Do Investors Care about Earnings Quality? An Empirical Analysis

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ABSTRACT

This study examines a panel sample of U.S.-listed Chinese reverse merger firms, IPO firms, and ADR firms to address the question whether, and to what extent, the earnings quality is capitalized in firm valuation and stock pricing by investors. Empirical evidence indicates that U.S.-listed Chinese reverse merger firms have much lower earnings quality as compared to both U.S.-listed Chinese IPO firms and U.S.-listed Chinese ADR firms, as measured by both the absolute value of discretionary accruals and the accruals quality. This fundamental difference, however, is reflected in neither firm valuation nor stock performance. An important implication arising from this study is that investors do not pay enough attention to the integrity of financial information of foreign listings in general and reverse merger firms in particular.

Key Words: Earnings Quality, Firm Value, Stock Performance, Reverse Merger, Initial Public Offering, American Depositary Receipt

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1. INTRODUCTION

Over the past decade, numerous foreign firms slipped into the United States through the back door by acquiring an existing public company. This is commonly known as a "reverse merger" (RM), and it is also referred to as a "reverse takeover" or a "reverse IPO." In a typical RM case, a privately held company acquires a controlling interest in a publicly traded company that usually has few, if any, assets and little ongoing business. The target firm is often referred to as the "shell" company. What makes the RM listing attractive is that, by acquiring an existing public company, the private firm may bypass the lengthy and complex process of going public.

The growing popularity of the backdoor listing technique has stimulated a series of explanatory studies. For example, drawing on a sample of RMs completed between 1990 and 2002, Adjei, Cyree, and Walker (2008) find that newer, smaller, and less profitable firms are more likely to opt for the RM route rather than an initial public offering (IPO), and that 42% of RMs are delisted within three years of listing. Gleason, Rosenthal, and Wiggins (2005) examine 121 exchange-listed firms and find little post-event improvement in operations and profitability. Consistent with Adjei et al. (2008), they find that only 46% of the sample firms survive for two years. Based on their empirical findings, they conclude that reverse takeovers are risky and may fail to generate long-term wealth. Using a sample of 298 shell firms that completed RM agreements during 2007-2008, Floros and Sapp (2011) find that while firms choose to go public via RM tend to be highly information asymmetric firms with minimal assets and low profitability, they enjoy a three-month cumulative abnormal return of around 48% on average. In contrast to these earlier studies, a recent study by Lee, Li, and Zhang (2014) find that Chinese RMs are NOT more problematic than other publicly-listed firms. Note, however, that the use of non-identical performance measurement periods may introduce a potential bias to the analysis. In particular,

because performance is measured during a three-year period following each listing, a RM that listed in 2007 could be matched with a control firm that listed in 2004 and their performance would be compared over the ensuing three years.

Despite the growing body of research, almost no attention had been paid to earnings quality of RM firms until a Chinese company, Rino International Corporation (RINO), was accused of significant fraud in January 2011. On June 9, 2011, the Securities and Exchange Commission (SEC) issued an investor bulletin cautioning investors about investing in RM firms, stating that they may be prone to fraud and other abuses. During the same year, a number of other Chinese RM firms were found to be manipulating their financial records, most of which have been suspended or delisted by NASDAQ, wiping out billions of dollars in stock market value. Such companies include Heli Electronics Corp (HELI) and China Changjiang Mining & New Energy Co (CHJI).

Since then, the general question of whether investors can really trust the numbers provided by RM firms in general and Chinese RM firms in particular has led to widespread stock market pessimism about U.S.-listed Chinese RM firms. Interest in such questions has spawned a growing body of research on earnings quality of RM firms. For example, Jindra, Voetmann, and Walking (2012) find that Chinese RMs not only have a lower level of analyst coverage and institutional following, but also face higher probability of class action lawsuits than U.S.-listed Chinese IPO firms. Similarly, Givoly, Hayn, and Lourie (2014) find that the earnings of RM firms are plagued by higher measurement errors and are less correlated with stock price movements than comparable non-RM firms, which can be attributed to lower auditor quality and lower external monitoring such as analyst coverage.

While previous studies have had some success in explaining the antecedents, the consequences, and the poor earnings quality of RM firms, it is not clear whether, and to what

extent, the low earnings quality of RM firms is capitalized into firm valuation and stock pricing. This study attempts to address this question.

In addition, this study also attempts to bridge another important gap in the literature. Generally speaking, there are three ways a foreign firm can enter the U.S. market: IPO, RM, and American Depositary Receipt (ADR). Existing studies mainly focus on RM versus IPO firms (e.g., Adjei et al., 2008; Floros and Sapp, 2011; Gleason et al., 2005; Jindra et al., 2012). There is little investigation of the difference between RM and ADR firms. The fact that ADR firms are subject to regulation in two jurisdictions makes them an even more interesting control group for exploring the role of regulatory and disclosure standards. This study examines all three groups (RM, IPO and ADR) in an integrated framework.

China has been chosen as the research focus of this study for two reasons. First, most foreign RMs listed in the U.S. are from China (around 85% of foreign RMs according to Lee et al., 2014). Second, while interests in Chinese stocks have risen commensurately with China's economic development and its increased integration with the world economy, persistent worries about the information integrity of Chinese firms remain a major concern. Therefore, understanding Chinese RMs is important from both regulators' and investors' perspectives.

The remainder of the paper develops as follows: The next section introduces the hypothesis development. Section 3 describes the data and methodology. Section 4 presents the empirical results. Section 5 draws conclusions and suggests important paths for future research.

2. LITERATURE AND HYPOTHESES

2.1 U.S. Listing Choices

As previously noted, there are three ways a foreign firm can enter the U.S. stock market: ADR, IPO and RM. ADR is a very popular means to list in the U.S. for firms that have already "gone public" in other stock markets. Each ADR is issued by a U.S. depositary bank and can represent a fraction or a multiple of a foreign share. In a typical ADR case, the listing firm has often had to comply with both U.S. regulations and listing requirements and financial regulatory oversight in its home jurisdiction. For instance, a Hong Kong-listed company that offers ADRs in the U.S. market is already required to comply with regulations promulgated by the Stock Exchange of Hong Kong and the Securities and Futures Commission of Hong Kong. A China-based firm that offers ADRs in the U.S. will come under the oversight of the China Securities Regulatory Commission.

Privately held firms often list in the U.S. through IPO. A company that wishes to list in the U.S. via IPO must undergo regulation and scrutiny by U.S. authorities during its registration process. In the United States, IPOs are regulated by the SEC under the Securities Act of 1933. A company that is required to register under the Securities Act of 1933 must provide copious information about the security and the company, including audited financial statements. The company, the underwriter, and other individuals signing the registration statement are strictly liable for any inaccurate statements in the document. This extremely high level of liability exposure drives an enormous effort to ensure that the document is complete and accurate. While the law helps to ensure investor protection and market integrity, the resultant strict due diligence process also makes IPOs very time-consuming and expensive, requiring considerable expenditure on legal, accounting, and investment banking services.

Reverse merger (or reverse IPO) offers an alternative way of international listing. In a typical RM case, shareholders of the private company purchase control of the public shell company and then merge it with the private company. The publicly traded corporation is often called a "shell" since all that exists of the original company is its organizational structure. The major advantage of RM is that the private company can bypass the lengthy and complex process of going public. Note that the overseas entity seeking a merger with a U.S. shell may not be operating under financial regulatory oversight in its home jurisdiction. The only required filing is an 8-K if the shell company is currently trading in the U.S. Yet, by seeking to enter into a business combination with a U.S. shell, a private company can sidestep most, if not all, of the initial registration and listing requirements required in a typical IPO.

Over the past decade, RM has become increasingly intriguing given its low costs and time-saving advantages. However, this backdoor listing technique may be potentially costly to investors due to its lack of regulation. This study attempts to explore the fundamental differences between RM firms and their IPO and ADR peers.

2.2 Earnings Quality

In the literature, a substantial body of research documents a nontrivial association between corporate earnings and stock valuation/pricing (e.g., Burgstahler and Dichev, 1997; Collins, Maydew, and Weiss, 1997). This strong relationship rests on solid conceptual grounds. In a standard valuation model with no market impediments, the intrinsic value of a firm should reflect the discounted present value of all expected future earnings.

Standing at the core of stock valuation models, the integrity of reported earnings, however, has long been questioned. Defined as the alternation of firms' reported economic performance by

insiders (Healy and Wahlen, 1999), earnings management has been related to a variety of corporate events. For example, Chaney, and Lewis (1995) find that firms consistently manage earnings to affect firm value in a world with asymmetric information. Dye (1988) shows that managers often manage corporate income to smooth managerial compensation. Lambert (1984) indicates that risk-averse managers have incentives to smooth economic earnings in order to lower the market assessment of earnings volatility. Moreover, Teoh, Welch, and Wong (1998a, 1998b) find that firms adjust discretionary accruals to report higher levels of net income prior to IPOs and seasoned public offerings. Given the fundamental role played by corporate earnings in stock valuation and the possibility of earnings management, close attention has to be paid to the integrity of reported earnings, i.e., earnings quality.

Given that there is no agreed-upon measure, this study uses two alternative approaches to measure earnings quality. The first measure is the absolute value of discretionary accruals. This proxy is based upon a simple decomposition of corporate earnings. With the accrual accounting method, earnings generally consist of two components: cash flow from operations (CFO) and accounting accruals. Accounting accruals can be further decomposed into two parts: non-discretionary accruals (necessary accounting adjustments) and discretionary accruals (accruals subject to managerial discretion), where larger values of discretionary accruals indicate more earnings management (lower earnings quality).

Following the literature (e.g., Bartov, Gul, and Tsui, 2001; Cornett, Marcus, and Tehranian, 2008; Dechow, Sloan, and Sweeney, 1995; Yu, 2008), the modified Jones model (1991) is utilized to estimate the discretionary accruals.

First, the following cross-sectional ordinary least squares (OLS) regression is conducted to estimate the coefficients α_1, α_2, and α_3 within each industry over the sample period from 2007 to 2011. In particular, the following model is estimated:

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

Following Hribar and Collins' (2002) suggestions, the total accruals, *TA*, is calculated using data from cash flow statements, i.e., $TA_{it} = EBXI_{it} - CFO_{it}$. Here, ΔREV is the change in sales revenues, and *PPE* is gross property, plant, and equipment. All variables are scaled by total assets at the beginning of the fiscal year as a control for size effects.

In the second stage, the value of non-discretionary accruals, *NDA*, is then calculated using the estimates of α_1, α_2, and α_3 from model (1). Note that the change in account receivables, ΔREC, is included in the equation per the modified Jones model so as to capture the extent to which a change in sales is due to an aggressive recognition of questionable sales. Specifically,

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

The difference between total accruals and non-discretionary accruals is discretionary accruals. That is, $DA_{it} = \frac{TA_{it}}{A_{i,t-1}} - NDA_{it}$. Because all variables are scaled by total assets, the magnitude of discretionary accruals is expressed as a percentage of the firm's lagged assets. Since managers may have incentives to both inflate (reflected by positive *DA*) and deflate (reflected by negative *DA*) corporate earnings, the absolute value of discretionary accruals is frequently used in the literature to capture earnings management in both directions.

The second measure used in this study is accruals quality, which is measured by 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 (e.g., Dechow and Dichev, 2002; Francis, LaFond, Olsson, and Schipper, 2005; Francis, Nanda, and Olsson, 2008). In particular, the following model is estimated:

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

Accruals quality is the standard deviation of residuals from the regression in equation (3). That is, $AQ_i = \sigma(\varepsilon_{it})$. Similar to the discretionary accruals measure, a higher standard deviation of residuals implies a higher level of earnings management (lower earnings quality).

2.3 Main Hypotheses

Extant literature has demonstrated both theoretically and empirically that the legal environment and regulatory standards play an important role in restricting corporate misconduct in general (e.g., La Porta et al., 1998) and earnings management in particular (e.g., Doukas and Wang, 2014). Since IPO and ADR firms are committed to higher regulatory and disclosure standards, the integrity of their reported earnings should be predictably higher than that of RM firms. Empirically, Jindra et al., (2012) find that U.S.-listed Chinese RMs have a lower level of analyst coverage and institutional following and face higher probability of class action lawsuits than U.S.-listed Chinese IPO firms. Givoly et al. (2014) find that the earnings of RM firms are plagued by higher measurement errors and are less correlated with stock price movements than non-RM firms. In line with previous studies, the following hypothesis is developed:

H1: RM firms tend to have a lower level of earnings quality (a higher level of earnings management) than both IPO and ADR firms.

Given the substantial difference in regulatory and disclosure standards and the hypothesized divergence in earnings quality between RM and non-RM firms, a natural question to

ask is whether, and to what extent, these fundamental differences are capitalized in firm valuation and stock pricing.

The efficient market hypothesis states that security prices should reflect all available information and all fundamental differences in a well-functioning capital market. That is, RM firms should exhibit a significant valuation discount and inferior stock performance as compared to both IPO and ADR firms – if RM firms indeed have a lower level of earnings quality as suggested by previous studies and if the market is indeed efficient in capitalizing essential firm-specific information. Therefore, the following hypotheses are derived:

H2: RM firms have lower valuations as compared to both IPO and ADR firms.

H3: RM firms have inferior stock performance as compared to both IPO and ADR firms.

3. DATA AND METHODOLOGY

3.1 Data Description

This study investigates a balanced panel sample of U.S.-listed Chinese RM firms, IPO firms, and ADR firms over a five-year period from 2007 to 2011. The sample period is chosen based on a tradeoff between the sample size and the length of the observation window. It is also a period during which RMs were numerous.

As noted earlier, the empirical evidence to date has been mixed with respect to the performance of RM firms. The literature is replete with both negative (e.g., Adjei et al., 2008; Gleason et al., 2005; Jindra et al., 2012) and positive findings (e.g., Floros and Sapp, 2011; Lee et al., 2014). There are many conceivable reasons as to why the evidence varies. On the one hand, it is largely due to the variation in methodological approaches (e.g., event study versus cross-sectional analysis), performance measures (e.g., accounting measures versus stock performance),

control groups (ADRs versus IPOs), and the timeframe under investigation. On the other hand, it may also be attributed to potential empirical biases in some studies, such as survivorship bias, omitted-variables bias, and measurement errors related to, for example, the use of non-identical performance measurement periods.

The empirical design of this study differs from previous studies in at least three aspects. First, unlike previous studies where RM firms are compared either to the IPO firms or to the ADR firms, this study examines all three possible means of U.S. listing (i.e., IPO, ADR, and RM) in an integrated framework. Second, for a more rigorous analysis, both accounting-based and stock-market-based measures are used to investigate the performance of RM firms. Lastly, a balanced panel sample is utilized to control for potential survivorship bias, which is particularly important given RM firms' high frequency of de-listing.

In constructing a balanced panel, the following criteria are imposed: First, all sample firms must be continuously listed in the U.S. during the entire sample period. In addition, to avoid short-term fluctuations and potential "news effect," all sample firms must have been listed in the U.S. (either RM, IPO, or ADR) for at least three months prior to the start of the sample period. After eliminating firms with insufficient histories, inactive firms, and firms in the financial industry, there are 118 firms left (45 RMs, 40 IPOs, and 33 ADRs), each with a continuous listing history over a five-year period from 2007 to 2011. The panel regression, therefore, is conducted based on 590 firm-year observations. All accounting and market data used in this study are compiled from Bloomberg, Capital IQ, and the SEC filings.

Table 1 reports the summary statistics. 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 liabilities, divided by the stock

market capitalization of the firm; *PE* is the price-to-earnings ratio, measured as adjusted closing price divided by the contemporaneous earnings per share figure; *LEV* is the leverage (debt-to-equity) ratio; *ROA* is the return on assets ratio, computed as net income divided by total assets; *VOL* is the annual trading volume; *RET* is annualized holding period return on a firm's common stock; and *Q* is the Tobin's Q ratio, calculated as book value of total assets minus book value of equity plus market value of equity, divided by book value of total assets. All variables are measured using calendar year end values.

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

As Table 1 indicates, RM firms tend to be smaller in size as compared to both IPO and ADR firms. They also have a higher average book-to-market ratio, especially compared to ADR firms, suggesting that RM firms tend to receive a lower valuation in the market or have less growth opportunities. In addition, RM firms appear to be more profitable than both IPO and ADR firms as measured by the ROA ratio.

Table 2 presents the correlation matrix of main variables. DRM is the reverse merger dummy, which takes the value of 1 for RM firms and 0 otherwise. All the other variables are defined as before. Consistent with the findings in Table 1, the reverse merger dummy is negatively correlated with firm size, leverage, the Tobin's Q ratio, and the P/E ratio, while it is positively associated with the book-to-market ratio and the return on assets ratio.

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

While Tables 1 and 2 provide some preliminary evidence on the relationships among key variables, such an analysis must be viewed cautiously given that other cross-sectional factors are not taken into consideration. For instance, the observed higher ROA ratio among RM firms may be largely attributable to earnings management.

3.2 Regression Models

To achieve a more direct assessment of the relationship between listing choices and earnings quality, multivariable regressions are further conducted. The dependent variables in the models are the alternative measures of earnings management: the absolute value of discretionary accruals, $|DA|$, and accruals quality, AQ. The key independent variable is the reverse merger dummy, DRM, which takes the value of 1 for RM firms and 0 otherwise. The control variables include firm size, $SIZE$, book-to-market ratio, BM, return on assets ratio, ROA, leverage ratio, LEV, trading volume, VOL, an industry dummy, IND, and a year dummy, YD. The control variables are chosen based on previous studies, data availability, and the nature of this study.[1] Here, the book-to-market ratio, return on assets ratio, leverage ratio, and trading volume are included to account for growth opportunities, profitability, capital structure, and liquidity, respectively. Specifically, the following models are estimated:

$$|DA| = \lambda_0 + \lambda_1 DRM + \lambda_2 SIZE + \lambda_3 BM + \lambda_4 ROA + \lambda_5 LEV + \lambda_6 VOL + \lambda_7 IND + \lambda_8 YD + \varepsilon \quad (4)$$

$$AQ = \lambda_0 + \lambda_1 DRM + \lambda_2 SIZE + \lambda_3 BM + \lambda_4 ROA + \lambda_5 LEV + \lambda_6 VOL + \lambda_7 IND + \lambda_8 YD + \varepsilon \quad (5)$$

[1] For a more rigorous analysis, the regressions are also conducted with additional control variables, such as firm age, sales growth, and an exchange dummy (exchange U.S. listing versus over-the-counter U.S. listing). These additional controls are neither statistically significant nor have any evident impact on the main results.

Observing a significant divergence in earnings quality between the "back door" firms and their "front door" peers, a natural question to ask is whether, and to what extent, the integrity of financial information is correctly incorporated into firm valuation and stock pricing. To address this question, the following regressions are conducted:

$$Q = \lambda_0 + \lambda_1 DRM + \lambda_2 SIZE + \lambda_3 PE + \lambda_4 ROA + \lambda_5 LEV + \lambda_6 VOL + \lambda_7 EM + \lambda_8 IND + \lambda_9 YD + \varepsilon \quad (6)$$

$$\alpha = \lambda_0 + \lambda_1 DRM + \lambda_2 SIZE + \lambda_3 PE + \lambda_4 ROA + \lambda_5 LEV + \lambda_6 VOL + \lambda_7 EM + \lambda_8 IND + \lambda_9 YD + \varepsilon \quad (7)$$

The dependent variables in the models are either firm value (as measured by the Tobin's Q ratio) or stock market performance (as measured by the annualized risk-adjusted abnormal return, α, form the CAPM). The independent variables include a reverse merger dummy, *DRM*, firm size, *SIZE*, price-to-earnings ratio, *PE*, return on assets ratio, *ROA*, leverage ratio, *LEV*, trading volume, *VOL*, a measure of earnings management, *EM*, which is an equally weighted average of the $|DA|$ value and the *AQ* value, an industry dummy, *IND*, and a year dummy, *YD*, Note that due to the special relationship between the book-to-market ratio and the Tobin's Q ratio, the price-to-earnings ratio, *PE*, is utilized in model (6) to account for growth opportunities.

To address the specific question of whether, and to what extent, the poor earnings quality among RM firms has been reflected in firm valuation (stock performance), the regressions are further repeated with an interaction term between the reverse merger dummy and earnings management, *DRM*EM*. In particular:

$$Q = \lambda_0 + \lambda_1 DRM + \lambda_2 SIZE + \lambda_3 PE + \lambda_4 ROA + \lambda_5 LEV + \lambda_6 VOL + \lambda_7 EM + \lambda_8 DRM * EM + \lambda_9 IND + \lambda_{10} YD + \varepsilon \quad (8)$$

$$\alpha = \lambda_0 + \lambda_1 DRM + \lambda_2 SIZE + \lambda_3 PE + \lambda_4 ROA + \lambda_5 LEV + \lambda_6 VOL + \lambda_7 EM + \lambda_8 DRM * EM + \lambda_9 IND + \lambda_{10} YD + \varepsilon \quad (9)$$

Where a negative and significant coefficient estimate of the interaction term, *DRM*EM*, would suggest that earnings management has a significant negative impact on firm valuation (stock performance) among reverse merger firms.

To ensure a rigorous analysis, close attention is paid to multicollinearity. While the correlation test indicates that there are a number of statistically significant relationships among explanatory variables, none of the VIF statistics is greater than 2.5, suggesting that the concern about multicollinearity among the independent variables does not appear to be warranted.

4. EMPIRICAL RESULTS

4.1 Empirical Results

Table 3 provides a comparison of earnings quality across the three groups of firms, where Panel A focuses on the absolute value of discretionary accruals, $|DA|$, and Panel B focuses on the accruals quality, AQ. In line with hypothesis *H1*, RM firms are found to manage earnings more aggressively than both IPO and ADR firms. While a higher level of discretionary accruals among RM firms is expected, it is rather surprising to see a $|DA|$ value that is more than 300% of lagged assets ($|DA| = 3.136$), as compared to 9.1% for IPO firms ($|DA| = 0.091$) and 15.7% for ADR firms ($|DA| = 0.157$). Consistent with the $|DA|$ measure, the AQ value is much higher among RM firms ($AQ = 0.135$) than among both IPO firms ($AQ = 0.084$) and ADR firms ($AQ = 0.054$). The mean differences are significant for both measures. As can be seen, our sample firms have much higher $|DA|$ and AQ values, on average, than those documented in previous studies (around 5% of lagged assets) for developed markets (c.f. Bergstresser and Philippon, 2006; Francis et al., 2005; Yu, 2008). This is consistent with the conventional belief that firms in emerging markets tend to have lower earnings quality due to the weak governance environment and insufficient investor protection. Overall, the results in Table 3 provide preliminary evidence that earnings quality is significantly lower among RM firms.

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

Table 4 reports the regression results regarding the impact of listing choices on earnings quality, where Panel A focuses on the absolute value of discretionary accruals, |*DA*|, and Panel B focuses on accruals quality, *AQ*. Consistent with the results reported in Table 3, the coefficient estimates on *DRM* are positive and significant in terms of both |*DA*| and *AQ* measures across different model specifications. The results suggest that RM firms tend to manage earnings more aggressively than both IPO and ADR firms, indicating a lower level of earnings quality for RM firms (hypothesis *H1* is supported). The relationship is unaffected by the measure of earnings quality utilized and is significant even after controlling for other factors.

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

Table 5 reports the regression results regarding the impact of listing choices and earnings quality on firm value, as measured by the Tobin's Q ratio. In contrast to hypothesis *H2*, no significant relationship is observed between listing choices and firm value. The coefficient estimates on the RM dummy is either insignificant or marginally significant. When the interaction term between the RM dummy and earnings management is not included (Model 1), the coefficient estimates on earnings management, *EM*, are insignificant across all three samples. While the coefficient estimates on *EM* become marginally significant in some regressions when the interaction term is included (Model 2), the positive sign indicates that earning management tends to have a positive, rather than negative, impact on firm value. In other words, the more aggressively the firms manipulate their earnings, the higher their valuations are. In terms of control variables, profitability (as measured by the ROA ratio) appears to have a positive impact on firm

value. All other control variables do not seem to have any material impact on firm value. Overall, these findings suggest that earnings quality is not correctly capitalized in firm valuation (hypothesis *H2* is not supported).

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

Table 6 reports the regression results regarding the impact of listing choices and earnings quality on stock performance, as measured by the risk-adjusted abnormal return, *Alpha*, form the CAPM. Consistent with the findings in Table 5, the coefficient estimates on the RM dummy, the earnings management measure, and the interaction term are all insignificant across different model specifications, suggesting that earnings quality is not capitalized in stock pricing (hypothesis *H3* is not supported). In terms of control variables, we find that firm size appears to have a negative impact on stock performance and the book-to-market ratio tends to have a positive impact on stock performance. All other control variables are statistically insignificant.

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

4.2 Robustness Checks

In the literature, an inevitable empirical challenge associated with studies that attempt to assess firm performance is endogeneity. With potential endogeneity, observing a significant relationship between two variables does not necessarily lead to the conclusion that A causes B. It is likely that B causes A (i.e., reverse causality), or there may be a third variable C that drives both

A and B (i.e., omitted-variables bias). In this study, the following approaches are utilized to address potential endogeneity issues:

First, note that endogeneity, omitted-variables bias in particular, is less of an issue for panel models than for cross-sectional models. This is because the past values of the variables in the panel automatically capture the effects of the missing variables. Second, our sampling criteria (specifically, the use of a balanced panel and the requirement that all sample firms must have been listed in the U.S. for at least three months prior to the start of the sample period) may, to a large extent, control for reverse casualty between listing choices (i.e., RM, IPO, or ADR) and firm valuation (stock performance).

Besides these efforts made in mitigating endogeneity, a standard robustness check is further conducted to gain additional confidence on the relationship between earnings quality and firm valuation (stock performance). In the literature, a standard remedy for endogeneity is the use of the two-stage model or instrumental variables. For a more rigorous analysis, therefore, the two-stage models are further conducted, where the fitted values of earnings management from the first stage are utilized in second-stage regressions. As Table 7 indicates, the results from the two-stage models are highly consistent with the findings in Tables 5 and 6, providing strong support to the empirical design of this study.

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

In addition to endogeneity checks, a series of robustness tests are conducted to investigate the direct relationship between the magnitude of earnings management and firm valuation (stock performance). Building upon the methodology commonly used in the price–earnings relationship

literature (e.g., Kothari and Zimmerman, 1995), this study examines the "price–earnings quality" relationship by regressing firm value and stock return on the magnitude of earnings management. Similar to the price–earnings relationship analysis, the focus is on both the significance of the estimated slope coefficient and the explanatory power of the model. In particular, if earnings quality is value-relevant, the estimated slope coefficient should be significantly different from zero and the model should explain a considerable portion of variations in firm value and stock performance.

Table 8 presents the regression results from the value-relevance tests. As can be seen, the coefficient estimates on earnings management are insignificant across all sub-samples and different model specifications, and the R-squared values are close to zero in all regression models. That is, no significant relationship is observed between the magnitude of earnings management and firm value (stock return) for U.S.-listed Chinese RM, IPO, and ADR firms. While earnings quality is value-relevant in none of the groups, RM firms are more of a serious concern given their low regulatory standards and poor earnings quality (as documented in Tables 3 and 4). Overall, these robustness checks provide additional support to the central argument that the poor earnings quality of RM firms is not capitalized and that there is a lack of attention on the integrity of financial information of foreign listings in general and RMs in particular.

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

5. CONCLUDING REMARKS

This study examines a panel sample of U.S.-listed Chinese RM firms, IPO firms, and ADR firms to address the question whether, and to what extent, the earnings quality is capitalized in

firm valuation and stock pricing by investors. Consistent with previous studies (e.g., Jindra et al., 2012; Givoly et al., 2014), U.S.-listed Chinese RM firms are found to manage their earnings more aggressively than both U.S.-listed Chinese IPO firms and U.S.-listed Chinese ADR firms, as measured by both the absolute value of discretionary accruals and the accruals quality. This fundamental difference, however, is reflected in neither firm valuation nor stock performance, suggesting that investors do not pay enough attention to the integrity of financial information of foreign listings in general and reverse merger firms in particular. The results are robust even after controlling for other factors and for endogeneity.

The present study contributes to the evolving literature in many ways. First, despite the growing interest in RM firms, there is no clear evidence on whether, and to what extent, the poor earnings quality of RM firms is incorporated into firm valuation and stock pricing. This study bridges this gap. As our empirical evidence indicates, earnings quality is capitalized in neither firm valuation nor stock pricing, suggesting that there is a lack of attention among investors on the integrity of financial information of foreign listings in general and RMs in particular.

Second, generally speaking, there are three possible ways a foreign firm can enter the U.S. market: IPO, ADR, and RM. Despite the expanding body of research on RM versus IPO firms (e.g., Adjei et al., 2008; Floros and Sapp, 2011; Gleason et al., 2005; Jindra et al., 2012), little attention has been paid to ADRs, and no systematic attempt to date has been made to address all three groups in an integrated framework. This study address all three means of U.S. listing in an integrated framework.

Besides its contributions to the academic literature, this study also offers new insights to policy makers and investors who intend to invest in foreign stocks. In particular, this paper calls

for an increased attention on the integrity of financial information of U.S. listed foreign firms, especially RM firms, for which the regulatory and disclosure standards are relatively low.

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Table 1. Summary Statistics

This table reports the summary statistics of the sample. 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 liabilities, divided by the stock market capitalization of the firm; *PE* is the price-to-earnings ratio, measured as adjusted closing price divided by contemporaneous earnings per share figure; *LEV* is the leverage (debt-to-equity) ratio; *ROA* is the return on assets ratio, computed as net income divided by total assets; *VOL* is the annual trading volume; *Q* is the Tobin's Q ratio, calculated as book value of total assets minus book value of equity plus market value of equity, divided by book value of total assets; and *RET* is annualized holding period return on a firm's common stock. The final sample consists of a balanced panel of 118 firms (45 RMs, 40 IPOs, and 33 ADRs), each with a continuous listing history over the entire sample period from 2007 to 2011. Standard deviations are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

	Full Sample	**RM (45 Firms)**	**IPO (40 Firms)**	**ADR (33 Firms)**	**Mean Diff. (IPO - RM)**	**Mean Diff. (ADR - RM)**
SIZE	6.6356 (2.04)	5.1703 (0.84)	6.0951 (1.05)	9.3415 (1.46)	0.9248***	4.1712***
BM	1.1987 (1.72)	1.6467 (2.35)	1.0894 (1.23)	0.6339 (0.53)	-0.5573	-1.0128***
PE	13.8814 (53.36)	5.7062 (27.89)	20.9674 (73.49)	16.7108 (49.72)	15.2612	11.0046
LEV	1.0389 (2.67)	0.9146 (2.40)	0.6663 (1.04)	1.6714 (4.00)	-0.2483	0.7568
ROA	0.061 (0.12)	0.1001 (0.11)	0.0235 (0.15)	0.0528 (0.07)	-0.0766**	-0.0473**
VOL	15.4885 (3.34)	15.3043 (2.81)	16.5529 (3.11)	14.3299 (3.96)	1.2486*	-0.9744
RET	0.3431 (2.80)	0.5714 (4.00)	0.2912 (1.95)	0.0771 (0.77)	-0.2802	-0.4943
Q	1.6586 (1.81)	1.3092 (0.83)	1.9082 (2.43)	1.8630 (1.82)	0.5990	0.5538

Table 2. Correlation Matrix

This table reports the correlation coefficients of key variables. The variables in the table are defined as follows: *Q* is the Tobin's Q ratio, *RET* is annualized holding period return on a firm's common stock, *DRM* is the reverse merger dummy, which takes the value of 1 for RM firms and 0 otherwise, *SIZE* is the size of the firm, *BM* is the book-to-market ratio, *PE* is the price-to-earnings ratio, *LEV* is the leverage (debt-to-equity) ratio, *ROA* is the return on assets ratio, and *VOL* is the annual trading volume. The final sample consists of a balanced panel of 118 firms (45 RMs, 40 IPOs, and 33 ADRs), each with a continuous listing history over the entire sample period from 2007 to 2011. Standard deviations are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

	Q	**RET**	**DRM**	**Size**	**BM**	**PE**	**ROA**	**LEV**	**VOL**
Q	1								
RET	0.149**	1							
DRM	-0.203***	0.078	1						
Size	0.105*	-0.125**	-0.875***	1					
BM	-0.349***	-0.134**	0.255***	-0.271***	1				
PE	0.028	0.033	-0.140**	0.150**	-0.053	1			
ROA	0.209***	0.055	0.239***	-0.306***	0.035	-0.004	1		
LEV	0.010	-0.003	-0.117**	0.139**	-0.023	0.004	-0.195***	1	
VOL	-0.105*	0.056	0.143*	0.017	0.107*	0.040	-0.151**	0.004	1

Table 3. Discretionary Accruals & Accruals Quality

This table presents alternative measures of earnings management: the absolute value of discretionary accruals, |*DA*|, and accruals quality, *AQ*. Here, |*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 final sample consists of a balanced panel of 118 firms (45 RMs, 40 IPOs, and 33 ADRs), each with a continuous listing history over the entire sample period from 2007 to 2011. Standard deviations are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

	Full Sample	**RM (45 Firms)**	**IPO (40 Firms)**	**ADR (33 Firms)**	**Mean Diff. (IPO–RM)**	**Mean Diff. (ADR–RM)**
|DA|	1.2781 (12.81)	3.1363 (16.80)	0.0907 (0.09)	0.1566 (0.20)	-3.0456***	-2.9798***
AQ	0.0950 (0.03)	0.1354 (0.01)	0.0837 (0.003)	0.0540 (0.004)	-0.0517***	-0.0814***

Table 4. Impact of Listing Choices on Earnings Quality

This table reports the regression results regarding the impact of listing choices on earnings management. The dependent variable is either the absolute value of discretionary accruals, |*DA*|, or accruals quality, *AQ*. The independent variables include a reverse merger dummy, *DRM*, firm size, *SIZE*, book-to-market ratio, *BM*, return on assets, *ROA*, leverage ratio, *LEV*, trading volume, *VOL*, an industry dummy, *IND*, and a year dummy, *YD*. The final sample consists of a balanced panel of 118 firms (45 RMs, 40 IPOs, and 33 ADRs), each with a continuous listing history over the entire sample period from 2007 to 2011. The *t*-values are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

	Panel A: Discretionary Accruals			**Panel B: Accruals Quality**		
	Full Sample	***RM vs. IPO***	***RM vs. ADR***	***Full Sample***	***RM vs. IPO***	***RM vs. ADR***
Intercept	0.8775***	0.1644	1.7435***	0.0905***	0.0831***	0.0448***
	(4.68)	(0.76)	(5.24)	(16.51)	(40.6)	(12.19)
DRM	**0.1575*** **	**0.2110*** **	**-0.1428**	**0.0567*** **	**0.0539*** **	**0.0860*** **
	(**3.27**)	(**3.92**)	(**-1.27**)	(**41.10**)	(**105.76**)	(**70.09**)
SIZE	-0.0521***	-0.0761***	-0.1375***	-0.0041***	0.0008***	0.0011***
	(-3.98)	(-3.40)	(-4.94)	(-10.53)	(3.36)	(3.42)
BM	-0.0181*	-0.0161	-0.0195	0.0001	0.0001	0.0002
	(-1.80)	(-1.55))	(-1.46)	(0.31)	(0.50)	(0.73)
ROA	0.0566	0.0725	-0.2994	-0.0059	-0.0038***	-0.0020
	(0.40)	(0.48)	(-1.06)	(-1.48)	(-2.64)	(-0.66)
LEV	0.0038	0.0014	0.0051	-0.0001	-0.0008***	-0.0001*
	(0.61)	(0.13)	(0.66)	(-0.36)	(-5.88)	(-1.80)
VOL	0.0073	0.0202	0.0084	0.0005***	-0.0001**	0.00001
	(1.36)	(2.89)	(0.98)	(3.73)	(-2.58)	(0.12)
IND	Included	Included	Included	Included	Included	Included
YD	Included	Included	Included	Included	Included	Included
R-Squared	0.2539	0.3813	0.2899	0.9462	0.9911	0.9922

Table 5. Impact of Listing Choices & Earnings Quality on Firm Value

This table reports the regression results regarding the impact of listing choices and earnings quality on firm value, as measured by Tobin's Q. The independent variables include a reverse merger dummy, *DRM*, firm size, *SIZE*, price-to-earnings ratio, *PE*, return on assets, *ROA*, leverage ratio, *LEV*, trading volume, *VOL*, a measure of earnings management, *EM*, which is an equally weighted average of the |*DA*| value and the *AQ* value, an interaction term between the reverse merger dummy and earnings management, *DRM*EM*, an industry dummy, *IND*, and a year dummy, *YD*. The final sample consists of a balanced panel of 118 firms (45 RMs, 40 IPOs, and 33 ADRs), each with a continuous listing history over the entire sample period from 2007 to 2011. The *t*-values are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

	Panel A: Full Sample		**Panel B: RM vs. IPO**		**Panel C: RM vs. ADR**	
	Model 1	***Model 2***	***Model 1***	***Model 2***	***Model 1***	***Model 2***
Intercept	-1.3913 (-1.10)	-2.1190 (-1.57)	-1.7279 (-1.11)	-1.9212 (-1.22)	-0.2098 (-0.14)	-0.8666 (-0.55)
DRM	**-0.6361*** (**-1.97**)	**-0.2651** (**-0.65**)	**-0.5239** (**-1.41**)	**-0.1353** (**-0.25**)	**-0.9147*** (**-1.82**)	**-0.6102** (**-1.13**)
SIZE	0.1770* (1.96)	0.1750* (1.94)	0.2782* (1.78)	0.2783* (1.78)	0.0947 (0.72)	0.0886 (0.68)
PE	0.0019 (1.02)	0.0019 (1.03)	0.0028 (1.35)	0.0029 (1.39)	-0.0013 (-0.48)	-0.0015 (-0.56)
ROA	5.7549*** (6.36)	5.8158*** (6.44)	4.6819*** (4.72)	4.7248*** (4.76)	4.2785*** (3.78)	4.3144*** (3.83)
LEV	-0.0066 (-0.17)	-0.0020 (-0.05)	0.0014 (0.01)	0.0020 (0.02)	0.0019 (0.06)	0.0061 (0.21)
VOL	0.0424 (1.30)	0.0357 (1.09)	0.0663 (1.62)	0.0617 (1.49)	0.0169 (0.53)	0.0117 (0.36)
EM	**0.7249** (**1.25)**	**4.4743*** (**1.75)**	**0.5415** **(0.80**)	**4.4004** **(1.1**)	**0.6839** **(1.50**)	**4.2169*** **(1.74**)
DRM*EM		**-3.8774** (**-1.50)**		**-3.9348** **(-0.98**)		**-3.6053** **(1.48**)
IND	Included	Included	Included	Included	Included	Included
YD	Included	Included	Included	Included	Included	Included
R-Squared	0.1939	0.2004	0.1737	0.1774	0.2041	0.2143

Table 6. Impact of Listing Choices & Earnings Quality on Stock Performance

This table reports the regression results regarding the impact of listing choices and earnings quality on stock performance, as measured by the risk-adjusted abnormal return, *Alpha*. The independent variables include a reverse merger dummy, *DRM*, firm size, *SIZE*, book-to-market ratio, *BM*, return on assets, *ROA*, leverage ratio, *LEV*, trading volume, *VOL*, a measure of earnings management, *EM*, which is an equally weighted average of the |*DA*| value and the *AQ* value, an interaction term between the reverse merger dummy and earnings management, *DRM*EM*, an industry dummy, *IND*, and a year dummy, *YD*. The final sample consists of a balanced panel of 118 firms (45 RMs, 40 IPOs, and 33 ADRs), each with a continuous listing history over the entire sample period from 2007 to 2011. The *t*-values are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

	Panel A: Full Sample		**Panel B: RM vs. IPO**		**Panel C: RM vs. ADR**	
	Model 1	***Model 2***	***Model 1***	***Model 2***	***Model 1***	***Model 2***
Intercept	0.7380	0.5129	-0.1612	-0.2712	3.1277*	3.0365
	(0.73)	(0.47)	(-0.13)	(-0.21)	(1.79)	(1.65)
DRM	**-0.0900**	**0.0226**	**-0.2072**	**-0.0362**	**-0.7047**	**-0.6619**
	(**-0.36**)	(**0.07**)	(**-0.63**)	(**0.08**)	(**-1.29**)	(**-1.09**)
SIZE	-0.1246*	-0.1247*	-0.2602*	-0.2602*	-0.3501**	-0.3507**
	(-1.72)	(-1.72)	(-1.83)	(-1.82)	(-2.38)	(-2.38)
BM	0.3403***	0.3415***	0.3448***	0.3450***	0.3778***	0.3783***
	(4.43)	(4.44)	(3.93)	(3.93)	(4.01)	(4.00)
ROA	-0.2426	-0.2259	-0.8425	-0.8123	-0.8338	-0.8323
	(-0.34)	(-0.32)	(-0.95)	(-0.91)	(-0.61)	(-0.61)
LEV	-0.0168	-0.0154	-0.0958	-0.0953	-0.0024	-0.0018
	(-0.54)	(-0.49)	(-1.08)	(-1.07)	(-0.07)	(-0.05)
VOL	0.0174	0.0154	0.0243	0.0212	0.0139	0.0132
	(0.68**)**	(0.60**)**	(0.67**)**	(0.58**)**	(0.36**)**	(0.34)
EM	**-0.1633**	**0.9676**	**0.1483**	**2.5859**	**-0.6369**	**-0.1536**
	(**-0.36)**	(**0.48)**	(**0.24)**	(**0.72)**	(**-1.14)**	(**-0.05)**
DRM*EM		**-1.1691**		**-2.4854**		**-0.4935**
		(**-0.57)**		(**-0.69)**		(**-0.17)**
IND	Included	Included	Included	Included	Included	Included
YD	Included	Included	Included	Included	Included	Included
R-Squared	0.1350	0.1360	0.1534	0.1552	0.1913	0.1914

Table 7. Robustness Check: The Two-Stage Models

This table reports the regression results from the two-stage models, where the fitted values of earnings management from the first stage are used in second-stage regressions. Panel A focuses on the impact of earnings quality on firm value, as measured by Tobin's Q. Panel B focuses on the impact of earnings quality on stock performance, as measured by the risk-adjusted abnormal return, *Alpha*. The independent variables include a reverse merger dummy, *DRM*, firm size, *SIZE*, book-to-market ratio, *BM* (or price-to-earnings ratio, *PE*), return on assets, *ROA*, leverage ratio, *LEV*, trading volume, *VOL*, a measure of earnings management, *EM*, which is an equally weighted average of the |*DA*| value and the *AQ* value, an industry dummy, *IND*, and a year dummy, *YD*. The final sample consists of a balanced panel of 118 firms (45 RMs, 40 IPOs, and 33 ADRs), each with a continuous listing history over the entire sample period from 2007 to 2011. The *t*-values are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

	Panel A: Impact of EM on Tobin's Q			**Panel B: Impact of EM on Stock Return**		
	Full Sample	***RM vs. IPO***	***RM vs. ADR***	***Full Sample***	***RM vs. IPO***	***RM vs. ADR***
Intercept	-9.1130 (-1.62)	-5.8560 (-1.60)	-4.9483 (-1.13)	7.4723 (1.5)	0.3578 (0.21)	5.2121 (1.18)
DRM	-2.1370* (-1.85)	-2.8030* (-1.96)	-0.9172 (-1.34)	1.1722 (1.14)	-0.2750 (-0.40)	-0.8330 (-1.38)
SIZE	0.6052* (1.84)	0.8999** (2.02)	0.4190 (1.26)	-0.4984* (-1.73)	-0.3116 (-1.40)	-0.4945 (-1.53)
PE/BM	0.0017 (0.53)	0.0029 (0.74)	-0.0011 (-0.30)	0.2849** (2.08)	0.3189*** (3.50)	0.3527*** (3.45)
ROA	5.0492*** (3.33)	3.5457* (1.79)	3.4030** (2.36)	0.2209 (0.17)	-0.7554 (-0.79)	-0.6694 (-0.45)
LEV	-0.0060 (-0.09)	-0.0010 (-0.01)	0.0019 (0.05)	-0.0194 (-0.36)	-0.0936 (-1.04)	-0.0045 (-0.12)
VOL	0.0505 (0.92)	0.0470 (0.59)	0.0325 (0.76)	0.0100 (0.22)	0.0116 (0.30)	-0.0037 (-0.08)
EM	**15.4658** **(1.51)**	**18.938*** **(1.85)**	**6.2211** **(1.38)**	**-12.7892** **(-1.40)**	**0.2423** **(0.05)**	**-2.2261** **(-0.47)**
IND	Included	Included	Included	Included	Included	Included
YD	Included	Included	Included	Included	Included	Included
R-Squared	0.0892	0.0733	0.1239	0.0608	0.1653	0.1936

Table 8. Robustness Check: The Value Relevance of Earnings Quality

This table reports the regression results on the relationship between the magnitude of earnings management and firm value (stock return), where earnings management, *EM*, is measured as the equally weighted average of the |*DA*| value and the *AQ* value. The final sample consists of a balanced panel of 118 firms (45 RMs, 40 IPOs, and 33 ADRs), each with a continuous listing history over the entire sample period from 2007 to 2011. The *t*-values are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

	Panel A: EM & Firm Value			**Panel B: EM & Stock Return**		
	RM	***IPO***	***ADR***	***RM***	***IPO***	***ADR***
Intercept	1.4303***	1.6801***	1.8032***	1.0743**	0.4109	0.1425
	(16.99)	(3.03)	(5.36)	(2.45)	(1.60)	(1.10)
EM	0.1664	4.0717	2.1692	-0.0079	-1.2098	0.2725
	(0.77)	(0.78)	(0.89)	(-0.40)	(-0.49)	(0.30)
R-Squared	0.0050	0.0056	0.0107	0.0014	0.0023	0.0011