Cross-Listing and the Value of Bonding under Increased Market Integration*

by

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ABSTRACT

This paper examines a panel sample of Chinese firms with and without foreign B-share listings over a nine-year period from 1998 to 2006 to address the changing role of cross-listing in shaping corporate earnings management, stock price informativeness, and firm value, contingent upon increased market integration. In line with the "bonding hypothesis" of Coffee (1999, 2002) and Stulz (1999), we find that firms with foreign listings manage their earnings less often than comparable home-market firms, while the divergence is less evident after the processes of the Chinese stock market liberalization in 2001 and 2002. Consistent with the findings on earnings management, we find that firms with foreign listings generally have more informative stock pricing and higher firm value (as measured by Tobin's Q) than their purely domestic-listed peers, and that the divergence in both price informativeness and firm valuation shrinks dramatically under increased market integration. Overall, the results suggest that cross-listing plays a significant but diminishing bonding role in a more integrated world. The empirical findings of this paper also point to a possible explanation for the worldwide foreign delisting wave that plagues major stock exchanges.

1. INTRODUCTION

In financial accounting literature, accounting information such as earnings and book values has been shown to have significant impact on a firm's stock market performance (Barth, Beaver and Landsman, 1998; Burgstahler and Dichev, 1997; Collins, Maydew and Weiss, 1997). However, the integrity of the corporate production of information has long been questioned, and a series of earnings management practices have been documented within a variety of contexts, including initial public offerings (Ball and Shivakumar, 2008; Teoh, Welch and Wong, 1998a), seasoned public offerings (Teoh, Welch and Wong, 1998b), mergers and acquisitions (Erickson and Wang, 1999; Louis, 2004), share repurchases (Brockman, Khurana and Martin, 2008; Gong, Louis and Sun, 2008), and compensation plans (Bergstresser and Philippon, 2006; Cornett, Marcus and Tehranian, 2008).

Furthermore, the manipulation of firm-specific information tends to be more rampant in emerging contexts than in developed capital markets (e.g. Leuz, Nanda and Wysocki, 2003). This is because, in an environment with limited investor protection, ineffective legal enforcement, and ill-functioning accounting-auditing systems, corporate managers often have more discretion over their financial reporting processes, making the "management" of firm-specific information more achievable. Consequently, firms in weak investor protection environments are found to exhibit more evident earnings smoothing, greater tendency to manage towards a target, and less timely recognition of losses (Lang, Raedy and Wilson, 2006).

Facing rampant opportunistic behaviors associated with weak investment environments, an effective countermeasure for firms to consider is to cross-list on a more advanced/regulated capital market, so that they can voluntarily bond themselves to higher regulatory and monitoring standards (Coffee, 1999, 2002; Stulz, 1999). Nevertheless, despite strong theoretical supports,

empirical evidence to date has been mixed in documenting the effectiveness of this kind of bonding commitment. The literature is permeated by both positive (Doidge, Karolyi, Lins, Miller and Stulz, 2009; Doidge, Karolyi and Stulz, 2004; Reese and Weisbach, 2002) and negative or insignificant findings (Lang et al., 2006; Siegel, 2005). Therefore, further research is needed to better understand whether firms are effectively "renting" the regulatory environment by cross-listing on a more advanced/regulated market. In addition, an interesting and important question to ask in today's increasingly integrated world is whether and to what extent enhanced market integration will affect the bonding role of cross-listing.

To address these issues, we examine a panel sample of Chinese firms with and without foreign B-share[1] listings, contingent upon the two regulatory reforms of the Chinese stock market liberalization (i.e. the opening of the foreign-based B-share to Chinese domestic investors in 2001 and the opening of domestic A-share market to qualified foreign institutional investors in 2002). China has been chosen as the research focus of this paper for two reasons.

First, despite the increasing importance of Chinese capital markets, empirical evidence to date has been rare and inconclusive in documenting the bonding impact of cross-listing on Chinese firms. For instance, Doidge et al. (2004) find that foreign companies with shares cross-listed in the U.S. are worth more relative to similar home-country firms using data from 40 countries, and Doidge et al. (2009) find that the firms' decision to cross-list overseas involves a trade-off between private control and bonding benefits using data from 31 countries. China is excluded from both studies. Therefore, testing the generalizability of the "bonding hypothesis" for Chinese firms merits our attention.

[1] Before the initialization of the Chinese stock market liberalization on February 19, 2001, Chinese domestic firms could issue two distinct classes of stocks, which are identical in all aspects except for the ownership restrictions: the A-shares that can only be held and traded by domestic investors and the B-shares that can only be held and traded by foreign investors. As a result, the Chinese stock market has been divided into two separate markets: the domestic A-share market and the foreign-based B-share market.

Second, while the issue of international listings has been one of the primary focuses in the literature, a common limitation associated with previous studies is that they tend to consider cross-listing impact in a static framework, where the effect of market integration is largely ignored. In today's increasingly integrated world, observing a significant bonding role of cross-listing is not the end of the story. A more relevant and important question to address is whether and to what extent enhanced market integration will erode the bonding effect of cross-listing. The ideal laboratory of the Chinese stock market restructuring has provided us with a unique opportunity in testing this issue. Thanks to the structural segmentation and subsequent liberalization of the Chinese stock market, we are empowered to test the changing role of cross-listing under increased market integration within a relatively short time frame, where the structural stationarity and omitted-variables problems are of less serious modeling concern.

The remainder of the paper begins with a brief discussion of the hypotheses development in Section 2. Data description and model specifications are presented in Section 3, followed by empirical results and concluding remarks in Sections 4 and 5, respectively.

2. HYPOTHESES DEVELOPMENT

2.1 Cross-Listing and Earnings Management

The framework of this study is built upon the "bonding hypothesis" of cross-listing proposed by Coffee (1999, 2002) and Stulz (1999), the earnings management literature, the information-based interpretation of stock price synchronicity (Morck, Yeung and Wu, 2000; among others), as well as the structural segmentation and subsequent liberalization of the Chinese stock market.

Before the initialization of the Chinese stock market liberalization in 2001, Chinese domestic firms could issue two distinct classes of stocks, i.e. the A-shares that can only be held and traded by domestic investors and the B-shares that can only be held and traded by foreign investors. As a result, the Chinese stock market has been divided into two separate markets, i.e. the domestic A-share market and the foreign-based B-share market. Due to the regulatory segmentation of the stock market, Chinese domestic firms have an additional cross-listing choice apart from listing overseas (e.g. on the NYSE or on the LSE). They might list on the foreign-based Chinese B-share market in addition to their domestic A-share listings.

The primary purpose of this study is to investigate the impact of market integration on the bonding role of cross-listing, drawing on the unique opportunity of the Chinese stock market liberalization. Hence, we mainly focus on the B-share listings as the means of cross-listing in this study, where the firms are defined as "cross-listed" if they have B-share listings and "non-cross-listed" if they do not.

Because firms with foreign B-share listings are bonded by higher disclosure, regulatory and monitoring standards, the integrity of their reported earnings may differ predictably from that of comparable purely domestic-listed firms. First, the information disclosure requirement is stricter for firms with foreign-based B-share listings. The bottom line is that firms with B-share listings are required to prepare their financial statements based on both the Chinese GAAP and the International Accounting Standards (IAS), while firms with only domestic A-share listings are subject solely to the Chinese GAAP. The increased financial reporting standard will, to a large extent, make the cooking of firm-specific information less feasible for firms with B-share listings. Moreover, under the requirements of IAS, the financial statements of dual-listed firms have to be audited by internationally authorized CPA firms, which are less likely to cooperate

with local Chinese firms in manipulating their financial figures. Finally, sophisticated foreign investors participating in the B-share market, especially institutional investors, often act as powerful external monitors guarding against corporate opportunistic behaviors. All in all, as cross-listed firms bear higher market and regulatory costs of earnings manipulation, they are more likely to have better earnings quality (less earnings management) relative to their purely domestic-listed peers.

Observing that cross-listing plays an important role in shaping corporate earnings management, however, is not the end of the story in today's increasingly integrated world. A more relevant and important question to ask is whether and to what extent increased market integration will erode the bonding effect of cross-listing. The recent regulatory reforms on the Chinese stock market offer us a unique opportunity to examine the changing role of cross-listing contingent upon instant market integration. While it is unlikely for the processes of market integration to entirely invalidate the impact of cross-listing in a relatively short time frame, a diminishing role is expected.

Based on the above discussions, the following hypotheses are developed:

H1a: Firms with foreign B-share listings have better earnings quality than firms with only domestic A-share listings

H1b: The divergence in earnings quality between the two groups of firms becomes less evident after the Chinese stock market integration.

2.2 Cross-Listing and Price Informativeness

Given the documented divergence in earnings management between cross-listed and non-cross-listed firms, a natural question to address is whether and to what extent the bonding

commitment of cross-listing and resultant increase in earnings quality will be correctly incorporated into stock pricing and firm valuation.

Drawing on the state-of-the-art finance literature, we use stock price synchronicity to measure price informativeness. This stream of research is developed upon a hypothesized decomposition of information in stock pricing. The idea is that, if asset prices can be considered as a function of both firm-specific and market-wide information, then we should observe less synchronous stock prices once more firm-specific information is capitalized into stock valuation. On the other hand, more synchronous (less informative) stock prices will be observed if market-wide information plays a more significant role in stock pricing, which is often the case in emerging markets where credible firm information is either technically unavailable or prohibitively costly. It follows that, if cross-listing on a more regulated market is indeed effective in inducing better corporate production of information, and if investors react to the improvement in firm-specific information accordingly, then we should observe less synchronous (more informative) stock prices for firms with foreign B-share listings compare to firms with only domestic A-share listings. Again, if cross-listing plays a mitigated role under increased capital market integration, then the divergence in stock price informativeness should be less evident after the processes of the Chinese stock market integration.

Therefore, the following hypotheses are derived:

H2a: Firms with foreign B-share listings have less synchronous (more informative) stock prices than firms with only domestic A-share listings.

H2b: The divergence in price informativeness between the two groups of firms becomes less evident after the Chinese stock market integration.

2.3 Cross-Listing and Firm Valuation

In the literature, a substantial body of research indicates that cross-listing on a more advanced/regulated capital market is value enhancing as a firm's management and/or controlling shareholders can "bond" themselves effectively to improved disclosure, corporate governance, and investor protection (e.g. Doidge et al., 2004). Given that the foreign-based B-share market is associated with more stringent disclosure, regulatory and monitoring standards, firms with B-share listings should have higher valuation than their purely domestic-listed peers if the "bonding hypothesis" is empirically valid. Moreover, if the role of cross-listing is less binding under increased market integration, the valuation differential between the two groups of firms will also tend to shrink after the processes of the Chinese stock market integration in 2001 and 2002.

Therefore, we hypothesize that:

H3a: Firms with foreign B-share listings have higher valuation than firms with only domestic A-share listings.

H3b: The valuation dispersion between the two groups of firms becomes less evident after the Chinese stock market integration.

3. DATA AND METHODOLOGY

3.1 Data Description

As the purpose of this study is to compare the earnings quality, price informativeness and firm value between firms with and without foreign B-share listings, we first construct a paired sample of cross-listed versus non-cross-listed firms. Note that due to the structural segmentation of the Chinese stock market, Chinese domestic firms have an additional cross-listing choice apart from listing overseas; they might list on the foreign-based B-share market in addition to domestic

A-share listings. In order to better understand the impact of increased market integration on the bonding role of cross-listing, we focus mainly on the B-share listings as the means of cross-listing in this study, where firms are defined as cross-listed if they have foreign B-share listings and non-cross-listed if they do not.

The sample period spans from 1998 to 2006. We begin our analysis in 1998 because Chinese public firms were required to release the Cash Flow Statement starting from 1998. The time frame of estimation spans the two regulatory reforms on the Chinese stock market, i.e. the opening of the foreign-based B-share market to Chinese domestic investors on February 19, 2001 and the opening of the domestic A-share market to qualified foreign institutional investors on November 5, 2002. The time frame of estimation is illustrated in Figure 1.

****Insert Figure 1 about here****

In this study, both firm-level accounting data and stock market figures are compiled from the China Stock Market and Accounting Research Database (CSMAR) and are cross-checked using Wind Database whenever applicable. Using balanced panel data, we further require the sample firms to be continuously listed either on the Shanghai Stock Exchange (SSE) or on the Shenzhen Stock Exchange (SZSE) during the entire nine-year period of estimation. After eliminating firms with insufficient time-series observations, firms with missing values on related accounting items[2], firms with incomparable sizes (relative to cross-listed firms), and firms in financial industries, we are left with 701 Chinese firms. The final sample consists of 67 A- and B-share dual-listed firms and 634 comparable purely domestic A-share listed firms, each of

[2] Related accounting items includes EBXI (earnings before extraordinary items and discontinued operations), CFO (cash flow from operations), sales revenues, receivables, and PPE (gross property, plant, and equipment).

which has a continuous listing history over the entire estimation period. In order to control for industry effect, we further classify the sample firms into different industry groups in line with CSMAR industry code A.

Table 1 provides summary statistics of the sample, sorted by the choice of exchange listings (SSE or SZSE), the choice of B-share listings, and the time periods of estimation. The variables are defined as follows: SIZE is the size of the firm, calculated as the natural log of total assets; BM is the book-to-market ratio, measured as the difference between total assets and total liability, divided by the stock market capitalization of the firm; LEV is the leverage (debt-to-equity) ratio; SO is state ownership, measured as the percentage of common shares owned by the state; ROA is the return on assets, computed as EBXI (earnings before extraordinary items and discontinued operations) divided by total assets; and Q is the Tobin's Q ratio, calculated as market value of equity minus book value of equity plus book value of assets, divided by book value of assets.

****Insert Table 1 about here****

According to Columns 2 and 3 of Table 1, SSE-listed firms are generally less leveraged (with a debt-to-equity ratio of 1.42, as opposed to 2.02), more profitable (with a ROA of 0.11, as opposed to 0.09), and less valued (with a Q ratio of 0.78, as opposed to 1.55) than SZSE-listed firms. A close comparison between Columns 4 and 5 indicates that firms with B-share listings tend to be less leveraged (with a debt-to-equity ratio of 1.03, as compared with 1.77), more profitable (with a ROA of 0.12, as compared with 0.09) and less valued (with a Q ratio of 0.86, as compared with 1.17) than their purely domestic-listed peers. These figures suggest that cross-

listed firms are more conservative in using leverage, more profitable, but less valued than their purely domestic-listed peers during the full sample period. Across time periods (Columns 6 and 7), we find a clear tendency towards a reduced use of leverage (the average debt-to-equity ratio drops from 2.07 to 1.48) and an increased valuation (the average Q ratio raises from 0.71 to 1.40) after market integration. All other variables experience marginal variation across different exchanges, cross-listing choices, and time periods.

3.2 Discretionary Accruals

Since there is no agreed-upon measure of earnings management in the literature, we evaluate earnings quality using two alternative proxies: the absolute value of discretionary accruals and the accruals quality.

In financial accounting literature, one prevalent proxy for earnings management is the discretionary accruals. This measure is based upon a natural decomposition of corporate earnings. In general, earnings consist of two components, CFO (cash flow from operations) and accounting accruals, where the latter can be further separated into two parts: non-discretionary accruals (i.e. necessary accounting adjustments) and discretionary accruals (i.e. accruals under managerial distortion). In line with the literature (Bartov, Gul and Tsui, 2001; Cornett et al., 2008; Dechow, Sloan and Sweeney, 1995; Yu, 2008), we use the modified Jones' (1991) model to estimate the discretionary accruals.

First, we estimate the coefficients α_1, α_2, and α_3 in model (1) using cross-sectional OLS regressions within each industry category over the sample period from 1999 to 2006 (note that we lose observation year 1998 in calculating lagged values):

$$\frac{TA_{i,t}}{A_{i,t-1}} = \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \alpha_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{it} \qquad (1)$$

Following the suggestions of Hribar and Collins (2002), we calculate the total accruals, TA, using data from the Cash Flow Statement, i.e. $TA_{it} = EBXI_{it} - CFO_{it}$, where $EBXI$ is earnings before extraordinary items and discontinued operations, CFO is cash flow from operations; ΔREV is the change in sales revenues; and PPE is the gross property, plant, and equipment. All variables are scaled by total assets at the beginning of the fiscal year to control for size effect.

Second, we calculate the non-discretionary accruals, NDA, using the estimates of α_1, α_2, and α_3 from model (1) based on equation (2), where the change in account receivables, ΔREC, is included in the regression as the "modification" to the Jones' model so as to capture the extent to which a change in sales is due to an aggressive recognition of questionable sales:

$$NDA_{i,t} = \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \frac{(\Delta REV_{i,t} - \Delta REC_{i,t})}{A_{i,t-1}} + \alpha_3 \frac{PPE_{i,t}}{A_{i,t-1}} \qquad (2)$$

The difference between total accruals and the estimated non-discretionary accruals is the so-called discretionary accruals, i.e. $DA_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - NDA_{i,t} = \varepsilon_{i,t}$. Because all variables are scaled by total assets, the magnitude of discretionary accruals, DA, is described as a percentage of the firm's lagged assets. A larger value of DA indicates higher earnings management (lower earnings quality). Since managers may have incentives to both inflate (as reflected by positive DA) and deflate (as reflected by negative DA) earnings, and since the purpose of this paper is to measure the propensity for earnings manipulation, the absolute value of discretionary accruals is used to capture earnings management in both directions.

In the context of this study, if we observe that the absolute value of discretionary accruals is lower for cross-listed than for non-cross-listed firms, then we contend that cross-listed firms have a lower level of earnings management (better earnings quality) relative to their purely domestic-listed peers, and that *H1a* is supported.

3.3 Accruals Quality

In the extant literature, another widely-used measure of earnings management is the accruals quality, which is calculated as the standard deviation of residuals from the model that regresses current accruals, TA, on the lagged, current, and future values of CFO, change in sales revenues, and gross PPE (Dechow and Dichev, 2002; Francis, LaFond, Olsson and Schipper, 2005; Francis, Nanda and Olsson, 2008). All variables are scaled by total assets at the beginning of the fiscal year. In particular, the following model is estimated:

$$\frac{TA_{i,t}}{A_{i,t-1}} = \gamma_0 + \gamma_1 \frac{CFO_{i,t-1}}{A_{i,t-1}} + \gamma_2 \frac{CFO_{i,t}}{A_{i,t-1}} + \gamma_3 \frac{CFO_{i,t+1}}{A_{i,t-1}} + \gamma_4 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \gamma_5 \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{it} \qquad (3)$$

The unexplained portion of the variation in current accruals is an inverse measure of accruals quality. Specifically, the accruals quality is measured as the standard deviation of residuals from the regression in equation (3), i.e. $AQ_i = \sigma(\varepsilon_{it})$. A higher standard deviation of residuals implies a lower level of accruals quality. Therefore, if cross-listed firms have better earnings quality than comparable purely domestic-listed firms (as contended in *H1a*), then we should observe a smaller AQ value for cross-listed than for non-cross-listed firms.

3.4 Impact of Cross-Listing on Earnings Management

To achieve a more direct assessment of the impact of cross-listing on earnings management, multivariate regressions are conducted in this section, where the dependent variable is either the absolute value of discretionary accruals, $|DA|$, or the accruals quality, AQ. In addition to the main variable of interest (i.e. the cross-listing dummy), the model also includes several control variables that have been documented to have nontrivial influence on earnings quality, including firm size, book-to-market ratio, return on assets, leverage and ownership

structure. In order to control for potential industry effect, the regressions are conducted within each industry category. Specifically, the following models are estimated:

$$|DA_{it}| = \lambda_0 + \lambda_1 DCROSS_{it} + \lambda_2 DEXCH_{it} + \lambda_3 SIZE_{it} + \lambda_4 BM_{it} + \lambda_5 ROA_{it} + \lambda_6 LEV_{it} + \lambda_7 SO_{it} + \varepsilon_{it} \quad (4)$$

$$AQ_{it} = \lambda_0 + \lambda_1 DCROSS_{it} + \lambda_2 DEXCH_{it} + \lambda_3 SIZE_{it} + \lambda_4 BM_{it} + \lambda_5 ROA_{it} + \lambda_6 LEV_{it} + \lambda_7 SO_{it} + \varepsilon_{it} \quad (5)$$

where the absolute value of discretionary accruals, $|DA|$, is calculated using the modified Jones' (1991) model and the accruals quality, AQ, is measured as the standard deviation of residuals from the model where current accruals is regressed on the lagged, current, and future values of CFO, change in sales revenues, and gross PPE. The exogenous variables in the models are defined as follows: $DCROSS$ is the cross-listing dummy, which takes the value of 1 for firms with both A- and B-share listings and 0 for firms with only domestic A-share listings; $DEXCH$ is the exchange dummy, where 1 stands for SSE-listed firms and 0 stands for SZSE-listed firms; $SIZE$ is the size of the firm; BM is the book-to-market ratio; and ROA is the return on assets. We include the book-to-market ratio and return on assets in the regression in order to control for the growth opportunity and profitability, respectively. In addition, the leverage (debt-to-equity) ratio, LEV, and state ownership, SO, are included in the equation so as to control for the impact of capital structure and ownership structure, respectively.

The inclusion of so many control variables, however, may lead to the problem of multicollinearity. Therefore, we further conduct a correlation test with respect to exogenous variables to check for possible signs of collinearity. As can be seen in Table 2, while there are a number of statistically significant relationships among explanatory variables, none of them exceeds .54. Hence, the concern about multicollinearity does not appear to be warranted.

****Insert Table 2 about here****

As the purpose of the multivariate regressions is to investigate the cross-listing impact on corporate earnings management, the main variable of focus here is the cross-listing dummy *DCROSS*. If cross-listing on the B-share market leads to a significant improvement in earnings quality (as contended in *H1a*), then the coefficient estimates of *DCROSS* should be negative and statistically significant. In order to address the changing role of cross-listing in deterring corporate earnings management, we further duplicate the multivariate regression with respect to both the pre-market-integration period (1999-2001) and the post-market integration period (2003-2006). If the cross-listing effect on earnings management is mitigated under increased market integration (as contended in *H1b*), then we should observe less significant coefficient estimates of *DCROSS* after the processes of market integration.

3.5 Price Informativeness

Following the literature (e.g. Chan and Hameed, 2006; French and Roll, 1986; Morck et al., 2000; Roll, 1988), we use the R-square from the regression of the capital asset pricing model to measure the departure of firm-specific stock movements from the market, specifically:

$$R^2 = \frac{\sum \hat{\varepsilon}_t^2}{\sum \left[y_t - \bar{y} \right]^2} \quad (6)$$

Since the omitted-variables problem is generally less of a serious concern for panel models than for cross-sectional models (as the past values of the variables in the panel will partly control the effects of the missing variables), the market model of Sharpe-Lintner-Black seems to be capable of testing this issue, where R_{it} is the stock return for each individual firm at time t, i.e. $R_{it} = \log(\frac{P_{it}}{P_{i,t-1}}) * 100$; R_t^M is the market return at time t, i.e. $R_t^M = \log(\frac{P_t^M}{P_{t-1}^M}) * 100$; R_t^F is the risk-

free rate (China's monthly yield of the three-month household deposit interest rate) at time t; and β is the covariance of the market return with the portfolio return, divided by the variance of the market return. Specifically, the following model is estimated:

$$(R_{it} - R_t^F) = \alpha + \beta(R_t^M - R_t^F) + \varepsilon_{it} \quad (7)$$

According to the Hausman Specification Test, the One-Way Random Effects Model seems to be more appropriate for our sample. This means that in general the residual consists of two parts, i.e. $\varepsilon_{it} = u_i + v_{it}$. In order to get a more precise estimation, the Error Components Model and GLS estimation are applied.

In testing the impact of cross-listing on the capitalization of firm-specific information, we compare the stock return synchronicity between cross-listed and non-cross-listed firms. If cross-listing plays an important role in inducing more informative stock prices (as contended in *H2a*), then we expect firms with B-share listings to experience less synchronous returns than firms with only domestic A-share listings, i.e. $R_C^2 < R_{NC}^2$. In order to address the changing role of cross-listing in shaping price informativeness, we further estimate the return synchronicity with respect to both the pre- and post-market-integration periods. If the impact of cross-listing is less binding under increased market integration (as contended in *H2b*), then the divergence in price informativeness between the two groups of firms will become less evident after the regulatory reforms of market liberalization (as reflected by less divergent R-squares).

3.6 Firm Valuation

Observing a significant divergence in earnings quality and price informativeness between cross-listed and non-cross-listed firms, a natural question to ask is whether and to what extent the increased earnings quality and improved information environment will be correctly incorporated into firm valuation. Following the literature (e.g. Morck, Shleifer and Vishny, 1988; McConnell

and Servaes, 1990), we measure firm value using Tobin's Q ratio, which is calculated as market value of equity minus book value of equity plus book value of assets, divided by book value of assets. In order to be consistent with previous studies, a number of exogenous variables are further included in the model apart from the main variable of interest $DCROSS$, including the exchange dummy, $DEXCH$, firm size, $SIZE$, leverage ratio, LEV, and state ownership, SO. In order to control for potential industry effect, the regression is conducted within each industry category. More specifically, the following model is estimated:

$$Q_{i,t} = \alpha + \beta_1 DCROSS_{it} + \beta_2 DEXCH_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 SO_{it} + \varepsilon_{it} \quad (8)$$

As the purpose of our study is to investigate the impact of cross-listing on firm value, we focus mainly on the coefficient estimates of $DCROSS$. If cross-listing plays an important role in inducing higher firm value (as contended in *H3a*), then the coefficient estimates of *DCROSS* should be positive and significant. If the cross-listing impact on firm valuation is mitigated in a more integrated world (as contended in *H3b*), then we should observe less significant coefficient estimates of $DCROSS$ during the post-market-integration period.

4. EMPIRICAL RESULTS

4.1 Earnings Management

Table 3 compares the magnitude of earnings management between cross-listed and non-cross-listed firms, where Panel A focuses on the entire sample period from 1999 to 2006 (note that we lose observation year 1998 in calculating lagged values) and Panel B breaks down the results into pre- and post-market-integration periods. In order to facilitate a more robust analysis, we evaluate earnings quality using two alternative proxies, i.e. $|DA|$ and AQ, where the former is calculated using the modified Jones' (1991) model, and the latter is measured as the standard

deviation of residuals from the model, which regresses current accruals on the lagged, current, and future values of CFO, change in sales revenues, and gross PPE.

****Insert Table 3 about here****

On the whole, both the absolute value of discretionary accruals (about 10.3% of lagged assets) and the measure of accruals quality (about 7.7% of lagged assets) are higher than those documented in previous studies concerning developed capital markets (around 5% of lagged assets) (e.g. Bergstresser and Philippon, 2006; Francis et al., 2005; Yu, 2008). This suggests that the manipulation of accounting information tends to thrive in emerging markets where the disclosure and regulatory standards are low and investor protection is weak.

In line with *H1a*, which postulates that firms with foreign B-share listings tend to have higher earnings quality relative to their purely domestic-listed peers, we find that earnings management is less prevalent in cross-listed than in non-cross-listed firms. The $|DA|$ and AQ values are 9.7% and 6.7%, respectively, for firms with B-share listings (Panel A Column 5), while they are 10.3% and 7.7%, respectively, for firms with only domestic A-share listings (Panel A Colum 6). The mean differences are 0.67% and 0.97% for $|DA|$ and AQ measures, respectively; both significant at 1% level.

The empirical findings in Panel B of Table 3 are largely consistent with *H1b* that predicts a diminishing role of cross-listing under increased market integration. As can be seen, during the pre-market-integration period, both $|DA|$ and AQ are much lower for cross-listed than for non-cross-listed firms (7.9% relative to 10.4% with respect to $|DA|$ and 5.8% relative to 7.6% with

respect to AQ). During the post-market-integration period, however, the difference becomes marginally significant (10.9% relative to 10.7% for $|DA|$ and 7.6% relative to 7.8% for AQ), suggesting that the cross-listing effect is mitigated under increased market integration.

Overall, the results provide preliminary evidence that firms with B-share listings tend to have better earnings quality than their purely domestic-listed peers, while the quality differential between the two groups of firms becomes less significant in a more integrated world. A year-by-year analysis of earnings management in Table 4 provides additional support for our analysis. It is evident that there is a significant divergence in earnings quality between cross-listed and non-cross-listed firms prior to the initialization of the Chinese stock market liberalization in 2001, while the divergence fades away after the completion of the regulatory reforms in 2002.

****Insert Table 4 about here****

The patterns of earnings management for cross-listed versus non-cross-listed firms are graphically presented in Figure 2. As can be seen, both the absolute value of discretionary accruals, $|DA|$, and accruals quality, AQ, are much lower for cross-listed than for non-cross-listed firms during the pre-market-integration period from 1999 to 2001. Consistent with the empirical predictions of *H1b*, we observe a clear convergence in earnings quality between the two groups of firms during the post-market-integration period from 2002 to 2006.

****Insert Figure 2 about here****

Table 5 represents the multivariate regression results concerning the impact of cross-listing on earnings management, where the dependent variable is either $|DA|$ (Columns 1-3) or AQ (Columns 4-6). Consistent with the empirical results reported in Tables 3 and 4, the cross-listing dummy is significantly negative during both the full sample period and the pre-market-integration period for both earnings management measures, but it becomes statistically insignificant during the post-market-integration period. To sum up, the empirical results so far document a consistent pattern: cross-listed firms manage corporate earnings less often than their purely domestic-listed peers (*H1a*), while the divergence in earning quality between the two groups of firms becomes less evident in a more integrated world (*H1b*).

****Insert Table 5 about here****

4.2 Price Informativeness

Built upon the literature of stock price synchronicity, we use the R-square from the regression of the capital asset pricing model to measure the departure of firm-specific stock movements from the market, and hence, the capitalization of firm-specific information. The regression results are reported in Table 6.

****Insert Table 6 about here****

A close comparison of the stock return synchronicity between cross-listed and non-cross-listed firms indicates that firms with B-share listings experience less synchronous returns than firms with only domestic A-share listings during the full sample period (0.37 relative to 0.42),

suggesting that cross-listing on the B-share market plays an important role in inducing more informative stock prices (*H2a*).

To address the changing role of cross-listing in shaping price informativeness, we further estimate the stock price synchronicity with respect to both the pre- and post-market-integration periods. Consistent with the empirical predictions of *H2b*, we find a more significant divergence in return synchronicity during the pre-market integration period than during the post-market-integration period. The mean difference of R-squares shrinks from 0.20 to 0.09 upon market integration. Overall, the results suggest that cross-listing plays an important role in inducing more informative stock prices, while the effect tends to be less prominent under increased capital market integration.

4.3 Firm Value

Table 7 reports the regression results for model (8), which addresses the impact of cross-listing on firm valuation, where Columns 1-2 focus on the full sample period, and Columns 3-4 and 5-6 consider the pre- and post-market-integration periods, respectively.

****Insert Table 7 about here****

Consistent with the predictions of *H3a* and *H3b*, we find that cross-listing has a positive and significant impact on firm value (as measured by Tobin's Q) during both the full and pre-market-integration periods, while the effect becomes less significant under increased market integration. The statistical significance of *DCROSS* changes from 1% to 5% level after the processes of market integration. The results suggest that cross-listing is indeed a value enhancing activity, while the impact is less prominent in a more integrated world.

4.4 Robustness Check for Endogeneity

With potential endogeneity problem, observing a lower level of earnings management for cross-listed than for non-cross-listed firms does not necessarily lead to the conclusion that cross-listing results in better earnings quality. The observed positive link between cross-listing and earnings quality may be largely driven by the fact that firms with better corporate governance (less earnings manipulation) are more likely to cross-list on a more advanced/regulated capital market. An effective way to address this causality issue is to compare the earnings quality of listing firms before and after their B-share listings to see whether the net change of investment environments has a significant influence on the corporate production of information. However, the limited history of the Chinese stock market and the tendency of Chinese firms to engage in domestic and foreign listings simultaneously have prevented us from obtaining sufficient pre-cross-listing observations. Another mechanism in addressing endogeneity is to use instrumental variables. However, given that both cross-listing decisions and earnings management practices remain largely unexplained in emerging economies, the construction of instrumental variables seems to be very opportunistic. This leaves the use of lagged dependent variables as the best choice for our sample.

Therefore, we re-estimate equations (4) and (5) with lagged dependent variables:

$$|DA_{it}| = \lambda_0 + \lambda_1 DCROSS_{it} + \lambda_2 DEXCH_{it} + \lambda_3 SIZE_{it} + \lambda_4 BM_{it} + \lambda_5 ROA_{it} + \lambda_6 LEV_{it} + \lambda_7 SO_{it} + \lambda_8 LDA_{it} + \varepsilon_{it} \quad (9)$$

$$AQ_{it} = \lambda_0 + \lambda_1 DCROSS_{it} + \lambda_2 DEXCH_{it} + \lambda_3 SIZE_{it} + \lambda_4 BM_{it} + \lambda_5 ROA_{it} + \lambda_6 LEV_{it} + \lambda_7 SO_{it} + \lambda_8 LAQ_{it} + \varepsilon_{it} \quad (10)$$

The results are reported in Table 8. Additional confidence is gained concerning endogeneity, as the inclusion of lagged dependent variables does not render the significance of cross-listing impact, nor does it have significant influence on any other variables.

****Insert Table 8 about here****

5. CONCLUSIONS

This paper examines the changing role of cross-listing in shaping corporate earnings quality, stock price informativeness, and firm valuation under increased market integration. Using a panel sample of Chinese A- and B-share dual-listed versus purely domestic-listed firms over a nine-year period from 1998 to 2006, we find that cross-listing plays an important but diminishing role in shaping corporate earnings management in a more integrated world. Consistent with the findings on earnings management, we find that firms with B-share listings generally have more informative stock pricing and higher valuation (as measured by Tobin's Q) than comparable purely domestic-listed firms. Again, the divergence in price informativeness and firm valuation between the two groups of firms shrinks dramatically after the processes of the Chinese stock market integration. Overall, the empirical results suggest that cross-listing plays a significant bonding role in shaping real corporate practices and the information environment, while the effect becomes less prominent in a more integrated world. Our results are robust using various earnings management measures and model specifications.

Despite the interesting findings, some caveats should be noted. First, the evidence of this study is based on a single-country analysis. It would be interesting to consider other emerging economies that undergo similar market liberalization processes to determine the generalizability of the results. Second, while the mitigated bonding role of cross-listing under increased market integration points to a possible explanation for the worldwide foreign delisting wave, alternative attributors such as increased regulatory requirements cannot be safely ruled out without additional investigation.

Notwithstanding these limitations, this study offers new and relatively robust insights into the literature. First, while the "bonding hypothesis" of cross-listing has been a subject of extensive research, little, if any, attention has been paid to directly testing the effectiveness of this kind of commitment in shaping real corporate practices and stock price informativeness, especially within an emerging context. The present paper bridges this gap. Second, while the issue of cross-listing has stimulated a considerable amount of quality research, a common limitation of these studies is that they tend to consider cross-listing impact in a static framework. The impact of increased market integration on the bonding role of cross-listing is largely ignored. Drawing on the unique opportunity of the Chinese stock market restructuring in 2001 and 2002, this paper effectively addresses the changing role of cross-listing under increased market integration within a relatively short time frame, where the structural stationarity and omitted-variables problems are of less serious modeling concern. Third, while the issues of earnings management, price informativeness, cross-listing, and market liberalization have been objects of focus in modern finance literature, no systematic attempt to date has been made to address these issues in an integrated framework. By investigating the impact of cross-listing on corporate earnings quality, price informativeness, and firm valuation, contingent upon the Chinese stock market liberalization, this study provides a meaningful synthesis of these disparate research streams. Finally, the empirical findings of this paper point to a possible explanation for the current worldwide foreign delisting wave that plagues major stock exchanges.

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Figure 1: The Time Frame of Estimation

This figure illustrates the time frame of estimation (from 1998 to 2006) contingent upon the processes of Chinese stock market liberalization. As the figure indicates, the two regulatory reforms on the Chinese stock market (i.e. the opening of the foreign-based B-share market to Chinese domestic investors on February 19, 2001 and the opening of the domestic A-share market to qualified foreign institutional investors on November 5, 2002) have divided the sample into three sub-periods: the pre-market-integration period, the post-market-integration period, and the period of market restructuring.

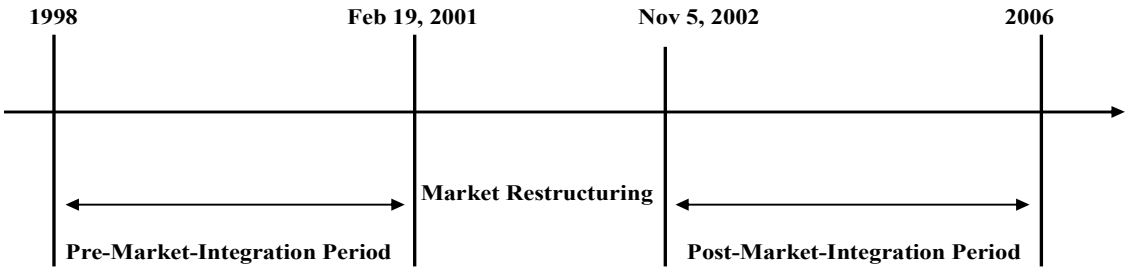
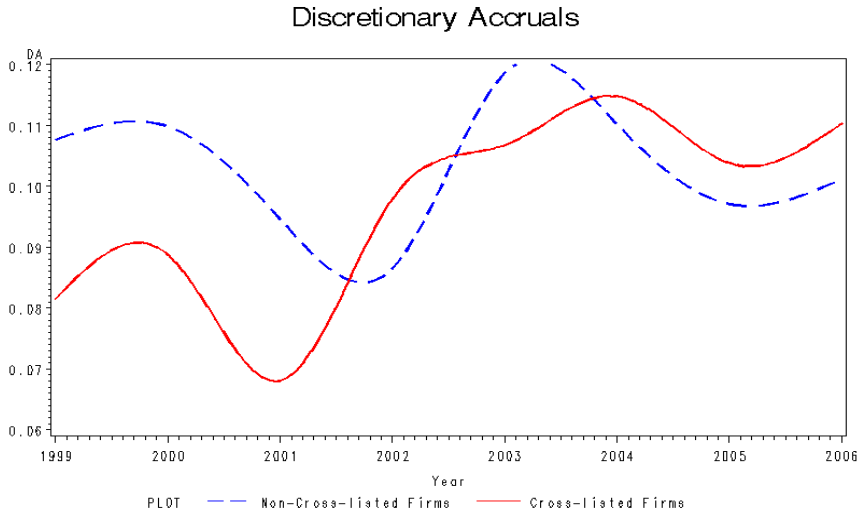


Figure 2: Earnings Management over Time

This figure compares the significance of earnings management between cross-listed and non-cross-listed firms over the sample period from 1999 to 2006. Given that there is no agreed-upon measure of earnings management in the literature, we evaluate earnings quality using two alternative proxies, i.e. the absolute value of discretionary accruals, $|DA|$, and the accruals quality, AQ, where $|DA|$ is calculated using the modified Jones' (1991) model and AQ is measured as the standard deviation of residuals from the model that regresses current accruals on the lagged, current, and future values of CFO, change in sales revenues, and gross PPE. The time frame of estimation spans the two regulatory reforms on the Chinese stock market (i.e. the opening of the foreign B-share market to Chinese domestic investors in 2001 and the opening of the domestic A-share market to qualified foreign institutional investors in 2002).



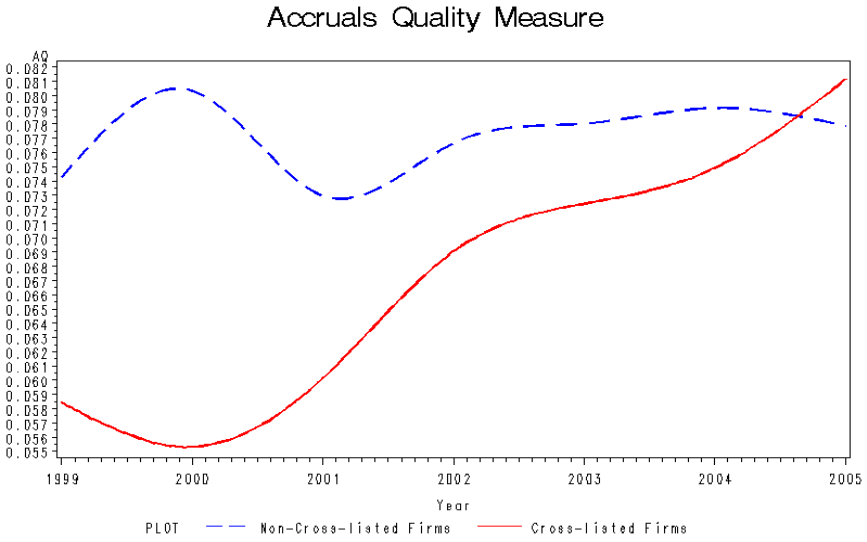


Table 1: Summary Statistics (1998-2006)

This table reports the summary statistics of the sample, sorted by exchange listings (Columns 2 and 3), the choice of B-share listings (Columns 4 and 5), and the time periods of estimation (Columns 6 and 7). After eliminating firms with insufficient time-series observations, firms with missing values on related accounting items, firms with incomparable size (relative to cross-listed firms), and firms in financial industries, we are left with 701 firms. The final sample consists of 67 A- and B-share dual-listed firms and 634 comparable purely domestic-listed firms, each of which has a continuous listing history over the entire period of estimation. The variables in the table are defined as follows: SIZE is the size of the firm, calculated as the natural log of total assets; BM is the book-to-market ratio, measured as the difference between total assets and total liability, divided by the stock market capitalization of the firm; LEV is the leverage (debt-to-equity) ratio; SO is state ownership, measured as the percentage of common shares owned by the state; ROA is the return on assets, computed as EBXI divided by total assets; and Q is the Tobin's Q ratio, calculated as market value of equity minus book value of equity plus book value of assets, divided by book value of assets.

		By Exchanges		***By Cross-Listing Choices***		***By Time Periods***	
	Full Sample (701 Firms)	**SSE (372 Firms)**	**SZSE (329 Firms)**	**CL (67 Firms)**	**NC (634 Firms)**	**Pre-Market-Integration**	**Post-Market-Integration**
SIZE	21.102 (0.97)	21.163 (0.98)	21.032 (0.95)	21.522 (0.95)	21.057 (0.96)	20.896 (0.86)	21.225 (1.01)
BM	2.7127 (1.52)	2.7491 (1.52)	2.6715 (1.51)	2.8047 (1.83)	2.7030 (1.48)	2.7388 (1.28)	2.6970 (1.64)
LEV	1.7027 (22.14)	1.4212 (13.93)	2.0209 (28.73)	1.0286 (9.09)	1.7739 (23.10)	2.0690 (31.62)	1.4829 (13.59)
SO	0.3227 (0.25)	0.3276 (0.26)	0.3171 (0.25)	0.3083 (0.24)	0.3242 (0.25)	0.3392 (0.26)	0.3127 (0.25)
ROA	0.1001 (0.64)	0.1107 (0.08)	0.0881 (0.93)	0.1186 (0.08)	0.0981 (0.67)	0.1037 (0.07)	0.0979 (0.81)
Q	1.1411 (26.64)	0.7792 (0.55)	1.5503 (38.88)	0.8585 (0.76)	1.1710 (28.01)	0.7092 (0.23)	1.4003 (33.69)

Standard deviations are represented in parentheses.

Table 2: Correlation Matrix (1998-2006)

This table reports the correlation coefficients of the explanatory variables in Models (4) and (5). Variables in the table are defined as follows: DCROSS is the cross-listing dummy, which takes the value of 1 for firms with both A- and B-share listings and 0 for firms with only domestic A-share listings; DEXCH is the exchange dummy, where 1 stands for Shanghai Stock Exchange listed firms and 0 stands for Shenzhen Stock Exchange listed firms; SIZE is the size of the firm, calculated as the natural log of total assets; BM is the book-to-market ratio, measured as the difference between total assets and total liability, divided by the stock market capitalization of the firm; ROA is the return on assets, computed as EBXI divided by total assets; LEV is the leverage (debt-to-equity) ratio; and SO is state ownership, measured as the percentage of common shares owned by the state. The final sample consists of 701 firms, including 67 A- and B-share dual-listed firms and 634 comparable purely domestic-listed firms, each of which has a continuous listing history over the entire period of estimation.

	DCROSS	**DEXCH**	**SIZE**	**BM**	**ROA**	**LEV**	**SO**
DCROSS	1.0000						
DEXCH	0.0248*	1.0000					
SIZE	0.1412***	-0.0674***	1.0000				
BM	0.0197	-0.0255*	0.5488***	1.0000			
ROA	0.0094	-0.0177	0.1339***	0.0603***	1.0000		
LEV	-0.0099	0.0135	-0.0188	-0.0306**	-0.0008	1.0000	
SO	-0.0186	-0.0210	0.1191***	0.1032***	0.0165	-0.0262*	1.0000

The p-values are represented in parentheses.
*Significance level = 10%
**Significance level = 5%
*** Significance level = 1%

Table 3: Earnings Management (1999-2006)

This table compares the magnitude of earnings management between cross-listed and non-cross-listed firms, where Panel A considers the entire sample period from 1999 to 2006 (note that we lose observation year 1998 in calculating lagged values) and Panel B breaks down into pre- and post-market-integration periods. Given that there is no agreed-upon measure of earnings management in the literature, we evaluate earnings quality using two alternative proxies, i.e. the absolute value of discretionary accruals, $|DA|$, and the accruals quality, AQ, where $|DA|$ is calculated using the modified Jones' (1991) model and AQ is measured as the standard deviation of residuals from the model that regressing current accruals on the lagged, current, and future values of CFO, change in sales revenues, and gross PPE. The final sample consists of 701 firms, including 67 A- and B-share dual-listed firms and 634 comparable purely domestic-listed firms, each of which has a continuous listing history over the entire period of estimation.

Panel A: Earnings Management during the Full Sample Period

		By Exchanges			***By Cross-Listing Decisions***		
	Full Sample (701 Firms)	**SSE (372 Firms)**	**SZSE (329 Firms)**	**Mean Diff. (SSE-SZSE)**	**CL (67 Firms)**	**NC (634 Firms)**	**Mean Diff. (NC-CL)**
DA	0.1026 (0.099)	0.1031 (0.102)	0.1020 (0.095)	0.0011*	0.0965 (0.082)	0.1032 (0.101)	0.0067**
AQ	0.0769 (0.003)	0.0767 (0.005)	0.0739 (0.004)	0.0028*	0.0673 (0.010)	0.0770 (0.003)	0.0097**

Panel B: Earnings Management Before and After Market Integration

	Pre-Market-Integration Period (1999-2001)				***Post-Market-Integration Period (2003-2006)***			
	Full Sample (701 Firms)	**CL (67 Firms)**	**NC (634 Firms)**	**Mean Diff. (NC-CL)**	**Full Sample (701 Firms)**	**CL (67 Firms)**	**NC (634 Firms)**	**Mean Diff. (NC-CL)**
DA	0.1017 (0.102)	0.0795 (0.068)	0.1040 (0.104)	0.0246***	0.1070 (0.100)	0.1089 (0.084)	0.1068 (0.100)	-0.002*
AQ	0.0750 (0.003)	0.0580 (0.004)	0.0759 (0.003)	0.0179***	0.0790 (0.001)	0.0762 (0.005)	0.0783 (0.001)	0.0022*

Standard deviations are represented in parentheses.
*Significance level = 10%
**Significance level = 5%
*** Significance level = 1%

Table 4: Earnings Management Year by Year (1999-2006)

This table compares the magnitude of earnings management between cross-listed and non-cross-listed firms year by year. Given that there is no agreed-upon measure of earnings management in the literature, we evaluate earnings quality using two alternative proxies, i.e. the absolute value of discretionary accruals, $|DA|$, and the accruals quality, AQ, where $|DA|$ is calculated using the modified Jones' (1991) model and AQ is measured as the standard deviation of residuals from the model that regressing current accruals on the lagged, current, and future values of CFO, change in sales revenues, and gross PPE. The final sample consists of 701 firms, including 67 A- and B-share dual-listed firms and 634 comparable purely domestic-listed firms, each of which has a continuous listing history over the entire period of estimation. Note that we do not have 2006 AQ values because we lose observation year 2006 in calculating forward CFO values.

	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Panel A: Absolute Value of Discretionary Accruals								
CL	0.0815	0.0888	0.0681	0.0979	0.1068	0.1149	0.1038	0.1104
	(0.062)	(0.068)	(0.073)	(0.102)	(0.076)	(0.083)	(0.084)	(0.093)
NC	0.1077	0.1098	0.0946	0.0865	0.1186	0.1102	0.0971	0.1011
	(0.100)	(0.115)	(0.097)	(0.089)	(0.121)	(0.098)	(0.083)	(0.095)
Panel B: Accruals Quality								
CL	0.0584	0.0553	0.0602	0.0691	0.0724	0.0749	0.0811	
	(0.002)	(0.003)	(0.005)	(0.003)	(0.003)	(0.004)	(0.003)	
NC	0.0743	0.0803	0.0730	0.0767	0.0780	0.0791	0.0779	
	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	

Standard deviations are represented in parentheses.

Table 5: Impact of Cross-Listing on Earning Management (1999-2006)

This table reports the regression results concerning the impact of cross-listing on earnings management. The dependent variable in the models is either the absolute value of discretionary accruals, $|DA|$, as reported in Columns 1-3, or the accruals quality, AQ, as reported in Columns 4-5, where $|DA|$ is calculated using the modified Jones' (1991) model and AQ is measured as the standard deviation of residuals from the model that regressing current accruals on the lagged, current, and future values of CFO, change in sales revenues, and gross PPE. In particular, the following models are estimated:

$$|DA_{it}| = \lambda_0 + \lambda_1 DCROSS_{it} + \lambda_2 DEXCH_{it} + \lambda_3 SIZE_{it} + \lambda_4 BM_{it} + \lambda_5 ROA_{it} + \lambda_6 LEV_{it} + \lambda_7 SO_{it} + \varepsilon_{it} \quad (4)$$

$$AQ_{it} = \lambda_0 + \lambda_1 DCROSS_{it} + \lambda_2 DEXCH_{it} + \lambda_3 SIZE_{it} + \lambda_4 BM_{it} + \lambda_5 ROA_{it} + \lambda_6 LEV_{it} + \lambda_7 SO_{it} + \varepsilon_{it} \quad (5)$$

The independent variables are defined as follows: DCROSS is the cross-listing dummy, which takes the value of 1 for firms with both A- and B-share listings and 0 for firms with only domestic A-share listings; DEXCH is the exchange dummy, where 1 stands for Shanghai Stock Exchange listed firms and 0 stands for Shenzhen Stock Exchange listed firms; SIZE is the size of the firm, calculated as the natural log of total assets; BM is the book-to-market ratio, measured as the difference between total assets and total liability, divided by the stock market capitalization of the firm; ROA is the return on assets, computed as EBXI divided by total assets; LEV is the leverage (debt-to-equity) ratio; and SO is state ownership, measured as the percentage of common shares owned by the state. The final sample consists of 701 firms, including 67 A- and B-share dual-listed firms and 634 comparable purely domestic-listed firms, each of which has a continuous listing history over the entire period of estimation.

	DV: Absolute Value of Discretionary Accruals			***DV: Accruals Quality***		
	Full Sample Period	**Pre-Market-Integration**	**Post-Market-Integration**	**Full Sample Period**	**Pre-Market-Integration**	**Post-Market-Integration**
Intercept	0.1592***	0.1553*	0.1440**	0.0783***	0.0760***	0.0809***
	(7.44)	(2.95)	(9.35)	(67.76)	(50.87)	(81.72)
DCROSS	**-0.0101***	**-0.0218***	**-0.0062**	**-0.0096****	**-0.0179****	**-0.0021**
	(-1.92)	**(-3.59)**	**(-0.95)**	**(-2.78)**	**(-4.84)**	**(-0.78)**
DEXCH	-0.0006	-0.0022	-0.0002	0.00001	-0.00004	0.00007***
	(-0.26)	(-0.54)	(-0.04)	(0.19)	(-0.51)	(13.41)
SIZE	-0.0048***	-0.0048	-0.0037**	-0.0001	0.00001	-0.0001*
	(-3.88)	(-1.66)	(-3.66)	(-1.56)	(0.23)	(-3.78)
BM	0.0023	0.0056	-0.0007	-0.00003	-0.00007	0.00002
	(0.93)	(1.36)	(-0.19)	(-0.39)	(-0.46)	(1.18)
ROA	0.4017***	0.4109***	0.4107*	-0.0014	-0.0019	-0.0009*
	(6.18)	(39.45)	(2.96)	(-1.93)	(-1.02)	(-3.16)
LEV	0.0005*	0.0006	0.0003	-0.000004**	-0.000003	-0.000004
	(2.34)	(1.23)	(1.82)	(-2.87)	(-0.97)	(-2.56)
SO	-0.0128*	-0.0239	-0.0035	0.0003**	0.00004	0.0005**
	(-2.13)	(-1.85)	(-0.73)	(2.9)	(0.43)	(7.93)
R-Square	0.1348	0.1019	0.1687	0.6998	0.9151	0.4581

The t-statistics are represented in parentheses.
*Significance level = 10%
**Significance level = 5%
*** Significance level = 1%

Table 6: Impact of Cross-Listing on Price Informativeness (1999-2006)

This table reports the regression results concerning the impact of cross-listing on price informativeness using the market model, $(R_{it} - R_t^F) = \alpha + \beta(R_t^M - R_t^F) + \varepsilon_{it}$, where R_{it} is the stock return for each individual firm at time t; R_t^M is the market return at time t; R_t^F is the risk-free rate (China's monthly yield of the three-month household deposit interest rate) at time t; and β is the covariance of market return with individual stock return, divided by the variance of market return. According to the Hausman Specification Test, the One-Way Random Effect Model is more appropriate for our sample. This means that the residual consists of two parts, i.e. $\varepsilon_{it} = u_i + v_{it}$. In order to get a more precise estimation, the Error Components Model and GLS estimation are applied. The final sample consists of 701 firms, including 67 A- and B-share dual-listed firms and 634 comparable purely domestic-listed firms, each of which has a continuous listing history over the entire period of estimation. Being estimated over an eight-year period, the cross-listed panel sample includes 536 firm-year observations, and the non-cross-listed panel sample includes 5072 firm-year observations.

	The Full Sample		***Pre-Market-Integration***		***Post-Market-Integration***	
	Cross-Listed	**Non-Cross-Listed**	**Cross-Listed**	**Non-Cross-Listed**	**Cross-Listed**	**Non-Cross-Listed**
α Estimate	-0.1023***	-0.1445***	-0.1157**	-0.0861***	-0.164***	-0.1867***
	(-7.77)	(-32.76)	(-2.24)	(-12.66)	(-10.3)	(-34.06)
β Estimate	0.6849***	0.7852***	1.3493***	1.024***	0.5193***	0.6750***
	(17.78)	(61.02)	(8.12)	(46.19)	(11.75)	(44.66)
R-Square	**0.3720**	**0.4235**	**0.3332**	**0.5289**	**0.2929**	**0.3864**

The t-values are represented in parentheses.
*Significance level = 10%
**Significance level = 5%
*** Significance level = 1%

Table 7: Impact of Cross-Listing on Firm Value (1999-2006)

This table reports the regression results concerning the impact of cross-listing on firm value, where the dependent variable is the Tobin's Q ratio and the independent variables include a cross-listing dummy, an exchange dummy, firm size, leverage and state ownership. Specifically, the following model is estimated:

$$Q_{it} = \alpha + \beta_1 DCROSS_{it} + \beta_2 DEXCH_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 SO_{it} + \varepsilon_{it} \quad (8)$$

The variables in the model are defined as follows: Q_{it} is the Tobin's Q ratio, which is computed as market value of equity minus book value of equity plus book value of assets, divided by book value of assets; DCROSS is the cross-listing dummy, which takes the value of 1 for firms with both A- and B-share listings and 0 for firms with only domestic A-share listings; DEXCH is the exchange dummy, where 1 stands for Shanghai Stock Exchange listed firms and 0 stands for Shenzhen Stock Exchange listed firms; SIZE is the size of the firm, calculated as the natural log of total assets; LEV is the leverage (debt-to-equity) ratio; and SO is state ownership, measured as the percentage of common shares owned by the state. The final sample consists of 701 firms, including 67 A- and B-share dual-listed firms and 634 comparable purely domestic-listed firms, each of which has a continuous listing history over the entire period of estimation.

	Full Sample Period		***Pre-Market-Integration***		***Post-Market-Integration***	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Intercept	20.477 (1.26)	20.534 (1.26)	2.4088*** (6.74)	2.2420*** (8.49)	37.956 (1.17)	38.259 (1.17)
DCROSS	**0.3092***** **(3.16)**	**0.2986***** **(3.07)**	**0.1355***** **(4.35)**	**0.1159***** **(4.77)**	**0.4614**** **(2.43)**	**0.4642**** **(2.46)**
DEXCH		-0.1490 (-0.86)		-0.0120 (-1.27)		-0.2993 (-0.87
SIZE	-0.9206 (-1.22)	-0.9220 (-1.21)	-0.0815*** (-4.9)	-0.0745*** (-6.15)	-1.7326 (-1.15)	-1.7431 (-1.15)
LEV		0.0258** (2.53)		0.0469** (2.48)		0.0049 (0.45)
SO		0.1217 (0.53)		-0.0622** (-2.36)		0.3088 (0.67)
R-Square	0.1632	0.3341	0.1216	0.3400	0.1902	0.3177

The t-values are represented in parentheses.
*Significance level = 10%
**Significance level = 5%
*** Significance level = 1%

Table 8: Impact of Cross-Listing on Earning Management with Lagged Dependent Variables

This table reports the regression results concerning the impact of cross-listing on earnings management with lagged dependent variables. The dependent variable in the models is either the absolute value of discretionary accruals, $|DA|$, as reported in Columns 1-3, or the accruals quality, AQ, as reported in Columns 4-5, where $|DA|$ is calculated using the modified Jones' (1991) model and AQ is measured as the standard deviation of residuals from the model that regressing current accruals on the lagged, current, and future values of CFO, change in sales revenues, and gross PPE. In particular, the following models are estimated:

$$|DA_{it}| = \lambda_0 + \lambda_1 DCROSS_{it} + \lambda_2 DEXCH_{it} + \lambda_3 SIZE_{it} + \lambda_4 BM_{it} + \lambda_5 ROA_{it} + \lambda_6 LEV_{it} + \lambda_7 SO_{it} + \lambda_8 LDA_{it} + \varepsilon_{it} \quad (9)$$

$$AQ_{it} = \lambda_0 + \lambda_1 DCROSS_{it} + \lambda_2 DEXCH_{it} + \lambda_3 SIZE_{it} + \lambda_4 BM_{it} + \lambda_5 ROA_{it} + \lambda_6 LEV_{it} + \lambda_7 SO_{it} + \lambda_8 LAQ_{it} + \varepsilon_{it} \quad (10)$$

The independent variables are defined as follows: DCROSS is the cross-listing dummy, where 1 stands for firms with both A- and B-share listings and 0 stands for firms with only domestic A-share listings; DEXCH is the exchange dummy, where 1 stands for Shanghai Stock Exchange listed firms and 0 stands for Shenzhen Stock Exchange listed firms; SIZE is the size of the firm, calculated as the natural log of total assets; BM is the book-to-market ratio, measured as the difference between total assets and total liability, divided by the stock market capitalization of the firm; ROA is the return on assets, computed as EBXI divided by total assets; LEV is the leverage (debt-to-equity) ratio; and SO is state ownership, measured as the percentage of common shares owned by the state.

	DV: Absolute Value of Discretionary Accruals			***DV: Accruals Quality***		
	Full Sample Period	**Pre-Market-Integration**	**Post-Market-Integration**	**Full Sample Period**	**Pre-Market-Integration**	**Post-Market-Integration**
Intercept	0.1553***	0.1574*	0.1353***	0.0481***	0.0475	0.0435**
	(7.12)	(3.11)	(7.21)	(5.05)	(2.08)	(5.48)
DCROSS	**-0.0102***	**-0.0219***	**-0.0061**	**-0.0054***	**-0.0116****	**0.0007**
	(-1.93)	**(-3.62)**	**(-0.95)**	**(-2.08)**	**(-5.31)**	**(0.31)**
DEXCH	-0.0007	-0.0024	-0.0002	0.00002	0.00001	0.00006*
	(-0.30)	(-0.59)	(-0.04)	(0.64)	(0.14)	(3.04)
SIZE	-0.0047***	-0.0049	-0.0035**	-0.00002	0.00002	-0.00006
	(-3.71)	(-1.68)	(-3.18)	(-0.57)	(0.41)	(-1.54)
BM	0.0024	0.0058	-0.0008	-0.00002	-0.00004	0.000001
	(0.94)	(1.38)	(-0.20)	(-0.36)	(-0.30)	(0.07)
ROA	0.4013***	0.4107***	0.4101*	-0.0009	-0.0018	-0.0001
	(6.18)	(39.11)	(2.96)	(-1.19)	(-0.97)	(-0.20)
LEV	0.0005**	0.0006	0.0004	-0.000003*	-0.000003	-0.000003
	(2.38)	(1.23)	(1.88)	(-2.05)	(-0.84)	(-1.34)
SO	-0.0130*	-0.024	-0.0038	0.0002	-0.00001	0.0003
	(-2.15)	(-1.81)	(-0.81)	(1.86)	(-0.11)	(2.72)
LDA	0.0178	-0.0042	0.0352			
	(1.27)	(-0.15)	(2.11)			
LAQ				0.3861**	0.3756	0.4624**
				(2.88)	(1.16)	(4.42)
R-Square	0.1365	0.1036	0.1707	0.7487	0.9213	0.5612

The t-statistics are represented in parentheses.
*Significance level = 10%
**Significance level = 5%
*** Significance level = 1%