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Abstract:

This study examines whether firms incorporated in mainland China benefit from cross-listing in Hong Kong, China. The Hong Kong Stock Market has more stringent rules regarding corporate governance and a better system of investor protection than the mainland market. Hong Kong companies generally provide strong incentives to executives via equity-based compensation. Have cross-listed companies learned from Hong Kong firms about adopting these strong executive incentives? The evidence from this study suggests that changes in top executive compensation are more sensitive to sales growth in cross-listed firms than they are in mainland firms without cross-listing. However, compared to Hong Kong firms, cross-listed firms are less sensitive to stock returns. Further, this study shows that it is necessary to differentiate between state-owned companies and private companies, as cross-listing may have a greater impact on executive incentives in state-owned companies than it does in private companies.

Keywords: Cross-listing Executive Compensation Corporate Governance

JEL code: J3, M5

1. Introduction

Cross-listing refers to situations where firms list their shares on one or more foreign stock exchanges in addition to a domestic exchange. The opportunity to raise capital from global investors and the promise of increased visibility in the foreign markets provide the motivation for firms to cross-list their stock. According to recent studies, another important motivation for cross-listing is the so-called "bonding hypothesis". Coffee (1999) was among the first to propose that firms incorporated in a country with a less developed stock market can creditably bond themselves by cross listing their shares in a more developed foreign stock market.

So far, empirical evidence on the "bonding" hypothesis comes mostly from studies of companies listed in the U.S. For examples, Doidge (2004) finds that cross listing is associated with lower private benefit of control; Bauer et al. (2005) finds that firms cross-listed in the U.S. have higher corporate governance ratings than firms without a U.S. cross listing; other studies suggest that cross-listing in the U.S. brings advantages such as better valuation, lower cost of capital, more scrutiny by financial analysts, and greater access to external finance (Doidge et al., 2004; Hail and Leuz, 2006; Lang et al., 2003, 2006; Reese and Weisbach, 2002).

However, there are also studies challenging the "bonding" hypothesis. Licht (2001, 2003) questioned the effectiveness of the U.S. Securities and Exchange Commission (SEC) in enforcing the U.S.'s more stringent corporate governance rules on foreign firms. In support of this view, Siegel (2005) found that the SEC's enforcement imposed on Mexican firms cross-listed in the U.S. was generally weak. Furthermore,

Licht (2003) argues that firms may actually cross list to avoid strict requirements in domestic markets, which is referred to as the "avoiding hypothesis".

There are several countries (e.g., Hong Kong) that claim to have levels of investor protection on par with that of the U.S. and these countries have attracted an increasing and significant number of cross listing firms. Hong Kong is the first choice for Chinese companies looking to list their stock on an overseas exchange. In the last decade, over 200 Chinese firms have issued initial public offerings (IPOs) in the Hong Kong Stock Market, accounting for almost one fourth of all the firms listed in Hong Kong. These companies are either known as "red chip" or "H-share" companies. A mainland-China controlled company incorporated and listed in Hong Kong is called a "red chip" company; the word red comes from "red China". Red chips are traded in Hong Kong dollars, and financial statements are also reported in HK dollars. H-share companies are incorporated in the mainland and approved by the China Securities Regulatory Commission (CSRC) to list in Hong Kong; the letter H stands for Hong Kong. H-share companies are traded in Hong Kong dollars, but financial statements are reported in RMB Yuan. Recently, the distinctions between H-shares and red chips have become blurred. Many mainland-incorporated companies are issued as red chips, such as China Mobile, China Insurance and China National Offshore Oil Corp (CNOOC). Thus, like many other studies, this paper treats H-share and red chips as one group.

Although Hong Kong was returned to China in 1997, Hong Kong's economic and political systems in general and its security markets in particular remain independent from the mainland. The Hong Kong Security and Future Commission (SFC) is the regulatory body for listed companies on the Hong Kong Stock Exchange. In mainland China, there are two stock exchanges – one in Shanghai and the other in Shenzhen.

Companies listed on either of these two stock exchanges may offer "A shares" to domestic investors and "B shares" to foreign investors. The two stock exchanges and listed companies are regulated by the CSRC.

The Company Law of China, enacted in 1994 and with the latest amendment in 2006, establishes general rules for corporate governance for listed companies. The Company Law is further supplemented by the specific regulations of the CSRC. The policies, rules, and regulations in the mainland are viewed as less developed than those of Hong Kong. An example lies in the differences in the requirements for independent directors to serve on the executive compensation committee of the board. The CSRC requires that only one third of directors be independent, and that independent directors take their responsibility seriously in important company matters such as executive appointment and compensation, and auditing and information disclosure. [1] In comparison, Hong Kong SFC regulations are quite detailed and require not only the majority of directors be non-executive and independent, but also that the most important board committees such as the auditing and executive remuneration committees comprise only non-executive directors. [2]

Several studies find that only a small fraction of A-share companies have established an executive compensation committee on the board, and the effectiveness of the committee is questionable; for those without the committee, the situation is worse and executives often set their own salaries (Firth et al., 2006b); HK companies, on the other hand, generally establish executive remuneration committees. These committees are composed of non-executive directors and outside experts, and are often more independent than the rest of the board (Ho, 2003). Some researchers suggest that the

problem of executives colluding with large state shareholders in expropriating minority investors is quite serious among A-share companies (Jian and Wong, 2003; Jiang et al., 2005); others have also questioned the quality of financial disclosure and the independence of external auditing of A-share companies (Bao and Chow, 1999; DeFond et al., 1999; Wang et al., 2008). Overall, after examining creditor rights, investor rights, the rules of law, and corruption, Allen et al. (2005) deem that Hong Kong is among countries like the U.S., U.K., Japan, Singapore, and Germany with the best investor protection, whereas mainland China ranked among Mexico and Indonesia, which are considered to have a poorer investor protection. Similarly, in 2002, CLSA Asia-Pacific Markets, the independent brokerage and investment group ranked Hong Kong second in their corporate governance rating of Asian countries, and ranked mainland China sixteenth (CLSA, 2002).

Since Hong Kong appears to have more stringent governance rules and a better investor protection than mainland China, executive compensation of HK companies is often more sensitive to company performance than that of mainland companies. The question is whether cross-listed companies have become assimilated to HK local firms in linking executive pay to performance. The stronger executive incentives adopted by cross-listed companies may be the result of improvements after cross-listing, or simply due to the "selection effect", i.e. only those companies that are in better condition are allowed to be listed in Hong Kong. We cannot disentangle these two effects. Our focus is to test whether the overall effect of cross-listing is positive. One distinguishing feature of our study is that we set two benchmarks for Chinese companies cross-listed in Hong Kong: one is based on executive incentives of mainland A-share companies; the other is

[1] CSRC "Advice on Establishing the Independent Director System in Listed Companies", 2001[102]

based on executive incentives of HK local companies. The comparison of these three groups reveals whether cross-listed companies have caught up with HK companies or still lag behind, and also whether cross-listed companies have shown improvement over A-share companies.

Our study is most closely related to Ke et al. (2008) who compared mainland companies cross-listed in Hong Kong to those without a HK cross-listing in terms of the sensitivity of executive compensation to firm performance. However, there are several important differences between our paper and Ke et al. (2008). First, our study includes an additional comparison between cross-listed companies and Hong Kong local companies. Second, and more importantly, Ke et al. (2008) used the cross-sectional data for 2003, while we managed to obtain the executive compensation data of mainland, cross-listed, and HK companies for 2004-2006. Thus, we are able to estimate the change regressions. The advantage of the change regression lies in the control of unobserved firm-specific characteristics. The omission of these variables in the level regression causes bias in the estimates. In the change regression, the unobserved firm-specific characteristics drop out after first differencing. Third, before 2004, there was no data available for individual executive compensation, and hence Ke et al. (2008) used the total compensation of the three or five highest paid executives and directors in a company. [3] Using 2004-2006 data, we employ individual executive compensation in the analysis.

Our work also benefits from previous studies that have extensively investigated the relationship of executive pay or turnover to performance of A-share companies, such

[2] SFC, http://www.sfc.hk/sfc/html/EN/aboutsfc/corporate/governance/governance.html
[3] For mainland companies, the total compensation of the three highest paid executives was disclosed before 2004, while for Hong Kong companies, that of the five highest paid executive was disclosed.

as Chi and Wang (2009), Firth et al. (2006a, b), Kato and Long (2006), Aivazian et al. (2005), and Mengistae and Xu (2004). In methodology, we follow Kaplan (1994) who compared the sensitivity of top executive rewards to firm performance of Japanese companies with that of U.S. companies.

Our findings are mixed. When firm performance is measured by sales growth, executive compensation is more sensitive to performance in cross-listed companies than in mainland companies without cross-listing. Cross-listed companies have caught up with HK firms in linking executive pay to sales growth, but in terms of incentives tied to stock returns, cross-listed firms still lag behind. The rest of the paper is structured as follows: Section 2 describes data, sample selection, and variables; Section 3 presents the results, and Section 4 summarizes and concludes the paper.

2. Data

The panel data of mainland, cross-listed and HK companies from 2004 to 2006 are used in this study. For HK-listed companies, before fiscal year 2004, executive compensation was broken down into bands of HK$500,000 beginning at HK$1,000,000, and the number of directors whose total remuneration fell into each band was disclosed; after 2005, regulations require that the exact amount of compensation be disclosed. Since the bandwidth was rather broad, the compensation data of HK executives had a relatively large measurement error before 2004. Therefore, we use data from 2004 to 2006 (the latest available year). For mainland listed companies, the disclosure requirement for executive compensation has been rather consistent over time: the compensation is also reported in bands, but the bandwidth is relatively small, 10,000 RMB Yuan or less. For consistency, we used data from the same years for mainland and HK-listed companies. The HK-listed companies include both HK local companies and

cross-listed mainland companies. As of the end of December 2004, there were 114 H-share and 88 red chip firms listed in Hong Kong. Thus, the sample of cross-listed companies consists of these 202 companies.

To compare cross-listed companies to mainland and Hong Kong companies, we constructed a sample of A-share companies that matched the cross-listed companies in industry and size, and we constructed a sample of similarly matched HK local companies. The primary reason we selected samples matched for industry and size is that industry and size are the two most important factors that impact firm performance and executive compensation. Another reason is to ease the data collection burden. The financial information and executive compensation figures disclosed by individual mainland companies in their annual reports have been coded and put into databases by various data consulting companies such as GTA, CSMAR, and GTI. Financial data of Hong Kong companies are available from Datastream. However, compensation and firm characteristics data of cross-listed and Hong Kong companies have to be hand-picked from company statements. There are over 1000 listed companies on the Hong Kong Stock Exchange so hand-picking data for all the companies for all three years would be an enormous job. For this reason, we decide to first limit the sample by industry and size, and then pick the data from company reports for the smaller sample.

The process of matching is as follows: The industry type of cross-listed companies (H-shares and red chips) is obtained from Datastream. For each of the 202 cross-listed companies, we first select A-share firms of the same industry by matching the industry classification code of CSRC with that of Datastream. [4] Next we identify the

[4] CSRC has classified A-share firms into 13 industries, including agriculture and forestry; mining; manufacturing; utility (water, gas, and electricity manufacturing and supply); construction; transportation

one A-share company that is most similar to the cross-listed company in terms of sales revenue and total assets. We use sales revenue and total assets as the indicators of firm size. This way we were able to obtain a matched sample that contains 202 mainland companies. The sample of HK local companies is constructed following the same process mentioned above. Specifically, for each of the cross-listed companies, we selected one HK local company in the same industry based on the Datastream industry code that was closest in sales revenue and total assets. The final sample contains 202 matched HK companies. Thus, we obtained three samples:

Mainland: Mainland firms without HK cross listing. The sample size is 202. We use letter "A" to indicate this sample.

Cross-listed: Mainland companies traded in Hong Kong, including red chips and H-share companies. The sample size is 202. We use "HR" to denote this sample.

Hong Kong: Hong Kong local firms incorporated and traded on the Hong Kong Stock Exchange. The sample size is 202. "HK" is used to denote this sample.

The data for executive compensation and firm characteristics of mainland companies are obtained from GTA, and those of cross-listed and HK local companies are hand picked from company statements obtained from the website of the Hong Kong Stock Exchange (www.hkex.com.hk). The final dataset contains information on the following variables: *Cash compensation* is the sum of an executive's annual salary and bonus in RMB 10,000 Yuan. Since the executive compensation for mainland companies is reported in intervals, we use the median of the reported interval. To be consistent, we convert executive compensation of cross-listed and HK companies to RMB Yuan based

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and storage; information technology; wholesale and retail; finance and insurance; real estate; social service; media and culture; and integrated (multi-industry).

on the appropriate exchange rate. We take the logarithm of *Cash Compensation* and calculate the difference between year *t* and *t-1*, and name the new variable *Change in cash compensation. Management shareholding* is defined as the total shares held by the top three executives of a company at the end of year *t*.

We use several variables to measure firm performance: *Market value of equity* is the total market value of tradable shares at the fiscal year end and stated in millions of RMB Yuan; *Stock return* is annual stock return from the first month of fiscal year *t* to the end of the fiscal year, adjusted for dividends; *Sales* is net sales revenue for the fiscal year *t* , also stated in millions of RMB Yuan; *Sales growth* is the change in the logarithm of sales from year *t -1* to *t*; *ROA* is net income divided by total assets at year end. To overcome extreme values, we winsorize sales growth and ROA to the range of [-20, 20]. *Change in ROA* is the change in ROA from year *t-1* to *t*; *Loss* is a dummy variable that equals one if net income in year *t* or *t-1* is negative.

The dataset also contains several variables that characterize the governance structures of the companies: *Ownership concentration* is the percentage of shares held by the largest shareholder*; State* is a dummy variable that equals one if the largest shareholder is the state. In addition, *Years of listing* refers to the number of years a firm has been listed as of December 31, 2007.

Table 1 shows financial performance, executive compensation, and ownership structure of mainland, cross-listed, and HK companies. To avoid extreme values, we use the Wilcoxon signed rank test of differences in median for continuous variables and report Z-values. For dummy variables, Chi-square frequency tests are used to test the differences, and Chi-square statistics are reported. The top panel shows that executives of HK firms earned the average compensation of 4.8 million RMB Yuan per year during

2004-2006 (the median is 2.5 million Yuan), nearly 15 times that earned by executives of mainland firms (10 times the median). Executives of cross-listed companies received an average cash compensation of 1.8 million Yuan (median = 0.77 million Yuan), which is significantly higher than that earned by mainland executives but lower than that earned by HK executives. However, executives in cross-listed companies received larger increases in cash compensation during 2004-2006, compared to their counterparts in mainland and HK firms. The average annual increase in compensation is 16 percent for cross-listed companies, while it is 7 percent for HK and mainland firms.

Panel A also shows that top three executives of HK firms own 42 percent of their company's stock, while their counterparts in mainland China own only 0.01 percent. The top executives of cross-listed companies own slightly more shares than executives of mainland companies, but the shares they own are much fewer than those held by executives of HK firms. From this perspective, financial incentives offered to executives in cross-listed companies are more similar to those in mainland companies than to those in HK firms. Executives of cross-listed firms are still mostly motivated by short-term cash compensation rather than stock ownership or options.

Panel B of Table 1 shows company performance by various measures. The average equity value and sales revenue is much higher for cross-listed companies than for mainland and HK firms. A few cross-listed companies, such as PetroChina, China Eastern Airlines and Huaneng Power, are large in terms of assets and sales and also are the respective industry leaders, which may drive up the average value for cross-listed firms. As can be seen, the median value of equity and sales of the three types of companies is more similar than the mean value, with HK firms being a little smaller.

Both cross-listed and HK companies outperform mainland companies in stock returns and ROA. The differences between HK and cross-listed firms in these two performance indicators are small and statistically insignificant. Cross-listed companies had an average sales growth of 22 percent (18 percent at the median), which is the highest among the three groups of companies. On the other hand, mainland companies had the lowest percentage of loss in that 22 percent of mainland companies had a negative net income in the previous two years compared to 23 percent for cross-listed companies and 29 percent for HK companies. The difference in the frequency of loss between mainland and cross-listed companies is insignificant. For both mainland and cross-listed companies, this frequency is substantially lower than that of HK companies. In summary, the evidence is rather mixed as to which type of firms have the best performance: HK companies perform the best in stock returns and ROA; cross-listed companies have the strongest sales growth; mainland companies have the lowest percentage of loss; the three groups do not differ significantly in the change of ROA.

Panel C shows other characteristics of firms. An important indicator of a company's governance structure is concentration of ownership. Table 1 shows that cross-listed companies have the most concentrated ownership structure, followed by HK companies and then by mainland companies. Overall, the percentage of shares held by the largest shareholder is rather high for all three groups of companies. The tabulation also shows that for 76 percent of mainland companies, the largest shareholder is the state, while for HK companies, that percentage is zero. Among the 202 cross-listed companies, 82 percent are state-controlled. Finally, HK companies in general have been listed longer than mainland and cross-listed companies. Thus far, descriptive results have shown that the executive compensation level of cross-listed companies lies between that

of mainland and HK companies. The question remains whether executive compensation of cross-listed companies is more or less tied to firm performance than that of mainland and HK firms.

3. Regression Results

To check consistency with previous research (Ke et al., 2008) and also to see how the results change when controlled for firm fixed effects, we begin our analysis by estimating the regression of the compensation level on firm characteristics and performance. The regression is estimated for 2004, 2005, and 2006 separately and also for the three years jointly with control for year dummies. The results are reported in Table 2. Consistent with descriptive results, executive compensation of HK companies is significantly higher than that of cross-listed firms which is in turn much higher than that of A-share firms. The coefficient estimates for the interaction of *A*, *HR* and *HK* with performance suggest that A-share executive compensation is sensitive to ROA. This finding confirms Ke et al. (2008) who used 2003 data and obtained the similar results. However, different from Ke et al. (2008), we find that A-share company executive compensation is also sensitive to stock returns, especially in the more recent years (in 2005 and 2006). These differences could be due to different years of data used in our study compared to those used in Ke et al. (2008) and the level regression may also be sensitive to the specific year chosen. [5]

The level regression uses cross-firm variation to identify the effect of firm performance on executive compensation and it is likely to be subject to omitted variable

[5] Ke et al. (2008) studied only A-share and cross-listed companies and did not have data of Hong Kong local firms, but they distinguished H-share and red chips among the cross-listed companies and estimated the regression for state and non-state controlled companies separately. To make a further comparison with Ke et al. (2008), we estimate the same models using A, H-share, and red chip shares only. Our 2004 results

bias. Although by controlling for as many firm characteristics as possible the omitted variable bias may be reduced, there are still some unobserved firm characteristics for which we do not control. The fixed effect model uses within-firm variation over time to identify the effect, and hence, could avoid bias due to omitted variables that are time constant. The fixed effect model may be estimated by first differencing the data and using ordinary least squares. Thus, we specify the following model:

$$\Delta Cash\ Compensation_{it} = \beta_0 + \beta_1 \Delta Performance_{it} + \beta_2 \Delta Performance_{it-1} + \beta_3 \Delta X_{it} + \varepsilon.$$

We adopt four measures of firm performance: (1) *stock returns*; (2) *sales growth*; (3) *change in ROA*; (4) *loss*. As can be seen, the measures indicate the change in the performance. In addition, the first variable is an external market performance measure while the rest are internal accounting performance measures. Following Kaplan (1994), we also include one-year lagged values for *stock returns*, *sales growth* and *changes in ROA* to capture any lagged effect of firm performance on executive compensation. Since *loss* indicates a negative net income in either or both of the previous two years, the lagged value of *loss* is not necessary. We estimate the model, entering the four performance variables separately as well as including them all together. ΔX_{it} are other measures on changes in firm characteristics and are included in the regression as control variables. Specifically, the control variables are the changes in leverage and the changes in the logarithm of total assets, as well as year dummy variables to control for year fixed effects.

We estimate the above equation for mainland, cross-listed, and HK companies separately and report coefficient estimates of β_1 and β_2 in Table 2. The left-hand side of

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are similar to those of Ke et al. (2008) estimated for 2003, which show that executive compensation of

Table 2 shows the estimates for each performance measures with separate adjusted R^2 reported. The right-hand side reports the estimates when all the performance variables and their lagged values are included. To test whether the estimates differ significantly between the three groups of firms, we use the joint sample and estimate the regression including the interaction of performance with group indicators. The estimates of the interaction terms, $Performance_t \times group$ and $Performance_{t-1} \times group$, are tested for significance separately (t-test) and also jointly (F-test). We carry out tests of equality of coefficients for A vs. HR, A vs. HK, and HR vs. HK, as well as joint tests across the three types of firms, i.e. A vs. HR vs. HK. We test each set of performance variables separately and also test the four sets of performance variables jointly. The results are reported in Table 3.

Several important points emerge from Table 3: First, there is some evidence suggesting that the change in executive compensation is more sensitive to stock returns in HK firms than in cross-listed and A-share firms. This result is mainly driven by the response of HK firms to the lagged stock return (*stock return, t-1*). It also appears that cross-listed companies are more similar to A-share companies than to HK companies in terms of executive incentives tied to stock returns. Moreover, despite being less sensitive to stock returns than HK firms, the first differencing estimates suggest A-share firms are still significantly sensitive to stock returns at t, which is consistent with the level estimates in Table 2.

Second, cross-listed firms have exceeded A-share and HK companies in the responsiveness of compensation changes with respect to sales growth. HK firms, on the other hand, are somewhat more sensitive to sales growth than A-share companies. When

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A-share companies, especially of those controlled by the state, is not sensitive to stock returns.

all four sets of performance variables are included in the regression, the differences between the three groups of firms are significant.

Third, the estimates of the sensitivity of executive compensation changes to the change in ROA are positive and sizeable but are only marginally significant for A-share and cross-listed companies. After including other performance variables, the estimates become insignificant. The comparison between groups did not produce significant patterns due to large standard errors. However, there is some weak evidence suggesting that A-share executive compensation changes may be more sensitive to the change in ROA than those of HK firms.

Finally, the change in executive compensation of mainland firms seems to be more sensitive to losses, although the results are statistically insignificant. This result may be partially due to the strict rules imposed by the CSRC on profitability. According to CSRC regulations, A-share companies incurring losses for two consecutive years will be put under special treatment (ST). The companies with losses for three consecutive years face the risk of delisting.

Since ownership structure may have a significant impact on executive incentives, we also conduct an analysis controlling for ownership types. Descriptive results in Table 1 show that the three types of companies have a similar level of shareholder concentration. Therefore, our focus is rather on the type of largest shareholder, specifically whether it is private or the state. For mainland and cross-listed companies, we estimate separate regressions when the largest shareholder is the state and when it is private. We also test the differences between the two situations. Since HK firms are all private, there is no need for separate regressions for them. The results are reported in Table 4.

As can be seen, for mainland A-share companies, the change in executive compensation is more sensitive to the change in ROA in state companies than in non-state companies, whereas in the non-state A-share companies, the change in the compensation is more sensitive to losses. This result is likely due to the different evaluation and incentive systems for executives in state and non-state companies. In many cases the government still evaluates state companies based on their total profits and taxes paid (Tenev et al., 2002).

For cross-listed companies, state and non-state firms are similar in terms of the relationship of executive compensation changes to stock returns and losses, but they differ significantly in the responsiveness to sales growth in that state companies that are cross-listed are more sensitive to sales growth than the non-state. Moreover, simple eyeballing suggests that the state-controlled cross-listed companies are also more sensitive to the change in ROA than the non-state controlled companies, but the statistical test of these differences is insignificant. Finally, the test of equality using all four sets of performance variables (groups A-D in Table 4) shows that for A-share companies, the differences between the state and the non-state are significant, while for cross-listed firms, the differences are not significant. This result suggests that cross-listing may help reduce the influence of government in state-controlled firms, and cause the state and non-state firms to adopt similar executive incentives in the foreign market.

In any case, Table 4 suggests the necessity to distinguish state and non-state firms in the analysis. For this reason, we carry out additional tests of differences and report the results in Table 5. We compared A-share state companies with cross-listed state companies and with HK firms; and we also compared A-share non-state companies with

cross-listed non-state companies and with HK firms. These results show that the earlier results in Table 3 suggesting that the change in executive compensation of cross-listed companies is sensitive to sales growth is actually mostly driven by the behavior of state-controlled cross-listed firms, while the sensitivity of mainland companies to losses is mainly due to private firms. Moreover, state-controlled A-share firms appear to be particularly sensitive to the changes in ROA.

Overall, Table 5 shows that, for non-state companies, the differences between cross-listed and A-share companies are insignificant, while for state companies, the differences are significant. These results are consistent with Table 4, suggesting that cross-listing has a greater impact on state-controlled companies than on non-state controlled companies. For state-controlled companies, cross-listing has been associated with the change in the performance indicator used to determine executive pay raises (from ROA to sales growth). For non-state companies, the changes in executive incentives are not apparent.

4. Summary and Conclusion

In conclusion, we find that the pattern of response of executive compensation to firm performance differs among mainland companies cross-listed in Hong Kong, mainland companies that are not cross-listed, and HK firms. Executive compensation in cross-listed companies is more sensitive to sales growth than mainland firms, but less sensitive to stock returns than HK firms. When state and non-state firms are separately examined, we find that in the state-controlled cross-listed firms the change in executive compensation is responsive to sales growth, while in the non-state controlled companies the incentives tied to sales growth are not much different from the companies without cross-listing. Moreover, for mainland A-share companies, we find that changes in

executive compensation are particularly sensitive to the changes in ROA in the state-controlled firms while changes in executive compensation are sensitive to losses in the non-state controlled firms. This finding suggests that the state and non-state controlled companies differ in terms of which performance measure carries the most weight in determining executive pay increases - in the case of the state-controlled firms, it is ROA, while for non-state controlled firms the pay raises are more sensitive to losses.

These results provide some evidence in support of the hypothesis that cross-listing is associated with a stronger relationship between executive compensation and firm performance. The hypothesis is supported when performance is measured by sales growth, particularly for state-controlled companies. Furthermore, our study shows that cross-listing may have a greater impact on executive incentives in state companies and reduce differences between state and non-state controlled companies traded in Hong Kong. Nevertheless, both types of companies still differ from HK local firms in their sensitivity of executive compensation changes to stock returns.

References

Aivazian, V. A., Ge, Y., Qiu, J.P., 2005. Corporate governance and manager turnover: An unusual social experiment. Journal of Banking & Finance 29, 1459--1481.

Allen, F., Qian, J., Qian, M.J., 2005. Law, finance, and economic growth in China. Journal of Financial Economics 77, 57--116.

Bao, B.H., Chow L., 1999. The usefulness of earnings and book value for equity valuation in emerging capital markets: Evidence from listed companies in the People's Republic of China. Journal of International Financial Management and Accounting 10, 85--104.

Bauer, R., Wojcik, D., Clark, G. L., 2005. Corporate governance and cross-listing: Evidence from European companies. Available at SSRN: http://ssrn.com/abstract=593364 or DOI: 10.2139/ssrn.593364

Chi, W., Wang, Y.J., 2009. Ownership, performance and executive turnover in China. Journal of Asian Economics. In Press, doi: DOI: 10.1016/j.asieco.2009.04.009.

CLSA, 2002. CG Watch. Corporate governance in emerging markets.

Coffee, J., 1999. The future as history: The prospects for global convergence in corporate governance and its implications. Northwestern University Law Review 93, 641--707.

DeFond, M.L., Wong, T.J., Li, S.H., 1999. The impact of improved auditor independence on audit market concentration in China. Journal of Accounting and Economics 28(3), 269--305.

Doidge, C., 2004. U.S. Cross-listings and the private benefits of control: Evidence from dual-class firms. Journal of Financial Economics 72, 519--553.

Doidge, C., Karolyi, G. Andrew, Stulz, R.M., 2004. Why are foreign firms listed in the U.S. worth more? Journal of Financial Economics 71(2), 205--238.

Firth, M., Fung, P., Rui, O.M., 2006a. Corporate performance and CEO compensation in China. Journal of Corporate Finance 12, 693--714.

Firth, M., Fung, P., Rui, O.M., 2006b. Firm performance, governance structure, and top management turnover in a transitional economy. Journal of Management Studies 43, 1289--1330.

Hail, L., Leuz, C., 2006. International difference in the cost of equity capital: Do legal institutions and securities regulation matter? Journal of Accounting Research 44(3), 485--531.

Ho, S. M., 2003. Corporate governance in Hong Kong: key problems and prospects. CUHK Centre for Accounting Disclosure and Corporate Governance Research Paper No. 1. Available at SSRN: http://ssrn.com/abstract=440924 or DOI: 10.2139/ssrn.440924

Jian, M., Wong, T.J., 2003. Earnings management and tunneling through related party transactions: Evidence from Chinese corporate groups. EFA 2003 Annual Conference Paper No. 549. Available at SSRN: http://ssrn.com/abstract=424888 or DOI: 10.2139/ssrn.424888

Jiang, G.H., Lee, Charles M.C., Yue, H., 2005. Tunneling in China: The Surprisingly Pervasive Use of Corporate Loans to Extract Funds from Chinese Listed Companies. Johnson School Research Paper Series No. 31-06. Available at SSRN: http://ssrn.com/abstract=861445

Kaplan, S.N., 1994. Top Executive Rewards and Firm Performance: A Comparison of Japan and the U.S. Journal of Political Economy 102 (3), 510--546.

Kato, T., Long, C., 2006. Executive compensation, firm performance, and corporate governance in China: Evidence from firms listed in the Shanghai and Shenzhen Stock Exchanges. Economic Development and Cultural Change 54(4), 945--983.

Ke, B., Rui O., Yu W., 2008. The effect of cross listing on the sensitivity of managerial compensation to firm performance. Working paper.

Lang, M., Raedy J.S., Wilson, W., 2006. Earnings management and cross listing: Are reconciled earnings comparable to U.S. earnings? Journal of Accounting and Economics 42(1), 255--283.

Lang, M., Lins, K.V., Miller, D., 2003. ADRs, analysts, and accuracy: Does cross listing in the United States improve a firm's information environment and increase market value? Journal of Accounting Research 41(2), 317--345.

Licht, A.N., 2001. The mother of all path dependencies: Toward a cross-cultural theory of corporate governance systems. Delaware Journal of Corporate Law 26, 147--205.

Licht, A.N., 2003. Cross-listing and corporate governance: bonding or avoiding? Chicago Journal of International Law 4, 141--163.

Mengistae, T., Xu, Linxin C., 2004. Agency theory and executive compensation: the case of Chinese state-owned enterprises. Journal of Labor Economics 22, 615--637.

Reese, W., Weisbach, M., 2002. Protection of minority shareholder interests, cross-listings in the United States, and subsequent equity offerings. Journal of Financial Economics 66(1), 65--104.

Siegel, J., 2005. Can foreign firms bond themselves effectively by renting U.S. securities laws? Journal of Financial Economics 75(2), 319--359.

Tenev, S., Zhang, C.L., Brefort, L., 2002. Corporate governance and enterprise reform in China: building the institutions of modern marketing. Washington, D.C.: World Bank and the International Finance Corporation.

Wang, Q., Wong, T.J., Xia, L.J., 2008. State ownership, the institutional environment, and auditor choice: evidence from China. Journal of Accounting and Economics 46(1), 112 --134.

Table 1: Summary Statistics for mainland, Hong Kong and cross-listed firms

Sample Group	A				HR				HK				Test of differences		
Variables	Mean	Median	STD	N	Mean	Median	STD	N	Mean	Median	STD	N	A vs. HR	A vs. HK	HR vs. HK
A. Compensation															
Cash compensation	33.75	25.06	37.38	590	180.90	77.30	384.35	551	479.31	249.14	745.41	536	16.98***	26.41***	14.16***
Change in cash compensation	0.07	0.06	0.39	387	0.16	0.11	0.51	349	0.07	0.02	0.45	327	2.43***	1.77*	3.64***
Management shareholding	0.01	0	0.03	528	10.64	0.07	20.76	554	42.05	47.77	22.86	543	13.61***	20.79***	11.88***
B. Financial Variables															
Market value of equity	3923.38	2099.78	6640.20	602	15075.85	1566.02	73976.52	586	9226.57	903.42	27148.77	590	3.65***	8.26***	2.85***
Stock returns	0.11	-0.05	0.57	605	0.26	0.05	0.83	553	0.31	0.09	0.94	583	3.77***	5.60***	1.59
Sales	3629.84	1554.79	6810.24	596	18297.66	2014.11	74895.80	590	4872.29	1150.83	14338.71	605	2.53***	4.35***	6.19***
Sales growth	0.09	0.14	1.18	596	0.22	0.18	0.84	589	0.09	0.08	0.77	605	3.01***	2.91***	5.61***
ROA	0.00	0.02	0.16	597	0.03	0.04	0.13	584	0.02	0.04	0.96	601	6.63***	4.83***	1.23
Change in ROA	-0.01	0	0.14	597	0	0	0.50	583	-0.03	0	4.24	601	1.35	0.58	1.54
Loss	0.22	0	0.41	597	0.23	0	0.42	584	0.29	0	0.45	601	0.55	2.97***	2.72***
Leverage	0.54	0.54	0.24	594	0.79	0.57	0.55	584	0.66	0.50	0.91	605	4.60***	0.33	3.69***
LnAssets	12.59	12.61	1.03	597	13.01	13.11	2.06	590	12.11	12.12	2.23	605	4.22***	5.20***	6.94***
C. Other Characteristics															
Ownership Concentration	49.94	40.70	190.93	528	50.82	52.72	17.90	554	47.24	49.76	18.28	543	8.18***	4.91***	2.99***
State	0.76	1	0.43	570	0.82	1	0.38	595					2.82***		
Years of listing	8.68	8	2.68	608	8.18	7	7.82	396	11.66	11	7.75	434	6.13***	5.73***	8.65***

Note: This table shows summary statistics of compensation, financial variables, and other characteristics of three groups of firms for 2004-2006. *HR* indicates cross-listed firms; *A* refers to mainland A-share firms; *HK* indicates Hong Kong local firms. To test differences across groups, the Wilcoxon signed rank test is used for continuous variables and the Chi-square frequency test is used for dummy variables, and test statistics are reported. *, **, and *** indicates significance at the 10, 5 and 1 percent level, respectively.

Table 2: Regression of the level of executive compensation on performance

Dependent variable: the logarithm of annual compensation

Independent variables	2004	2005	2006	2004-2006 pooled
HR	1.077***	0.970***	1.213***	1.119***
	(8.38)	(8.90)	(10.35)	(12.82)
HK	2.373***	2.351***	2.598***	2.503***
	(21.13)	(24.78)	(26.44)	(33.81)
A × *Stock return, t*	0.590***	0.756***	0.228***	0.235***
	(2.61)	(2.79)	(3.12)	(4.49)
HR × *Stock return, t*	0.560***	0.046	-0.018	0.041
	(2.65)	(0.21)	(-0.27)	(0.70)
HK× *Stock return, t*	0.008	0.001	-0.183***	-0.034
	(0.23)	(0.02)	(-2.54)	(-1.05)
A × *ROA, t*	1.561	0.788	0.305	0.713**
	(1.33)	(1.00)	(1.16)	(2.10)
HR × *ROA, t*	-2.313*	-0.688	-0.544	-0.727*
	(-1.60)	(-1.48)	(-1.34)	(-1.64)
HK × *ROA, t*	0.078	0.391	1.760**	0.015
	(1.28)	(1.01)	(2.30)	(0.30)
Sales growth, t	-0.015	-0.023**	-0.010**	-0.014**
	(-1.28)	(-1.93)	(-2.25)	(-2.19)
Leverage	-0.023	-0.198	-0.234	-0.119***
	(-0.32)	(-1.31)	(-1.50)	(-2.48)
LnAssets	0.309***	0.344***	0.322***	0.337***
	(11.82)	(15.85)	(13.79)	(16.93)
Constant	-0.168	-0.199	-0.016	-0.335
	(-0.28)	(-0.39)	(-0.02)	(-0.61)
Industry dummies	yes	Yes	yes	yes
Year dummies	yes	Yes	yes	yes
Adj. R^2	.630	.698	.691	0.662
Observations	531	525	467	1523

Note: this table reports the estimates of the regression of the compensation level on firm characteristics and financial variables. *HR* indicates cross-listed firms; *A* refers to mainland A-share firms; *HK* indicates Hong Kong local firms. t-statistics are in parentheses. *, **, and *** indicates significance at the 10, 5 and 1 percent level, respectively.

Table 3: Regression of the change in executive compensation on performance for mainland, Hong Kong, and cross-listed firms

Dependent variable: Change in the logarithm of annual compensation

	By Individual Performance Variables			Test of differences				Including All Performance Variables			Test of differences			
Independent variables	A (1)	HR (2)	HK (3)	A vs. HR (4)	A vs.HK (5)	HR vs.HK (6)	A vs. HR vs.HK (7)	A (8)	HR (9)	HK (10)	A vs. HR (11)	A vs.HK (12)	HR vs.HK (13)	A vs. HR vs. HK (14)
A. Stock return														
Stock return, t	.087***	.089***	.060**					0.067**	0.077**	0.060**				
	(2.81)	(2.68)	(2.01)					(2.24)	(2.28)	(2.08)				
Stock return, t-1	0.036	0.004	.097***					-0.023	-0.067	0.088***		†	†	†
	(0.53)	(0.05)	(2.89)					(-0.35)	(-0.75)	(2.69)				
Adj. R^2	.045	.059	.084											
B. Sales growth				※							※	※	※	※
Sales growth, t	.017**	.140**	.051	†				0.006	0.190***	0.061*	†		†	†
	(2.15)	(2.11)	(1.25)					(0.73)	(3.42)	(1.62)				
Sales growth, t-1	.097**	0.074	.087**					0.053	0.149***	0.099***	†			
	(2.43)	(1.44)	(2.17)					(1.36)	(3.47)	(2.94)				
Adj. R^2	.043	.058	.067											
C. Change in ROA														
Change in ROA, t	.433*	.144	-.003		†			0.316	0.162	0.008				
	(1.78)	(0.49)	(-0.29)					(1.25)	(0.65)	(0.95)				
Change in ROA, t-1	.116	.152*	.005***					-0.137	0.117	0.008***				
	(0.34)	(1.75)	(6.24)					(-0.49)	(1.51)	(5.48)				
Adj. R^2	.040	.040	.050											
D. Loss														
Loss, t or t-1	-.153***	-.113***	-.060					-0.145**	-0.067	-0.016				
	(-2.82)	(-2.06)	(-1.44)					(-2.40)	(-1.08)	(-0.36)				
Adj. R^2	.053	.044	.047					.081	.111	.115				
Test of equality for groups A-D jointly											Insignificant	Insignificant	Insignificant	
Observations	373	302	304					373	302	304				

Note: this table reports the estimates of the regressions of the change in executive compensation on the change in firm characteristics and performance during 2004-2006. *HR* indicates cross-listed firms; *A* refers to mainland A-share firms; *HK* indicates Hong Kong local firms. In columns (1)-(7), performance measures A-D are included individually in the regression. In columns (8)-(14), performance variables are included jointly. In all the regressions, the change in *leverage*, the change in *lnAssets*, and *constant* are included but not reported. t-statistics are in parentheses. *, **, and *** indicates that the coefficient estimate is significant at the 10, 5 and 1 percent level, respectively. † indicates that the differences between groups are significant at the 10 percent level or better. ※ indicates that the test of equality for t and t-1 jointly is significant at the 10 percent level or better.

Table 4: Regression of the change in executive compensation on performance for state and non-state controlled mainland and cross-listed companies
Dependent variable: Change in the logarithm of annual compensation

	A						HR					
	By Individual Performance Variables		Test of difference	Including All Performance Variables		Test of difference	By Individual Performance Variables		Test of difference	Including All Performance Variables		Test of difference
Independent variables	State (1)	Non-state (2)	State vs. Non- state (3)	State (4)	Non-state (5)	State vs. Non- state (6)	State (7)	Non-state (8)	State vs. Non- state (9)	State (10)	Non-state (11)	State vs. Non- state (12)
A. Stock return												
Stock return, t	0.081**	0.060		0.053*	-0.006		0.088**	0.067		0.067	0.056	
	(2.27)	(0.67)		(1.59)	(-0.06)		(2.17)	(1.24)		(1.63)	(0.83)	
Stock return, t-1	0.081	-0.107		-0.033	-0.220		0.026	-0.007		-0.034	-0.037	
	(1.01)	(-0.76)		(-0.42)	(-1.25)		(0.29)	(-0.04)		(-0.34)	(-0.17)	
Adj. R^2	.043	.113					0.063	.128				
B. Sales growth									※			※
Sales growth, t	0.066	0.021***		0.066	0.014***		0.382***	-0.083	†	0.367***	0.027	†
	(0.68)	(3.05)		(0.74)	(2.61)		(3.67)	(-0.51)		(3.37)	(0.15)	
Sales growth, t-1	0.137*	0.042		0.072	0.009		-0.008	0.015		0.047	0.073	
	(1.79)	(0.87)		(1.07)	(0.16)		(-0.21)	(0.10)		(0.92)	(0.41)	
Adj. R^2	.040	.136					.108	.104				
C. Change in ROA			※			※						
Change in ROA, t	1.822***	0.290*	†	1.701**	0.152	†	0.216	-0.768		0.275	-0.686	
	(2.60)	(1.53)		(2.51)	(0.74)		(0.67)	(0.92)		(1.11)	(-0.59)	
Change in ROA, t-1	1.949***	-0.336	†	1.742**	-0.407*	†	0.150*	0.061		0.092	-0.463	
	(2.74)	(-1.06)		(2.32)	(-1.76)		(1.84)	(0.12)		(1.29)	(-0.49)	
Adj. R^2	.104	.141					.044	.107				
D. Loss												
Loss, t or t-1	-0.130*	-0.214**		-0.024	-0.273**	†	-0.133**	-0.041		-0.076	-0.067	
	(-1.77)	(-2.21)		(-0.33)	(-2.25)		(-2.37)	(-0.23)		(-1.27)	(-0.26)	
Adj. R^2	.037	.171		.123	.251		.049	.079		.152	.174	
Test of equality for groups A-D jointly						Significant (p=.004)						Insignificant
Observations	269	82		269	82		256	46		256	46	

Note: this table reports the estimates of the change regressions for state and non-state companies separately during 2004-2006. *HR* indicates cross-listed firms; *A* refers to mainland A-share firms; *HK* indicates Hong Kong local firms. *State* and *Non-state* indicate state and non-state controlled companies, respectively. In columns (1)-(3) and (7)-(9), performance measures A-D are included individually in the regression. In columns (4)-(6) and (10)-(12), performance variables are included jointly. In all the regressions, the change in *leverage*, the change in *lnAssets*, and *constant* are included but not reported. t-statistics are in parentheses. *, **, and *** indicates that the coefficient estimate is significant at the 10, 5 and 1 percent level. † indicates that the differences between groups are significant at the 10 percent level or better. ※ indicates that the test of equality for t and t-1 jointly is significant at the 10 percent level or better.

Table 5: Tests of differences in the executive pay-for-performance sensitivity for mainland, Hong Kong and cross-listed firms by State

Dependent variable: Change in the logarithm of annual compensation

	By Individual Performance Variables						Including All Performance Variables					
Independent variables	A-state vs. HR-state	A-state vs. HK	HR-state vs. HK	A-non-state vs. HR-non-state	A-non-state vs. HK	HR-non-state vs. HK	A-state vs. HR-state	A-state vs. HK	HR-state vs. HK	A-non-state vs. HR-non-state	A-non-state vs. HK	HR-non-state vs. HK
A. Stock return												
Stock return, t												
Stock return, t-1					†						†	
B. Sales growth			※(-)				※		※(-)		※	
Sales growth, t	†		†(-)				†		†(-)			
Sales growth, t-1			†									
C. Change in ROA	※(-)	※(-)					※(-)	※(-)				
Change in ROA, t	†(-)	†(-)			†(-)		†(-)	†(-)				
Change in ROA, t-1	†(-)	†(-)					†(-)	†(-)			†	
D. Loss												
Loss, t or t-1											†(-)	
Test of equality for groups A-D jointly							Significant (p=.046)	Significant (p=.021)	Insignificant	Insignificant	Significant (p=.001)	Insignificant

Note: this table reports the test of equality between different groups of companies in terms of the sensitivity of executive compensation changes to firm performance. *A-state* and *A-non-state* refer to state and non-state controlled A-share companies, respectively. *HR-state* and *HR-non-state* indicate state and non-state controlled cross-listed companies. *HK* indicates Hong Kong local firms, which are all private companies. † indicates that the difference is significant at the 10 percent level or better. ※ indicates that the test of equality for t and t-1 jointly is significant at the 10 percent level or better. The hypothesis is: A-shares' executive compensation change is less sensitive to performance than that of cross-listed companies (HR) which is then less sensitive than that of HK firms. (-) indicates that the direction is opposite to the hypothesis.