251
Philippine SE	3 045.1	3 044.8	0.3	18	34 783.1	34 780.4	2.7	244
Shanghai SE	275 746.1	275 746.0	NA	21	2 598 805.4	2 598 810.0	NA	243
Shenzhen SE	229 878.7	229 879.0	NA	21	2 369 079.6	2 369 080.0	NA	243
Singapore Exchange	19 024.7	19 024.7	NA	20	256 055.9	256 056.0	NA	251
Taiwan SE Corp.	55 504.0	51 860.3	3 643.7	21	678 514.5	641 734.0	36 780.5	250
The Stock Exchange of Thailand	20 705.6	20 705.6	NA	18	236 024.9	236 025.0	NA	245
Total region	1 258 988.4				14 295 756.1			
Europe - Africa - Middle East								
Abu Dhabi SE	498.2	497.9	0.3	20	5 995.1	5 982.8	12.2	252
Amman SE	262.1	262.1	NA	20	2 734.6	2 734.6	0.0	251
Athens Exchange	1 180.4	1 144.1	36.3	18	15 949.5	14 836.0	1 113.5	249
BME Spanish Exchanges	69 560.7	69 247.2	313.4	19	851 827.6	846 103.0	5 724.5	256
Borsa Istanbul	34 810.6	34 802.5	8.2	21	357 779.2	357 643.0	136.2	252
Budapest SE	581.8	581.8	0.0	17	10 883.1	10 877.6	5.5	246
Casablanca SE	981.0	980.3	0.8	21	3 469.6	3 449.4	20.2	251
Cyprus SE	9.9	9.9	0.0	18	290.5	290.5	0.0	247
Deutsche Börse	76 144.2	72 157.7	3 986.6	17	1 275 949.4	1 225 530.0	50 417.7	254
Egyptian Exchange	1 351.8	1 351.8	NA	22	17 855.7	17 855.7	NA	245
Irish SE	647.7	643.3	4.4	19	9 261.6	9 191.5	70.1	254
Johannesburg SE	22 414.2	15 825.5	6 588.6	18	335 909.7	235 560.0	100 350.0	250
Ljubljana SE	30.6	30.6	0.0	17	392.7	392.7	0.0	246
London SE Group	136 676.3	120 178.0	16 498.4	18	2 194 257.4	1 910 420.0	283 841.0	253
Luxembourg SE	9.0	7.6	1.4	19	131.8	112.4	19.3	252
Malta SE	3.3	3.3	0.0	16	43.1	43.1	0.0	246
Mauritius SE	27.3	27.3	0.0	20	298.8	298.8	0.0	247
Moscow Exchange	17 164.1	17 148.4	15.7	20	337 110.7	336 886.0	224.9	255
Muscat Securities Market	308.0	308.0	NA	22	2 663.2	2 663.2	NA	249
NASDAQ OMX Nordic Exchange	34 492.0	32 168.6	2 323.4	17	586 971.2	549 240.0	37 731.3	254
NYSE Euronext (Europe)	95 696.8	95 389.6	307.2	19	1 576 120.7	1 571 900.0	4 220.9	256
Oslo Børs	7 506.3	5 979.6	1 526.6	17	146 149.8	115 214.0	30 936.2	250
Saudi Stock Exchange - Tadawul	32 632.4	32 632.4	NA	23	511 196.4	511 196.0	NA	251
SIX Swiss Exchange	37 127.0	36 918.6	208.4	17	585 204.9	581 952.0	3 252.7	250
Tel Aviv SE	5 023.7	5 023.7	NA	22	49 365.1	49 365.1	NA	245
Wiener Börse	1 847.3	1 826.5	20.8	17	23 404.7	23 214.9	189.8	247
Total region	576 986.8				8 901 216.0			
WFE Total	3 720 393.5				48 876 164.1			

Notes:

- 1 The figure is in USD million.
2. Korea Exchange: includes KOSDAQ market data.
3. BME: Including investment companies listed (open-end investment companies) that differ from investment funds included in the table because of their legal status and that cannot be distinguished from other listed companies.
4. Australian SE: include investment funds.
5. NASDAQ OMX Nordic Exchange: OMX includes Copenhagen, Helsinki, Iceland, Stockholm, Tallinn, Riga and Vilnius Stock Exchanges.
6. Singapore Exchange: Main Board, SESDAQ & CLOB International.
7. Due to different reporting rules & calculation methods, turnover figures are not entirely comparable.

Source : World Federation of Exchanges (2013)

Appendix C: Descriptive information on the A+H cross-listed firms (As at 12/31/2012)

company name	Industry	H-share listing date	A-share listing date	H-share code	A-share code	Province incorporated	ADR/London
Tsingtao Brewery	Beverages	15/07/1993	27/08/1993	00168	600600	Shan Dong	ADR
Sinopec Shanghai Petrochemicals	Chemicals	26/07/1993	8/11/1993	00338	600688	Shang Hai	ADR
Beiren Printing Machinery	Industrial Engineering	6/08/1993	6/05/1994	00187	600860	Bei Jing	
Guangzhou Shipyard International	Industrial Engineering	6/08/1993	28/10/1993	00317	600685	Guang Dong	
Maanshan Iron and Steel	Industrial Metals and Mining	3/11/1993	6/01/1994	00323	600808	An Hui	
Shenji Group Kunming Machine Tool	Industrial Engineering	7/12/1993	3/01/1994	00300	600806	Yun Nan	
Sinopec Yizheng Chemical Fibre	Chemicals	29/03/1994	11/04/1995	01033	600871	Jiang Su	
Tianjin Capital Environmental Protection Group	Gas, Water and Multiutilities	17/05/1994	30/06/1995	01065	600874	Tian Jin	
Dongfang Electric	Industrial Engineering	6/06/1994	10/10/1995	01072	600875	Si Chuan	
Luoyang Glass	Construction and Materials	8/07/1994	31/10/1995	01108	600876	He Nan	
China Shipping Development	Industrial Transportation	11/11/1994	23/05/2002	01138	600026	Shang Hai	ADR
Northeast Electric Development	Electronic and Electrical Equipment	6/07/1995	13/12/1995	00042	000585	Liao Ning	
Jingwei Textile Machinery	Industrial Engineering	2/02/1996	10/12/1996	00350	000666	Bei Jing	
Nanjing Panda Electronic	Technology Hardware and Equipment	2/05/1996	18/11/1996	00553	600775	Jiang Su	
Guangshen Railway	Travel and Leisure	14/05/1996	22/12/2006	00525	601333	Guang Dong	ADR
Hisense Kelon Electrical Holdings	Household Goods and Home Construction	23/07/1996	13/07/1999	00921	000921	Guang Dong	
Anhui Expressway	Industrial Transportation	13/11/1996	7/01/2003	00995	600012	An Hui	
Shandong Xinhua Pharmaceutical	Pharmaceuticals and Biotechnology	31/12/1996	6/08/1997	00719	000756	Shan Dong	
China Eastern Airlines	Travel and Leisure	5/02/1997	5/11/1997	00670	600115	Shang Hai	ADR
Shenzhen Expressway	Industrial Transportation	12/03/1997	25/12/2001	00548	600548	Guang Dong	
Datang International Power Generation	Electricity	21/03/1997	20/12/2006	00991	601991	Bei Jing	London
Beijing North Star	Real Estate Investment and Services	14/05/1997	16/10/2006	00588	601588	Bei Jing	
Jiangxi Copper	Industrial Metals and Mining	12/06/1997	11/01/2002	00358	600362	Jiang Xi	London
First Tractor	Industrial Engineering	23/06/1997	8/08/2012	00038	601038	He Nan	
Jiangsu Expressway	Industrial Transportation	27/06/1997	16/01/2001	00177	600377	Jiang Su	
Angang Steel	Industrial Metals and Mining	24/07/1997	25/12/1997	00347	000898	Liao Ning	
China Southern Airlines	Travel and Leisure	31/07/1997	25/07/2003	01055	600029	Guang Dong	ADR
Sichuan Expressway	Industrial Transportation	7/10/1997	27/07/2009	00107	601107	Si Chuan	
Chongqing Iron and Steel	Industrial Metals and Mining	17/10/1997	28/02/2007	01053	601005	Chong Qing	
Anhui Conch Cement	Construction and Materials	21/10/1997	7/02/2002	00914	600585	An Hui	
Guangzhou Pharmaceutical	Pharmaceuticals and Biotechnology	30/10/1997	6/02/2001	00874	600332	Guang Dong	
Huaneng Power International	Electricity	21/01/1998	6/12/2001	00902	600011	Bei Jing	ADR
Yanzhou Coal Mining	Mining	1/04/1998	1/07/1998	01171	600188	Shan Dong	ADR
Huadian Power International	Electricity	30/06/1999	3/02/2005	01071	600027	Shan Dong	
Petrochina	Oil and Gas Producers	7/04/2000	5/11/2007	00857	601857	Bei Jing	ADR
China Petroleum and Chemical	Oil and Gas Producers	19/10/2000	8/08/2001	00386	600028	Bei Jing	ADR/London
Aluminum Corporation of China	Industrial Metals and Mining	12/12/2001	30/04/2007	02600	601600	Bei Jing	ADR
BYD	Automobiles and Parts	31/07/2002	30/06/2011	01211	002594	Guang Dong	
China Oilfield Services	Oil Equipment and Services	20/11/2002	28/09/2007	02883	601808	Tian Jin	
Dongjiang Environmental	Support Services	29/01/2003	26/04/2012	00895	002672	Guang Dong	
Great Wall Motor Company	Automobiles and Parts	15/12/2003	28/09/2011	02333	601633	He Bei	
China Life Insurance	Life Insurance	18/12/2003	9/01/2007	02628	601628	Bei Jing	ADR
Zijin Mining Group	Mining	23/12/2003	25/04/2008	02899	601899	Fu Jian	
Weichai Power	Industrial Engineering	11/03/2004	30/04/2007	02338	000338	Shan Dong	
Shandong Molong Petroleum Machinery	Oil Equipment and Services	15/04/2004	21/10/2010	00568	002490	Shan Dong	
China Shipping Container Lines	Industrial Transportation	16/06/2004	12/12/2007	02866	601866	Shang Hai	
Ping An Insurance	Life Insurance	24/06/2004	1/03/2007	02318	601318	Guang Dong	
ZTE	Technology Hardware and Equipment	9/12/2004	18/11/1997	00763	000063	Guang Dong	
Air China	Travel and Leisure	15/12/2004	18/08/2006	00753	601111	Bei Jing	London
Shanghai Electric Group Company	Industrial Engineering	28/04/2005	5/12/2008	02727	601727	Shang Hai	
China Shenhua Energy Company	Mining	15/06/2005	9/10/2007	01088	601088	Bei Jing	
Bank of Communications	Banks	23/06/2005	15/05/2007	03328	601328	Shang Hai	
China Cosco Holdings	Industrial Transportation	30/06/2005	26/06/2007	01919	601919	Tian Jin	
China Construction Bank	Banks	27/10/2005	25/09/2007	00939	601939	Bei Jing	
Dalian Port PDA	Industrial Transportation	28/04/2006	6/12/2010	02880	601880	Liao Ning	
Zhejiang Shibao	Automobiles and Parts	16/05/2006	2/11/2012	01057	002703	Zhe Jiang	
Bank of China	Banks	1/06/2006	5/07/2006	03988	601988	Bei Jing	
China Merchants Bank	Banks	22/09/2006	9/04/2002	03968	600036	Guang Dong	
Industrial and Commercial Bank of China	Banks	27/10/2006	27/10/2006	01398	601398	Bei Jing	
China Communications Construction	Construction and Materials	15/12/2006	9/03/2012	01800	601800	Bei Jing	
China Coal Energy	Mining	19/12/2006	1/02/2008	01898	601898	Bei Jing	
China Molybdenum	Mining	26/04/2007	9/10/2012	03993	603993	He nan	
China Citic Bank	Banks	27/04/2007	27/04/2007	00998	601998	Bei Jing	
China Railway Group	Construction and Materials	7/12/2007	3/12/2007	00390	601390	Bei Jing	
China Railway Construction	Construction and Materials	13/03/2008	10/03/2008	01186	601186	Bei Jing	
Shandong Chenming Paper Holdings	Forestry and Paper	18/06/2008	20/11/2000	01812	000488	Shan Dong	
China South Locomotive & Rolling (CSR)	Industrial Engineering	21/08/2008	18/08/2008	01766	601766	Bei Jing	
Beijing Building Materials Group (BBMG)	Construction and Materials	29/07/2009	1/03/2011	02009	601992	Bei Jing	
Metallurgical Corporation of China	Construction and Materials	24/09/2009	21/09/2009	01618	601618	Bei Jing	
China Minsheng Banking	Banks	26/11/2009	19/12/2000	01988	600016	Bei Jing	
China Pacific Insurance (Group)	Life Insurance	23/12/2009	25/12/2007	02601	601601	Shang Hai	
Agricultural Bank of China	Banks	16/07/2010	15/07/2010	01288	601288	Bei Jing	
Guangzhou Automobile Group	Automobiles and Parts	30/08/2010	29/03/2012	02238	601238	Guang Dong	
Xinjiang Goldwind Science and Technology	Alternative Energy	8/10/2010	26/12/2007	02208	002202	Xin Jiang	
Changsha Zoomlion	Industrial Engineering	23/12/2010	12/10/2000	01157	000157	Hu Nan	
Shanghai Pharmaceuticals Holding Company	Pharmaceuticals and Biotechnology	20/05/2011	24/03/1994	02607	601607	Shang Hai	
Citic Securities	Financial Services (Sector)	6/10/2011	6/01/2003	06030	600030	Guang Dong	
New China Life Insurance	Life Insurance	15/12/2011	16/12/2011	01336	601336	Bei Jing	
Haitong Securities Company	Financial Services (Sector)	27/04/2012	24/02/1994	06837	600837	Shang Hai	
Shanghai Fosun Pharmaceutical (Group)	Pharmaceuticals and Biotechnology	30/10/2012	7/08/1998	02196	600196	Shang Hai	
Zhengzhou Coal Mining Machinery Group	Industrial Engineering	5/12/2012	3/08/2010	00564	601717	He Nan	
China International Marine Containers (Group)	General Industrials	19/12/2012	12/12/2007	02039	601866	Shang Hai	

Note: The table reports basic information for 78 cross-listing firms as of 31/12/2012. The information in this table is arranged based on sources from Datastream, China Securities Regulatory Commission (CSRC) and Hong Kong stock exchanges (HKSE) websites.

Appendix D: All-time top 25 largest global IPOs (As at 12/31/2012)

Company Name	Offer Date	Exchange	Industry	Underwriter	Deal Size (US\$MM)
ABC Bank	07/07/10	Hong Kong / Shanghai	Financial	Goldman Sachs (Asia)	\$19,228
ICBC Bank	10/20/06	Hong Kong / Shanghai	Financial	Merrill Lynch	\$19,092
NTT Mobile	10/22/98	Tokyo Stock Exchange	Communications	Goldman Sachs (Asia)	\$18,099
Visa	03/18/08	NYSE	Financial	J.P. Morgan	\$17,864
AIA	10/21/10	Hong Kong	Financial	Citi	\$17,816
ENEL SpA	11/01/99	NYSE	Utilities	Merrill Lynch	\$16,452
Facebook	05/17/12	NASDAQ	Technology	Morgan Stanley	\$16,007
General Motors	11/17/10	NYSE	Capital Goods & Services	Morgan Stanley	\$15,774
Nippon Tel	02/09/87	Tokyo Stock Exchange	Communications	Nomura Securities	\$15,301
Deutsche Telekom	11/17/96	NYSE	Communications	Goldman, Sachs & Co.	\$13,034
Bank of China	05/24/06	Hong Kong / Shanghai	Financial	Goldman, Sachs & Co	\$11,186
Dai-ichi Mutual Life Insu	03/23/10	Tokyo Stock Exchange	Financial	BofA Merrill Lynch	\$10,986
AT&T Wireless Group	04/26/00	NYSE	Communications	Goldman, Sachs & Co.	\$10,620
Rosneft Oil Company	07/13/06	Russian Trading System	Energy	ABN AMRO	\$10,421
Glencore International	05/19/11	LSE Main / Hong Kong	Basic Resources	Citi	\$10,316
Japan Tobacco Inc. (JT)	10/27/94	Tokyo Stock Exchange	Consumer	Nomura Securities	\$9,576
China Construction Bank	10/20/05	Hong Kong / Shanghai	Financial	Morgan Stanley	\$9,227
Kraft Foods	06/12/01	NYSE	Consumer	Credit Suisse	\$8,680
Electricite De France	11/18/05	Euronext/Paris	Utilities	ABN AMRO	\$8,328
Water Holding Co	11/22/89	LSE Main	Utilities	Credit Suisse	\$8,199
VTB Bank	05/10/07	LSE Main	Financial	Citi	\$7,988
Banader Hotels Co	11/20/05	Bahrain Stock Exchange	Consumer	KPMG Corporate	\$7,958
Telia AB	06/13/00	OMX Nordic Exchange	Communications	Morgan Stanley	\$7,728
British Gas PLC	12/08/86	LSE Main	Energy	Goldman, Sachs & Co.	\$7,610
DDI Corp	09/03/93	Tokyo Stock Exchange	Communications	Daiwa Securities	\$7,592
China Engineering	07/23/09	Shanghai	Capital Goods & Services	China International Capital	\$7,343
France Telecom	10/17/97	NYSE	Communications	Merrill Lynch	\$7,289
Banco Santander Brasil	10/06/09	NYSE / Bovespa	Financial	Santander Investment	\$7,026

Source: Renaissance Capital Investments (<http://www.renaissancecapital.com/IPOHome/Rankings/biggest.aspx>)

Appendix E: Total assets and market value of Chinese A+H firms (2005-2011)

Date	company	Industry	Total Assets	Market Value
28/04/2005	Shanghai Electric Group Company	Industrial Engineering	116824.64	9840.33
15/06/2005	China Shenhua Energy Company	Mining	456261.00	115381.80
23/06/2005	Bank of Communications	Banks	5260878.00	204469.20
30/06/2005	China Cosco Holdings	Industrial Transportation	164969.63	9806.27
27/10/2005	China Construction Bank	Banks	13945777.00	1495395.00
28/04/2006	Dalian Port PDA	Industrial Transportation	27768.05	1955.18
16/05/2006	Zhejiang Shibao	Automobiles and Parts	1182.24	225.46
01/06/2006	Bank of China	Banks	12659323.00	289332.90
22/09/2006	China Merchants Bank	Banks	3403232.00	66869.06
27/10/2006	Industrial and Commercial Bank of China	Banks	17519428.00	477366.90
15/12/2006	China Communications Construction	Construction and Materials	431477.00	33117.69
19/12/2006	China Coal Energy	Mining	185310.08	34578.09
26/04/2007	China Molybdenum	Mining	15615.88	4457.93
27/04/2007	China Citic Bank	Banks	2953848.00	68457.88
07/12/2007	China Railway Group	Construction and Materials	546760.00	19059.46
13/03/2008	China Railway Construction	Construction and Materials	478671.20	18292.16
18/06/2008	Shandong Chenming Paper Holdings	Forestry and Paper	47348.48	1185.55
21/08/2008	China South Locomotive & Rolling (CSR)	Industrial Engineering	104747.61	13682.23
29/07/2009	Beijing Building Materials Group (BBMG)	Construction and Materials	81956.04	8232.45
24/09/2009	Metallurgical Corporation of China	Construction and Materials	323557.00	4335.20
26/11/2009	China Minsheng Banking	Banks	3203184.00	51770.70
23/12/2009	China Pacific Insurance (Group)	Life Insurance	665314.00	79512.19
16/07/2010	Agricultural Bank of China	Banks	13187393.00	117729.70
30/08/2010	Guangzhou Automobile Group	Automobiles and Parts	48866.33	15205.38
8/10/2010	Xinjiang Goldwind Science and Technology	Alternative Energy	31880.13	1650.15
23/12/2010	Changsha Zoomlion	Industrial Engineering	88478.00	16330.93
20/05/2011	Shanghai Pharmaceuticals Holding Company	Pharmaceuticals and Biotechnology	50877.29	11335.23
6/10/2011	Citic Securities	Financial Services	167670.87	23095.19
15/12/2011	New China Life Insurance	Life Insurance	492830.00	30454.45
Mean (2005 - 2011)			2643497.53	111142.23
Mean (1993 - 2004)			221720.39	24150.77
Times of Mean (2005 - 2011) to Mean (1993 - 2004)			11.92	4.60

Note: the table shows a list of Chinese A+H firms. "Date" is the issuance day when Chinese firms cross-list on the Hong Kong stock market. "Company" gives the name of cross-listed companies. "Industry" means the industries that cross-listed companies belong to. "Total Assets" suggests millions of assets that cross-listed companies owned as of the end of 2012. "Market value" indicates millions HKD of those cross-listed companies at the end of 2012.

Appendix F: Operating performance of Chinese cross-listed firms relative to purely domestic-listed firms based on the median

Panel A: full sample over 1993 to 2011

year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0	5.44%	5.63%	11.23%	8.02%	13.94%	13.55%	47.61%	25.82%	10.18	9.04		
1	4.08%	5.08%	10.79%	7.99%	12.42%	12.24%	48.65%	29.75%	10.23	9.10	19.90%	19.16%
2	3.22%	4.40%	9.93%	7.43%	13.52%	13.47%	50.33%	35.80%	10.21	9.15	17.86%	17.90%
3	3.62%	3.81%	11.23%	7.60%	13.94%	15.79%	49.39%	42.55%	10.15	9.18	22.92%	20.80%

Panel B: pre-2005 newly listing firms

year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0	5.77%	4.80%	11.17%	7.35%	13.32%	13.97%	39.37%	33.07%	9.76	8.96		
1	4.60%	4.22%	9.03%	7.44%	13.32%	13.16%	38.31%	37.86%	9.80	9.03	11.09%	18.68%
2	4.19%	3.47%	6.75%	6.78%	12.42%	14.27%	43.53%	42.68%	9.85	9.08	12.24%	19.70%
3	4.67%	3.11%	8.37%	6.61%	13.52%	15.14%	41.66%	45.72%	9.97	8.96	22.92%	20.75%

Panel C: post-2005 newly listing firms

year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0	3.05%	6.04%	11.78%	8.25%	12.52%	13.31%	61.39%	20.93%	11.14	9.08		
1	2.53%	5.61%	13.36%	8.19%	16.44%	11.77%	67.32%	24.66%	11.22	9.14	25.88%	19.80%
2	2.28%	4.95%	13.81%	7.84%	11.47%	12.72%	73.23%	30.21%	11.36	9.20	23.02%	17.23%
3	1.90%	4.79%	13.70%	8.77%	15.16%	17.13%	77.75%	37.39%	11.47	9.24	22.71%	21.16%

Panel D: pre-2000 newly listing firms												
year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0	5.62%	5.84%	10.13%	9.53%	5.41%	14.76%	36.82%	33.74%	9.67	8.99		
1	4.35%	5.34%	6.70%	9.81%	9.22%	14.20%	35.02%	38.40%	9.69	9.06	9.90%	13.62%
2	2.50%	4.35%	4.59%	7.46%	8.78%	13.85%	38.84%	42.04%	9.79	9.11	9.01%	14.68%
3	2.59%	3.00%	5.54%	6.46%	8.98%	13.02%	39.32%	43.31%	9.81	9.17	10.46%	12.01%
Panel E: post-2000 newly listing firms												
year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0	4.38%	5.63%	13.68%	7.91%	15.26%	13.45%	55.98%	33.06%	10.77	9.04		
1	3.66%	5.08%	13.12%	7.88%	18.02%	12.12%	56.31%	37.67%	10.82	9.10	24.55%	19.87%
2	3.42%	4.40%	13.86%	7.43%	19.12%	13.45%	57.82%	43.57%	10.94	9.15	24.88%	17.97%
3	4.18%	3.82%	15.82%	8.02%	24.55%	16.09%	65.21%	47.18%	11.02	9.18	27.29%	21.97%
Panel F: 2000-2004 newly listing firms												
year	ROA		ROE		CFE		Leverage		Log (Assets)		Growth	
	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing	Cross-listing	Domestic-listing
0	10.97%	4.58%	18.40%	7.09%	24.74%	13.87%	47.19%	32.80%	10.32	8.96		
1	5.75%	4.02%	13.09%	7.15%	28.93%	13.06%	49.94%	37.60%	10.35	9.03	12.34%	20.39%
2	7.69%	3.41%	14.81%	6.63%	22.61%	14.48%	52.44%	43.52%	10.42	9.08	26.34%	19.93%
3	8.50%	3.17%	17.09%	6.65%	32.76%	15.72%	55.27%	46.83%	10.61	9.15	31.13%	22.45%

Note: this table presents the summary of median values of operating performance for cross-listings and relative purely domestic-listings in three years subsequent to the listing. ROA is return on assets; ROE is return on equity; CFE is cash flow to total equity ratio; Size is measured by log of total assets; Leverage is measured by debt to assets ratio; Growth is measured by sales growth. All the values are winsorized at 10% each year.

References

- Abdallah, W., & Goergen, M. (2008). The impact of a cross-listing on dividend policy. *International Journal of Corporate Governance*, 1(1), 49 -72. doi: 10.1504/ijcg.2008.017650
- Adhikari, A., & Tondkar, R. H. (1992). Environmental factors influencing accounting disclosure requirements of global stock exchanges. *Journal of International Financial Management and Accounting*, 4(2), 75-105. doi: 10.1111/j.1467-646X.1992.tb00024.x
- Alexander, G. J., Eun, C. S., & Janakiramanan, S. (1987). Asset pricing and dual listing on foreign capital markets: A note. *Journal of Finance*, 42(1), 151-158. doi: 10.1111/j.1540-6261.1987.tb02556.x
- Alexander, G. J., Eun, C. S., & Janakiramanan, S. (1988). International listings and stock returns: Some empirical evidence. *Journal of Financial and Quantitative Analysis*, 23(2), 135-151. doi: 10.2307/2330877
- Arauner, A. H. (1996). *The impact of international cross-listing on the cost of capital*. (Dissertation/Thesis), (Doctoral dissertation). Available from ProQuest Dissertations and Theses Full Text database. (UMI No. 3371229)
- Baker, H. K., Nofsinger, J. R., & Weaver, D. G. (2002). International cross-listing and visibility. *Journal of Financial and Quantitative Analysis*, 37(3), 495-521. doi: 10.2307/3594990
- Bancel, F., & Kalimipalli, M. (2009). Cross-listing and the long-term performance of ADRs: Revisiting european evidence. *Journal of International Financial Markets, Institutions and Money*, 19(5), 895-923. doi: 10.1016/j.intfin.2009.07.004
- Bancel, F., & Mittoo, C. (2001). European managerial perceptions of the net benefits of foreign stock listings. *European financial management*, 7(2), 213-236. doi: 10.1111/1468-036X.00153
- Barber, B. M. (1997). Detecting long-run abnormal stock returns: The empirical power and specification of test statistics. *Journal of financial economics*, 43(3), 341-372. doi: 10.1016/S0304-405X(96)00890-2
- Barberis, N., Shleifer, A., & Vishny, R. (1998). A model of investor sentiment. *Journal of financial economics*, 49(3), 307-343. doi: Doi 10.1016/S0304-405x(98)00027-0

- Bhushan, R. (1989). Firm characteristics and analyst following. *Journal of Accounting and Economics*, 11(2), 255-274. doi: 10.1016/0165-4101(89)90008-6
- Bris, A., Cantale, S., & Nishiotis, G. P. (2007). A breakdown of the valuation effects of international cross-listing. *European financial management*, 13(3), 498-530. doi: DOI 10.1111/j.1468-036X.2006.00370.x
- Cai, C. X., McGuinness, P. B., & Zhang, Q. (2011). The pricing dynamics of cross-listed securities: The case of Chinese A- and H-shares. *Journal of Banking and Finance*, 35(8), 2123-2136. doi: DOI 10.1016/j.jbankfin.2011.01.010
- Cai, J., & Zhang, Z. (2011). Leverage change, debt overhang, and stock prices. *Journal of Corporate Finance*, 17(3), 391-402. doi: 10.1016/j.jcorpfin.2010.12.003
- Campbell, J. Y., & Shiller, R. J. (1988). Stock prices, earnings, and expected dividends. *Journal of Finance*, 43(3), 661-676. doi: 10.1111/j.1540-6261.1988.tb04598.x
- Carpentier, C., L'Her, J.-F., & Suret, J.-M. (2007, November). Is the long-run performance of cross-listed firms anomalous?
<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.192.5827&rep=rep1&type=pdf>
- Chemmanur, T. J., & Fulghieri, P. (2006). Competition and cooperation among exchanges: A theory of cross-listing and endogenous listing standards. *Journal of financial economics*, 82(2), 455-489. doi: 10.1016/j.jfineco.2005.06.008
- Chen, J., Tse, Y., & Williams, M. (2009). Trading location and equity returns: Evidence from US trading of British cross-listed firms. *Journal of International Financial Markets, Institutions and Money*, 19(5), 729-741. doi: 10.1016/j.intfin.2009.05.001
- Cheng, C.-l., & Kung, F.-h. (2012). The determinants of overseas listing decisions: evidence from Chinese H-share companies. *Asian Business and Management*, 11(5), 591-613. doi: 10.1057/abm.2012.24
- Chi, J., & Padgett, C. (2006). Operating performance and its relationship to market performance of chinese initial public offerings. *Chinese Economy*, 39(5), 28-50. doi: 10.2753/ces1097-1475390502
- China International Capital Corporation. (2013). Milestone Transaction. . Retrieved August, 14, 2013, from <http://www.cicc.com.cn/cicc/english/operation/page1-2-his.htm>
- China Securities Regulatory Commission. (2012). *Annual Report 2012*. Beijing, China: CSRC.

- Chong, T. T.-L., & Su, Q. (2006). On the comovement of A and H shares. *Chinese Economy*, 39(5), 68-86. doi: 10.2753/CES1097-1475390504
- Chuang, W.-I., & Lee, B.-S. (2011). The informational role of institutional investors and financial analysts in the market. *Journal of Financial Markets*, 14(3), 465-493. doi: 10.1016/j.finmar.2010.12.001
- Claessens, S., Klingebiel, D., & Schmukler, S. L. (2006). Stock market development and internationalization: Do economic fundamentals spur both similarly? *Journal of Empirical Finance*, 13(3), 316-350. doi: 10.1016/j.jempfin.2006.03.002
- Coffee, J. C. (1999). The future as history: The prospects for global convergence in corporate governance and its implications. *Northwestern University Law Review*, 93(3), 641-707.
- Coffee, J. C. (2002). Racing towards the top?: The impact of cross-listings and stock market competition on international corporate governance. *Columbia Law Review*, 102(7), 1757-1831.
- Dey, M. K., & Wang, C. (2012). Return spread and liquidity: Evidence from Hong Kong ADRs. *Research in international business and finance*, 26(2), 164-180. doi: 10.1016/j.ribaf.2011.10.002
- Ding, Y., Nowak, E., & Zhang, H. (2010). Foreign vs. domestic listing: An entrepreneurial decision. *Journal of Business Venturing*, 25(2), 175-191. doi: 10.1016/j.jbusvent.2008.05.002
- Dodd, O. (2013). The valuation effects of international cross-listings. *The Business Review, Cambridge*, 21(1), 59-66.
- Doidge, C. (2004). Us cross-listings and the private benefits of control: Evidence from dual-class firms. *Journal of financial economics*, 72(3), 519-553.
- Doidge, C., Karolyi, G. A., & Stulz, R. M. (2004). Why are foreign firms listed in the U.S. worth more? *Journal of financial economics*, 71(2), 205-238. doi: 10.1016/s0304-405x(03)00183-1
- Durand, R. B., Gunawan, F., & Tarca, A. (2006). Does cross-listing signal quality? *Journal of Contemporary Accounting and Economics*, 2(2), 170-189. doi: 10.1016/S1815-5669(10)70021-7
- Errunza, V. R., & Losq, E. (1985). International asset pricing under mild segmentation - theory and test. *Journal of Finance*, 40(1), 105-124. doi: Doi 10.2307/2328050

- Fama, E. F. (1998). Market efficiency, long-term returns, and behavioral finance. *Journal of financial economics*, 49(3), 283-306. doi: Doi 10.1016/S0304-405x(98)00026-9
- Fama, E. F., & French, K. R. (1992). The cross-section of expected stock returns. *Journal of Finance*, 47(2), 427-465.
- Fama, E. F., & French, K. R. (1993). Common risk-factors in the returns on stocks and bonds. *Journal of financial economics*, 33(1), 3-56. doi: Doi 10.1016/0304-405x(93)90023-5
- Fanto, J. A., & Karmel, R. S. (1997). A report on the attitudes of foreign companies regarding a U.S. listing. *Stanford Journal of Law, Business and Finance*, 3(1), 51-83.
- Ferrell, A. (2007). Mandatory disclosure and stock returns: Evidence from the over-the-counter market. *Journal of Legal Studies*, 36(2), 213-251.
- Foerster, S. R., & Karolyi, G. A. (1993). International listings of stocks: The case of Canada and the U.S. *Journal of International Business Studies*, 24(4), 763-784. doi: 10.1057/palgrave.jibs.8490254
- Foerster, S. R., & Karolyi, G. A. (1998). Multimarket trading and liquidity: A transaction data analysis of Canada-US interlistings. *Journal of International Financial Markets, Institutions and Money*, 8(3-4), 393-412. doi: 10.1016/s1042-4431(98)00049-3
- Foerster, S. R., & Karolyi, G. A. (1999). The effects of market segmentation and investor recognition on asset prices: Evidence from foreign stocks listing in the United States. *Journal of Finance*, 54(3), 981-1013. doi: 10.1111/0022-1082.00134
- Foerster, S. R., & Karolyi, G. A. (2000). The long-run performance of global equity offerings. *Journal of Financial and Quantitative Analysis*, 35(4), 499-528. doi: 10.2307/2676253
- Foucault, T., & Parlour, C. A. (2004). Competition for listings. *The RAND Journal of Economics*, 35(2), 329-355. doi: 10.2307/1593694
- Gao, S. (2002, September). China stock market in a global perspective. *Dow Jones Indexes*, 1-48.
- Geranio, M. (2012). Cross-listing and the evolution of global stock market liquidity. In G. Poitras (Ed.), *Handbook of Research on Stock Market Globalization* (pp. 195-210). Cheltenham, England: Edward Elgar Publishing.

- Gómez-mejia, L. R., & Palich, L. E. (1997). Cultural diversity and the performance of multinational firms. *Journal of International Business Studies*, 28(2), 309-335.
- Hail, L., & Leuz, C. (2009). Cost of capital effects and changes in growth expectations around U.S. cross-listings. *Journal of financial economics*, 93(3), 428-454. doi: 10.1016/j.jfineco.2008.09.006
- Halling, M., Pagano, M., Randl, O., & Zechner, J. (2008). Where is the market? Evidence from cross-listings in the United States. *Review of Financial Studies*, 21(2), 725-761. doi: 10.1093/rfs/hhm066
- Hemraj, M. B. (2002). Preventing corporate failure: The Cadbury Committee's governance report. *Journal of Financial Crime*, 10(2), 141-145. doi: 10.1108/13590790310808727
- Ho, K. Y., & Zhang, Z. (2012). Dynamic linkages among financial markets in the greater china region: A multivariate asymmetric approach. *The World Economy*, 35(4), 500-523. doi: 10.1111/j.1467-9701.2012.01448.x
- Huang, G., & Song, F. M. (2005). The financial and operating performance of China's newly listed H-firms. *Pacific-Basin Finance Journal*, 13(1), 53-80.
- Inci, A. C. (2011). Capital investment, earnings, and annual stock returns: Causality relationships in china. *Eurasian Economic Review*, 1(2), 95-125.
- Jain, B. A., & Kini, O. (1994). The post-issue operating performance of IPO firms. *Journal of Finance*, 49(5), 1699-1726. doi: 10.1111/j.1540-6261.1994.tb04778.x
- Jarque, C. M., & Bera, A. K. (1980). Efficient tests for normality, homoscedasticity and serial independence of regression residuals. *Economics Letters*, 6(3), 255-259. doi: 10.1016/0165-1765(80)90024-5
- Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review*, 76(2), 323-329.
- Ji, G. (2005). Cross listing and firm value-corporate governance or market segmentation? An empirical study of the stock market. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1002902
- Kadlec, G. B., & McConnell, J. J. (1994). The effect of market segmentation and illiquidity on asset prices: Evidence from exchange listings. *Journal of Finance*, 49(2), 611-636. doi: 10.1111/j.1540-6261.1994.tb05154.x
- Karolyi, G. A. (2006). The world of cross-listings and cross-listings of the world: Challenging conventional wisdom. *Review of Finance*, 10(1), 99-152. doi: 10.1007/s10679-006-6980-8

- Keats, B. W., & Hitt, M. A. (1988). A causal model of linkages among environmental dimensions, macro organizational characteristics, and performance. *Academy of Management Journal*, 31(3), 570-598. doi: Doi 10.2307/256460
- Keith, T. R., & Derek, B. N. (2008). China's qualified domestic institutional investor program: Opening the door to chinese overseas investment. *The Investment Lawyer*, 15(6), 3.
- Khurana, I. K., Martin, X., & Periera, R. (2008). Cross-listing and firm growth. *Review of Finance*, 12(2), 293-322. doi: 10.1093/rof/rfm031
- Kimmel, P. D., Weygandt, J. J., & Kieso, D. E. (2011). *Financial accounting: tools for business decision making*. Hoboken, N.J: John Wiley.
- King, M. R., & Segal, D. (2009). The long-term effects of cross-listing, investor recognition, and ownership structure on valuation. *Review of Financial Studies*, 22(6), 2393-2421. doi: 10.1093/rfs/hhn050
- Ko, K., Lee, I., & Yun, K. (1997). Foreign listings, firm value, and volatility: The case of Japanese firms' listings on the US stock markets. *Japan and The World Economy*, 9(1), 57-69. doi: 10.1016/S0922-1425(96)00240-X
- Korczak, P., & Bohl, M. T. (2005). Empirical evidence on cross-listed stocks of Central and Eastern European companies. *Emerging Markets Review*, 6(2), 121-137. doi: 10.1016/j.ememar.2004.11.001
- Kothari, S. P. (1997). Measuring long-horizon security price performance. *Journal of financial economics*, 43(3), 301-339. doi: 10.1016/S0304-405X(96)00899-9
- Lamont, O. A. (2000). Investment plans and stock returns. *Journal of Finance*, 55(6), 2719-2745. doi: 10.1111/0022-1082.00304
- Lang, M. H., Lins, K. V., & Miller, D. P. (2003). ADRs, analysts, and accuracy: Does cross listing in the united states improve a firm's information environment and increase market value? *Journal of Accounting Research*, 41(2), 317-345. doi: 10.1111/1475-679X.00106
- Lang, M. H., Lins, K. V., & Miller, D. P. (2004). Concentrated control, analyst following, and valuation: Do analysts matter most when investors are protected least? *Journal of Accounting Research*, 42(3), 589-623. doi: 10.1111/j.1475-679X.2004.t01-1-00142.x
- Lang, M. H., & Lundholm, R. J. (1996). Corporate disclosure policy and analyst behavior. *Accounting Review*, 71(4), 467-492.
- Lau, S. T., Lee, C. T., & McInish, T. H. (2002). Stock returns and beta, firms size, E/P, CF/P, book-to-market, and sales growth: Evidence from Singapore and

- Malaysia. *Journal of multinational financial management*, 12(3), 207-222. doi: 10.1016/s1042-444x(01)00051-2
- Lel, U., & Miller, D. P. (2008). International cross-listing, firm performance, and top management turnover: A test of the bonding hypothesis. *Journal of Finance*, 63(4), 1897-1937. doi: 10.1111/j.1540-6261.2008.01377.x
- Lins, K. V., Strickland, D., & Zenner, M. (2005). Do non-US firms issue equity on US stock exchanges to relax capital constraints? *Journal of Financial and Quantitative Analysis*, 40(1), 109-134.
- Loughran, T., & Ritter, J. R. (1995). The new issues puzzle. *Journal of Finance*, 50(1), 23-51. doi: Doi 10.2307/2329238
- Lulu, G., & Reed, W. R. (2013). Information asymmetry, market segmentation, and cross-listing: Implications for event study methodology. *Journal of Asian Economics*, 28, 28. doi: 10.1016/j.asieco.2013.04.009
- Luo, Y., Fang, F., & Esqueda, O. A. (2012). The overseas listing puzzle: Post-IPO performance of Chinese stocks and ADRs in the U.S. market. *Journal of multinational financial management*, 22(5), 193-211. doi: 10.1016/j.mulfin.2012.06.008
- Luo, Y., & Jackson, D. (2012). Executive compensation, ownership structure and firm performance in Chinese financial corporations. *Global Business and Finance Review*, 17(1), 56-74.
- Lyon, J. D., Barber, B. M., & Tsai, C.-L. (1999). Improved methods for tests of long-run abnormal stock returns. *Journal of Finance*, 54(1), 165-201. doi: 10.1111/0022-1082.00101
- Marosi, A., & Massoud, N. (2008). You can enter but you cannot leave...: US securities markets and foreign firms. *Journal of Finance*, 63(5), 2477-2506. doi: DOI 10.1111/j.1540-6261.2008.01402.x
- Merton, R. C. (1987). A simple model of capital market equilibrium with incomplete information. *Journal of Finance*, 42(3), 483-510. doi: 10.1111/j.1540-6261.1987.tb04565.x
- Mitchell, M. L., & Stafford, E. (2000). Managerial decisions and long-term stock price performance. *Journal of Business*, 73(3), 287-329. doi: Doi 10.1086/209645
- Mittoo, U. R. (2003). Globalization and the value of US listing: Revisiting Canadian evidence. *Journal of Banking and Finance*, 27(9), 1629-1661. doi: Doi 10.1016/S0378-4266(03)00093-1

- Ng, Y. H., Yong, H. H. A., & Faff, R. (2013). The long-and short-run financial impacts of cross listing on Australian firms. *Australian Journal of Management*, 38(1), 81-98.
- Nontapunthawat, N. (1992). Hong Kong as a financial centre in the twenty-first century. *Pacific Review*, 5(3), 259-267. doi: 10.1080/09512749208718988
- Noronha, G. M., Sarin, A., & Saudagaran, S. M. (1996). Testing for micro-structure effects of international dual listings using intraday data. *Journal of Banking and Finance*, 20(6), 965-983. doi: 10.1016/0378-4266(95)00038-0
- O'Connor, T. G. (2009). Does cross listing in the USA really enhance the value of emerging market firms? *Review of Accounting and Finance*, 8(3), 308-336. doi: 10.1108/14757700910980877
- Ozdagli, A. K. (2012). Financial leverage, corporate investment, and stock returns. *Review of Financial Studies*, 25(4), 1033-1069. doi: 10.1093/rfs/hhr145
- Pagano, M., Röell, A. A., & Zechner, J. (2002). The geography of equity listing: Why do companies list abroad? *Journal of Finance*, 57(6), 2651-2694. doi: 10.1111/1540-6261.00509
- Pratt, J. D. (2010). Selection of regions for entrepreneurship: An application of the CAPM. *Academy of Entrepreneurship Journal*, 16(2), 87.
- Pulatkonak, M., & Sofianos, G. (1999, March). The distribution of global trading in NYSE-listed non-US stocks. <http://www.nyse.com/pdfs/wp99-03.pdf>
- Ramos, S. B., & von Thadden, E.-L. (2008). Stock exchange competition in a simple model of capital market equilibrium. *Journal of Financial Markets*, 11(3), 284-307. doi: 10.1016/j.finmar.2008.01.001
- Renaissance Capital Investment. (2013). All Time Largest Global IPOs - Top 25. Retrieved August 14, 2013, from <http://www.renaissancecapital.com/IPOHome/Rankings/biggest.aspx>
- Ribstein, L. E. (2005). Cross-listing and regulatory competition. *Review of Law and Economics*, 1(1), 1014.
- Ritter, J. R. (1991). The long-run performance of initial public offerings. *Journal of Finance*, 46(1), 3-27. doi: Doi 10.2307/2328687
- Ritter, J. R. (2013). *The market share of foreign companies among U.S. listing, 1980-2012*. Retrieved July 5, 2013, from <http://bear.warrington.ufl.edu/ritter/IPOs2012Statistics.pdf>

- Roosenboom, P., & van Dijk, M. A. (2009). The market reaction to cross-listings: Does the destination market matter? *Journal of Banking and Finance*, 33(10), 1898-1908. doi: 10.1016/j.jbankfin.2009.04.010
- Sarkissian, S., & Schill, M. J. (2004). The overseas listing decision: New evidence of proximity preference. *Review of Financial Studies*, 17(3), 769-809. doi: 10.1093/rfs/hhg048
- Sarkissian, S., & Schill, M. J. (2009). Are there permanent valuation gains to overseas listing? *Review of Financial Studies*, 22(1), 371-412. doi: 10.1093/rfs/hhn003
- Schmukler, S. L., & Levine, R. (2006). Internationalization and stock market liquidity. *Review of Finance*, 10(1), 153-187. doi: 10.1007/s10679-006-6981-7
- Shen, H., Liao, L., & Liao, G. (2010). Cross-listing and bonding premium: Evidence from Chinese listed companies. *Frontiers of Business Research in China*, 4(2), 171-184. doi: 10.1007/s11782-010-0008-0
- Smith, K., & Sofianos, G. (1997, June). The impact of an NYSE listing on the global trading of non-US stocks <http://www.nyse.com/pdfs/wp97-02.pdf>
- Stulz, R. M. (1990). Managerial discretion and optimal financing policies. *Journal of financial economics*, 26(1), 3-27. doi: 10.1016/0304-405X(90)90011-N
- Stulz, R. M. (1999). Globalization, corporate finance, and the cost of capital. *Journal of Applied Corporate Finance*, 12(3), 8-25. doi: 10.1111/j.1745-6622.1999.tb00027.x
- Su, Q., & Chong, T. T. (2007). Determining the contributions to price discovery for Chinese cross-listed stocks. *Pacific-Basin Finance Journal*, 15(2), 140-153. doi: 10.1016/j.pacfin.2006.07.002
- Sun, Q., & Tong, W. H. S. (2000). The effect of market segmentation on stock prices: The China syndrome. *Journal of Banking and Finance*, 24(12), 1875-1902. doi: 10.1016/S0378-4266(99)00121-1
- Sun, Q., Tong, W. H. S., & Wu, Y. J. (2013). Overseas listing as a policy tool: Evidence from China's H-shares. *Journal of Banking and Finance*, 37(5), 1460-1474. doi: DOI 10.1016/j.jbankfin.2012.05.013
- Sun, Q., Tong, W. H. S., & Zhang, X. (2013). How cross-listings from an emerging economy affect the host market? *Journal of Banking and Finance*, 37(7), 2229-2245. doi: 10.1016/j.jbankfin.2013.02.014
- Tam, O. K., Li, S. G., Zhang, Z., & Yu, C. P. (2010). Foreign investment in China and Qualified Foreign Institutional Investor (QFII). *Asian Business and Management*, 9(3), 425-448. doi: 10.1057/abm.2010.15

- Tay, N. S. P., & Oladi, R. (2011). Listings from the emerging economies: An opportunity for reputable stock exchanges. *International Review of Economics and Finance*, 20(3), 388-394. doi: DOI 10.1016/j.iref.2010.11.014
- Thomas, G. O. C. (2009). Does cross listing in the USA really enhance the value of emerging market firms? *Review of Accounting and Finance*, 8(3), 308-336. doi: 10.1108/14757700910980877
- Torabzadeh, K. M., Berlin, W. J., & Zivney Maxon, T. L. (1992). Valuation effects of international listings. *Global Finance Journal*, 3(2), 159-170. doi: 10.1016/1044-0283(92)90011-9
- Vaihekoski, M. (2004). Portfolio construction for tests of asset pricing models. *Financial Markets, Institutions and Instruments*, 13(1), 1-39. doi: 10.1111/j.0963-8008.2004.0001.x
- Valero, M., & Melvin, M. (2009). The dark side of international cross-listing: Effects on rival firms at home. *European financial management*, 15(1), 66-91. doi: 10.1111/j.1468-036X.2008.00449.x
- Venkataraman, K. (2001). Automated versus floor trading: An analysis of execution costs on the Paris and New York exchanges. *Journal of Finance*, 56(4), 1445-1485. doi: 10.1111/0022-1082.00375
- Wang, S. S., & Jiang, L. (2004). Location of trade, ownership restrictions, and market illiquidity: Examining Chinese A- and H-shares. *Journal of Banking and Finance*, 28(6), 1273-1297. doi: 10.1016/S0378-4266(03)00119-5
- Wang, Y. (2013). Determinants of IPO gross spreads: Evidence from China. *Journal of Finance*, 45, 1045-1067.
- Wei, P., & Zeng, B. (2011). The role of liquidity in international cross-listing effects: The case of chinese H and N shares. *11*(3), 65.
- World Federation of Exchanges. (2013). Monthly report. Retrieved July 22, 2013, from <http://www.world-exchanges.org/statistics/monthly-reports>
- Wu, C., & Kwok, C. C. (2003). The pricing of global and domestic initial public offerings by US companies. *Journal of Banking and Finance*, 27(6), 1167-1184.
- Wu, C., & Kwok, C. C. (2007). Long-run performance of global versus domestic initial public offerings. *Journal of Banking and Finance*, 31(3), 609-627. doi: DOI 10.1016/j.jbankfin.2006.01.013
- Yang, T., & Lau, S. T. (2006). Choice of foreign listing location: Experience of Chinese firms. *Pacific-Basin Finance Journal*, 14(3), 311-326. doi: 10.1016/j.pacfin.2005.10.005

- You, L., Parhizgari, A. M., & Srivastava, S. (2012). Cross-listing and subsequent delisting in foreign markets. *Journal of Empirical Finance*, 19(2), 200-216. doi: 10.1016/j.jempfin.2011.11.005
- Zhang, C. X., & King, T.-H. D. (2010). The decision to list abroad: The case of ADRs and foreign IPOs by Chinese companies. *Journal of multinational financial management*, 20(1), 71-92. doi: 10.1016/j.mulfin.2010.04.001
- Zhou, J., Zhang, T., & Cui, S. (2011). Cross listing, corporate governance and corporate performance. *Nankai Business Review International*, 2(3), 275-288. doi: 10.1108/20408741111155299