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U.S. cross-listing, institutional investors, and equity returns

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U.S. CROSS-LISTING, INSTITUTIONAL INVESTORS, AND EQUITY
RETURNS

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By

LAW Yui

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ABSTRACT

U.S. Cross-listing, Institutional Investors, and Equity Returns

By

LAW Yui

Master of Philosophy

Cross-listing refers to firms listing their equities on more than one stock exchange. Cross-listing is an interesting topic of international finance. This is because along with the deeper integration of the global financial market, we should see lesser importance of geographic factors. Thus, the motivations and effects of listing a firm on exchanges of different regions should have essential economic implications. The reputation bonding hypothesis suggests that U.S. cross-listing improves the information environment of a firm because of the higher disclosure standard and more analyst coverage. The legal bonding hypothesis argues that U.S. cross-listing improves the investor protection and corporate governance of a firm since the firm is under more stringent law and regulation. The firm growth hypothesis points out that U.S. cross-listing lowers the external capital cost of a firm and thus enables the firm to achieve a higher growth rate.

Using a sample with 12532 firms of 23 developed regions from 2006 to 2011, this thesis tests the three hypotheses of cross-listing. Firstly, my empirical results show that a cross-listing on the U.S. exchanges improves the equity returns predictability of institutional investors. I find a stronger positive correlation between the changes in institution ownership level and future equity returns of U.S. cross-listed firms. This suggests that the information environment is improved after a U.S. cross-listing. However, the improvement in information environment exists only in non-crisis period. Secondly, the results support the firm growth hypothesis. The U.S. cross-listing event only has a positive effect on equity returns of firms with younger age and lower dividend yield. This effect becomes less obvious during the crisis period. Thirdly, the legal bonding effect of U.S. cross-listing only exists during the crisis period, when the financial market is volatile. During the crisis period, a U.S. cross-listing increases the equity returns of the firms form non-common-law regions, but not the firms from common-law regions.

DECLARATION

I declare that this is an original work based primarily on my own research, and I warrant that all citations of previous research, published or unpublished, have been duly acknowledged.

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(LAW Yui)

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Date

CERTIFICATE OF APPROVAL OF THESIS

U.S. CROSS-LISTING, INSTITUTIONAL INVESTORS, AND EQUITY
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Master of Philosophy

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Chapter 1 Introduction

Listing a firm on a foreign exchange is not a new phenomenon. According to the World Federation of Exchanges, in 1995, there was 246 and 361 foreign firms listed their equities on NYSE and NASDAQ respectively. In 2010, the numbers remained stable, with 451 on NYSE and 298 on the NASDAQ. Along with the increasing liberalization of the international financial market, the equity markets around the world should be more integrated. However, we are still seeing a large number of firms trading on foreign equity markets. Therefore, we should find out the motivations and impacts of the cross-listing decisions of the firms.

Despite of the long history of overseas listing, academic researches still do not have a concrete conclusion about what are the reasons driving a firm listing on a foreign exchange. Academic researches on foreign listing can be divided into three main groups. One focuses on the legal bonding hypothesis (e.g. Reese and Weisbach, 2002; Doidge, Karolyi and Stulz, 2004; Doidge, 2004; Lel and Miller, 2008; Frésard and Salva, 2010), another focuses on the reputation bonding hypothesis or the information improvement hypothesis (e.g. Baker, Nofsinger and Weaver, 2002; Lang, Lins and Miller, 2003; Siegel, 2005; Fernandes and Ferreira, 2008), and the third one focuses on the firm growth hypothesis (e.g. Röell and Zechner, 2002; Khurana, Martin and Periera, 2008; Hail and Leuz, 2009).

The legal bonding hypothesis argues that different exchanges are characterized by different standards of law and regulation, and thus have different levels of investor protection. Firms from a region with low standards of law and regulation can list their equities on exchanges with stringent legal and regulatory standards. Thus, the firms can enhance the level of investor protection and reduce the cost of capital

(Coffee, 1999; Coffee, 2001). The reputation bonding hypothesis or information improvement hypothesis does not agree with the importance and effectiveness of the legal bonding, this is because some studies (e.g. Seigel, 2005) show that the legal enforcement of the Security Exchange Commission (SEC) on foreign listing firms is weak. The reputation bonding hypothesis suggests that the better quality of corporate governance is caused by the improvement in the information environment of the cross-listed firms. The possible factors of the improvement are the higher disclosure standard and more analyst coverage.

Besides these two main hypotheses, some studies suggest that the lack of external capital by growing firms is an important reason for cross-listing. For example, Pagano, Röell and Zechner (2002) show that firms cross-listed on the U.S. exchanges tend to be rapidly expanding high-tech and export-oriented companies with low leverage. Khurana, Martin and Periera (2008) find out that the external-financed growth rate of firms increases significantly after a U.S. cross-listing. Furthermore, Hail and Leuz (2009) point out that about half of the increase in equity value of the firms after a U.S. cross-listing is caused by the change in growth expectation.

In this thesis, the goals are to test the information environment improvement hypothesis, the legal bonding hypothesis and the firm growth hypothesis of cross-listing. In other words, this thesis tests whether a U.S. cross-listing improves the information environment, the corporate governance and the growth opportunity of the firms.

For the information environment improvement hypothesis, I suggest that the equity returns predictability of institutional investors is positively related to the information

environment. If cross-listing on the U.S. exchanges can improve the information environment, the equity returns predictability of institutional investors on the U.S. cross-listed firm should be improved. The definition of equity returns predictability of institutional investors of this thesis follows the definition of Gompers and Metrick (2001), i.e. the positive partial correlation between the changes in ownership of institutional investors in the period t-1 and the equity returns in period t. Therefore, I expect that the changes in institutional ownership level have a stronger positive correlation with future equity returns of firms with a U.S. cross-listing than those without.

For the legal bonding hypothesis, the sample is divided into firms from common-law regions and non-common-law regions. If the U.S. cross-listing enhances the legal and regulatory standards and the difference in the legal standard between the United States and the non-common-law regions is larger, the equity returns should have a greater increase during and after the cross-listing period for firms from non-common-law regions, indicating the greater decrease in the cost of capital and improvement in performance of the U.S. cross-listed firms from these regions.

For the firm growth hypothesis, the sample is divided into firms with sample period mean age higher and lower than the sample period median and firms with sample period mean dividend yield higher and lower than the sample period median. If a U.S. cross-listing can reduce the financial constraints of the growing firms, a U.S. cross-listing should have a greater positive effect on the equity returns of firms with younger age and lower dividend yield. These two characteristics reflect the weaker financial situation.

This thesis uses the semi-annual data of 12532 firms of 23 developed regions from the first half of 2006 to the first half of 2011. First, my regression analyses support the information environment improvement hypothesis. My results show that a U.S. cross-listing significantly increases the positive correlation between the changes in institutional ownership level and the future equity returns, reflecting a higher equity predictability of institutional investors on U.S. cross-listed firms. Therefore, the information environment is improved after a U.S. cross-listing. Moreover, the increase in equity returns predictability is higher for U.S. cross-listed firms from non-common-law regions, indicating the larger difference in information environment between the United-States and the non-common-law regions. However, the information environment improvement effect of U.S. cross-listing does not exist in the crisis period, i.e. from the second half of 2008 to the second half of 2009.

Second, my results support the firm growth hypothesis. After a cross-listing on the U.S. exchanges, firms with younger age and lower dividend yield experience an increase in equity returns. The thesis suggests the reason is that the U.S. cross-listing improves the financial condition of the younger firms and firms lacking for external capital.

Thirdly, my results show that although the legal bonding effect of the U.S. cross-listing does not exist during the whole sample period and the non-crisis period, it exists during the crisis period, i.e. from the second half of 2008 to the second of 2009. From the first half of 2006 to the first half of 2011, U.S. cross-listing only had a positive effect on the equity returns of firms from common-law regions, but from the second half of 2008 to the second half of 2009, U.S. cross-listing only had a positive effect on the equity returns of firms from non-common-law regions.

This thesis makes several contributions. First, it tests directly whether U.S. cross-listing can effectively enhance the information environment of the firms by analyzing the difference between the equity returns predictability of institutional investors on U.S. cross-listed firms and non-U.S.-cross-listed firms. Previous studies only test the information environment improvement indirectly by analyzing whether U.S. cross-listing increases the variation of accounting earnings or the proportion of variation of firm specific equity returns (e.g. Lang, Raedy and Yetman(2003); Fernandes and Ferreira (2008)).

Second, for the legal bonding hypothesis and firm growth hypothesis, this thesis uses the most recent data from 2006 to 2011, while the sample period of most previous researches are before 2005. Also, most, if not all, of the previous researches do not control the demand preference of the institutional investors. If cross-listing affects the demand preference of institutional investors, and the demand preference affects the equity returns, the estimation of the effect of cross-listing may not be consistent. This thesis controls both the firm specific factors affecting the cross-listing decision and the demand preference of institutional investors in order to estimate the effect of U.S. cross-listing more accurately.

Third, the additional regression analyses of this thesis test the three hypotheses of cross-listing by splitting the sample period into the non-crisis period and the crisis period in order to analyze whether the three effects of U.S. cross-listing exist in both the non- crisis and the crisis period.

Fourth, this thesis find out that cross-listing on London Stock Exchange (LSE) and exchanges other than the U.S. exchanges and LSE benefit firms with characteristics different from those benefited from a U.S. cross-listing. Although the information

environment improvement effect does not exist for firms cross-listed on London Stock Exchange (LSE) or exchanges other than the U.S. exchanges and LSE, cross-listing on LSE benefits firms with higher age and higher dividend yield, and cross-listing on exchanges other than the U.S. exchanges and LSE benefit firms with both lower and higher age and firms with lower dividend yield.

The remaining chapters are organized as follows. Chapter 2 reviews the literatures of cross-listing and equity returns predictability of institutional investors. Chapter 3 develops the hypotheses and describes the regression model and variable data. Chapter 4 presents the empirical analyses. Chapter 5 concludes.

Chapter 2 Literature Review

In the previous chapter, the main theme of the thesis is introduced. This chapter reviews the three hypotheses of cross-listing, i.e. the legal bonding hypothesis, the information improvement hypothesis, and the firm growth hypothesis. Moreover, the studies of equity returns predictability of institutional investors are also described.

2.1 Survey on the cross-listed firms

At the beginning of the cross-listing literature review, two surveys are introduced. The surveys spend little on economic theory development and may not give deep insight about the motivations and effects of cross-listing. However, because they directly ask the chief financial officers or executives in charges of shareholder relations of the firms with questions about the reasons for an overseas listing and the difficulties faced by the overseas listing firms, they may serve as a supplement of the accounting and financial data empirical researches.

The first survey is Fanto and Karmel (1997). According to the survey, there is no dominant reason for a U.S. listing. 23% of the respondents agree that the reasons are for business motivations, such as U.S. acquisition or U.S. business expansion. 23% mention that the reasons are the benefits of U.S. capital market, such as better price, liquidity and status. 23% point out that the reasons are industry motivations, such as listing of competitors and benefits of analysts. Only 11% agree that the reason is to expand the U.S. shareholder base. For the difficulties of a U.S. listing, results are more determinant. More than 50% of the respondents think that the main difficulties are disclosure and accounting reconciliation. Only around 30% agree that the monetary expense is the obstacle. Another survey about foreign listing is Bancel and Mittoo (2001). This study shows that among 9 options, on average, respondents rank

the disclosure of more information as the first important consequence of cross-listing, while the consequence of enhancing the internal procedures of management control is in the sixth rank.

The limitation of these surveys is lack of economic theories to analyze the motivations of cross-listing. For example, they do not consider the requirement in information disclosure and higher standards of law and regulation as benefits in the sense that these signal the better quality of the cross-listed firms. Second, the respondents may not give true answers in the surveys. For these reasons, surveys may not be particularly insightful. In the following parts, theoretical studies on the economics implications of cross-listing and empirical researches based on financial and accounting data are introduced.

2.2 The theory of the legal bonding hypothesis

To explain the phenomenon of cross-listing, Coffee (1999) argues that different stock exchanges have different functions and legal requirements. Firms with different goals may choose to list on foreign stock exchanges and subject to foreign governance standards. Coffee (1999) suggests that the positive abnormal price movement of a U.S. cross-listed firm is due to the bonding mechanism, i.e. the firm voluntarily complies with higher regulatory and disclosure standards. Moreover, Coffee (2002) points out that law is an important factor for those firms having financial stress to obtain external finance, this is because without the guarantee of high standards of law and regulation and strong investor protection, the firms cannot achieve a high equity valuation. Hence, cross-listing provides an option for these firms to bond themselves under a stringent legal and regulatory system. The author goes on to predict that firms with weak corporate governance and controlling

shareholders will be less likely to choose to cross-list on a stock exchange with high standards of law and regulation. Therefore, the author concludes that stock exchanges with high and low legal and disclosure standards will co-exist, and attract firms with different corporate governance qualities.

2.3 Studies supporting the legal bonding hypothesis

To test the legal bonding hypothesis, Reese and Weisbach (2002) show that despite the fact that most firms have subsequent equity issues after cross-listing on U.S. stock exchanges, firms from regions with weaker shareholder protection are more likely to have equity issues after a U.S. cross-listing. Moreover, firms from regions with weaker shareholder protection get higher new equity proceeds after a U.S. cross-listing. This reflects that before cross-listing on U.S. stock exchanges, firms from regions with weaker shareholder proection faced difficulties in raising capital by equity issuing, so they tend to raise more capital by equity issuing thereafter.

Another early empirical study of legal bonding hypothesis is Doidge, Karolyi and Stulz (2004), the authors find out that foreign companies cross-listed on the U.S. exchanges have a higher Tobin's q ratio than those from the same country without a U.S. cross-listing. Furthermore, for firms with higher growth opportunity, which is proxied by sales growth, the increase in Tobin's q after a U.S. cross-listing is higher. The authors suggest that the controlling shareholders of U.S. cross-listed firms tend to be willing to restrain from expropriating the capital of the firms and thus enhance the value of the growth opportunity.

Until then, the empirical results are not convincing enough to prove the relationship between corporate governance and cross-listing. This is because the higher probability of equity issues and Tobin's q may not be caused by the stronger investor

protection, but is caused by other factors, such as the depth and liquidity of the U.S. equity market. Nevertheless, later studies by testing the relationship between cross-listing and variables reflecting corporate governance, such as voting premium, CEO turnover, and valuation of investors on excessive cash, give stronger support for the legal bonding hypothesis.

The voting premium of a dual class equity, i.e. the price of the high voting shares minus the price of low voting shares, is negatively related to the quality of corporate governance. Therefore, Doidge (2004) argues that provided the existence of the legal bonding effect, the voting premium should decrease after a U.S. cross-listing. Empirical results suggest that during the announcement of the U.S. cross-listing, both the price of high voting shares and low voting shares increase, but the low voting shares increase more. The decrease in the voting premium thus is an evidence that the legal bonding effect of U.S. cross-listing improves the corporate governance and reduces the value of private control.

One of the most direct tests of the corporate governance quality of cross-listed firm is Lel and Miller (2008). The authors point out that a higher probability of replacement of CEOs with poor performance reflects the higher corporate governance quality of a firm. Results show that, firms from countries with weaker investor protection have a stronger negative relationship between the CEO turnover and firm performance after a cross-listing. However, this phenomenon only exists among firms cross-listed on exchanges with stringent regulation, such as exchanges of the United States.

Because of the liquidity feature, cash is regarded as the asset which is the easiest to be expropriated by the insiders. Without sufficient investor protection, investors

should place a lower value on the excess cash holding by a firm. Nevertheless, Frésard and Salva (2010) show that a U.S. cross-listing increases the value of the excessive cash. The authors conclude that a U.S. cross-listing can effectively lower the risk of expropriation of the excessive cash by the insiders.

2.4 Studies questioning the legal bonding hypothesis

Licht (2003) suggests that in the perspective of the cross-listed firms, the legal bonding effect is only second order important. The first order consideration is to increase the visibility. The author further points out that, for this reason, the U.S. regulatory authority has lighter legal requirements on corporate governance for foreign listed firms than domestic listed firm in order to attract foreign firms to list on the U.S. exchanges. For example, foreign listed firms are able to easily get exemption from the equity listing requirements on corporate governance.

More evidences questioning the legal bonding hypothesis is found by Siegel (2005). Although the cross-listed firms are under the law and regulation of the United States, the author finds out that from 1994 to 2002, the SEC (Security Exchange Commission) only took real legal action against 13 foreign cross-listed firms. Furthermore, the author points out that the SEC never took legal action against cross-listed firms from Brazil, Mexico (the author shows that from 1994 to 2002, there were at least 16 insider asset takings among the Mexican U.S. cross-listed firms), Russia, and South Korea. Besides, the author shows that U.S. cross-listed firms from Mexico have a higher probability of insider asset taking (legal or illegal) from investors than non-U.S.-cross-listed firms. Therefore, in fact, the legal enforcement of SEC on cross-listed firms is not strong. The author, however, suggests that the reputation bonding rather than the legal bonding is the cause of the

improvement in corporate governance of the cross-listed firms. The study discovers that, the Mexican U.S. cross-listed firms which did not engage in asset taking from investors were more likely to raise external capital in the later period. The author concludes that although the legal enforcement is weak, the better information environment, such as the business press and equity analysis, serves as a reputation bonding which motivates the U.S. cross-listed firms to improve their corporate governance.

King and Segal (2005) suggest that not all the cross-listings are necessarily accompanied by legal bonding. The authors use the sample of Canadian firms and find out that for single class firms, the value increase caused by the U.S. cross-listing is only temporary unless the U.S. investor base, i.e. investor recognition, expands. For dual class firms, however, regardless of the U.S. investor base, there is a permanent increase in Tobin's q ratio. The authors argue that the bonding effect only exists among firms with weak investor protection.

Nevertheless, Sarkissian and Schill (2008) reject both the legal bonding and investor recognition hypothesis. They suggest that all the valuation gain from different characteristics of the exchanges, such as liquidity, higher legal standard, and from characteristic of the cross-listed firms, i.e. larger shareholder base, are temporary, except valuation gain from increase disclosure.

2.5 Studies supporting the information improvement hypothesis

As Siegel (2005) suggests that the law enforcement on cross-listed firms may be overstated, and the reputation bonding is the main reason for cross-listed firms to improve their corporate governance. Therefore, we should see an improvement in information environment after a U.S. cross-listing.

One of the earliest studies of cross-listing and information environment is Baker, Nofsinger and Weaver(2002). Using both regression and industrial and geographical matching, results show that the number of following analysts increases after the firms cross-listed on NYSE or LSE. The increase is higher for firms cross-listed on NYSE. Moreover, after the cross-listing, firms with more following analysts have lower capital cost.

Lang, Lins and Miller (2003) discover similar phenomena. The study first finds out that a U.S. cross-listing increases the number of analyst coverages of a firm. Second, a U.S. cross-listing improves the earnings forecast accuracy of the equity analysts. Also, the study discovers that the U.S. cross-listed firms with more analyst coverages and higher earnings forecast accuracy have higher valuation.

The degree of earning management is an important indicator measuring the quality of information environment. Lang, Raedy and Yetman(2003) show that the variation of net income of firms with a U.S. cross- listing is higher than those without. Moreover, firms have higher variation of net income in post-U.S.-cross-listing period than pre-U.S.-cross-listing period. Therefore, U.S. cross-listing deters earning smoothing activities. In addition, the study finds out that the accounting data of U.S. cross-listed firms contain higher quality information than non-U.S.-cross-listed firms. This is because, by regressing the equity price on the accounting data, the R-squared of the sample of U.S. cross-listed firms is higher than non-U.S.-cross-listed firms.

Although traditional theory suggests that price discoveries are mainly contributed by the home market from where the relevant information is generated. Eun and Sabherwal (2003) point out that the cross-listing market is also an important contributor of price discoveries. Using the sample of Canadian firms listed on both

TSE (Toronto Stock Exchange) and a U.S. exchange, the study shows that about 40% of the price discoveries are generated from the U.S. market. Also, the share of price discoveries of the U.S. market is higher for firms with higher U.S. trading proportion, particularly for the medium size trades, i.e. the informative trades.

Another study about the price discovery of the cross-listing equity is Su and Chong (2007). Using a sample of eight firms from China cross-listed on Hong Kong Stock Exchange and NYSE, the authors discover that the price sequences on Hong Kong Stock Exchange and NYSE of these eight firms are cointegrated with a common factor. Moreover, 85% of the price discoveries are from Hong Kong Stock Exchange, while 15% are from NYSE. The authors argue that there are two possible reasons for the high share of price discoveries generated from Hong Kong Stock Exchange. One is the information advantage because of the geographical proximity. Another is the trading hours of Hong Kong Stock Exchange are 12 hours after the close of NYSE.

Fernandes and Ferreira (2008) indirectly prove the information environment improvement effect of cross-listing by decomposing the variation of the equity returns into two parts. One part is related to the market wide variation, i.e. the systematic volatility. The remaining part is related to the firm specific information, i.e. the idiosyncratic volatility. Therefore, if a U.S. cross-listing improves the information environment of the firms, we should find out that the ratio of idiosyncratic returns volatility to total returns volatility of the U.S. cross-listed firm is higher than that of the non-U.S.-cross-listed firms. The empirical findings show that U.S. cross-listing improves the information environment for firms from developed countries but not developing countries. Moreover, for U.S. cross-listed

firms from developing countries, increase in analyst coverage actually decreases the information environment.

Extending the strategic disclosure model of Shin (2003), Goto, Watanabe and Xu (2008) argue that under the lack of high information disclosure standard, risk-averse investors are more skeptical about the information provided by the managers. For example, if the firm discloses a few good news, i.e. small expected cash flow, the investors expect that there is some bad news withheld by the firm managers. For this uncertainty, the risk-averse investors require higher expected equity returns. Therefore, we should find a negative correlation between the expected cash flow and expected returns. And because of this reason, the equity returns reversal of these firms should be strong. However, if cross-listing can enhance the information disclosure standard, these statistical relationships will be weaker. Actually, the authors find out that the negative correlation between expected cash flow and expected equity returns and the phenomenon of equity returns reversal decrease significantly after the firm cross-listed on the U.S. exchanges.

2.6 Studies questioning the information improvement hypothesis

There are, however, studies questioning the information environment improvement caused by a U.S. cross-listing. For example, Bailey, Karolyi and Salva (2006) argue that if a U.S. cross-listing enhances the disclosure standard and thus the information environment, we should find out that the abnormal returns and abnormal trading volumes after an earnings announcement are lower for firms with U.S. cross-listing. The authors, however, show that the results are contrary to the assumption. More surprisingly, the higher abnormal returns and higher abnormal trading volumes are mainly concentrated in U.S. cross-listed firms with higher S&P disclosure scores.

Although some studies suggest that firms with cross-listing on the U.S. exchanges engage in less earning management than those without, Lang, Raedy and Wilson (2006) show that the quality of the accounting information of U.S. cross-listed firms is lower than that of the U.S. domestic firms. Results indicate that the variations of accounting earnings of the U.S. cross-listed firms are smaller than the U.S. domestic firms. Within the cross-listing sample, firms from countries with weaker investor protection have smoother earning. Moreover, comparing with the U.S. domestic firms, the accounting data of the U.S. cross-listed firms is less correlated with the equity returns. The authors conclude that the SEC dose not effectively enhance the accounting standard of cross-listed firms to a level of the U.S. domestic firms.

In addition, Ndubizu (2007) argue that cross-listing even increases the incentive of the firms to manage the earnings. First, the author shows that the return on assets, cash flows and discretionary accruals of the U.S. cross-listed firms reach the highest level during the cross-listing period, but decrease significantly in the years after the cross-listing event. Thus, the author suggests that the U.S. cross-listed firms either engage in earning management or timing the cross-listing. Second, the results show that during the cross-listing period, U.S. cross-listed firms have higher discretionary accruals than domestic firms listed on the U.S. exchanges with similar characteristics.

2.7 Studies supporting the firm growth hypothesis

As mentioned by Reese and Weisbach (2002), a U.S. cross-listing increases the probability of the subsequent equity issuing. Furthermore, King and Segal (2005) suggest that U.S. cross-listed firms have a larger investor base. Therefore, it is reasonable to expect that, by improving the sources of external capital, a U.S.

cross-listing provides a larger benefit for firms with younger age and financial stress. Some empirical studies support this hypothesis. For example, Pagano, Röell and Zechner (2002) find out that firms cross-listed on the U.S. exchanges differ substantially from firms cross-listed on the European exchanges. In particular, U.S. cross-listed firms are characterized by higher total asset growth, higher market to book value and higher foreign sales percentage. The authors thus suggest that the motivation of a U.S. cross-listing may be the need for equity capital to support the expansion strategy of the growing companies.

Khurana, Martin and Periera (2008) show that a U.S. cross-listing improves the financial condition and the firm growth. The authors decompose the firm growth rate into "internal financed growth rate", i.e. the estimated maximum growth rate that can be achieved by only using the internal cash flows, short-term borrowing, and long-term loans, and "external financed growth rate", i.e. the difference between the actual growth rate and the "internal financed growth rate". Results show that, the "external financed growth rate" increases after the firms cross-listed on the U.S. exchanges.

Using the implied cost of capital models, Hail and Leuz (2009) decompose the increase in equity price of firms cross-listed on the U.S. exchanges into components caused by the lower cost of capital and the higher growth expectation. They find out that for exchange listing ADRs, around half of the increase in equity price of the cross-listed firms is because of the higher growth expectation. Moreover, for the OTC (over the counter) ADRs, higher growth expectation explains almost all the increase in equity price.

Lin, Seade and Zhang (2010) examine the firm growth effect of the cross-listing on Chinese firms. Results show that among the three cross-listing markets, NYSE has the greatest positive effect on the growth of sales, investment, and ROA of the cross-listed firms, and it is followed by the Singapore Stock Exchange and Hong Kong Stock Exchange.

2.8 Predictability of institutional investors on equity returns

Whether institutional investors possess the ability to predict stock returns is a long debated question. One of the empirical studies supports the view that institutional investors have the superior trading ability is Chakravarty (2001). The author argues that if most of the stock price changes are caused by public information, the proportion of cumulative price change of a specific category of trade should be closed to the ratio of the transaction of that specific category to the total transaction. The results reject this hypothesis by showing that nearly 80% of the cumulative price changes are caused by the medium-size trades initiated by institutional investors. The author thus concludes that the institutional investors are informed traders.

Gompers and Metrick (2001) have a different conclusion. Using a sample of the U.S. firms, the authors argue that although the lag institutional ownership level is positive correlated with the equity returns, this does not imply the superior equity selection ability of the institutional owner. The positive correlation only reflects the price pressure on equity returns caused by the demand shock. When the authors decompose the lag institutional ownership into the lag first difference and level of second lag, the first difference, which reflects the information trades, positively but not significantly correlates with the equity returns. However, the level of second lag,

which reflects the long term preference of institutional investors, is positively and significantly correlated with the equity returns.

Yan and Zhang (2009) extend the study of Gompers and Metrick (2001) by dividing the institutional investors into long term investors and short term investors. The sample includes firms based on the United States. The authors point out that institutional investors who possess superior information tend to exploit this information advantage frequently, while institutional investors without the information advantage trade more cautiously and less often. Therefore, the short term institutional investors are better informed than the long term institutional investors. By using a similar model to Gomper and Metrick (2001), the authors find out that the coefficient of the lag first difference of short term institutional ownership, but not long term institutional ownership, is positive and significant in the regressions with quarter returns and year returns as the dependent variables. This positive correlation is stronger for the sample of high growth firms.

Another study extends the model of Gompers and Metrick (2001) is Baik, Kang and Kim (2010). The authors suggest that local institutional investors, because of the geographical proximity and the accessibility to local media, have more information advantage than non-local institutional investors. Concentrating on the sample of U.S. firms, the authors define local institutional investors as investors locating in the same state with the firm they invest, while non-local institutional investors as investors locating in states different from the firm they invest. The results show that the lag first difference of local institutional ownership is more significantly and positively correlated with equity returns. And the positive relationship is stronger for

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firms with greater information cost, such as high growth firms, young firms, and firms with high returns volatility.

To summarize, there are both studies support and question the legal bonding hypothesis and information environment improvement hypothesis. However, for the firm growth hypothesis, there are only supporting literatures. Moreover, most of the literatures support the equity returns predictability of the institutional investors.

In the next chapter, first, empirical tests are developed in order to test the informational environment improvement hypothesis, the legal bonding hypothesis, and the firm growth hypothesis of cross-listing. Second, the empirical model and the definition of the data are presents.

Chapter 3 Hypotheses, Methodology and Data

3.1 Hypotheses

The previous chapter introduces the literatures about the informational environment improvement hypothesis, the legal bonding hypothesis, and the firm growth hypothesis. This chapter develops empirical tests to investigate these three hypotheses of cross-listing and describes the empirical model and the definition of the data.

One of the main goals of this thesis is to investigate whether cross-listing on the U.S. exchanges enhances the information environment and thus improves the equity returns predictability of the institutional investors. First, I suggest that a better information environment can improve the investing skill of the institutional investors. Moreover, the regions with British common-law origin are regarded as regime with high quality of information environment because of the stringent disclosure standard. Therefore, I expect the ability of institutional investors in predicting equity returns of firms from British common-law regions is better than other legal origins. Therefore, I develop the following hypotheses,

H1a. *The changes in institutional ownership level in the previous period are positively correlated with the equity returns in the current period.*

H1b. *The correlation between the changes in institutional ownership level in the previous period and the equity returns in the current period is higher for firms from common-law regions than firms from non-common-law regions.*

Since the information disclosure requirement and the quality of information environment of the U.S. exchanges are regarded as the highest in the world.

Therefore, cross-listing on the U.S. exchanges should improve the equity returns predictability of the institutional investors. Therefore, after a U.S. cross-listing, the ability of institutional investors in predicting equity returns should become stronger. Moreover, the increase in predictability should be higher for firms from non-common-law regions than common-law regions, reflecting the larger difference between the information environment of non-common-law regions and the United States. Therefore, I develop the following hypotheses,

H2a. *After a U.S. cross-listing, the correlation between the changes in institutional ownership level in the previous period and the equity returns in the current period will increase.*

H2b. *The increase in correlation between the changes in institutional ownership level in the previous period and the equity returns in the current period caused by a U.S. cross-listing is higher for firms from non-common-law regions than firms from common-law regions.*

Besides, the legal bonding hypothesis suggests that a cross-listing on the U.S. exchanges can improve the legal standard and investor protection of a firm. Moreover, La Porta et al (1998) point out that, the regions with English common-law origin have the best shareholder protection. Therefore, I expect the equity returns of the U.S. cross-listed firms from non-common-law regions increase more during and after the cross-listing period than those from common-law regions. This is because the difference in legal standard between the United States and the non-common-law regions is larger. Therefore, I have the following hypothesis,

H3.*The correlations between the U.S. cross-listing dummies and the equity returns should be higher for firms from non-common-law regions than firms from common-law regions.*

Furthermore, the firm growth hypothesis argues that a U.S. cross-listing improves the financial condition and thus enhances the growth of a firm. Therefore, the equity returns of firms with younger age and lower dividend yield should increase more after a U.S. cross-listing. Therefore, I have the following hypotheses,

H4a. *The correlations of U.S. cross-listing dummies and the equity returns should be higher for firms with younger age.*

H4a. *The correlations of U.S. cross-listing dummies and the equity returns should be higher for firms with lower dividend yield.*

3.2 Methodology

Since this thesis analyzes whether U.S. cross-listing enhances the information environment and equity returns predictability of the institutional investors, I apply and extend the model of Gompers and Metrick (2001) because the research subjects are similar and the model is widely used in later similar studies, such as Yan and Zhang (2009) and Baik, Kang and Kim (2010). The regression model is as follows,

Raw Equity returns$_{i,t}$ = α_t + γ(Δ U.S. Cross-list$_{i,t}$) + μ(U.S. Cross-list$_{i,t-1}$) + η(ΔNo. of IOs$_{i,t-1}$) + ν ((U.S. Cross-list$_{i,t-1}$ ΔNo. of IOs$_{i,t-1}$)) + θ(No. of IOs$_{i,t-2}$) + β (Control Variables$_{i,t-1}$) + ε*

In the following part, the definition of variables are explained.

3.3 Dependent variables

In this thesis, the sample data are from 23 developed regions from the first half of 2006 to the first half of 2011. Because of the insufficiency of institutional ownership data, the frequency of the regression analyses in this study is semi-annual. The developing regions are not included because the data of direct ownership of institutional investors from OSIRIS database is inadequate for firms from developing regions. Also, the data of direct ownership of institutional investors of firms from developed regions from OSIRIS database are also not enough before 2005 (Since first lag and second lag variables are included in the regressions, so the sample period in the regression analyses is from the first half of 2006).

Raw Equity Returns$_{i,t}$

The dependent variable is the raw equity returns in the current period. The raw equity return is,

(USD Equity price in period t -USD Equity price in period t-1) / USD Equity price in period t-1

Since the firms may pay stock dividend or split their stock during the sample period, the raw equity price may not be relevant. Therefore, the USD equity price is the daily closing price at the end of June or December, i.e. PRCCD in Compustat, divided by the cumulative adjustment factor, i.e. AJEXDI in Compustat, and then adjusted by the corresponding daily exchange rate provided by Datastream, in order to convert the price into U.S. dollar. Semi-annual data are from Compustat.

Industrial Adjusted Equity Returns$_{i,t}$

In the robustness test, the dependent variable is the industrial adjusted equity returns. This is because the equity returns mainly contain two parts, one reflects the business condition of the industrial sector and another reflects the firm specific factors. Therefore, studying the effects of U.S. cross-listing on the industrial adjusted returns can help us to understand the benefit of U.S. cross-listing more precisely. If U.S. cross-listing has impacts on the firms, the impacts on the industrial adjusted returns should be also statistically significant. This is because the industrial adjusted returns reflect only the firm, while the raw returns may include market wide factors and contain more noise. The industrial adjusted returns are the raw returns net of the returns of an equally weighted portfolio containing firms in the same industry according to the Fama-French 48 industry sectors.

3.4 Key independent variables

U.S. Cross-list$_{i,t-1}$

The variable *U.S. Cross-list$_{i,t-1}$* is a dummy variable of the U.S. cross-listing status of firm i in the previous period. If the firm had cross-listing on the NYSE, NASDAQ or Amex in the previous period, *U.S. Cross-list$_{i,t-1}$* equals to one. Otherwise, *U.S. Cross-list$_{i,t-1}$* equals to zero. Semi-annual data are from Compustat, Bank of New York, JP-Morgan, NYSE-Euronext and NASDAQ.

Δ U.S. Cross-list$_{i,t}$

The variable *Δ U.S. Cross-list$_{i,t}$* is the first difference of the U.S. cross-listing dummy in the current period, i.e. if the firm started a U.S. cross-listing in the current period, *Δ U.S. Cross-list$_{i,t}$* equals one. Otherwise, *Δ U.S. Cross-list$_{i,t}$* equals to zero.

Semi-annual data are from Compustat, Bank of New York, JP-Morgan, NYSE-Euronext and NASDAQ.

$\triangle$No. of IOs$_{i,t-1}$

The variable $\triangle$*No of IOs$_i$* is the first difference of institutional ownership level in the previous period. Since in the OSIRIS direct ownership database, many institutional ownership observations only record whether the institutional owner holds a specific firm in a specific period, but not the percentage of shareholding, using the percentage ownership will cause large information missing. In this thesis, the number of institutional investors is used as a proxy for the institutional ownership level. Institutional investors include banks, financial companies, hedge funds, insurance companies, mutual and pension fund/nominee/trust/trustee. Semi-annual data are from Osiris.

No. of IOs$_{i,t-2}$

The variable *No. of IOs$_{i,t-2}$* is the institutional ownership level in the second previous period, i.e. the number of institutional owners in the second previous period. Semi-annual data are from Osiris.

U.S. Cross-list$_{i,t-1}$*$\triangle$No. of IOs$_{i,t-1}$

U.S. Cross-list$_{i,t-1}$*$\triangle$No. of IOs$_{i,t-1}$ is the interaction term of *U.S. Cross-list$_{i,t-1}$* and $\triangle$ *No. of IOs$_{i,t-1}$*.

3.5 The control variables

Gompers and Metrick (2001) use control variables to control the long term preference of the institutional owners. This is because long term preference of the

institutional investors can produce a price pressure on the equity. Thus, the correlation between the institutional ownership and the equity returns may reflect the price pressure on the equity returns, but not the information advantage of the institutional investors. Therefore, the following control variables, as suggested by Gompers and Metrick (2001), are included in the regression analyses to control the effect of long term preference of the institutional investors.

Equity returns$_{i,t-1}$ and Equity returns$_{i,t-2}$

Equity returns$_{i,t-1}$ and *Equity returns$_{i,t-2}$* are the raw equity returns of firm i in the first and second previous periods respectively. These two variables reflect the momentum of the equity returns. Gompers and Metrick (2001) argue that institutional investors may have superior knowledge about the historical pattern of the equity price and exploit this pattern to earn abnormal returns. Semi-annual data are from Compustat (equity price) and Datastream (exchange rate).

BTV$_{i,t-1}$

BTV$_{i,t-1}$ denotes the book to market ratio of firm i in the previous period. It is another variable represents the price momentum of the equity. It is the book value in thousands of USD of firm i divided by the market capitalization in thousands of USD of firm i. The book value is the total assets net of total liabilities. Annual book value data are from Osiris. Semi-annual market capitalization data are from Compustat.

Log MKC$_{i,t-1}$

Log MKC$_{i,t-1}$ denotes the natural logarithm of market capitalization in thousands of U.S. dollar of firm i in the previous period. As mentioned by Gompers and Metrick

(2001), the market capitalization reflects the size of a firm. One of the important considerations of institutional investors when choosing equity is the transaction cost and liquidity. High market capitalization firms are usually more liquid. The market capitalization is the daily closing price at the end of June or December, i.e. PRCCD in Compustat, multiplied by the total shares outstanding at the end of June or December, i.e. CSHOC in Compustat, and then adjusted by the corresponding exchange rates provided by Datastream.

Turnover$_{i,t-1}$

Turnover$_{i,t-1}$ denotes the ratio of total turnover to total shares outstanding of firm i in the previous period. This variable indicates the liquidity and transaction cost of the firm. It is the total trading volume in the previous period, i.e. CSHTRD in Compustat, divided by the average total shares outstanding in the previous period, i.e. CSHOC in Compustat. The frequency is semi-annual.

Log price$_{i,t-1}$

Log price$_{i,t-1}$ denotes the natural logarithm of the equity price in U.S. dollar of firm i in the previous period. As pointed out by Gompers and Metrick (2001), low-priced stock involves higher transaction cost. The equity price is the daily closing price at the end of June or December, i.e. PRCCD in Compustat, divided by the cumulative adjustment factor, i.e. AJEXDI in Compustat, and then adjusted by the corresponding daily exchange rates provided by Datastream in order to convert the price into U.S. dollar. The frequency is semi-annual.

Age$_{i,t-1}$

Age~i,t-1~ denotes the monthly age of the firm i in the previous period. Gompers and Metrick (2001) argue that the institutional investors are characterized by prudence. Firm age is one of the proxies of the risk of the firms. *Age~i,t-1~* is the number of months since the first price observation appeared in Compustat in the previous period. Since the earliest year of the Global Daily Security Database in Compustat is 1984, if the firm existed before 1984, in this study, the firm can only be regarded as a firm started at the January of 1984.

DVY~i,t-1~

DVY~i,t-1~ denotes the dividend yield of firm i in the previous period. It indicates the risk of the firm. It is the total dividend per share of firm i in the previous period, i.e. DIV in Compustat, adjusted by the corresponding exchange rates at the end of the previous period provided by Datastream, in order to convert the dividend per share into U.S. dollar, and then divided by the USD equity price. The frequency is semi-annual.

S&P~i,t-1~

In Gompers and Metrick (2001), the S&P variable is the membership of S&P 500. However, the sample of this study is firms from 23 developed regions not including the United States. Therefore, in this study, *S&P~i,t-1~* is the dummy variable of membership of S&P Global 1200 Index or S&P/TSX Composite Index in the previous period. The membership dummy represents the risk of the firm. *S&P~i,t-1~* equals to one if the firm was included in either or both of the indexes in the previous period. Otherwise, *S&P~i,t-1~*equals to zero. Semi-annual data are from Compustat.

VR~i,t-1~

VR$_{i,t-1}$ denotes the monthly equity returns volatility of the twenty months before the previous period. It reflects the risk of the firm. It is the variance of monthly returns of the twenty months before the previous period. The monthly return is,

(USD Equity price in month i -USD Equity price in month i-1) / USD Equity price in month i-1

The USD equity price in month i is the daily closing price at the end of each month, i.e. PRCCD in Compustat, divided by the cumulative adjustment factor, i.e. AJEXDI in Compustat, and then adjusted by the corresponding daily exchange rates provided by Datastream, in order to convert the price into U.S. dollar. The frequency is semi-annual

Other dummy variables

Other dummy variables include industrial sector dummies according to Fama-French 48 industrial sectors, country dummies and semi-annual period dummies.

3.6 The decomposition of the institutional ownership variable

The reason for decomposing the *No of IOs$_{i,t-1}$* into $\triangle$*No of IOs$_{i,t-1}$* and *No of IOs$_{i,t-2}$* is to distinguish the informed trades from the long term demand shock of the institutional investors. As suggested by Gompers and Metrick (2001), the level of institutional investors, i.e. *No of IOs$_{i,t-2}$*, is more stable and reflects the long term demand preference of the institutional investors, since it is accumulated in many periods. Therefore, the coefficient of *No of IOs$_{i,t-2}$* represents the price pressure of this long term demand, but not the superior information of institutional owners. However, the first difference, i.e. $\triangle$*No of IOs$_{i,t-1}$*, represents the growth of the

number of institutional investors in one period and is more noisy. This short term and small fraction of demand change thus reflects the informed trades. The positive coefficient of $\Delta No\ of\ IOs_{i,t-1}$ is an evidence of the information advantage of the institutional investors.

3.7 Additional control variables for robustness analyses

In the original model of Gompers and Metrick (2001), the cross-listing variables are not included, the control variables only include factors affecting the institutional investor ownership, but not those affecting the cross-listing decision. Therefore, after adding the cross-listing variables, additional variables should be controlled in order to minimize the endogenous effect of cross-listing. In the robust regression analyses, the following additional control variables are included.

Sales growth$_{i,t-1}$

Sales growth$_{i,t-1}$ is the semi-annual sales growth rate of firm i in the previous period, which proxies for the growth prospect of the firms. As pointed out by King and Segal (2009), firms with higher growth opportunity are more likely to cross-list. It is the changes in semi-annual sales, i.e. changes in the summation of two quarterly sales (SALEQ in Compustat), in the previous period, divided by the semi-annual sales in the second previous period. If there is no information about the *Sales growth$_{i,t-1}$* of the observation, the *Sales growth$_{i,t-1}$* is treated as zero in order to avoid missing observation. The frequency is semi-annual.

Leverage$_{i,t-1}$

Leverage$_{i,t-1}$ is the leverage of firm i in the previous period. King and Segal (2009) use the leverage as the proxy for the growth opportunity of the firm, which is

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regarded as a factor affecting the cross-listing decision. It is the total liabilities in the second quarter and fourth quarter, i.e. ATQ in Compustat, divided by the total assets in the second quarter and fourth quarter, i.e. LTQ in Compustat, respectively. The frequency is semi-annual.

Proportion of foreign sales$_{i,t-1}$

Proportion of foreign sales$_{i,t-1}$ is the ratio of the foreign sales to total sales of firm i in the previous period. The data are from Osiris. As pointed out by King and Segal (2009), the higher the proportion of foreign sales, the higher the probability of cross-listing. If there is no information about *Proportion of foreign sales$_{i,t-1}$*

of the observation, *Proportion of foreign sales$_{i,t-1}$* is treated as zero in order to avoid missing observation. The frequency is semi-annual.

Log Total assets$_{i,t-1}$

Log Total assets$_{i,t-1}$ is the natural logarithm of the total assets in thousands of USD of firm i in the previous period. King and Segal (2009) suggest that total assets indicates firm size, and firm size is one of the factor affecting the cross-listing decision. Annual data are from Osiris.

ROA$_{i,t-1}$

ROA$_{i,t-1}$ is the return on assets in percentage of firm i in the previous period. King and Segal (2009) argue that the ROA reflects the profitability of the firm, and firms with higher profitability are more likely to cross-list. The data are from Osiris. The frequency is annual.

3.8 Cross-listing on London Stock Exchange

Some firms have cross-listing on the U.S. stock exchanges may also have cross-listing on LSE (London Stock Exchange). Since LSE is also a common-law international financial center, a cross-listing on LSE may provide similar effects to a cross-listing on the U.S. stock exchanges. Excluding the LSE cross-listing variables may over-estimate the bonding effect of the U.S. cross-listing for firms cross-listing their equity on both LSE and the U.S. stock exchanges. Therefore, the LSE cross-listing variables are added to the original regression model.

LSE Cross-list$_{i,t-1}$

The variable *LSE Cross-list$_{i,t-1}$* is a dummy variable of the LSE cross-listing status of firm i in the previous period. If the firm had cross-listing on the LSE in the previous period, *LSE Cross-list$_{i,t-1}$* equals to one. Otherwise, *LSE Cross-list$_{i,t-1}$* equals to zero. Semi-annual data are from Compustat, Bank of New York, JP-Morgan, and LSE.

Δ LSE Cross-list$_{i,t}$

The variable *Δ LSE Cross-list$_{i,t}$* is the first difference of the LSE cross-listing dummy in the current period, i.e. if the firm started or stopped a LSE cross-listing in the current period, *Δ LSE Cross-list$_{i,t}$* equals to one or negative one respectively. Otherwise, *Δ LSE Cross-list$_{i,t}$* equals to zero. Semi-annual data are from Compustat, Bank of New York, JP-Morgan, and LSE.

*LSE Cross-list$_{i,t-1}$ * Δ No. of IOs$_{i,t-1}$*

*LSE Cross-list$_{i,t-1}$ * Δ No. of IOs$_{i,t-1}$* is the interaction term of *LSE Cross-list$_{i,t-1}$* and *Δ No. of IOs$_{i,t-1}$*.

3.9 Cross-listing on exchanges other than the U.S. exchanges and LSE

Some firms in the sample period listed their equity on exchanges other than the U.S. exchanges and LSE. Therefore, it is interesting to study whether cross-listing on these exchanges provides the similar benefits to cross-listing on the U.S. exchanges or LSE. Therefore, the global cross-listing variables are added to the original regression model.

Global Cross-list$_{i,t-1}$

The variable *Global Cross-list$_{i,t-1}$* is a dummy variable of the global cross-listing status of firm i in the previous period. If the firm had cross-listing on the exchanges other than the U.S. exchanges and LSE in the previous period, i.e., the firm listed the equity on exchanges of more than two countries/regions other than the U.S. exchanges and LSE in the previous period, *Global Cross-list$_{i,t-1}$* equals to one. Otherwise, *Global Cross-list$_{i,t-1}$* equals to zero. Semi-annual data are from Compustat.

$\triangle$Global Cross-list$_{i,t-1}$

The variable *$\triangle$Global Cross-list$_{i,t}$* is the first difference of the global cross-listing dummy in the current period, i.e. if the firm started or stopped a global cross-listing in the current period, *$\triangle$Global Cross-list$_{i,t}$* equals to one or negative one respectively. Otherwise, *$\triangle$Global Cross-list$_{i,t}$* equals to zero. Semi-annual data are from Compustat.

Global Cross-list$_{i,t-1}$*$\triangle$No. of IOs$_{i,t-1}$

Global Cross-list$_{i,t-1}$*$\triangle$No. of IOs$_{i,t-1}$ is the interaction term of *Global Cross-list$_{i,t-1}$* and *$\triangle$No. of IOs$_{i,t-1}$*.

This chapter presents the hypotheses development, empirical model and data definitions. In the next chapter, summary statistics, empirical results of the information improvement hypothesis, the legal bonding hypothesis, the firm growth hypothesis of cross-listing, and the robustness tests are analyzed.

Chapter 4 Empirical Results

4.1 Summary statistics

Table 1 reports that there are totally 12,532 firms in the sample. Out of which, 238, 147 and 360 firms had cross-listing on the U.S. exchanges, LSE and exchanges other than the U.S. exchanges and LSE during the sample period respectively. More than half of the firms with a U.S. cross-listing were from Canada. For LSE cross-listed firms, around half were from Australia and Ireland. This is not surprising. As showed by Sarkissian and Schill (2004), geographical, cultural and economic proximity are the main factors in the selection of overseas listing markets.

Table 2a, Table 2b, Table 2c, Table 2d and Table 2e report the summary statistics of the dependent variables and the independent variables of the whole sample and the sub-sample of non-cross-listed firms, U.S. cross-listed firms, LSE cross-listed firms and firms cross-listed on exchanges other than the U.S. exchanges and LSE respectively. All variables, except Δ *No. of IOs*$_{i,t-1}$, *No. of IOs*$_{i,t-2}$, and the cross-listing dummies, are winsorized in the lowest 1% and highest 1% distribution. Comparing the firms with cross-listing, especially for U.S. cross-listing and LSE cross-listing, and firms without cross-listing, the firm characteristics were very different.

For example, on average, the equity returns of cross-listed firms were higher than non-cross-listed firms. Moreover, the average returns volatility of cross-listed firms was lower than non-cross-listed firms. The mean age of cross-listed firms was lower than non-cross-listed firms. This may be because most of the cross-listed firms were young and growing firms. Also, cross-listed firms were characterized by higher turnover, higher market capitalization, lower book to market ratio and lower

dividend yield. Furthermore, the average number of institutional investors of the cross-listed firms was more than two times as the non-cross-listed firms.

Table 2f reports the time series of number of firms with U.S. cross-listing, firms with LSE cross-listing and firms with cross-listing on exchanges other than the U.S. exchanges and LSE during the sample period. Table 2f shows the summary statistics of these three time series. All three time series show increasing trends.

4.2 Test of information environment hypothesis

Table 3 reports the regression results of equity returns against institutional ownership variables and the control variables. Column 1 reports the results of the whole sample regression. The results are similar to the study of Gompers and Metrick (2001). The level of number of institutional investors, *No. of IOs$_{i,t-2}$*, which proxies for the long term demand shock, is positively and significantly correlated with the equity returns, indicating that the long term demand preference produces a positive price pressure on the equity price. However, the coefficient of the changes in the number of institutional investors, *△No. of IOs$_{i,t-1}$*, which proxies for the informed trades of institutional investors, is positive but not significant. Therefore, the results reject the hypothesis H1a that institutional investors can predict future equity returns.

Column 2 of Table 3 reports the regression results of the sub-sample of firms from common-law regions. The results are striking. For firms from common-law regions, not only the level of number of institutional investors, *No. of IOs$_{i,t-2}$*, is positively and significantly correlated with the future equity returns, but the coefficient of the changes in number of institutional investors, *△No. of IOs$_{i,t-1}$*, is also positive and significant at 1% level. If the number of institutional investors increases by one, the

equity returns in the next period increase by 0.14%. Column 3 of Table 3 reports the regression results of the sub-sample of firms from non-common-law countries. For firms from non-common-law regions, only the coefficient of level of number of institutional investors, *No. of IOs$_{i,t-2}$*, is positive and significant. The coefficient of the first difference of number of institutional investors, *ΔNo. of IOs$_{i,t-1}$*, is positive but not significant. Therefore, superior equity selection ability is limited to firms from common-law regions. The hypothesis H1b that institutional investors have better equity returns predictability on firms from common-law regions than firms from non-common-law regions is accepted.

Columns 4, 5 and 6 of Table 3 extend the regression model by including the interception and interaction terms of the U.S. cross-listing variable, i.e. *ΔU.S. Cross-list$_{i,t}$*, *U.S. Cross-list$_{i,t-1}$*, and *U.S. Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$*. For all three samples, coefficients of the interaction terms between the U.S. cross-listing variable and changes in number of institutional investors, *U.S. Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$*, are significantly positive. Therefore, cross-listing on the U.S. exchanges improves the information environment and thus enhances the equity returns predictability of the institutional investors. The hypothesis H2a is accepted.

Moreover, the coefficient of the interaction term between the U.S. cross-listing and the changes in number of institutional investors, *U.S. Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$*, is higher for firms from non-common-law regions than common-law regions. For U.S. cross-listed firms from common-law regions, one more institutional investor increases equity returns by around 0.28%, of which 0.17% is from the extra effect of the U.S. cross-listing. For U.S. cross-listed firms from non-common-law regions, one more institutional investor increases the equity returns by 0.21%, all of which is

contributed by the extra effect of the U.S. cross-listing. The results support the hypothesis H2b that the information environment improvement caused by U.S. cross-listing is stronger for firms from non-common-law regions. This indicates the bigger difference in information environment between the United States and the non-common-law regions.

4.3 Test of the firm growth hypothesis

As showed by Guariglia (2008), young firms are more likely to face financial constraint. Moreover, Lau (1987) and DeAngelo and DeAngelo (1990) argue that low dividend payout is one of the evidence of financial stress. I suggest that the positive effects of U.S. cross-listing on equity returns is because of the improvement in the financial condition of the young firms and firms with lower dividend yield.

Table 4 reports the regression results of split samples by mean of firm age, dividend yield during the sample period. Column 1 shows that, for firms with sample period mean age lower than the sample period median, the coefficient of first difference of the cross-listing dummy, $\Delta U.S.\ Cross\text{-}list_{i,t}$, is positive and significant. Therefore, in the cross-listing period, there is an extra equity return more than 25% temporarily. The coefficient of the lag level of the cross-listing dummy, $U.S.\ Cross\text{-}list_{i,t\text{-}1}$, is also positive and significant, implying that cross-listing increases the equity returns by about 5.6% permanently. However, column 2 shows that similar results do not appear in firms with sample period mean age higher than the sample period median. The results support the hypothesis H4a. This is because when comparing with higher age firms, young firms usually have more growth opportunity and face financial stress, and U.S. cross-listing provides more sources for the young firms to obtain external finance and thus help the young firms to realize the growth opportunity.

Columns 3 and 4 of Table 4 report the regression results of firms with sample period mean dividend yield lower and higher than the sample period median respectively. For firms with sample period mean dividend yield lower than the sample period median, the coefficient of the lag level of U.S. cross-listing variable, *U.S. Cross-list*$_{i,t-1}$, is positive and significant. This implies that firms with lower dividend yield enjoy around 5% permanent increase in equity returns after a U.S. cross-listing. However, this permanent increase does not exist for firms with sample period mean dividend yield higher than the median. The results support the hypothesis H4b. The reason is comparing with firms with lower dividend yield, firms with higher dividend yield usually are mature firms without financial stress.

4.4 Test on legal bonding hypothesis

In Table 3, the sign of coefficients of the interception terms of U.S. cross-listing are unexpected. The magnitude of the coefficients of the first difference and lag level of U.S. cross-listing dummy are lower for the non-common-law sample than the common-law sample. Therefore, the temporary and permanent increases in equity returns caused by U.S. cross-listing are higher for firms from common-law regions than those from non-common-law regions. This rejects the legal bonding hypothesis.

The more unexpected result is that the coefficients of the first difference and lag level of U.S. cross-listing dummy in the common-law sample regression are positive and significant. This may be due to the U.S. cross-listed firms of the common-law sample are over represented by young firms. In Table 5, the sample is split into firms with sample period mean age lower and higher than the sample period median. The results still reject the legal bonding hypothesis because only the coefficient of the U.S. cross-listing variable of the young firms from common-law regions is positive

and significant. Therefore, U.S. cross-listing only has a permanent positive effect on young firms from common-law regions. One possible reason is the difference in corporate governance between the firms from common-law regions and non-common-law regions. Young firms are usually characterized by higher risk. However, investor protection can lower the risk faced by investors. Therefore, U.S. cross-listing improves the financial condition, growth opportunity, and the equity returns of young firms from common-law regions with good corporate governance, but not young firms from non-common-law regions with weak corporate governance.

From Table 3, Table 4, and Table 5, results of the whole sample period support the information environment improvement hypothesis and the firm growth hypothesis, but not the legal bonding hypothesis. Moreover, positive effect on the equity returns of young firms is only limited to firms from common-law regions. These findings are consistent with some existing literatures. For example, in the survey of Fanto and Karmel (1997), U.S. listing foreign firms point out that the most important difficulties of a U.S. listing is the information disclosure, and in the survey of Bancel and Mittoo (2001), among the 9 options, on average, respondents rank disclosure of more information as the first important consequence of cross-listing, but the consequence of enhancing the internal procedures of management control is in the sixth rank. La Porta et al (2000) suggests that ADRs can improve the information environment but the strengthening in investor protection is limited. Empirical results of Siegel (2005) also show that the U.S. legal enforcement on foreign cross-listed firms is weak, while the reputation bonding is effective. For the firm growth effect which is only limited to firms from common-law regions, I suggest that the reason is still the difference in corporate governances. Lower age usually implies higher risk.

However, investor protection can lower the risk faced by investors. For example, Houston et al (2010) use the legal origin as the instrumental variable of creditor protection and find out that better creditor protection increases the risk-taking of the banks. Therefore, the risk of young firms from common-law regions with better investor protection is alleviated, and the financial stress can be solved. However, the risk of young firms from non-common-law regions remains, so the financial stress cannot be improved.

4.5 Robustness tests – Additional variables

The regression model of Gompers and Metrick (2001) only control the factors affecting the institutional ownership, but not those affecting the cross-listing decision. Therefore, in order to minimize the endogenous effect of cross-listing, control variables which determine the cross-listing decision should be included. As suggested by King and Segal (2009), sales growth, leverage, proportion of foreign sales, natural logarithm of total assets, and return on assets are factors affecting the cross-listing decision. This thesis does not apply the two-stage-least-squares regression. The reason is, as emphasized by Siegel (2005), *"Most, if not all, instruments that one could list are invalid because they also have a direct effect on later firm performance."* Therefore, in the robustness analyses, these variables are included as additional control variables in the regressions. Also, the dependent variable is the industrial adjusted equity returns. The results of robustness analyses are showed in Table 6, Table 7, and Table 8.

Table 6 reports the regression results of effects of U.S. cross-listing, number of institutional investors, and their interaction term on industrial adjusted returns, with the additional control variables. Columns 1, 2, and 3 report the regression results of

the whole sample, the common-law-sample and the non-common-law sample respectively. In all three regressions, the coefficients of the interaction term, *U.S. Cross-list$_{i,t-1}$* Δ*No. of IOs$_{i,t-1}$,* are positive and significant. The results still support the H2a, i.e. U.S. cross-listing can improve information environment. However, the results do not support the H2b that the information environment improvement is stronger for U.S. cross-listed firms from non-common-law regions. This is because the coefficient of interaction term, *U.S. Cross-list$_{i,t-1}$* Δ*No. of IOs$_{i,t-1}$,* of the common-law sample is greater than the non-common-law sample. In addition, the results still do not support the legal bonding hypothesis, i.e. H3. The coefficient of Δ *U.S. Cross-list$_{i,t}$* is only positive and significant in the common-law sample, but not the non-common-law sample.

The robust analyses support the firm growth hypothesis. Table 7 shows the split sample regression analyses by sample period mean age and sample period mean dividend yield with additional control variables. Columns 1 and 2 report the young firms and old firms respectively. Columns 3 and 4 report the firms with lower dividend yield and higher dividend yield respectively. In column 1, the coefficient of Δ *U.S. Cross-list$_{i,t}$* is positive and significant at 5% level. Therefore, U.S. cross-listing has a temporary positive effect on the industrial adjusted return of young firms. In column 3, the coefficient of Δ *U.S. Cross-list$_{i,t}$* is positive and significant at 10% level in the lower dividend yield sample. In Table 7, it seems that the evidences of firm growth hypothesis are weaker than the previous tests.

However, this may be caused by the missing observations due to the inclusion of the variable *Leverage$_{i,t-1}$*. Not all the observations in the previous tests have data of leverage. Also, the coefficients of the variable *Leverage$_{i,t-1}$* are not significant in all

the previous regressions. Table 8 shows the regression results without the variable *Leverage_{i,t-1}*. With more observations, the evidences of firm growth hypothesis become stronger. Coefficients of both Δ*U.S. Cross-list_{i,t}* and *U.S. Cross-list_{i,t-1}*are positive and significant at 1% level in the younger firms sample. The U.S. cross-listing increases the industrial adjusted equity returns of the younger firms by around 25% temporarily and around 4% permanently. Moreover, the coefficient of Δ *U.S. Cross-list_{i,t}* is positive and significant at 5% level in the lower dividend yield sample. The U.S. cross-listing increases the industrial adjusted equity return of the firms with lower dividend yield by 22% temporarily. The results of Table 8 still give strong supports for the firm growth hypothesis.

4.6 Cross-listing on LSE as additional variables

Another concern about the robustness is the effect of cross-listing on the LSE (London Stock Exchange). LSE is another common-law international financial center. Thus, the legal bonding effect, information environment improvement effect and growth improvement effect of a LSE cross-listing may be similar to those of cross-listing on U.S. exchanges. Excluding the LSE cross-listing variables may overestimate the positive effects of the U.S. cross-listing on firms with both U.S. cross-listing and LSE cross-listing. Therefore, regressions with LSE cross-listing variables as additional control variables are estimated and the results are reported in Table 9 and Table 10.

Table 9 reports the regression results of the effects of U.S. cross-listing, number of institutional investors, and their interaction term on industrial adjusted returns, with LSE cross-listing variables as additional control variables. Columns 1, 2, and 3 report the regression results of the whole sample, the common-law-sample and the

non-common-law sample respectively. In all regressions of Table 9, the sign and significance of coefficients of Δ *U.S. Cross-list$_{i,t}$*, *U.S. Cross-list$_{i,t-1}$*, and *U.S. Cross-list$_{i,t-1}$* Δ*No. of IOs$_{i,t-1}$* are generally the same as previous test. Nevertheless, the coefficient of LSE cross-listing variables, i.e., Δ *LSE Cross-list$_{i,t}$*, *LSE Cross-list$_{i,t-1}$*, and *LSE Cross-list$_{i,t-1}$* Δ*No. of IOs$_{i,t-1}$* are not significant in all three regressions. Therefore, a LSE cross-listing does not provide the same benefits as those offered by the U.S. exchanges.

However, Table 10 shows some meaningful results about the LSE cross-listing. Table 10 shows the split sample regression analyses by sample period mean age and sample period mean dividend yield with LSE cross-listing variables as additional control variables. Columns 1 and 2 report the young firms and old firms respectively. Columns 3 and 4 report the firms with lower dividend yield and higher dividend yield respectively. Results still support the firm growth hypothesis of the U.S. cross-listing, since the coefficients of both Δ*U.S. Cross-list$_{i,t}$* and *U.S. Cross-list$_{i,t-1}$* are positive and significant for the young firms and firms with lower dividend yield. For the firms with higher age and firms with higher dividend yield, although they do not receive benefit from a U.S. cross-listing, they enjoy higher equity returns by cross-listing on LSE. A LSE cross-listing increases the equity returns of old firms by around 19% temporarily and 4% permanently. For firms with higher dividend yield, a LSE cross-listing increases the equity returns by around 4% permanently. This finding to some extent is consistent with the discoveries of Pagano, Röell and Zechner (2002) that firms cross-listed on the U.S. exchanges tend to be rapidly expanding high-tech and export-oriented companies with low leverage, while firms cross-listed on European exchanges tend to be large and newly privatized firms trying to expand foreign sales. The reason for the different characteristics of

cross-listed firms on U.S. exchanges and European exchanges may be that a cross-listing on U.S. exchanges and a cross-listing on European exchanges, such as LSE, benefit firms with different characteristics.

4.7 Cross-listing on other regions

It is also important to compare the effect of cross-listing on the U.S. exchanges, LSE and exchanges of other regions. Table 11 shows the regression results of the effects of U.S. cross-listing, number of institutional investors, and their interaction term on industrial adjusted returns, with LSE cross-listing variables and global cross-listing variables as additional control variables. Columns 1, 2, and 3 report the regression results of the whole sample, the common-law-sample and the non-common-law sample respectively. First, in all regressions of Table 11, the sign and significance of coefficients of Δ *U.S. Cross-list$_{i,t}$*, *U.S. Cross-list$_{i,t-1}$*, and *U.S. Cross-list$_{i,t-1}$* * Δ*No. of IOs$_{i,t-1}$* are generally the same as previous tests. Second, the linear and interaction terms of LSE cross-listing are all insignificant. Third, the level and interaction terms of global cross-listing, *Global Cross-list$_{i,t-1}$* and *Global Cross-list$_{i,t-1}$* * Δ*No. of IOs$_{i,t-1}$* are not significant, but the first difference of the global cross-listing variable, Δ *Global Cross-list$_{i,t}$* is positive and significant in the whole sample and the common-law sample. Although the coefficients of Δ *Global Cross-list$_{i,t}$* is lower than the coefficients of Δ *U.S. Cross-list$_{i,t}$* in both the whole sample and the common law sample, however, the p-value of the F-tests in the third bottom row of the respective columns of Table 11 show that the coefficients of Δ *Global Cross-list$_{i,t}$* are not significantly different from the coefficients of Δ *U.S. Cross-list$_{i,t}$*. Therefore, the temporary positive effects of U.S. cross-listing and global cross-listing on equity returns are similar for both the whole sample and the common law sample.

Nevertheless, only U.S. cross-listing has a permanent positive effect on the equity returns for the common law sample.

Table 12 shows the results of the firm growth hypothesis with LSE cross-listing variables and global cross-listing variables as additional control variables. Columns 1 and 2 report the firms with lower sample period mean age and higher sample period mean age respectively. Columns 3 and 4 report the firms with lower sample period mean dividend yield and higher sample period mean dividend yield respectively. The linear and interaction terms of U.S. cross-listing variables and LSE cross-listing variables have similar sign and significance to pervious regression results. The first difference of global cross-listing, Δ *Global Cross-list$_{i,t}$* is positive and significant in both the lower and higher age samples and the lower dividend yield sample. For both the lower age sample and lower dividend yield sample, the coefficients of Δ *Global Cross-list$_{i,t}$* are lower than the coefficients of Δ *U.S. Cross-list$_{i,t}$*, and for the higher age sample, the coefficient of Δ *Global Cross-list$_{i,t}$* is lower than the coefficient of Δ *LSE Cross-list$_{i,t}$*. However, the p-value of the F-tests in the third bottom row of the respective columns of Table 12 show that for the lower age sample and lower dividend yield sample, the coefficients of Δ *Global Cross-list$_{i,t}$* are not significantly different from the coefficient of Δ *U.S. Cross-list$_{i,t}$*, and for the higher age sample, the coefficient of Δ *Global Cross-list$_{i,t}$* is not significantly different from the coefficient of Δ *LSE Cross-list$_{i,t}$*. Therefore, although global cross-listing does not have a permanent effect on equity returns of young firms, old firms, and firms with lower dividend yield, global cross-listing has similar temporary positive effects to U.S. cross-listing on equity returns of young firms and firms with lower dividend yield and a similar temporary positive effect to LSE cross-listing on old firms.

This suggests that there is no information environment improvement for global cross-listing. Also, cross-listing on exchanges other than the U.S. exchanges and LSE does not have the permanent positive effect on the equity returns similar to those of U.S. cross-listing and LSE cross-listing. However, cross-listing on exchanges other than the U.S. exchanges and LSE benefits a wider range of firms with different characteristics by temporary positive effects on equity returns, and the magnitudes are not significantly different from the temporary positive effects of the U.S. exchanges and LSE. One possible explanation is the familiarity, i.e. "the geographical, economic, cultural, and industrial proximity", suggested by Sarkissian and Schill (2004). Since in the global financial market, the firms are easier to select suitable exchanges to cross-list instead of constraining in cross-listing on one stock exchange, such as LSE, firms with different characteristics are more likely to be benefited from global cross-listing.

4.8 The non-crisis period and crisis period

The sample period of this study is from the first half of 2006 to the first half of 2011. There is a global financial crisis, the Financial Tsunami, during the sample period. Therefore, it is important to test the three hypotheses of cross-listing for the crisis period and non-crisis period separately. It is difficult to determine the starting and ending time of the Financial Tsunami. In this study, the starting time of the Financial Tsunami is the second half of 2008 when the Lehman Brothers bankrupted, and the ending time is the second half of 2009, since the U.S. President Barack Obama announced on January 27, 2010, "the markets are now stabilized, and we've recovered most of the money we spent on the banks. (United States Department of the Treasury Office of Finance Stability 2010)"

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Columns 1, 2 and 3 of Table 13 reports the regression results of U.S. cross-listing for the whole sample, the common-law sample and the non-common-law sample respectively during the non-crisis period with raw returns as the dependent variable. During the non-crisis period, the coefficient of the interaction term of the U.S. cross-listing variable, *U.S. Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$* is positive and significant at 1% level for the whole sample and the common-law sample, but positive and significant at 10% level for the non-common-law sample. The coefficients of the linear terms of the U.S. cross-listing, Δ*U.S. Cross-list$_{i,t}$*, and *U.S. Cross-list$_{i,t-1}$*, are only positive and significant for the common-law sample. However, the variable Δ *U.S. Cross-list$_{i,t}$*, is negative and significant for the non-common-law sample. The reason may be some firms choose to cross-list on the U.S. exchanges when the performance is strongest as suggested by Ndubizu (2007). If the firms from non-common-law regions choose to cross-list when the performance of the firms is strongest, the performance of these firms will become worse after the U.S. cross-listing. Therefore, during the non-crisis period, the results support the information environment hypothesis, but not the legal bonding hypothesis.

Nevertheless, there are differences between the crisis period and non-crisis period. Columns 4, 5 and 6 of Table 13 report the regression results of U.S. cross-listing for the whole sample, the common-law sample and the non-common-law sample respectively during the crisis period with raw returns as the dependent variable. During the crisis period, the interaction term of the U.S. cross-listing variable, *U.S. Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$* is not significant for all three samples. Therefore, there is no information environment improvement during the crisis period. Moreover, the first difference of the U.S. cross-listing variable, Δ*U.S. Cross-list$_{i,t}$*, is only positive and significant for the non-common-law sample. Therefore, only firms from

non-common-law regions receive a temporary increase in equity return when they initiate a U.S. cross-listing. This suggests that the legal bonding effect exists during the crisis period.

Table 14 reports the regression results of split samples by sample period mean age and sample period mean dividend yield during the non-crisis period. Columns 1 and 2 report the young firms and old firms respectively. Columns 3 and 4 report the firms with lower dividend yield and higher dividend yield respectively. During the non-crisis period, the coefficient of the first difference and the lag level of the U.S. cross-listing, Δ *U.S. Cross-list$_{i,t}$*, and *U.S. Cross-list$_{i,t-1}$*, are positive and significant for the young firms, and the coefficient of the lag level of the U.S. cross-listing, *U.S. Cross-list$_{i,t-1}$*, is positive and significant for the firms with lower dividend yield. These results are similar to the previous tests with the whole sample period and still support the firm growth hypothesis. However, column 2 of Table 14 shows that a U.S. cross-listing temporarily lowers the equity returns of old firms by around 47% during the non-crisis period. One possible reason is that the cross-listing firms seize the timing of the U.S. cross-listing as suggested by Ndubizu (2007).

Table 15 reports the regression results of split samples by sample period mean age and sample period mean dividend yield during the crisis period. Columns 1 and 2 report the young firms and old firms respectively. Columns 3 and 4 report the firms with lower dividend yield and higher dividend yield respectively. Columns 1 and 2 show that both the equity returns of firms with lower and higher age do not increase during and after a U.S. cross-listing. Nevertheless, columns 3 and 4 show that during the crisis period, both the firms with lower and higher dividend yield receive benefit from a U.S. cross-listing. A U.S. cross-listing increases the equity returns of firms

with lower dividend yield by around 7.1% permanently and increases the equity return of firms with higher dividend yield by around 21% temporarily. A possible explanation is that during the crisis period, even firms with higher dividend yield need external capital to maintain an effective operation. After improving the source of external capital, firms with higher dividend yield, which usually do not have financial stress in the long run, can operate smoothly, so the increase in equity return is once. Firms with lower dividend yield, which usually have financial stress in the long run, need time to show whether the firm can solve the financial stress in the long run even after improving the source of external capital by cross-listing on the U.S. exchanges, so the increase in equity returns last for many periods.

During the non-crisis period, the information environment improvement and firm growth effect exist, but there is no legal bonding effect. During the crisis period when the financial market is not stable, nevertheless, the information environment improvement effect does not exist, and the firm growth effect is not strong. However, during the crisis period, results show support for legal bonding hypothesis. The reason may be that the U.S. cross-listing only has legal bonding effect on serious corporate governance problems. As suggested by Johnson et al (2000), the corporate governance problem becomes serious during the crisis period. Therefore, the legal bonding effect only exists during crisis period, but not non-crisis period.

This chapter described the detailed analyses of the empirical findings. In the next chapter, a short conclusion is present.

Chapter 5 Conclusion

This chapter gives a short conclusion of the empirical findings of the Chapter 4. First, for the information environment improvement hypothesis, most of the previous studies test the hypothesis indirectly. For example, Lang, Raedy and Yetman(2003) shows that the U.S. cross-listed firms engage in less earning smoothing and the correlation between their accounting data and their equity returns is stronger. Fernandes and Ferreira (2008) shows that the equity price of U.S. cross-listed firms contains more firm specific information. These studies only point out that cross-listing lead to more information flow into the market. However, this information may not be useful for investment decision. If the extra information is not useful for the institutional investors to enhance profit, the extra information just produces more noise. This thesis directly asks the question whether a U.S. cross-listing improves the information environment by increasing the equity returns predictability of institutional investors. The answer is positive. The effect of U.S. cross-listing on information environment and equity returns predictability is strong regardless whether the returns are raw returns or industrial adjusted returns. These results do not only consist with the literatures supporting the information improvement hypothesis, but also some literatures questioning the information improvement hypothesis. For example, Lang, Raedy and Wilson (2006) suggest that the SEC does not enhance the disclosure standard of the U.S. cross-listed firm fully. The statistics results of this thesis show that, even we add up the coefficients of the linear term of the changes in number of institutional investors and the interaction term between U.S. cross-listing and changes in number of institutional investors, the predictability on equity returns of U.S. cross-listed firms from non-common-law regions is still lower than those from common-law regions. However, the important

implication is that the U.S. cross-listing effect on predictability is larger for firms from non-common-law regions. One possible reason is that the difference in information environment between the United States and non-common-law regions is larger.

When the sample period is divided into non-crisis period and crisis period, the information environment improvement effect of U.S. cross-listing exists during the non-crisis period when the financial market is stable, but does not exist during the crisis period when the financial market is volatile. Therefore, the information environment improvement of U.S. cross-listing is only effective in the stable period.

Second, results show that although the legal bonding effect of U.S. cross-listing does not exist in the whole sample period and non-crisis period, the legal bonding effect of U.S. cross-listing exists in the crisis period, i.e. from the second half of 2008 to the second half of 2009. A U.S. cross-listing only improves the equity returns of firms from common-law regions during the whole sample period and non-crisis period. However, during the crisis period, a U.S. cross-listing only improves the equity returns of firms from non-common-law regions. This finding partially consists with the view of La Porta et al (2000) **,** Licht (2003) and Siegel (2005) that the legal bonding effect of U.S. cross-listing is not fully effective. The legal bonding effect of U.S. cross-listing exists only in the crisis period when the corporate governance problem becomes serious.

The third important finding is that only young firms and firms with lower dividend yield benefit from the U.S. cross-listing, this is reflected by the increase in equity returns of these firms during and after a U.S. cross-listing. Firms with these two characteristics are more likely to face financial distress. A U.S. cross-listing provides

more opportunities and lower capital cost for these firms to raise external capital. This may be one of the most important motivations and impacts of a U.S. cross-listing. When the sample period is divided into non-crisis period and crisis period, the firm growth effect of U.S. cross-listing exists during the non-crisis period when the financial market is stable, but the firm growth effect becomes weaker during the crisis period when the financial market is volatile.

Fourth, this thesis discovers that while cross-listing on U.S. exchanges increases the equity returns of young firms and firms with lower dividends yield, cross-listing on LSE has the similar effects, but on old firms and firms with higher dividend yield. This suggests that U.S. cross-listing and LSE cross-listing provide benefit to firms with different characteristics. Some studies have a similar view. For example, as pointed out by Coffee (1999), different stock exchanges have different functions. Therefore, firms with different goals may choose to list on different stock exchanges and subject to different corporate governance standards. Moreover, empirical results of Pagano, Röell and Zechner (2002) show that firms cross-listed on the U.S. exchanges tend to be rapidly expanding high-tech and export-oriented companies with low leverage, while firms cross-listed on European exchanges tend to be large and newly privatized firms trying to expand foreign sales.

Moreover, the empirical results of this thesis find out that cross-listing on exchanges other than the U.S. exchanges and LSE does not improve the information environment. However, cross-listing on exchanges other than the U.S. exchanges and LSE benefits a wider range of firms, including firms with lower and higher age and firms with lower dividend yield. The reason may be that the firms can select

suitable cross-listing exchanges from the global market, rather than constraint to cross-list on one particular exchange.

Nevertheless, this thesis may not completely solve the self-selection problem of the U.S. cross-listing decision. Since the dependent variable of this study is the equity returns, and as pointed out by Siegel (2005), *"Most, if not all, instruments that one could list are invalid because they also have a direct effect on later firm performance."*, instead of using instrument variables to estimate two-stage-least-squares regressions, the robustness tests of this thesis include additional control variables which affect the cross-listing decision in order to minimize the self-selection problem of the U.S. cross-listing.

Table A
Definition of variables

Variable name	Variable definitions
Dependent variables	
Raw Returns$_{i,t}$	(USD Equity price of firm i in period t -USD Equity price of firm i in period t-1) / USD Equity price of firm i in the period t-1.
Industrial Adjusted Returns$_{i,t}$	Raw returns of firm i net of the returns of an equally weighted portfolio containing firms in the same industry according to the Fama-French 48 industry sectors.
Key independent variables	
U.S. Cross-list$_{i,t-1}$	If the firm i has cross-listing on the NYSE, NASDAQ or Amex in the previous period, *U.S. Cross-list$_{i,t-1}$*equals to one. Otherwise, *U.S. Cross-list$_{i,t-1}$*equals to zero.
ΔU.S. Cross-list$_{i,t}$	If the firm i starts a cross-listed in the current period, *ΔU.S. Cross-list$_{i,t}$* equals to one. Otherwise, *ΔU.S. Cross-list$_{i,t}$* equals to zero.
ΔNo. of IOs$_{i,t-1}$	Changes in number of institutional investors of firm i in the previous period.
No. of IOs$_{i,t-2}$	Number of institutional investors of firm i in the second previous period.
*U.S. Cross-list$_{i,t-1}$*ΔNo. of IOs$_{I,t-1}$*	The interaction term of *U.S. Cross-list$_{i,t-1}$* and*ΔNo. of IOs$_{I,t-1}$*.
Control variables	
Raw returns$_{i,t}$	Raw equity returns of firm i in the previous period.
Raw returns$_{i,t-2}$	Raw equity returns of firm i in the second previous period.
BTV$_{i,t-1}$	The book to market ratio of firm i in the previous period.
Log MKC$_{i,t-1}$	The natural logarithm of market capitalization in thousands of U.S. dollar of firm i in the previous period.
Turnover$_{i,t-1}$	The ratio of total turnover to total shares outstanding of firm i in the previous period.
Log price$_{i,t-1}$	The natural logarithm of the equity price in U.S. dollar of firm i in the previous period.
Age$_{i,t-1}$	The number of months since the first price observation of firm i appeared in Compustat in the previous period.
DVY$_{i,t-1}$	The dividend yield of firm i in the previous period.
S&P$_{i,t-1}$	*S&P$_{i,t-1}$* equals to one if the firm i was included in either

	or both of S&P Global 1200 Index or S&P/TSX Composite Index in the previous period. Otherwise, $S\&P_{i,t-1}$ equals to zero.
$VR_{i,t-1}$	The variance of monthly returns of firm i of the twenty months before the previous period.
<u>Additional control variables</u>	
Sales growth$_{i,t-1}$	The semi-annual sales growth rate of firm i in the previous period
Leverage$_{i,t-1}$	Total liabilities of firm i divided by total assets of firm i in the previous period.
Proportion of foreign sales$_{i,t-1}$	The ratio of the foreign sales to total sales of firm i in the previous period.
Log Total assets$_{i,t-1}$	The natural logarithm of the total assets in thousands of USD of firm i in the previous period.
ROA$_{i,t-1}$	The return on assets in percentage of firm i at the previous period.
LSE Cross-list$_{i,t-1}$	If the firm i has cross-listing on the LSE in the previous period, *LSE Cross-list$_{i,t-1}$* equals to one. Otherwise, *LSE Cross-list$_{i,t-1}$* equals to zero.
ΔLSE Cross-list$_{i,t}$	If the firm i starts or stops a LSE cross-listing in the current period, *ΔLSE Cross-list* equals to one or negative one respectively. Otherwise, *ΔLSE Cross-list* equals to zero.
*LSE Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$*	The interaction term of *LSE Cross-list$_{i,t-1}$* and *ΔNo. of IOs$_{i,t-1}$*
Global Cross-list$_{i,t-1}$	If the firm i has listing on exchanges of at least two countries/regions other than the U.S. exchanges and LSE in the previous period, *Global Cross-list$_{i,t-1}$* equals to one. Otherwise, *Global Cross-list$_{i,t-1}$* equals to zero.
ΔGlobal Cross-list$_{i,t}$	The first difference of *Global Cross-list$_{i,t}$* in the current period.
*Global Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$*	The interaction term of *Global Cross-list$_{i,t-1}$* and *ΔNo. of IOs$_{i,t-1}$*

Table 1
Number of cross-listed on the U.S. exchanges, LSE, and non-cross-listed firms

Country	Firms without cross-listing in the sample period	Firms with U.S. cross-listing in the sample period	Firms with a LSE cross-listing in the sample period	Firms with cross-listing on exchanges other than the U.S. exchanges and LSE in the sample period	Total
Austria	63	0	0	8	71
Austrialia	1,407	8	39	68	1,517
Belgium	110	2	1	10	122
Canada	1,987	144	17	1	2,147
Swizerland	170	5	2	16	188
Germany	673	6	8	9	692
Denmark	116	1	0	5	122
Spain	102	2	3	17	119
Finland	99	1	2	8	109
France	622	8	3	32	660
United Kingdom	1,427	24	0	80	1,521
Greece	240	1	4	1	244
Hong Kong	162	4	2	11	177
Ireland	4	4	43	0	49
Italy	201	4	1	10	215
Japan	3,305	9	8	13	3,329
Luxemburg	14	3	5	9	27
Netherland	83	4	4	16	105
Norway	119	1	1	4	124
New Zealand	93	4	1	14	108
Portugal	39	1	0	3	42
Sweden	310	2	0	11	323
Singapore	504	0	3	14	521
Total	11,850	238	147	360	12,532

Table 2a

Summary statistics of the whole sample. Table A shows the definition of the variables.

Variables	N	mean	sd	p25	p50	p75
Dependent Variables						
Raw returns$_{i,t}$	116563	0.061092	0.479536	-0.19677	0.001206	0.211728
Industrial adjusted returns$_{i,t}$	116563	-0.0175	0.406736	-0.23251	-0.05965	0.122163
Key Independent Variables						
ΔNo. of IOs$_{i,t-1}$	116563	1.139864	5.793875	0	0	1
No. of IOs$_{i,t-2}$	116563	9.970428	16.60431	0	3	12
U.S. Cross-list$_{i,t-1}$	116563	0.019432	0.138037	0	0	0
ΔU.S. Cross-list$_{i,t}$	116563	0.000292	0.017077	0	0	0
U.S. Cross-list$_{i,t-1}$*ΔNo. of IOs$_{I,t-1}$	116563	0.094764	2.041082	0	0	0
Control Variables						
Price$_{i,t-1}$	116563	47.72951	207.5762	0.578722	3.29033	11.5725
Price$_{i,t-2}$	116563	49.66559	215.4164	0.607745	3.377907	11.72546
Age$_{i,t-1}$	116563	229.7714	101.7314	130	281	305
BTV$_{i,t-1}$	116563	1.027209	0.951609	0.397938	0.775386	1.326852
DVY$_{i,t-1}$	116563	0.01031	0.021527	0	0	0.012387
Turnover$_{i,t-1}$	116563	0.050133	0.072289	0.00748	0.023516	0.062268
VR$_{i,t-1}$	116563	0.036994	0.060664	0.006679	0.015597	0.039479
MKC$_{i,t-1}$	116563	892024.6	2936685	20474.15	77303.23	357595.2
Additional Control Variables						
Sales growth$_{i,t-1}$	116563	0.046966	0.414588	0	0	0.016925
Leverage$_{i,t-1}$	88796	0.476477	0.259403	0.28323	0.488528	0.651356
Proportion of foreign sales$_{i,t-1}$	116563	0.167988	0.3249	0	0	0.134701
Total assets$_{i,t-1}$	116509	1414993	4638484	29835	141992	608849
ROA$_{i,t-1}$	112449	-1.19971	18.48483	-4.77	2.94	7.91
LSE Cross-list$_{i,t-1}$	116563	0.009368	0.096336	0	0	0
ΔLSE Cross-list$_{i,t}$	116563	9.44E-05	0.019648	0	0	0
LSE Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$	116563	0.021388	0.88584	0	0	0
Global Cross-list$_{i,t-1}$	116563	0.019783	0.139256	0	0	0
ΔGlobal Cross-list$_{i,t}$	116563	0.000841	0.03818	0	0	0
Global Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$	116563	0.052435	1.594028	0	0	0

Table 2b

Summary statistics of firms without cross-listing during the sample period. Table A shows the definition of the variables.

Variable	N	mean	sd	p25	p50	p75
Dependent Variables						
Raw returns$_{i,t}$	110019	0.058251	0.477505	-0.19745	-0.0014	0.207081
Industrial adjusted returns$_{i,t}$	110019	-0.01815	0.406387	-0.23296	-0.06074	0.120938
Key Independent Variables						
ΔNo. of IOs$_{i,t-1}$	110019	1.016515	5.304493	0	0	1
No. of IOs$_{i,t-2}$	110019	9.091166	15.13061	0	3	11
U.S. Cross-list$_{i,t-1}$	110019	0	0	0	0	0
ΔU.S. Cross-list$_{i,t}$	110019	0	0	0	0	0
*U.S. Cross-list$_{i,t-1}$*ΔNo. of IOs$_{I,t-1}$*	110019	0	0	0	0	0
Control Variables						
Price$_{i,t-1}$	110019	48.68996	210.1356	0.562187	3.203489	11.12925
Price$_{i,t-2}$	110019	50.7584	218.3263	0.590034	3.303817	11.29395
Age$_{i,t-1}$	110019	230.8201	101.4566	134	281	305
BTV$_{i,t-1}$	110019	1.045691	0.958527	0.409674	0.796504	1.351426
DVY$_{i,t-1}$	110019	0.010358	0.021636	0	0	0.012427
Turnover$_{i,t-1}$	110019	0.048567	0.071542	0.007148	0.022334	0.059175
VR$_{i,t-1}$	110019	0.037115	0.06102	0.006662	0.015493	0.039412
MKC$_{i,t-1}$	110019	678831.4	2273815	19353.94	71110.26	312969.1
Additional Control Variables						
Sales growth$_{i,t-1}$	110019	0.043458	0.402687	0	0	0.005103
Leverage$_{i,t-1}$	82735	0.480053	0.258766	0.288897	0.491338	0.653034
Proportion of foreign sales$_{i,t-1}$	110019	0.158696	0.315769	0	0	0.108075
Total assets$_{i,t-1}$	109967	1121573	3736357	28599	134413	552559
ROA$_{i,t-1}$	106075	-1.22269	18.46949	-4.66	2.93	7.85
LSE Cross-list$_{i,t-1}$	110019	0	0	0	0	0
ΔLSE Cross-list$_{i,t}$	110019	0	0	0	0	0
*LSE Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$*	110019	0	0	0	0	0
Global Cross-list$_{i,t-1}$	110019	0	0	0	0	0
ΔGlobal Cross-list$_{i,t}$	110019	0	0	0	0	0
*Global Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$*	110019	0	0	0	0	0

Table 2c

Summary statistics of firms with cross-listing on the U.S. exchanges during the sample period. Table A shows the definition of the variables.

Variable	N	mean	sd	p25	p50	p75
Dependent Variables						
Raw returns$_{i,t}$	2483	0.114439	0.461622	-0.14084	0.070018	0.273822
Industrial adjusted returns$_{i,t}$	2483	-0.00902	0.388136	-0.20975	-0.0329	0.145064
Key Independent Variables						
ΔNo. of IOs$_{i,t-1}$	2483	4.65888	13.39071	0	1	6
No. of IOs$_{i,t-2}$	2483	31.69392	34.07579	3	16	55
U.S. Cross-list$_{i,t-1}$	2483	0.912203	0.283057	1	1	1
ΔU.S. Cross-list$_{i,t}$	2483	0.013693	0.116237	0	0	0
*U.S. Cross-list$_{i,t-1}$*ΔNo. of IOs$_{I,t-1}$*	2483	4.448651	13.27673	0	1	5
Control Variables						
Price$_{i,t-1}$	2483	37.96607	174.0679	3.449734	10.62416	26.05506
Price$_{i,t-2}$	2483	37.33478	173.6229	3.276782	10.28024	24.54398
Age$_{i,t-1}$	2483	216.6589	88.20172	134	263	293
BTV$_{i,t-1}$	2483	0.564182	0.527245	0.249253	0.43115	0.713606
DVY$_{i,t-1}$	2483	0.009781	0.018697	0	0	0.013487
Turnover$_{i,t-1}$	2483	0.082578	0.075235	0.031006	0.063317	0.107946
VR$_{i,t-1}$	2483	0.027495	0.043143	0.005991	0.01428	0.032254
MKC$_{i,t-1}$	2483	6428892	8211339	224625.4	1778528	1.08E+07
Additional Control Variables						
Sales growth$_{i,t-1}$	2299	0.101785	0.454682	-0.03585	0.017954	0.177372
Leverage$_{i,t-1}$	2228	0.415356	0.239996	0.225335	0.42502	0.580937
Proportion of foreign sales$_{i,t-1}$	2299	0.340077	0.413785	0	0	0.774495
Total assets$_{i,t-1}$	2483	8216153	12054374	145862	1534681	12303000
ROA$_{i,t-1}$	2269	2.48825	16.61383	-2.77	5.57	10.77
LSE Cross-list$_{i,t-1}$	2483	0.11078	0.485058	-0.03343	0.011934	0.176873
ΔLSE Cross-list$_{i,t}$	2401	0.403568	0.244688	0.204987	0.405593	0.574585
*LSE Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$*	2483	0.331444	0.413094	0	0	0.768397
Global Cross-list$_{i,t-1}$	2483	8216153	1.21E+07	145862	1534681	1.23E+07
ΔGlobal Cross-list$_{i,t}$	2448	1.5396	17.59311	-4.255	4.9	10.69
*Global Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$*	2483	0.11078	0.485058	-0.03343	0.011934	0.176873

Table 2d

Summary statistics of firms with cross-listing on LSE during the sample period. Table A shows the definition of the variables.

Variable	N	mean	sd	p25	p50	p75
Dependent Variables						
Raw returns$_{i,t}$	1353	0.10991	0.556594	-0.21867	0.050118	0.31344
Industrial adjusted returns$_{i,t}$	1353	-0.01746	0.443147	-0.2625	-0.04551	0.138908
Key Independent Variables						
ΔNo. of IOs$_{i,t-1}$	1353	2.13969	8.429599	-1	0	3
No. of IOs$_{i,t-2}$	1353	18.81227	22.82705	2	10	28
U.S. Cross-list$_{i,t-1}$	1353	0.105691	0.307556	0	0	0
ΔU.S. Cross-list$_{i,t}$	1353	0	0	0	0	0
*U.S. Cross-list$_{i,t-1}$*ΔNo. of IOs$_{I,t-1}$*	1353	0.521803	4.911465	0	0	0
Control Variables						
Price$_{i,t-1}$	1353	23.81744	139.8494	0.309605	1.95214	10.11414
Price$_{i,t-2}$	1353	23.33747	138.6742	0.323867	2.161466	10.24184
Age $_{i,t-1}$	1353	188.4974	116.5644	64	263	299
BTV $_{i,t-1}$	1353	0.835828	0.951716	0.320453	0.535779	0.931299
DVY $_{i,t-1}$	1353	0.00791	0.018197	0	0	0.007663
Turnover $_{i,t-1}$	1353	0.062912	0.072736	0.012128	0.039634	0.090075
VR $_{i,t-1}$	1353	0.042092	0.054663	0.008726	0.024009	0.054267
MKC $_{i,t-1}$	1353	3664181	6832954	39235.5	211637.1	2967416
Additional Control Variables						
Sales growth $_{i,t-1}$	1353	0.105754	0.643091	-0.07581	0	0.164496
Leverage $_{i,t-1}$	1268	0.411025	0.277638	0.14552	0.418668	0.624288
Proportion of foreign sales $_{i,t-1}$	1353	0.419725	0.449895	0	0.174901	1
Total assets $_{i,t-1}$	1351	5771457	11056068	29847	204295	3665580
ROA $_{i,t-1}$	1303	-3.5404	20.467	-10.06	1.31	7.72
LSE Cross-list$_{i,t-1}$	1353	0.807095	0.394725	1	1	1
ΔLSE Cross-list$_{i,t}$	1353	0.00813	0.182258	0	0	0
*LSE Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$*	1353	1.842572	8.018445	0	0	3
Global Cross-list$_{i,t-1}$	1353	0.070953	0.256842	0	0	0
ΔGlobal Cross-list$_{i,t}$	1353	0.004435	0.085888	0	0	0
*Global Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$*	1353	0.224686	3.440932	0	0	0

Table 2e

Summary statistics of firms with cross-listing on exchanges other than the U.S. exchanges and LSE during the sample period. Table A shows the definition of the variables.

Variable	N	mean	sd	p25	p50	p75
Dependent Variables						
Raw returns$_{i,t}$	3366	0.096283	0.497831	-0.19418	0.042608	0.279134
Industrial adjusted returns$_{i,t}$	3366	0.00037	0.397212	-0.21464	-0.03483	0.1363
Key Independent Variables						
ΔNo. of IOs$_{i,t-1}$	3366	2.98574	10.93185	-1	1	5
No. of IOs$_{i,t-2}$	3366	25.34195	28.83674	3	13	40
U.S. Cross-list$_{i,t-1}$	3366	0.113785	0.317597	0	0	0
ΔU.S. Cross-list$_{i,t}$	3366	0.000297	0.017236	0	0	0
U.S. Cross-list$_{i,t-1}$*ΔNo. of IOs$_{I,t-1}$	3366	0.703506	6.173184	0	0	0
Control Variables						
Price$_{i,t-1}$	3366	40.36555	182.2764	0.767853	4.790886	23.47498
Price$_{i,t-2}$	3366	40.2069	182.2322	0.768639	4.822763	23.24881
Age$_{i,t-1}$	3366	229.5799	105.6649	119	281	305
BTV$_{i,t-1}$	3366	0.771003	0.80653	0.297969	0.53062	0.964567
DVY$_{i,t-1}$	3366	0.011277	0.021242	0	0	0.01595
Turnover$_{i,t-1}$	3366	0.0834	0.086668	0.021912	0.05945	0.114809
VR$_{i,t-1}$	3366	0.033444	0.057199	0.006137	0.014814	0.036104
MKC$_{i,t-1}$	3366	5132924	7901349	91141.05	652312.3	6428457
Additional Control Variables						
Sales growth$_{i,t-1}$	3366	0.09447	0.584159	-0.06484	0	0.150774
Leverage$_{i,t-1}$	3018	0.471058	0.259475	0.261446	0.502954	0.665169
Proportion of foreign sales$_{i,t-1}$	3366	0.300245	0.416193	0	0	0.721981
Total assets$_{i,t-1}$	3366	7773515	12282843	95683	807433	9966112
ROA$_{i,t-1}$	3280	0.121439	17.89697	-3.43	3.94	9.165
LSE Cross-list$_{i,t-1}$	3366	0.046643	0.210904	0	0	0
ΔLSE Cross-list$_{i,t}$	3366	0.000891	0.038537	0	0	0
LSE Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$	3366	0.173203	2.828638	0	0	0
Global Cross-list$_{i,t-1}$	3366	0.685086	0.464551	0	1	1
ΔGlobal Cross-list$_{i,t}$	3366	0.029115	0.222873	0	0	0
Global Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$	3366	1.815805	9.209431	0	0	2

Table 2f
Time series of number of firms cross-listed on different exchanges.

	Number of firms cross-listed on the U.S. exchanges	Number of firms cross-listed on London Stock Exchanges	Number of firms had at least listed on exchanges of two countries other than the U.S. exchanges and London Stock Exchange	Total number of firms
2005 2nd half	175	67	130	8,238
2006 1st half	183	78	146	8,863
2006 2nd half	196	87	160	9,326
2007 1st half	199	92	172	10,074
2007 2nd half	206	98	178	10,534
2008 1st half	210	106	206	10,915
2008 2nd half	214	109	227	11,301
2009 1st half	215	110	251	11,526
2009 2nd half	219	111	269	11,739
2010 1st half	220	115	275	11,955
2010 2nd half	228	119	292	12,092
2011 1st half	231	121	302	12,092

Table 2g
Summary statistics of the time series of the U.S. cross-listing dummy, LSE cross-listing dummy and global cross-listing dummy in each period.

U.S. cross-listing dummy (Number of	N	mean	sd	p25	p50	p75
2005 2nd half	8238	0.021243	0.144202	0	0	0
2006 1st half	8863	0.020648	0.14221	0	0	0
2006 2nd half	9326	0.021017	0.143447	0	0	0
2007 1st half	10074	0.019754	0.13916	0	0	0
2007 2nd half	10534	0.019556	0.138474	0	0	0
2008 1st half	10915	0.01924	0.137372	0	0	0
2008 2nd half	11301	0.018936	0.136306	0	0	0
2009 1st half	11526	0.018654	0.135304	0	0	0
2009 2nd half	11739	0.018656	0.135312	0	0	0
2010 1st half	11955	0.018402	0.134407	0	0	0
2010 2nd half	12092	0.018855	0.13602	0	0	0
2011 1st half	12092	0.019104	0.136895	0	0	0
LSE cross-listing dummy	N	mean	sd	p25	p50	p75
2005 2nd half	8238	0.008133	0.089821	0	0	0
2006 1st half	8863	0.008801	0.093403	0	0	0
2006 2nd half	9326	0.009329	0.096139	0	0	0
2007 1st half	10074	0.009132	0.095131	0	0	0
2007 2nd half	10534	0.009303	0.096008	0	0	0
2008 1st half	10915	0.009711	0.098071	0	0	0
2008 2nd half	11301	0.009645	0.097739	0	0	0
2009 1st half	11526	0.009544	0.097229	0	0	0
2009 2nd half	11739	0.009456	0.096784	0	0	0
2010 1st half	11955	0.009619	0.09761	0	0	0
2010 2nd half	12092	0.009841	0.098718	0	0	0
2011 1st half	12092	0.010007	0.099535	0	0	0
Global cross-listing dummy	N	mean	sd	p25	p50	p75
2005 2nd half	8238	0.015781	0.124633	0	0	0
2006 1st half	8863	0.016473	0.127293	0	0	0
2006 2nd half	9326	0.017156	0.129861	0	0	0
2007 1st half	10074	0.017074	0.129552	0	0	0
2007 2nd half	10534	0.016898	0.128894	0	0	0
2008 1st half	10915	0.018873	0.136083	0	0	0
2008 2nd half	11301	0.020087	0.140303	0	0	0
2009 1st half	11526	0.021777	0.145961	0	0	0
2009 2nd half	11739	0.022915	0.149639	0	0	0
2010 1st half	11955	0.023003	0.149919	0	0	0
2010 2nd half	12092	0.024148	0.153516	0	0	0
2011 1st half	12092	0.024975	0.156056	0	0	0

Table 3

The effect of U.S. cross-listing and institutional ownership level on raw returns.
This table presents the ordinary least squares regression results on the effects of U.S. cross-listing and institutional ownership level on raw returns. The dependent variable is Raw returns$_{i,t}$, which is the USD semi-annual raw equity returns. Table A shows the definition of the independent variables. All the regressions include the Fama-French 48 industrial dummies, country dummies and semi-annual time dummies. t-statistics according to firm cluster robust standard error are in the parenthesis. Significance level notations are $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

	Law origin			Law origin		
	(Whole sample)	(Common-law)	(Non-common-law)	(Whole sample)	(Common-law)	(Non-common-law)
	(1)	(2)	(3)	(4)	(5)	(6)
	Raw returns	Raw returns	Raw returns	Raw returns	Raw returns	Raw returns
$\Delta U.S.\ Cross\text{-}list_{i,t}$				0.179*	0.223**	-0.0995
				(1.76)	(2.22)	(-0.34)
$U.S.\ Cross\text{-}list_{i,t-1}$				0.0176**	0.0319***	-0.00135
				(1.96)	(2.90)	(-0.09)
$\Delta No.\ of\ IOs_{i,t-1}$	0.000349*	0.00143***	0.000246	0.000115	0.00110***	0.000101
	(1.73)	(5.41)	(0.80)	(0.53)	(3.88)	(0.32)
$No.\ of\ IOs_{i,t-2}$	0.00133***	0.00158***	0.000371***	0.00131***	0.00153***	0.000371***
	(13.26)	(11.30)	(2.90)	(12.93)	(10.80)	(2.91)
$U.S.\ Cross\text{-}list_{i,t-1}*$ $\Delta No.\ of\ IOs_{i,t-1}$				0.00167***	0.00172***	0.00210**
				(3.19)	(2.83)	(2.45)
$Raw\ returns_{i,t-1}$	-0.0110***	-0.00893*	0.0170***	-0.0110***	-0.00895*	0.0170***
	(-2.75)	(-1.69)	(3.17)	(-2.77)	(-1.69)	(3.18)
$Raw\ returns_{i,t-2}$	0.0113***	0.0323***	0.00258	0.0113***	0.0324***	0.00266
	(3.00)	(6.22)	(0.52)	(3.01)	(6.23)	(0.53)
$Log\ price_{i,t-1}$	-0.0170***	-0.0416***	-0.00533***	-0.0171***	-0.0415***	-0.00532***
	(-17.60)	(-18.08)	(-5.85)	(-17.68)	(-18.06)	(-5.84)
$S\&P_{i,t-1}$	0.0357***	0.0359***	0.0257***	0.0321***	0.0289***	0.0248***
	(7.45)	(4.42)	(5.09)	(6.60)	(3.52)	(4.73)
$Age_{i,t-1}$	0.000109***	0.0000883***	0.000171***	0.000108***	0.0000868***	0.000170***
	(5.43)	(3.11)	(6.65)	(5.37)	(3.05)	(6.63)
$VR_{i,t-1}$	0.0852**	-0.0698	0.0505	0.0866**	-0.0687	0.0501
	(2.31)	(-1.60)	(0.81)	(2.34)	(-1.58)	(0.80)
$BTV_{i,t-1}$	0.0632***	0.0660***	0.0507***	0.0631***	0.0659***	0.0507***
	(26.89)	(18.31)	(19.42)	(26.84)	(18.28)	(19.42)
$Log\ MKC_{i,t-1}$	-0.00721***	0.00262	-0.00126	-0.00727***	0.00208	-0.00120
	(-6.61)	(1.25)	(-1.09)	(-6.65)	(0.98)	(-1.05)
$Turnover_{i,t-1}$	-0.0956***	-0.128***	-0.0721***	-0.0939***	-0.124***	-0.0719***
	(-4.30)	(-3.16)	(-3.06)	(-4.21)	(-3.05)	(-3.05)
$DVY_{i,t-1}$	0.333***	-0.0724	0.626***	0.338***	-0.0567	0.626***
	(5.60)	(-0.66)	(9.60)	(5.67)	(-0.52)	(9.60)
Adjusted R^2	0.258	0.325	0.205	0.258	0.325	0.205
N	116563	53779	62784	116563	53779	62784

Table 4

The effect of U.S. cross-listing and institutional ownership level on raw returns, sub-sample analyses: Firm age and dividend yield.

This table presents the ordinary least squares regression results on the effects of U.S. cross-listing and institutional ownership level on raw returns with split samples. Columns 1 and 2 report the results of sub-sample with sample period mean age lower and higher than the sample period median respectively. Columns 3 and 4 report the results of sub-sample with sample period mean dividend yield lower and higher than the sample period median respectively. The dependent variable is Raw returns$_{i,t}$, which is the USD semi-annual raw equity returns. Table A shows the definition of the independent variables. All the regressions include the Fama-French 48 industrial dummies, country dummies and semi-annual time dummies. t-statistics according to firm cluster robust standard error are in the parenthesis. Significance level notations are * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	Firm age		Dividend yield	
	(Low)	(High)	(Low)	(High)
	(1)	(2)	(3)	(4)
	Raw returns	Raw returns	Raw returns	Raw returns
Δ U.S. Cross-list$_{i,t}$	0.260**	-0.109	0.224*	0.121
	(2.53)	(-0.56)	(1.82)	(1.03)
U.S. Cross-list$_{i,t-1}$	0.0570***	-0.000641	0.0496***	-0.00542
	(3.89)	(-0.06)	(3.23)	(-0.67)
Δ No. of IOs$_{i,t-1}$	0.00134*	-0.00119***	0.00115**	-0.00143***
	(1.82)	(-6.05)	(2.41)	(-7.16)
No. of IOs$_{i,t-2}$	0.00262***	0.000530***	0.00245***	0.000311***
	(9.15)	(5.56)	(11.15)	(3.24)
U.S. Cross-list$_{i,t-1}$* Δ No. of IOs$_{i,t-1}$	0.00256**	0.00198***	0.00236**	0.00192***
	(2.27)	(3.92)	(1.99)	(4.19)
Raw returns$_{i,t-1}$	-0.00945	0.0305***	-0.00651	0.0304***
	(-1.61)	(6.29)	(-1.31)	(5.52)
Raw returns$_{i,t-2}$	0.0319***	-0.000538	0.0288***	-0.0164***
	(5.53)	(-0.12)	(5.98)	(-3.36)
Log price$_{i,t-1}$	-0.0406***	-0.00819***	-0.0246***	-0.00679***
	(-15.54)	(-8.77)	(-16.80)	(-6.13)
S&P $_{i,t-1}$	0.0706***	0.0171***	0.0625***	-0.000144
	(5.50)	(3.73)	(5.99)	(-0.03)
Age $_{i,t-1}$	-0.000135***	-0.000631***	0.0000927***	0.0000336
	(-2.98)	(-7.05)	(3.60)	(0.60)
VR $_{i,t-1}$	-0.0458	-0.0300	0.0333	0.0703
	(-1.01)	(-0.49)	(0.81)	(0.87)
BTV $_{i,t-1}$	0.0750***	0.0538***	0.0723***	0.0528***
	(17.26)	(22.17)	(21.00)	(18.29)
Log MKC $_{i,t-1}$	-0.0114***	-0.00124	-0.0174***	0.00136
	(-4.17)	(-1.15)	(-9.58)	(1.17)
Turnover $_{i,t-1}$	-0.172***	-0.0438*	-0.177***	0.0442
	(-3.66)	(-1.93)	(-5.60)	(1.54)
DVY $_{i,t-1}$	0.290	0.424***	0.369	0.452***
	(1.22)	(6.86)	(1.14)	(7.11)
Adjusted R^2	0.309	0.252	0.272	0.286
N	38350	78213	58277	58286

Table 5

The effect of U.S. cross-listing and institutional ownership level on raw returns of firms from different legal origin regions, sub-sample analyses: Firm age.

This table presents the ordinary least squares regression results on the effects of U.S. cross-listing and institutional ownership level on raw returns with split samples. Columns 1 and 2 report the results of common-law firm sample with sample period mean age lower and higher than the sample period median respectively. Columns 3 and 4 report the results of non-common-law firms sample with sample period mean age lower and higher than the sample period median respectively. The dependent variable is Raw returns$_{i,t}$, which is the USD semi-annual raw equity returns. Table A shows the definition of the independent variables. All the regressions include the Fama-French 48 industrial dummies, country dummies and semi-annual time dummies. t-statistics according to firm cluster robust standard error are in the parenthesis. Significance level notations are * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	Law origin			
	(Common-law)		(Non-common-law)	
	Firm age		Firm age	
	(Low)	(High)	(Low)	(High)
	(1)	(2)	(3)	(4)
	Raw returns	Raw returns	Raw returns	Raw returns
U.S. Cross-list$_{i,t-1}$	0.0536***	0.0141	0.113*	-0.0117
	(3.52)	(0.99)	(1.76)	(-0.77)
$\triangle$No. of IOs$_{i,t-1}$	0.00149**	0.000426	0.00116	-0.000317
	(1.96)	(1.53)	(0.46)	(-1.10)
No. of IOs$_{i,t-2}$	0.00252***	0.00118***	0.00191**	0.0000967
	(8.21)	(7.92)	(2.41)	(0.78)
U.S. Cross-list$_{i,t-1}$*$\triangle$	0.00258**	0.00174***	-0.00430	0.00229***
No. of IOs$_{i,t-1}$	(2.28)	(3.08)	(-0.67)	(2.72)
Raw returns$_{i,t-1}$	-0.0115*	0.0365***	0.0330**	0.0153***
	(-1.79)	(4.00)	(2.22)	(2.74)
Raw returns$_{i,t-2}$	0.0316***	0.0378***	0.00355	0.00638
	(4.98)	(4.53)	(0.26)	(1.23)
Log price$_{i,t-1}$	-0.0509***	-0.0248***	-0.0218***	-0.00486***
	(-15.64)	(-8.32)	(-5.95)	(-5.18)
S&P$_{i,t-1}$	0.0673***	-0.00471	-0.167*	0.0202***
	(4.94)	(-0.52)	(-1.83)	(3.91)
Age$_{i,t-1}$	-0.000108**	-0.00254***	-0.000153	0.000221**
	(-2.17)	(-13.93)	(-1.50)	(2.21)
VR$_{i,t-1}$	-0.0927*	-0.150	0.0342	0.00274
	(-1.90)	(-1.57)	(0.31)	(0.04)
BTV$_{i,t-1}$	0.0727***	0.0520***	0.0706***	0.0496***
	(15.19)	(10.46)	(7.62)	(18.73)
Log MKC$_{i,t-1}$	-0.00466	0.00253	-0.0114**	0.00102
	(-1.45)	(0.99)	(-2.09)	(0.87)
Turnover$_{i,t-1}$	-0.0849	-0.200***	-0.312***	-0.0332
	(-1.45)	(-3.96)	(-4.54)	(-1.35)
DVY$_{i,t-1}$	0.190	0.0168	2.410***	0.583***
	(0.77)	(0.14)	(2.72)	(8.88)
Adjusted R^2	0.328	0.371	0.227	0.210
N	31726	22053	6624	56160

Table 6

The effect of U.S. cross-listing and institutional ownership level on industrial adjusted returns with additional control variables.

This table presents the ordinary least squares regression results on the effects of U.S. cross-listing and institutional ownership level on industrial adjusted returns. The dependent variable is Industrial adjusted returns$_{i,t}$, which is the industrial semi-annual adjusted equity returns calculated by subtracting the USD raw returns by the returns of an equally weight industrial portfolio according to the Fama-French 48 industry sectors. Table A shows the definition of the independent variables. All the regressions include the Fama-French 48 industrial dummies, country dummies and semi-annual time dummies. t-statistics according to firm cluster robust standard error are in the parenthesis. Significance level notations are $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

	Law origin		
	(Whole sample)	(Common-law)	(Non-common-law)
	(1)	(2)	(3)
	Industrial adjusted returns	Industrial adjusted returns	Industrial adjusted returns
Δ U.S. Cross-list$_{i,t}$	0.161*	0.193**	-0.102
	(1.93)	(2.25)	(-0.38)
U.S. Cross-list$_{i,t-1}$	-0.00218	0.00443	-0.00482
	(-0.23)	(0.39)	(-0.30)
Δ No. of IOs$_{i,t-1}$	-0.000504**	0.000480	0.0000964
	(-2.19)	(1.53)	(0.29)
No. of IOs$_{i,t-2}$	0.000940***	0.00133***	0.000120
	(8.65)	(8.25)	(0.88)
U.S. Cross-list$_{i,t-1}$*Δ No. of IOs$_{i,t-1}$	0.00248***	0.00258***	0.00207**
	(4.40)	(3.84)	(2.47)
Raw returns$_{i,t-1}$	0.0209***	0.0284***	-0.0000852
	(4.61)	(4.42)	(-0.01)
Raw returns$_{i,t-2}$	0.00939**	0.0385***	-0.0184***
	(2.10)	(5.75)	(-3.42)
Log price$_{i,t-1}$	-0.0170***	-0.0353***	-0.00797***
	(-15.30)	(-13.01)	(-7.16)
S&P$_{i,t-1}$	0.0172***	0.00771	0.0171***
	(3.59)	(0.96)	(3.11)
Age$_{i,t-1}$	0.00000830	0.0000270	-0.0000387
	(0.35)	(0.81)	(-1.24)
VR$_{i,t-1}$	0.0664	-0.165***	0.273***
	(1.36)	(-2.80)	(3.26)
BTV$_{i,t-1}$	0.0464***	0.0543***	0.0326***
	(12.12)	(8.25)	(7.85)
Log MKC$_{i,t-1}$	-0.0137***	0.00142	-0.0273***
	(-3.84)	(0.24)	(-6.38)
Turnover$_{i,t-1}$	-0.0311	-0.0121	-0.0450*
	(-1.33)	(-0.26)	(-1.82)
DVY$_{i,t-1}$	0.288***	0.0577	0.470***
	(4.32)	(0.48)	(6.25)
Sales growth$_{i,t-1}$	0.0123***	0.0146***	0.0129**
	(3.17)	(3.08)	(2.24)
Leverage$_{i,t-1}$	-0.00172	0.0262*	-0.00818
	(-0.18)	(1.83)	(-0.73)
Proportion of foreign sales$_{i,t-1}$	0.0104**	-0.00939	0.0244***
	(2.16)	(-1.16)	(4.50)
Log Total Assets$_{i,t-1}$	0.00680**	-0.00487	0.0265***
	(2.01)	(-0.89)	(6.44)
ROA$_{i,t-1}$	0.00182***	0.00127***	0.00355***
	(13.82)	(7.64)	(15.56)
Adjusted R^2	0.0381	0.0484	0.0871
N	86518	35538	50980

Table 7

The effect of U.S. cross-listing and institutional ownership level on industrial adjusted returns with additional control variables, sub-sample analyses: Firm age and dividend yield.

This table presents the ordinary least squares regression results on the effects of U.S. cross-listing and institutional ownership level on industrial adjusted returns with split samples. Columns 1 and 2 report the results of sub-sample with sample period mean age lower and higher than the sample period median respectively. Columns 3 and 4 report the results of sub-sample with sample period mean dividend yield lower and higher than the sample period median respectively. The dependent variable is Industrial adjusted returns$_{i,t}$, which is the industrial semi-annual adjusted equity returns calculated by subtracting the USD raw returns by the returns of equally weight industrial portfolio according to Fama-French 48 industry sectors. Table A shows the definition of the independent variables. All the regressions include the Fama-French 48 industrial dummies, country dummies and semi-annual time dummies. t-statistics according to firm cluster robust standard error are in the parenthesis. Significance level notations are * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	Firm age		Dividend yield	
	(Low)	(High)	(Low)	(High)
	(1)	(2)	(3)	(4)
	Industrial adjusted returns	Industrial adjusted returns	Industrial adjusted returns	Industrial adjusted returns
Δ U.S. Cross-list$_{i,t}$	0.213**	-0.0989	0.190*	0.0439
	(2.44)	(-0.56)	(1.87)	(0.35)
U.S. Cross-list$_{i,t-1}$	0.0189	-0.00980	0.00757	-0.0169*
	(1.27)	(-0.80)	(0.47)	(-1.92)
ΔNo. of IOs$_{i,t-1}$	0.000191	-0.00106***	0.000149	-0.00125***
	(0.25)	(-4.94)	(0.29)	(-5.72)
No. of IOs$_{i,t-2}$	0.00190***	0.000452***	0.00178***	0.000252**
	(6.35)	(4.17)	(7.72)	(2.30)
U.S. Cross-list$_{i,t-1}$*ΔNo. of IOs$_{i,t-1}$	0.00359***	0.00195***	0.00381***	0.00195***
	(3.11)	(3.27)	(3.21)	(3.61)
Raw returns$_{i,t-1}$	0.0218***	0.0271***	0.0263***	0.0292***
	(2.94)	(5.14)	(4.41)	(4.75)
Raw returns$_{i,t-2}$	0.0371***	-0.0123**	0.0295***	-0.0295***
	(4.90)	(-2.41)	(4.90)	(-5.25)
Log price$_{i,t-1}$	-0.0299***	-0.0122***	-0.0194***	-0.0142***
	(-10.31)	(-10.36)	(-12.16)	(-9.96)
S&P$_{i,t-1}$	0.0385***	0.0153***	0.0340***	-0.00203
	(3.15)	(3.12)	(3.33)	(-0.40)
Age$_{i,t-1}$	-0.000128***	-0.000504***	0.0000343	0.0000177
	(-2.66)	(-5.14)	(1.20)	(0.30)
VR$_{i,t-1}$	-0.119*	0.144*	-0.0246	0.204**
	(-1.88)	(1.89)	(-0.45)	(2.01)
BTV$_{i,t-1}$	0.0541***	0.0398***	0.0501***	0.0369***
	(6.82)	(9.90)	(8.55)	(7.96)
Log MKC$_{i,t-1}$	-0.0128*	-0.0263***	-0.0189***	-0.0341***
	(-1.84)	(-6.18)	(-3.61)	(-6.80)
Turnover$_{i,t-1}$	-0.0567	-0.0191	-0.102***	0.0440
	(-1.03)	(-0.80)	(-2.98)	(1.50)
DVY$_{i,t-1}$	-0.0540	0.284***	-0.112	0.319***
	(-0.24)	(3.95)	(-0.33)	(4.41)
Sales growth$_{i,t-1}$	0.0106**	0.0212***	0.0116**	0.0168***
	(2.02)	(4.11)	(2.43)	(3.12)
Leverage$_{i,t-1}$	-0.0155	0.0114	-0.0229	0.00671
	(-0.92)	(1.09)	(-1.64)	(0.59)
Proportion of foreign sales$_{i,t-1}$	-0.00808	0.0207***	0.00922	0.0130**
	(-0.81)	(4.09)	(1.16)	(2.49)
Log Total Assets$_{i,t-1}$	-0.00450	0.0240***	0.00165	0.0366***
	(-0.70)	(5.90)	(0.33)	(7.39)
ROA$_{i,t-1}$	0.00104***	0.00372***	0.00138***	0.00475***
	(5.68)	(16.21)	(8.54)	(16.44)
Adjusted R^2	0.0349	0.0650	0.0326	0.0777

| N | 24476 | 62042 | 40061 | 46457 |

Table 8

The effect of U.S. cross-listing and institutional ownership level on industrial adjusted returns of firms from different legal origin regions with additional control variables, sub-sample analyses: Firm age and dividend yield.

This table presents the ordinary least squares regression results on the effects of U.S. cross-listing and institutional ownership level on industrial adjusted returns with split samples. Columns 1 and 2 report the results of sub-sample with sample period mean age lower and higher than the sample period median respectively. Columns 3 and 4 report the results of sub-sample with sample period mean dividend yield lower and higher than the sample period median respectively. The dependent variable is Industrial adjusted returns$_{i,t}$, which is the industrial semi-annual adjusted equity returns calculated by subtracting the USD raw returns by the returns of equally weight industrial portfolio according to Fama-French 48 industry sectors. Table A shows the definition of the independent variables. All the regressions include the Fama-French 48 industrial dummies, country dummies and semi-annual time dummies. t-statistics according to firm cluster robust standard error are in the parenthesis. Significance level notations are $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

	Firm age		Dividend yield	
	(Low)	(High)	(Low)	(High)
	(1)	(2)	(3)	(4)
	Industrial adjusted returns	Industrial adjusted returns	Industrial adjusted returns	Industrial adjusted returns
Δ U.S. Cross-list$_{i,t}$	0.248***	-0.0861	0.220**	0.0731
	(2.81)	(-0.49)	(2.13)	(0.59)
U.S. Cross-list$_{i,t-1}$	0.0401***	-0.00326	0.0253	-0.00837
	(2.73)	(-0.28)	(1.63)	(-0.99)
ΔNo. of IOs$_{i,t-1}$	0.000608	-0.00117***	0.000409	-0.00136***
	(0.84)	(-5.98)	(0.88)	(-6.78)
No. of IOs$_{i,t-2}$	0.00211***	0.000430***	0.00184***	0.000256***
	(7.49)	(4.64)	(8.89)	(2.70)
U.S. Cross-list$_{i,t-1}$* ΔNo. of IOs$_{i,t-1}$	0.00322***	0.00175***	0.00360***	0.00182***
	(2.84)	(3.09)	(3.05)	(3.54)
Raw returns$_{i,t-1}$	0.0112*	0.0244***	0.0165***	0.0260***
	(1.83)	(5.10)	(3.27)	(4.75)
Raw returns$_{i,t-2}$	0.0256***	-0.0102**	0.0221***	-0.0283***
	(4.16)	(-2.25)	(4.38)	(-5.71)
Log price$_{i,t-1}$	-0.0352***	-0.00933***	-0.0213***	-0.00890***
	(-13.70)	(-9.81)	(-15.30)	(-7.92)
S&P$_{i,t-1}$	0.0536***	0.0171***	0.0501***	-0.000846
	(4.49)	(3.73)	(5.12)	(-0.18)
Age$_{i,t-1}$	-0.000127***	-0.000337***	0.0000464*	0.00000122
	(-2.93)	(-3.89)	(1.85)	(0.02)
VR$_{i,t-1}$	-0.0608	0.0734	0.000500	0.141*
	(-1.29)	(1.20)	(0.01)	(1.78)
BTV$_{i,t-1}$	0.0590***	0.0403***	0.0573***	0.0384***
	(10.79)	(14.31)	(14.19)	(11.48)
Log MKC$_{i,t-1}$	-0.0113**	-0.0243***	-0.0153***	-0.0279***
	(-2.32)	(-8.52)	(-4.34)	(-8.73)
Turnover$_{i,t-1}$	-0.0908*	-0.0218	-0.122***	0.0462*
	(-1.90)	(-1.02)	(-4.01)	(1.70)
DVY$_{i,t-1}$	0.256	0.281***	0.165	0.324***
	(1.16)	(4.60)	(0.53)	(5.14)
Sales growth$_{i,t-1}$	0.0132**	0.0210***	0.0136***	0.0178***
	(2.53)	(4.16)	(2.88)	(3.38)
Leverage$_{i,t-1}$	-0.00391	0.0211***	0.00973	0.0166***
	(-0.41)	(4.60)	(1.31)	(3.48)
Proportion of foreign sales$_{i,t-1}$	-0.00213	0.0209***	-0.00241	0.0283***
	(-0.48)	(7.89)	(-0.73)	(9.38)
Log Total Assets$_{i,t-1}$	0.00110***	0.00307***	0.00134***	0.00366***
	(7.29)	(18.16)	(10.10)	(18.93)
Adjusted R^2	0.0376	0.0637	0.0355	0.0742
N	34787	77662	54507	57942

Table 9

The effect of U.S. cross-listing and institutional ownership level on industrial adjusted returns with additional control variables of London Stock Exchange cross-listing.

This table presents the ordinary least squares regression results on the effects of U.S. cross-listing and institutional ownership level on industrial adjusted returns. The dependent variable is industrial adjusted returns$_{i,t}$, which is the semi-annual industrial adjusted equity returns calculated by subtracting the USD raw returns by the returns of the equally weight industrial portfolio according to Fama-French 48 industry sectors. Table A shows the definition of the independent variables. All the regressions include the Fama-French 48 industrial dummies, country dummies and semi-annual time dummies. t-statistics according to firm cluster robust standard error are in the parenthesis. Significance level notations are $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

	Law origin		
	(Whole sample)	(Common-law)	(Non-common-law)
	(1)	(2)	(3)
	Industrial adjusted returns	Industrial adjusted returns	Industrial adjusted returns
ΔU.S. Cross-list$_{i,t}$	0.182**	0.226***	-0.0894
	(2.11)	(2.58)	(-0.33)
U.S. Cross-list$_{i,t-1}$	0.00809	0.0239**	-0.00570
	(0.92)	(2.22)	(-0.36)
ΔLSE Cross-list$_{i,t}$	0.112	0.125	0.0936
	(1.23)	(1.19)	(0.62)
LSE Cross-list$_{i,t-1}$	0.0287	0.0344	0.0289
	(1.62)	(1.26)	(1.29)
ΔNo. of IOs$_{i,t-1}$	-0.000274	0.000272	0.000262
	(-1.32)	(0.96)	(0.91)
No. of IOs$_{i,t-2}$	0.00107***	0.00124***	0.000409***
	(11.13)	(9.13)	(3.34)
U.S. Cross-list$_{i,t-1}$*Δ	0.00226***	0.00236***	0.00257**
No. of IOs$_{i,t-1}$	(4.00)	(3.64)	(2.37)
LSE Cross-list$_{i,t-1}$*Δ	0.000407	0.00125	-0.00148
No. of IOs$_{i,t-1}$	(0.21)	(0.65)	(-0.41)
Raw returns$_{i,t-1}$	0.0126***	0.0122**	0.0165***
	(3.25)	(2.34)	(3.12)
Raw returns$_{i,t-2}$	0.0128***	0.0311***	0.000173
	(3.43)	(5.95)	(0.04)
Log price$_{i,t-1}$	-0.0156***	-0.0383***	-0.00487***
	(-17.17)	(-17.43)	(-5.51)
S&P $_{i,t-1}$	0.0253***	0.0228***	0.0205***
	(5.50)	(2.92)	(4.03)
Age $_{i,t-1}$	0.0000880***	0.0000674**	0.000165***
	(4.56)	(2.46)	(6.52)
VR $_{i,t-1}$	0.0109	-0.120***	0.0393
	(0.31)	(-2.81)	(0.65)
BTV $_{i,t-1}$	0.0535***	0.0557***	0.0481***
	(23.90)	(15.73)	(19.05)
Log MKC $_{i,t-1}$	-0.00639***	0.00167	-0.000871
	(-6.15)	(0.81)	(-0.78)
Turnover $_{i,t-1}$	-0.0627***	-0.0589	-0.0788***
	(-2.94)	(-1.47)	(-3.43)
DVY $_{i,t-1}$	0.416***	0.152	0.632***
	(7.10)	(1.42)	(9.71)
Adjusted R^2	0.0330	0.0415	0.0723
N	116563	53779	62784

Table 10

The effect of U.S. cross-listing and institutional ownership level on industrial adjusted returns with additional control variables of London Stock Exchange cross-listing, sub-sample analyses: Firm age and dividend yield

This table presents the ordinary least squares regression results on the effects of U.S. cross-listing and institutional ownership level on industrial adjusted returns with split samples. Columns 1 and 2 report the results of sub-sample with sample period mean age lower and higher than the sample period median respectively. Columns 3 and 4 report the results of sub-sample with sample period mean dividend yield lower and higher than the sample period median respectively. The dependent variable is Industrial adjusted returns$_{i,t}$, which is the industrial adjusted semi-annual equity returns calculated by subtracting the USD raw returns by the returns of equally weight industrial portfolio according to Fama-French 48 industry sectors. Table A shows the definition of the independent variables. All the regressions include the Fama-French 48 industrial dummies, country dummies and semi-annual time dummies. t-statistics according to firm cluster robust standard error are in the parenthesis. Significance level notations are * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	Firm age		Dividend yield	
	(Low)	(High)	(Low)	(High)
	(1)	(2)	(3)	(4)
	Industrial adjusted returns	Industrial adjusted returns	Industrial adjusted returns	Industrial adjusted returns
ΔU.S. Cross-list$_{i,t}$	0.259***	-0.0999	0.232**	0.0927
	(2.89)	(-0.57)	(2.20)	(0.78)
U.S. Cross-list$_{i,t-1}$	0.0474***	-0.00296	0.0332**	-0.00803
	(3.32)	(-0.28)	(2.20)	(-0.98)
ΔLSE Cross-list$_{i,t}$	0.107	0.190**	0.113	0.141
	(1.03)	(2.38)	(1.10)	(1.48)
LSE Cross-list$_{i,t-1}$	0.0262	0.0402**	0.0222	0.0399***
	(0.87)	(2.06)	(0.76)	(2.70)
ΔNo. of IOs$_{i,t-1}$	0.000575	-0.00109***	0.000538	-0.00131***
	(0.83)	(-5.53)	(1.18)	(-6.53)
No. of IOs$_{i,t-2}$	0.00210***	0.000504***	0.00192***	0.000317***
	(7.57)	(5.43)	(9.27)	(3.36)
U.S. Cross-list$_{i,t-1}*\Delta$ No. of IOs$_{i,t-1}$	0.00342***	0.00177***	0.00370***	0.00191***
	(3.01)	(3.08)	(3.07)	(3.71)
LSE Cross-list$_{i,t-1}*\Delta$ No. of IOs$_{i,t-1}$	-0.000650	0.000914	0.000819	0.0000880
	(-0.13)	(0.69)	(0.20)	(0.06)
Raw returns$_{i,t-1}$	0.00944	0.0341***	0.0166***	0.0340***
	(1.64)	(7.15)	(3.43)	(6.22)
Raw returns$_{i,t-2}$	0.0317***	-0.00220	0.0286***	-0.0183***
	(5.49)	(-0.49)	(5.94)	(-3.72)
Log price$_{i,t-1}$	-0.0377***	-0.00765***	-0.0225***	-0.00622***
	(-15.20)	(-8.47)	(-16.38)	(-5.79)
S&P$_{i,t-1}$	0.0638***	0.0123***	0.0543***	-0.00275
	(5.23)	(2.72)	(5.48)	(-0.59)
Age$_{i,t-1}$	-0.000135***	-0.000338***	0.0000771***	0.0000197
	(-3.14)	(-3.86)	(3.16)	(0.36)
VR$_{i,t-1}$	-0.0842*	-0.0621	-0.0306	0.0335
	(-1.89)	(-1.06)	(-0.77)	(0.43)
BTV$_{i,t-1}$	0.0616***	0.0511***	0.0598***	0.0496***
	(14.52)	(21.64)	(18.10)	(17.70)
Log MKC$_{i,t-1}$	-0.0103***	-0.000856	-0.0149***	0.00129
	(-3.92)	(-0.82)	(-8.61)	(1.14)
Turnover$_{i,t-1}$	-0.117**	-0.0443**	-0.141***	0.0382
	(-2.55)	(-2.01)	(-4.65)	(1.36)
DVY$_{i,t-1}$	0.409*	0.434***	0.535*	0.444***
	(1.81)	(7.07)	(1.71)	(7.00)
Adjusted R^2	0.0366	0.0520	0.0327	0.0601
N	38350	78213	58277	58286

Table 11

The effect of U.S. cross-listing and institutional ownership level on industrial adjusted returns with additional control variables of London Stock Exchange cross-listing and global cross-listing.

This table presents the ordinary least squares regression results on the effects of U.S. cross-listing and institutional ownership level on industrial adjusted returns. The dependent variable is industrial adjusted returns$_{i,t}$, which is the semi-annual industrial adjusted equity returns calculated by subtracting the USD raw returns by the returns of the equally weight industrial portfolio according to Fama-French 48 industry sectors. Table A shows the definition of the independent variables. All the regressions include the Fama-French 48 industrial dummies, country dummies and semi-annual time dummies. t-statistics according to firm cluster robust standard error are in the parenthesis. Significance level notations are $^{*}\,p < 0.10$, $^{**}\,p < 0.05$, $^{***}\,p < 0.01$.

	Law origin		
	(Whole sample)	(Common-law)	(Non-common-law)
	(1)	(2)	(3)
	Industrial adjusted returns	Industrial adjusted returns	Industrial adjusted returns
Δ U.S. Cross-list$_{i,t}$	0.182**	0.226***	-0.0867
	(2.11)	(2.58)	(-0.33)
U.S. Cross-list$_{i,t-1}$	0.00775	0.0235**	-0.00414
	(0.88)	(2.18)	(-0.27)
ΔLSE Cross-list$_{i,t}$	0.115	0.125	0.0887
	(1.25)	(1.19)	(0.60)
LSE Cross-list$_{i,t-1}$	0.0283	0.0330	0.0290
	(1.60)	(1.21)	(1.29)
ΔGlobal Cross-list$_{i,t}$	0.119***	0.217***	-0.0360
	(3.39)	(4.19)	(-1.01)
Global Cross-list$_{i,t-1}$	-0.000773	0.0108	-0.00963
	(-0.08)	(0.70)	(-0.91)
ΔNo. of IOs$_{i,t-1}$	-0.000298	0.000244	0.000306
	(-1.40)	(0.85)	(1.02)
No. of IOs$_{i,t-2}$	0.00107***	0.00124***	0.000420***
	(11.06)	(9.07)	(3.42)
U.S. Cross-list$_{i,t-1}$*Δ No. of IOs$_{i,t-1}$	0.00225***	0.00231***	0.00263**
	(3.94)	(3.49)	(2.45)
LSE Cross-list$_{i,t-1}$*Δ No. of IOs$_{i,t-1}$	0.000334	0.00113	-0.00133
	(0.17)	(0.59)	(-0.36)
Global Cross-list$i,t-1$*Δ No. of IOs$i,t-1$	0.000235	0.000190	-0.000501
	(0.37)	(0.21)	(-0.56)
Raw returns$_{i,t-1}$	0.0125***	0.0120**	0.0166***
	(3.23)	(2.30)	(3.13)
Raw returns$_{i,t-2}$	0.0128***	0.0310***	0.000194
	(3.41)	(5.94)	(0.04)
Log price$_{i,t-1}$	-0.0156***	-0.0383***	-0.00489***
	(-17.17)	(-17.40)	(-5.52)
S&P $_{i,t-1}$	0.0253***	0.0231***	0.0214***
	(5.49)	(2.96)	(4.16)
Age $_{i,t-1}$	0.0000883***	0.0000692**	0.000164***
	(4.58)	(2.52)	(6.50)
VR $_{i,t-1}$	0.0108	-0.120***	0.0396
	(0.30)	(-2.82)	(0.66)
BTV $_{i,t-1}$	0.0535***	0.0556***	0.0481***
	(23.88)	(15.70)	(19.05)
Log MKC $_{i,t-1}$	-0.00639***	0.00149	-0.000870
	(-6.14)	(0.72)	(-0.78)
Turnover $_{i,t-1}$	-0.0622***	-0.0572	-0.0786***
	(-2.91)	(-1.42)	(-3.42)
DVY $_{i,t-1}$	0.416***	0.150	0.631***
	(7.10)	(1.40)	(9.70)
F-test of whether the coefficients of ΔU.S. Cross-list$_{i,t}$ and ΔGlobal Cross-list$_{i,t}$ are equal			
P-value of the F-test	0.4994	0.9297	N/A
Adjusted R^2	0.033	0.0418	0.0723

N	116563	76	53779	62784

Table 12

The effect of U.S. cross-listing and institutional ownership level on industrial adjusted returns with additional control variables of London Stock Exchange cross-listing and global cross-listing, sub-sample analyses: Firm age and dividend yield.

This table presents the ordinary least squares regression results on the effects of U.S. cross-listing and institutional ownership level on industrial adjusted returns with split samples. Columns 1 and 2 report the results of sub-sample with sample period mean age lower and higher than the sample period median respectively. Columns 3 and 4 report the results of sub-sample with sample period mean dividend yield lower and higher than the sample period median respectively. The dependent variable is Industrial adjusted returns$_{i,t}$, which is the industrial adjusted semi-annual equity returns calculated by subtracting the USD raw returns by the returns of equally weight industrial portfolio according to Fama-French 48 industry sectors. Table A shows the definition of the independent variables. All the regressions include the Fama-French 48 industrial dummies, country dummies and semi-annual time dummies. t-statistics according to firm cluster robust standard error are in the parenthesis. Significance level notations are $^*p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

	Firm age		Dividend yield	
	(Low)	(High)	(Low)	(High)
	(1)	(2)	(3)	(4)
	Industrial adjusted returns	Industrial adjusted returns	Industrial adjusted returns	Industrial adjusted returns
Δ U.S. Cross-list$_{i,t}$	0.260***	-0.0990	0.232**	0.0923
	(2.90)	(-0.57)	(2.21)	(0.77)
U.S. Cross-list$_{i,t-1}$	0.0481***	-0.00332	0.0330**	-0.00780
	(3.36)	(-0.31)	(2.19)	(-0.95)
ΔLSE Cross-list$_{i,t}$	0.112	0.190**	0.118	0.141
	(1.07)	(2.38)	(1.14)	(1.48)
LSE Cross-list$_{i,t-1}$	0.0252	0.0400**	0.0213	0.0401***
	(0.83)	(2.05)	(0.73)	(2.73)
ΔGlobal Cross-list$_{i,t}$	0.208***	0.0761**	0.175***	0.0684*
	(2.64)	(2.38)	(3.13)	(1.82)
Global Cross-list$_{i,t-1}$	0.0219	-0.00252	0.0107	-0.00584
	(0.89)	(-0.30)	(0.61)	(-0.68)
ΔNo. of IOs$_{i,t-1}$	0.000472	-0.00112***	0.000375	-0.00131***
	(0.67)	(-5.54)	(0.80)	(-6.38)
No. of IOs$_{i,t-2}$	0.00209***	0.000503***	0.00191***	0.000319***
	(7.51)	(5.41)	(9.18)	(3.37)
U.S. Cross-list$_{i,t-1}$*Δ No. of IOs$_{i,t-1}$	0.00353***	0.00169***	0.00379***	0.00191***
	(3.07)	(2.91)	(3.14)	(3.74)
LSE Cross-list$_{i,t-1}$*Δ No. of IOs$_{i,t-1}$	-0.000855	0.000868	0.000581	0.000130
	(-0.17)	(0.66)	(0.14)	(0.09)
Global Cross-list$_{i,t-1}$*Δ No. of IOs$_{i,t-1}$	0.00192	0.000369	0.00279*	-0.0000411
	(0.48)	(0.63)	(1.66)	(-0.07)
Raw returns$_{i,t-1}$	0.00936	0.0340***	0.0164***	0.0341***
	(1.62)	(7.13)	(3.39)	(6.22)
Raw returns$_{i,t-2}$	0.0318***	-0.00228	0.0285***	-0.0183***
	(5.50)	(-0.51)	(5.94)	(-3.73)
Log price$_{i,t-1}$	-0.0377***	-0.00766***	-0.0225***	-0.00625***
	(-15.19)	(-8.48)	(-16.38)	(-5.82)
S&P$_{i,t-1}$	0.0650***	0.0124***	0.0550***	-0.00253
	(5.30)	(2.72)	(5.57)	(-0.54)
Age$_{i,t-1}$	-0.000134***	-0.000338***	0.0000772***	0.0000184
	(-3.10)	(-3.86)	(3.17)	(0.34)
VR$_{i,t-1}$	-0.0851*	-0.0620	-0.0309	0.0337
	(-1.91)	(-1.06)	(-0.78)	(0.43)
BTV$_{i,t-1}$	0.0616***	0.0511***	0.0597***	0.0497***
	(14.50)	(21.61)	(18.09)	(17.68)
Log MKC$_{i,t-1}$	-0.0106***	-0.000838	-0.0150***	0.00133
	(-4.01)	(-0.80)	(-8.66)	(1.17)
Turnover$_{i,t-1}$	-0.116**	-0.0441**	-0.140***	0.0385

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		(-2.52)	(-2.00)	(-4.61)	(1.37)
$DVY_{i,t-1}$		0.407^{*}	0.434^{***}	0.531^{*}	0.444^{***}
		(1.81)	(7.07)	(1.70)	(7.00)
F-test with null hypothesis: coef.. of $\Delta U.S.\ Cross\text{-}list_{i,t}$ and $\Delta Global\ Cross\text{-}list_{i,t}$ are equal					
P-value of the F-test		0.6631	N/A	0.6286	N/A
F-test with null hypothesis: coef.. of $\Delta LSE\ Cross\text{-}list_{i,t}$ and $\Delta Global\ Cross\text{-}list_{i,t}$ are equal					
P-value of the F-test		N/A	0.1862	N/A	N/A
Adjusted R^2		0.0368	0.0520	0.0329	0.0602
N		38350	78213	58277	58286

Table 13

The effect of the U.S. cross-listing and institutional ownership level on raw returns, non-crisis period and crisis period.

This table presents the ordinary least squares regression results on the effects of U.S. cross-listing and institutional ownership level on raw returns. Columns 1, 2 and 3 report the results of the whole sample, the common-law sample and non-common-law sample during the non-crisis period, respectively. Columns 4, 5 and 6 report the results of the whole sample, the common-law sample and non-common-law sample during the crisis period, respectively. The dependent variable is Raw returns$_{i,t}$, which is the USD semi-annual raw equity returns. Table A shows the definition of the independent variables. All the regressions include the Fama-French 48 industrial dummies, country dummies and semi-annual time dummies. t-statistics according to firm cluster robust standard error are in the parenthesis. Significance level notations are * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	Non-crisis period			Crisis period		
	Law origin			Law origin		
	(Whole sample)	(Common-law)	(Non-common-law)	(Whole sample)	(Common-law)	(Non-common-law)
	(1)	(2)	(3)	(4)	(5)	(6)
	Raw returns	Raw returns	Raw returns	Raw returns	Raw returns	Raw returns
ΔU.S. Cross-list$_{i,t}$	0.163	0.210**	-0.424***	0.285	0.325	0.355***
	(1.52)	(1.99)	(-21.59)	(1.09)	(1.10)	(10.62)
U.S. Cross-list$_{i,t-1}$	0.0154*	0.0328***	0.00572	0.0250	0.0288	-0.00416
	(1.72)	(2.99)	(0.36)	(1.28)	(1.15)	(-0.15)
ΔNo. of IOs$_{i,t-1}$	-0.000278	0.000337	0.000268	0.00113*	0.00464***	-0.000918
	(-1.28)	(1.18)	(0.83)	(1.84)	(5.26)	(-1.14)
No. of IOs$_{i,t-2}$	0.000933***	0.00163***	-0.000571***	0.00189***	0.00144***	0.00154***
	(7.84)	(9.58)	(-3.91)	(10.25)	(5.52)	(6.43)
U.S. Cross-list$_{i,t-1}$ *	0.00221***	0.00235***	0.00161*	-0.00233	-0.00106	0.00393
ΔNo. of IOs$_{i,t-1}$	(4.27)	(3.94)	(1.79)	(-1.15)	(-0.46)	(1.16)
Raw returns$_{i,t-1}$	-0.00000808	0.00794	0.0479***	-0.0573***	-0.0543***	-0.109***
	(-0.00)	(1.29)	(7.72)	(-7.35)	(-5.08)	(-10.65)
Raw returns$_{i,t-2}$	0.0402***	0.0421***	0.0308***	-0.111***	0.000212	-0.150***
	(9.22)	(7.17)	(5.52)	(-10.79)	(0.02)	(-11.24)
Log price$_{i,t-1}$	-0.0134***	-0.0327***	-0.00471***	-0.0255***	-0.0637***	-0.00815***
	(-12.95)	(-13.14)	(-4.52)	(-14.06)	(-15.04)	(-4.25)
S&P$_{i,t-1}$	0.0374***	0.0370***	0.0283***	0.0201**	0.00969	0.00932
	(7.35)	(4.33)	(5.06)	(2.18)	(0.62)	(0.89)
Age$_{i,t-1}$	0.000143***	0.0000948***	0.000207***	0.0000489	0.0000718	0.000138***
	(6.39)	(3.00)	(7.01)	(1.33)	(1.41)	(2.73)
VR$_{i,t-1}$	-0.110***	-0.158***	-0.220***	0.528***	0.153*	0.783***
	(-2.73)	(-3.25)	(-3.36)	(6.80)	(1.80)	(4.53)
BTV$_{i,t-1}$	0.0449***	0.0533***	0.0378***	0.0760***	0.0726***	0.0604***
	(16.94)	(11.57)	(13.42)	(20.93)	(14.03)	(13.85)
Log MKC$_{i,t-1}$	-0.00853***	-0.00492**	-0.000425	-0.00515**	0.0187***	-0.00166
	(-7.09)	(-2.09)	(-0.33)	(-2.42)	(4.52)	(-0.70)
Turnover$_{i,t-1}$	-0.192***	-0.227***	-0.132***	0.0535	0.137*	-0.0481
	(-8.26)	(-5.00)	(-5.41)	(1.10)	(1.66)	(-0.87)
DVY$_{i,t-1}$	0.248***	0.0599	0.831***	0.512***	-0.167	0.310***
	(3.69)	(0.51)	(10.47)	(5.11)	(-0.92)	(2.90)
Adjusted R^2	0.141	0.183	0.124	0.416	0.500	0.343
N	82821	38083	44738	33742	15696	18046

Table 14

The effect of U.S. cross-listing and institutional ownership level on raw returns during non-crisis period, sub-sample analyses: Firm age and dividend yield.

This table presents the ordinary least squares regression results on the effects of U.S. cross-listing and institutional ownership level on raw returns with split samples. Columns 1 and 2 report the results of sub-sample with sample period mean age lower and higher than the sample period median respectively. Columns 3 and 4 report the results of sub-sample with sample period mean dividend yield lower and higher than the sample period median respectively. The dependent variable is Raw returns$_{i,t}$, which is the USD semi-annual raw equity returns. Table A shows the definition of the independent variables. All the regressions include the Fama-French 48 industrial dummies, country dummies and semi-annual time dummies. t-statistics according to firm cluster robust standard error are in the parenthesis. Significance level notations are * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	Firm age		Dividend yield	
	(Low)	(High)	(Low)	(High)
	(1)	(2)	(3)	(4)
	Raw returns	Raw returns	Raw returns	Raw returns
$\Delta U.S.\ Cross\text{-}list_{i,t}$	0.239**	-0.465***	0.199	0.0802
	(2.28)	(-26.37)	(1.57)	(0.50)
$U.S.\ Cross\text{-}list_{i,t\text{-}1}$	0.0609***	0.00180	0.0410***	-0.000334
	(4.23)	(0.17)	(2.65)	(-0.04)
$\Delta No.\ of\ IOs_{i,t\text{-}1}$	0.000112	-0.00107***	0.000655	-0.00145***
	(0.14)	(-5.55)	(1.28)	(-7.55)
$No.\ of\ IOs_{i,t\text{-}2}$	0.00256***	0.000144	0.00211***	-0.0000147
	(7.50)	(1.27)	(7.99)	(-0.13)
$U.S.\ Cross\text{-}list_{i,t\text{-}1}$*	0.00393***	0.00192***	0.00327***	0.00202***
$\Delta No.\ of\ IOs_{i,t\text{-}1}$	(3.49)	(3.59)	(2.78)	(4.57)
$Raw\ returns_{i,t\text{-}1}$	0.00338	0.0524***	0.00272	0.0507***
	(0.50)	(8.95)	(0.47)	(7.67)
$Raw\ returns_{i,t\text{-}2}$	0.0438***	0.0359***	0.0484***	0.0332***
	(6.74)	(7.03)	(8.77)	(6.01)
$Log\ price_{i,t\text{-}1}$	-0.0337***	-0.00642***	-0.0202***	-0.00493***
	(-12.19)	(-6.12)	(-12.72)	(-4.04)
$S\&P_{i,t\text{-}1}$	0.0682***	0.0255***	0.0665***	0.00657
	(5.16)	(5.25)	(6.13)	(1.32)
$Age_{i,t\text{-}1}$	-0.0000880*	-0.000360***	0.000138***	0.0000558
	(-1.80)	(-3.89)	(4.76)	(1.00)
$VR_{i,t\text{-}1}$	-0.125**	-0.393***	-0.104**	-0.483***
	(-2.51)	(-6.03)	(-2.31)	(-5.91)
$BTV_{i,t\text{-}1}$	0.0650***	0.0399***	0.0574***	0.0377***
	(11.59)	(15.30)	(13.57)	(13.70)
$Log\ MKC_{i,t\text{-}1}$	-0.0169***	-0.00290**	-0.0187***	-0.000318
	(-5.63)	(-2.40)	(-9.22)	(-0.25)
$Turnover_{i,t\text{-}1}$	-0.263***	-0.136***	-0.271***	-0.0640**
	(-5.04)	(-5.76)	(-8.06)	(-2.23)
$DVY_{i,t\text{-}1}$	0.873***	0.372***	-1.178***	0.399***
	(3.40)	(5.34)	(-2.92)	(5.66)
Adjusted R^2	0.173	0.148	0.148	0.174
N	26818	56003	41063	41758

Table 15

The effect of U.S. cross-listing and institutional ownership level on raw returns during crisis period, sub-sample analyses: Firm age and dividend yield.

This table presents the ordinary least squares regression results on the effects of U.S. cross-listing and institutional ownership level on raw returns with split samples. Columns 1 and 2 report the results of sub-sample with sample period mean age lower and higher than the sample period median respectively. Columns 3 and 4 report the results of sub-sample with sample period mean dividend yield lower and higher than the sample period median respectively. The dependent variable is Raw returns$_{i,t}$, which is the USD semi-annual raw equity returns. Table A shows the definition of the independent variables. All the regressions include the Fama-French 48 industrial dummies, country dummies and semi-annual time dummies. t-statistics according to firm cluster robust standard error are in the parenthesis. Significance level notations are * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	Firm age		Dividend yield	
	(Low)	(High)	(Low)	(High)
	(1)	(2)	(3)	(4)
	Raw returns	Raw returns	Raw returns	Raw returns
ΔU.S. Cross-list$_{i,t}$	0.399	0.156	0.406	0.205***
	(1.12)	(1.40)	(1.09)	(5.60)
U.S. Cross-list$_{i,t-1}$	0.0417	0.00929	0.0705**	-0.00857
	(1.23)	(0.47)	(2.05)	(-0.59)
ΔNo. of IOs$_{i,t-1}$	0.00518***	-0.00170***	0.00235**	-0.000980
	(3.36)	(-2.75)	(2.12)	(-1.48)
No. of IOs$_{i,t-2}$	0.00285***	0.000823***	0.00292***	0.000566***
	(5.98)	(4.53)	(7.92)	(3.02)
U.S. Cross-list$_{i,t-1}$* ΔNo. of IOs$_{i,t-1}$	-0.00516	0.00121	-0.00290	-0.00120
	(-1.16)	(0.81)	(-0.64)	(-0.70)
Raw returns$_{i,t-1}$	-0.0478***	-0.0629***	-0.0408***	-0.0694***
	(-3.99)	(-6.68)	(-4.10)	(-6.18)
Raw returns$_{i,t-2}$	-0.0121	-0.169***	-0.0590***	-0.213***
	(-0.81)	(-14.02)	(-4.60)	(-16.28)
Log price$_{i,t-1}$	-0.0584***	-0.0129***	-0.0347***	-0.0112***
	(-12.15)	(-7.08)	(-12.87)	(-5.34)
S&P$_{i,t-1}$	0.0692***	-0.00142	0.0473**	-0.00636
	(3.00)	(-0.16)	(2.42)	(-0.69)
Age$_{i,t-1}$	-0.000266***	0.0389***	0.00000774	-0.000100
	(-3.17)	(75.16)	(0.17)	(-0.88)
VR$_{i,t-1}$	0.146	0.712***	0.356***	1.286***
	(1.58)	(5.22)	(4.22)	(6.26)
BTV$_{i,t-1}$	0.0807***	0.0609***	0.0833***	0.0572***
	(13.17)	(15.24)	(16.49)	(11.91)
Log MKC$_{i,t-1}$	0.00376	0.00343	-0.0136***	0.00551**
	(0.73)	(1.61)	(-4.05)	(2.35)
Turnover$_{i,t-1}$	0.0727	0.0383	0.00631	0.0959
	(0.76)	(0.75)	(0.10)	(1.37)
DVY$_{i,t-1}$	-0.439	0.409***	2.450***	0.400***
	(-1.34)	(3.80)	(4.50)	(3.60)
Adjusted R^2	0.479	0.404	0.436	0.439
N	11532	22210	17214	16528

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