Private Class Action Litigation Risk of Chinese Firms Listed in the US

Jan Jindra*

U.S. Securities and Exchange Commission
44 Montgomery Street
San Francisco, CA 94104, USA
jj@janjindra.com

Torben Voetmann

University of San Francisco, San Francisco
CA 94105, USA
The Brattle Group, San Francisco
CA 94105, USA
Torben.voetmann@brattle.com

Ralph A. Walkling

LeBow College of Business, Drexel University
3141 Chestnut Street, Philadelphia
PA 19104, USA
raw38@drexel.edu

We analyze the litigation risk of Chinese firms listed in the US. We find that firm-specific characteristics from prior literature studying US firms are not correlated with the litigation risk of US-listed Chinese firms. However, our findings indicate that the method of listing is the only reliable predictor of litigation risk — firms listing via reverse merger are significantly more likely to face lawsuits compared to firms listing via initial public offering (IPO). We find that Chinese reverse merger (CRMs) firms, relative to Chinese IPOs, have lower analyst following, similar post-listing stock performance, higher operating cash flows, smaller size, and lower cash holdings. We conclude that the litigation risk differential is consistent with the bonding hypothesis of [Stulz 1999, Globalization of Equity Markets and the Cost of Capital, *Journal of Applied Corporate Finance* 12, 8–25], wherein the higher litigation risk of CRMs is a

---

*Corresponding author.

reflection of increased but varying levels of monitoring, starting with the regulatory oversight at the pre-listing stage and a post-listing tradeoff between enforcement and monitoring by shareholders.

1. Introduction

In the last 15 years, there has been a surge in listings of Chinese firms in US equity markets. This surge in listings has subsequently been followed by a surge in private class action lawsuits and increasing enforcement actions involving these firms. In this paper, we analyze the litigation risk of the Chinese firms listed in the US. Surprisingly, we find that the litigation risk is unrelated to previously documented firm-characteristics associated with litigation. Instead, our findings show that the cross-sectional variation in litigation risk of Chinese firms listed in the US reflects their commitment to a corporate governance system that is subject to US securities laws and regulatory oversight.

Chinese firms' initial listings in the US frequently make front page headlines. For example, Alibaba's initial public offering on 19 September 2014 raised $25 billion on NYSE, including underwriters' overallotment options. However, many of the US-listed Chinese firms have been accused of fraud and these allegations also frequently make front page headlines. For example, on 17 March 2010, the shares of Fuqi International declined more than 35% overnight, following an announcement of the company's alleged accounting errors and internal control deficiencies. Hence, understanding of the factors affecting litigation risk of Chinese firms listed in the US is of interest to shareholders, foreign managers of firms considering US listing, regulators, and academics.

We find a litigation risk differential between Chinese firms listing via reverse merger (CRMs)[1] and Chinese initial public offering (IPO) firms. We

---

[1] A reverse merger transaction (or reverse takeover) generally involves two companies, a publicly listed company and a private company seeking public listing or cross-border listing (Adjei *et al.*, 2008). Reverse mergers can also be structured as a reverse triangular merger where a shell company forms a new subsidiary and the private companies are merged with the newly formed subsidiary (Sjostrom, 2008). The public firm is usually only a "shell" company — i.e., it has little or only nominal assets, and is merely listed on an exchange. As a result of the transaction, the private company is acquired by the public company and merged into it (Floros and Sapp, 2011). In exchange for contributing substantially to all of the surviving firm's assets, the private company's shareholders are issued a controlling stake in the surviving firm. Hence, the public company contains the operating assets and liabilities of the private company and retains its stock exchange listing.

examine whether this litigation risk differential can be explained by the bonding hypothesis (Stulz, 1999). Generally, under the bonding hypothesis, when firms from countries with less established disclosure requirements and poorer shareholding protection rights list in the US, they become subject to monitoring by US regulators and private parties. Under the bonding hypothesis, cross-listed firms are subject to greater scrutiny and monitoring by gatekeepers such as regulators, underwriters, issuers' legal advisors, analysts, and (institutional) investors. The role of gatekeepers is to act in a way that is consistent with the protection of minority shareholders (Reese and Weisbach, 2002). Caglio *et al.* (2013) suggest that foreign IPOs are typically from countries with less developed capital markets and lower disclosure standards. Stulz (2009) find that the IPO proceeds are larger when there is a higher difference between the disclosure laws of the home and the foreign country.

Addressing Chinese firms, Siegel and Wang (2013, p. 8) propose that foreign firms seek stricter rules and enforcement of corporate law in the US, but also note that "some of these reverse mergers may be used as an instrument for the owner-manager to engage in fraud". In the specific context involving CRMs and Chinese IPO firms, there is differential monitoring of the two types of firms starting with the listing process. During the listing process, while the IPO prospectus is scrutinized by investors, underwriters, and the regulators, there is notably less scrutiny applied to the reverse merger listing. Specifically, as part of the IPO process and soon after a firm has received and addressed comments from the Securities and Exchange Commission (SEC) about its initial prospectus, the firm goes on a road show, subjecting itself to the scrutiny of investors (Hanley and Hoberg, 2012). In contrast, for reverse mergers the only requirement is a disclosure through an SEC Form 8-K.[2]

---

[2] An important characteristic of a reverse merger is that the transaction itself does not raise new capital for either the public shell or the private firm. Frequently, however, reverse mergers raise capital through a private investment in public equity (PIPE) financing option (Floros and Sapp, 2011). Compared to an IPO, the benefits to reverse mergers by relying on a PIPE transaction are less time commitment, lower registration expenses, and fewer initial disclosure requirements (Chaplinsky and Haushalter, 2010). It is not surprising that reverse merger companies engage in raising equity capital since the shell company does not typically have cash reserves to finance the operations of the surviving company (Asquith and Rock, 2011). In our sample, 69 firms (43 CRMs and 26 Chinese IPO firms) out of 207 use PIPE financing following their listing based on data from CapIQ. In untabulated results, we analyze the effect of PIPE financing on our conclusions and find that usage of PIPE financing is not related to litigation risk. Untabulated univariate results indicate that CRMs are significantly more likely to use PIPE financing when compared to Chinese IPO firms, however, the significance disappears in multivariate comparison. Hence, our conclusions are not affected by the presence of PIPE transactions in our sample.

By not filing registration statements and prospectuses, CRMs avoid the initial scrutiny of regulators, underwriters, and investors during the underwriting process. We argue that the increased litigation risk of CRMs reflects in part the lower level of scrutiny applied to them during the listing process (Aguilar, 2011).

We also propose that after listing on a US exchange, differential following of CRMs and Chinese IPO firms by analysts and institutions has implication for the bonding hypothesis. Specifically, relative to Chinese IPO firms, lower analyst and institutional following of CRMs makes monitoring of CRMs more expensive and less pervasive, consequently increasing the risk of litigation (Chemmanur et al., 2008).[3] Consistent with our predictions, we find that relative to Chinese IPO firms, CRMs are followed by fewer analysts after the listing, making them less transparent and, as a result, increasing the cost of monitoring. Overall, we conclude that the litigation risk differential between CRMs and Chinese IPO firms is consistent with the lower scrutiny faced by the CRMs during the listing process as well as following the listing, as both sets of firms commit to the enforcement of shareholder rights in the US.

In addition to the bonding hypothesis, we examine two other explanations of the litigation risk differential: post-listing stock performance and "deep-pockets". Prior literature on litigation risk suggests that firms with poor stock price performance are more likely to be subject to private class action lawsuits (Cheng et al., 2014; Arena and Julio, 2015). Hence, under the post-listing stock performance explanation, we expect that CRMs would perform poorly relative to Chinese IPO firms. We measure stock performance as the cumulative abnormal stock return over various post-listing periods. The results indicate that both sets of firms experience similar poor post-listing stock performance, a result inconsistent with the post-listing stock performance explanation.

Prior literature also suggests that firms with "deep-pockets" face increased litigation risk (Walker et al., 2015). Under the "deep-pockets" explanation, the litigation risk increases with the size of the firm, its cash holdings, and its ability to generate cash internally. Relative to Chinese IPO firms, we find

---

[3] Doidge et al. (2004) show that foreign firms from countries with poor disclosure requirements and poor protection of shareholders' rights enhance their valuations when listing in the US. The change in valuations of the US-listed foreign firms is correlated with changes in analyst coverage and the improved information environment for investors (Lang et al., 2003). Dechow et al. (1996) find that powerful or less closely monitored chief executive officers (CEOs) are more likely to engage in aggressive financial reporting and other types of opportunistic behavior and face higher likelihood of litigation.

that CRMs have higher operating cash flows, a result consistent with the "deep-pockets" explanation. However, CRMs are smaller and hold less cash than Chinese IPO firms. This result is contrary to the well-documented positive correlation of firm size and cash holdings with the likelihood of private class action lawsuits for US firms (Jones and Weingram, 1996; Choi, 2004; Kim and Skinner, 2012; Walker *et al.*, 2015). Overall, we conclude that the evidence is inconsistent with the "deep-pockets" explanation of the litigation risk differential between CRMs and Chinese IPO firms.

We make several contributions to the current literature on cross-listing and litigation risk. First, we quantify the higher incident of litigation risk that US-listed CRMs face in the US as compared to Chinese IPO firms. Second, we demonstrate that previously documented firm-specific characteristics explaining the likelihood of litigation are insignificant in our sample of Chinese firms listed in the US. Finally, we argue that the litigation risk differential between CRMs and Chinese IPO firms is consistent with the firms committing to the US system of enforcing shareholder rights, and the increased risk of litigation reflects the lower level of scrutiny by regulators, analysts, investment bankers, institutional investors, and other stakeholders faced by the CRMs during and after the listing process.

2. Data

We collect a sample of Chinese firms that listed in the US between 2000 and 2010 ending our sample in 2010 to allow sufficient time for us to observe a lawsuit after the listing. The Chinese firms included in our sample listed in the US in one of two ways: a reverse merger or an IPO. We include both types of US listings in our analysis, and excluded some firms that could not be reliably confirmed as one or the other.

We identify CRMs listing in the US between 2000 and 2010 from several sources. First, we search for transactions from the Thomson Reuters SDC Mergers and Acquisitions Database (SDC) that are classified as CRMs. We supplement this list with Chinese firms in the Bloomberg Reverse Merger Index as of 31 December 2010. These two sources yield a total of 80 observations. We then perform a search of public press articles on Factiva using the search term "Chinese reverse merger". This search identifies an additional 35 CRMs. A review of the information on all 115 transactions reveals that eight firms actually used an IPO to list their shares in the US. We delete these transactions from our sample of CRMs. We also delete two more transactions from the sample because they do not appear to involve a reverse merger. For

Table 1.   Sample distribution.

Panel A: Year of Listing	Number of Observations	Percent of Sample
2000	5	2.4%
2001	1	0.5%
2002	1	0.5%
2003	6	2.9%
2004	18	8.7%
2005	20	9.7%
2006	26	12.6%
2007	51	24.6%
2008	23	11.1%
2009	24	11.6%
2010	32	15.5%
2000–2004	31	15.0%
2005–2010	176	85.0%
Total	207	100.0%
Panel B: Fama-French Industries	Number of Observations	Percent of Sample
1. Consumer NonDurables	13	6.3%
2. Consumer Durables	6	2.9%
3. Manufacturing	24	11.6%
4. Oil, Gas, Coal Extraction/Products	4	1.9%
5. Chemicals and Allied Products	7	3.4%
6. Business Equipment	56	27.1%
7. Telephone and TV Transmission	5	2.4%
8. Utilities	0	0.0%
9. Wholesale, Retail, and Services	16	7.7%
10. Healthcare, Med. Equip., Drugs	19	9.2%
11. Finance	9	4.3%
12. Other	48	23.2%
Total	207	100.0%
Panel C: State of Incorporation	Number of Observations	Percent of Sample
Non-US Incorporation	147	71.0%
Colorado	1	0.5%
Delaware	22	10.6%
Florida	8	3.9%
Nebraska	1	0.5%
Nevada	27	13.0%
North Carolina	1	0.5%
Total	207	100.0%

Note: This table reports the number of Chinese firms listed on a major US stock exchange between 2000 and 2010 for which public data are available from CRSP and Compustat.

two additional transactions, we are unable to confirm whether or not their US-listing involved reverse mergers, and thus we delete them as well. Finally, we exclude two transactions that could not be matched to the Center for Research in Security Prices (CRSP) and Compustat databases.[4] This leaves a final sample of 101 CRMs.

Chinese firms pursuing an IPO in the US between 2000 and 2010 are identified using the Thomson Reuters SDC New Issue Database. We exclude all transactions not classified as IPOs by SDC and identify an initial sample of 130 Chinese IPOs in the US. After excluding firms that cannot be matched to the CRSP and Compustat databases, we have a final sample of 106 Chinese IPOs.

Table 1, Panel A, displays a year-by-year breakdown of our final sample of all Chinese firms listing in the US. A total of 31 listings of Chinese firms in the US were completed between 2000 and 2004 compared to 176 between 2005 and 2010. Untabulated results indicate a slowdown in Chinese IPOs during the financial crisis in 2008 and 2009, while the activity in the CRMs remained relatively stable.

Table 1, Panel B, displays a breakdown of our sample firms according to the Fama-French (12) industries classification. The top three industries (Business Equipment, "Other", and Manufacturing) comprise 27%, 23%, and 12% of the sample, respectively. The "Other" category includes: Mines, Construction, Building Materials, Transportation, Hotels, Business Services, and Entertainment.

Table 1, Panel C, displays a breakdown of the sample by state of incorporation. About 71% of Chinese firms listing in the US are incorporated outside the US. About 13% are incorporated in Nevada, and 11% are incorporated in Delaware.

3. Litigation Risk of Chinese Firms Listed in the US

In this section, we discuss our analysis of the determinants of the likelihood of Chinese firms facing private class action lawsuits in the US. We first present our univariate tests, and then discuss our multivariate logistic regressions.

---

[4]We note that requiring CRSP data effectively requires that a firm is listed a major US exchange. Doidge (2004) argues that the bonding mechanism of foreign firms only applies to listings on major US exchanges and provides support that the bonding effect does not apply to firms listing on non-major US exchanges such as Pink Sheets. We, therefore, focus only on CRMs listed on major US exchanges. We confirm that all CRMs are listed on a major exchange by conducting public press searches and by examining CRSP data to determine the first date that a stock began trading on AMEX, NASDAQ, or NYSE.

3.1. *Univariate analysis*

Table 2 presents the univariate comparisons of US-listed Chinese firms subject to litigation with those that are not subject to litigation. We use the Stanford Securities Class Action Clearing House database to identify firms subject to litigation in the US.[5] In our sample, a total of 55 Chinese firms are subject to private securities class action litigation.

Previous research suggests that firm size is an important determinant of private class action lawsuits, and that large firms (measured by total assets) face higher litigation risk relative to small firms (Choi, 2004; Kim and Skinner, 2012). However, within our sample we find that neither the mean

Table 2.   Sample characteristics.

		Subject to Private Class Action Litigation?		
		Yes ($N = 55$)	No ($N = 144$)	Difference
Total Assets	*Mean*	$897.9	$744.5	−$153.3
	Median	$133.5	$133.9	$0.4
(Cash+Cash Equivalents)/Total Assets	*Mean*	41.47%	38.71%	−2.75%
	Median	38.16%	31.86%	−6.30%
Operating CF/Total Assets	*Mean*	8.10%	6.55%	−1.55%
	Median	8.76%	8.93%	0.17%
Tobin's Q	*Mean*	3.13	3.51	0.38
	Median	2.46	2.21	−0.26
Leverage	*Mean*	8.00%	11.67%	3.66%*
	Median	2.61%	3.83%	1.22%
R&D/Total Assets	*Mean*	1.10%	1.33%	0.23%
	Median	0.20%	0.20%	0.00%
Capex/Total Assets	*Mean*	6.03%	6.34%	0.31%
	Median	2.27%	2.91%	0.64%
Chinese Reverse Merger	*Mean*	56.14%	45.95%	−10.19%

Note: This table reports the summary characteristics of the Chinese firms cross-listed in the US classified as subject/not subject to private class action litigation in the US. The sample is described in Table 1. The characteristics are measured at the fiscal year-end immediately following the uplisting to or IPO on a major US stock exchange. For each characteristic, we compare the mean and median. Tobin's Q is calculated as the sum of book value of debt and market value of common stock divided by the book value of total assets. Leverage is the total debt divided by total assets. ***, ** and * are for the tests of differences in means and medians for the two samples and indicate statistical significance at 1%, 5%, and 10%, respectively.

[5] Consistent with Kim and Skinner (2012), we consider litigation risk as the exposure to private class action lawsuits. Choi and Pritchard (2016) argue that class action lawsuits help market participants recognize importance of regulatory investigations.

nor the median total assets of Chinese firms facing litigation is significantly different from the assets of firms not facing litigation. Arena and Julio (2015) demonstrate that firm's cash holdings are positively correlated to the likelihood of a private class action lawsuit in their sample of US firms. Therefore, in our analysis, we consider both cash and the ability to generate cash internally, i.e., cash flows (relative to total assets). We note that in our sample neither cash nor cash flows are significantly different between US-listed Chinese firms that are facing litigation and those that are not.

We also collect data for the following characteristics: Tobin's Q, leverage, R&D and CAPEX. We calculate the Tobin's Q-ratio as (market value of equity + book value of total assets–book value of equity) divided by book value of assets. La Porta *et al.* (2002) and Doidge (2004) argue that the Tobin's Q-ratio may be an indication of firms with better investor protection and investment opportunities. Market and book values are measured at the fiscal year end immediately following the reverse merger or IPO. We note that the Tobin's Q-ratio is similar in the two subsamples. We calculate leverage as total debt divided by the total assets. Christensen (2016) argues that leverage provides incentives for firms to engage in misconduct, which may increase the likelihood of a private class action lawsuit. Our results contradict this argument — within our sample, US-listed Chinese firms facing litigation exhibit significantly lower leverage than firms not facing litigation (*p*-value of 0.072). R&D and CAPEX relative to total assets are included in our analysis because they have previously been demonstrated to affect litigation risk (Kim and Skinner, 2012). For example, Arena and Julio (2015) demonstrate that capital expenditures are positively related to litigation in their sample of US firms. In our sample, there are no significant differences in either R&D or CAPEX between the litigated and non-litigated firms.

Finally, we note that within our sample, CRMs account for both about half of the sued and not sued Chinese firms. Specifically, CRMs represent 56% of Chinese firms facing litigation and 46% of Chinese firms that are not facing litigation, with the difference not being statistically significant (*p*-value of 0.193).

Overall, the univariate evidence in Table 2 suggests a lack of correlation between firm size, *Q*-value, leverage, R&D, and CAPEX and incidence of litigation. As a result, our findings suggest that the US-listed Chinese firms that are subject to litigation do not differ significantly from the Chinese firms that are not subject to litigation.

3.2. *Logistic analysis of likelihood of litigation*

In Table 3, we report the results of our multivariate logistic regressions analysis of the likelihood that a US-listed Chinese firm faces private class action lawsuits in the US. Following Kim and Skinner (2012), we examine the *ex ante* litigation risk by excluding variables that directly reflect events that trigger litigation in the first place. The regressions include the previously discussed firm-specific variables: total assets, cash holdings, operating cash flows, Tobin's Q, leverage, R&D, and CAPEX. We also include an indicator variable set equal to one for CRMs and to zero for Chinese IPOs. Regressions in columns (2) and (4) also include industry fixed effects based on the Fama–French 12-industry groups.

None of the continuous variables has a significant coefficient in column (1). The CRM indicator has a positive coefficient that is statistically significant at

Table 3. Logistic regression analyzing the probability of private class action lawsuit.

	(1)	(2)	(3)	(4)
Total Assets	0.030	0.037		
	(0.358)	(0.337)		
Log(Total Assets)			0.211	0.283
			(0.210)	(0.124)
(Cash+Cash Equivalents)/Total Assets	1.366	1.470	1.270	1.400
	(0.142)	(0.125)	(0.155)	(0.132)
Operating CF/Total Assets	−0.518	−1.309	−0.499	−1.344
	(0.661)	(0.309)	(0.668)	(0.289)
Tobin's Q	−0.019	−0.025	−0.009	−0.011
	(0.615)	(0.556)	(0.814)	(0.798)
Leverage	−1.929	−2.101	−2.157	−2.411*
	(0.150)	(0.134)	(0.112)	(0.093)
R&D/Total Assets	−2.873	−3.530	−2.312	−2.855
	(0.641)	(0.596)	(0.705)	(0.664)
Capex/Total Assets	0.217	0.566	0.109	0.361
	(0.920)	(0.808)	(0.959)	(0.876)
Chinese Reverse Merger	0.960**	0.910*	1.158**	1.173**
	(0.036)	(0.067)	(0.024)	(0.034)
Industry FE	No	Yes	No	Yes
Pseudo R-Squared	0.057	0.123	0.062	0.133
Pr(Likelihood Ratio)	0.438	0.471	0.364	0.376
N	199	199	199	199

Note: This table shows estimates of logistic regressions modeling the probability of a Chinese firm becoming a defendant in a US Class Action Litigation in the US prior to 30 April 2012 (based on Stanford Securities Clearing House). The sample is described in Table 1. Tobin's Q is calculated as the sum of book value of debt and market value of common stock divided by the book value of total assets. Leverage is the total debt divided by total assets. ***, **, and * indicate statistical significance at 1%, 5%, and 10%, respectively.

the 0.05 level, suggesting that CRMs are more likely to face private class action lawsuits. In column (2), we further control for industry fixed effects, with results similar to those in column (1): none of the continuous firm characteristics has a significant coefficient and CRM indicator has a positive coefficient, with a p-value of 0.067.

We also explore the sensitivity of these results to an alternative measurement of firm size as log (Total Assets). The results in column (3) show that the coefficient on the log of size variable remains insignificant. Hence, our finding that size is not related to the litigation risk is robust to an alternative measurement of firm size. In column (4), we again include industry fixed effects to assess the robustness of the model in column (3). The CRM indicator continues to have a positive and significant coefficient at the 0.05 level while other coefficients remain insignificant at the 0.05 level.

In untabulated analysis, we replicate the analysis in Table 3 for the CRM and Chinese IPO samples separately. The results for CRMs indicate that the coefficient on cash holdings is consistently positive and significant at the 0.05 level. This result is consistent with prior literature for US firms subject to class action litigation. We also note that for CRMs, leverage has consistently negative coefficients, significant at the 0.10 level. For Chinese IPO firms, no coefficients in any of the four models are significant.

Overall, the surprising result of our logistic regression analysis is that none of the factors previously shown to be related to the likelihood of litigation is significant in our sample of Chinese firms listed in the US. However, we find that CRMs faced significantly higher incidents of private class action lawsuits after listing in the US, *ceteris paribus*. This result suggests that while reverse mergers may mitigate many of the costs of the traditional IPO process for small firms (Gleason *et al.*, 2005; Aydogdu *et al.*, 2007), CRMs likely face higher indirect costs of listing in the US arising from the higher likelihood of private class action lawsuits subsequent to their listing.

4. Litigation Risk Differential: CRMs Versus Chinese IPO Firms

In this section, we first discuss potential explanations of the litigation risk differential between CRMs and Chinese IPO firms. Second, we analyze the differences between CRMs and Chinese IPOs in a univariate setting. We then present our multivariate results. Finally, we analyze whether the characteristics of CRMs and Chinese IPO firms affect the litigation exposure of each set of firms differently.

4.1. *Potential explanations of the litigation risk differential*

We propose three explanations of the litigation risk differential between CRMs and Chinese IPOs: bonding, post-listing stock performance, and "deep-pockets" of the sued firms.

First, with respect to bonding explanation, we argue that CRMs are subject to less scrutiny by regulators than Chinese IPO firms during the pre-listing process. Specifically, CRMs effectively avoid the process of finding an underwriter and completing the registration statement and prospectus (Aguilar, 2011). In a reverse merger, the private company gains listing by registering as a public company without going through the vetting process from underwriters and investors that companies undergo when they complete a traditional IPO. Moreover, as part of the IPO process, firms receive and address comments from the SEC about the initial prospectuses and subsequently go on a road show (Hanley and Hoberg, 2012). In contrast, all that is basically required for a reverse merger is simply a disclosure through an SEC Form 8 K. Hence, the increased litigation risk of CRMs can be explained by the fact that their filings are subject to less scrutiny before they ever list.

With respect to post-listing firm characteristics of CRMs versus Chinese IPOs, we note that the difference in analyst following and the positive relation between institutional ownership and likelihood of litigation is consistent with increased monitoring leading to uncovering of fraud. The potential channel may be that the presence of both the analysts and institutions serves to make monitoring cheaper and more pervasive. As a consequence of the lower cost of monitoring, the value of the potential fraud that may survive detection given allocations of equal resources to monitoring declines. Hence, the potential rewards of enforcing fraud claims through litigation decline and the risk of litigation declines as well. With respect to the post-listing monitoring proxies, under the bonding hypothesis, we expect that CRMs are followed by fewer analysts, have fewer institutional owners, and the largest institutional owner holds fewer shares when compared to Chinese IPO firms. These characteristics make CRMs less transparent and, as a result, increase the cost of monitoring (hence, increasing the value of the potential fraud that may go undetected and increasing the payoff to litigation and litigation risk).

Second, the post-listing stock performance explanation suggests that firms become targets of litigation because of their inferior stock performance (Cheng *et al.*, 2014; Arena and Julio, 2015). Hence, under the post-listing stock performance explanation of the litigation risk differential, CRMs should

underperform relative to Chinese IPO firms. We measure stock performance as the cumulative abnormal post-listing return over three years.[6] If poor stock performance explains the greater likelihood of litigation involving CRMs than Chinese IPOs, we would expect that CRMs perform worse than Chinese IPOs in the three-year period after the listing on a US exchange.

The third explanation of the litigation risk differential posits that firms are targeted for litigation because they have "deep-pockets" with readily available resources to settle lawsuits regardless of merit. Therefore, the higher litigation risk of certain firms may reflect the incentive for plaintiff attorneys to file private class action lawsuits against firms with more available resources. Hence, under the "deep-pockets" explanation, CRMs should have more available resources to dispose of a lawsuit compared to Chinese IPO firms. Specifically, we measure availability of resources using firm size, cash holdings, and operating cash flows. The "deep-pockets" explanation also suggests that CRMs should be larger, hold more cash, and have higher operating cash flows compared to Chinese IPO firms.

4.2. *Univariate analysis*

In Table 4, we report the univariate tests of the bonding, post-listing stock performance, and "deep-pockets" explanations of the litigation risk differential.

The results show that CRMs and Chinese IPO firms in our sample are covered by about one and two analysts, respectively. The difference in analyst coverage is significant at the 0.01 level for both the mean and the median. We also find that the number of institutional owners of the CRMs is significantly lower when compared to the number of institutional owners of the Chinese IPOs. On average, about nine institutional shareholders own a CRM, while about 27 institutional investors own a Chinese IPO. Similarly, we also find that the ownership by the largest blockholder is, on average, significantly lower for the CRMs than for the Chinese IPOs. These results are consistent with the bonding hypothesis wherein the higher litigation risk of CRMs is a reflection of lower levels of monitoring.

Table 4 also reports the average cumulative abnormal returns (CARs) for CRMs and Chinese IPOs through the first three years of their listing. Both groups experience negative CARs, with CRMs showing both average and median three-year CAR that is lower than the three-year CAR for Chinese

---

[6] In untabulated results, we find that our conclusions are not affected by using one- or two-year post-listing periods.

Table 4.   Comparison of Chinese reverse merger firms and Chinese IPOs.

		CRMs	Chinese IPOs	Difference
Number of Analysts	*Mean*	0.8	2.4	1.7 ***
	Median	1.0	2.0	1.0 ***
Number of Institutional Owners	*Mean*	9.3	26.5	17.2 ***
	Median	4.0	25.0	21.0 ***
Top Shareholder Ownership	*Mean*	3.16%	5.29%	2.13% **
	Median	0.59%	3.61%	3.01% ***
CAR (1, 36 months)	*Mean*	−25.90%	−6.05%	19.85%
	Median	−78.76%	−59.95%	18.82% *
Percent of Positive CAR (1, 36)	*Mean*	24.24%	29.52%	5.28%
Total Assets	*Mean*	$101.6	$1,440.1	$1,338.5 **
	Median	$80.2	$225.1	$144.9 ***
(Cash+Cash Equivalents)/Total Assets	*Mean*	23.33%	54.85%	31.52% ***
	Median	19.88%	60.39%	40.51% ***
Operating CF/Total Assets	*Mean*	7.22%	6.74%	−0.48%
	Median	8.55%	9.24%	0.69%
Tobin's Q	*Mean*	3.34	3.48	0.14
	Median	2.02	2.74	0.71 ***
Leverage	*Mean*	14.30%	7.17%	−7.13% ***
	Median	7.12%	0.55%	−6.58% ***
R&D/Total Assets	*Mean*	0.79%	1.72%	0.93% **
	Median	0.00%	0.43%	0.43% ***
Capex/Total Assets	*Mean*	7.54%	5.04%	−2.50% **
	Median	3.32%	2.47%	−0.85%
Time from Listing to Litigation (days)	*Mean*	888.5	683.5	−205.1
	Median	637.0	516.0	−121.0 *

Note: This table reports the summary characteristics of the Chinese firms classified as CRMs and Chinese IPOs. The sample is described in Table 1. For each characteristic, we compare the mean and median. CARs are measured as the return on the stock less than the return on the CRSP value-weighted index. Number of analysts, institutional owners, and top shareholder ownership is measured in the quarter immediately prior to the filing of the class action lawsuit. All other variables are defined in prior tables. ***, ** and * are for the tests of differences in means and medians for the two samples and indicate statistical significance at 1%, 5%, and 10%, respectively.

IPO firms. However, only the difference in three-year median CARs is different from zero (*p*-value of 0.068). We also note that similar proportions of CRMs and Chinese IPO firms experience positive CARs during the three-year period. Overall, we interpret the results as providing at best weak support for the post-listing stock performance explanation of the litigation risk differential between CRMs and Chinese IPOs.

Focusing on variables related to the "deep-pockets" explanation, Table 4 shows that the average total assets are $101.6 million for CRMs compared to $1,440.1 million for Chinese IPOs, i.e., Chinese IPOs average about 14 times

the size of the total assets of CRMs.[7] Cash positions held by CRMs are a significantly lower fraction of total assets than those held by Chinese IPOs, while the operating cash flows are similar between the two subsamples. Overall, these results are not only contrary to the "deep-pockets" explanation, but they are also surprising given the high frequency of litigation against CRMs. As shown in Table 2, we do not find a difference in the size between Chinese firms that were or were not sued. The results in Table 4 suggest that contrary to prior literature (Choi, 2004; Kim and Skinner, 2012), smaller CRMs face higher litigation risk relative to the larger Chinese IPO firms.

With respect to other firm-specific characteristics, the growth opportunities, as measured by Tobin's Q, are significantly lower for the median CRMs than Chinese IPOs. Table 4 also shows that despite their smaller size, the CRMs in our sample are significantly more leveraged than Chinese IPO firms. Therefore, CRMs raise more capital through debt offerings prior to the US-listing than is the case for Chinese IPO firms. CRMs in our sample have significantly higher capital expenditures than the Chinese IPOs, but CRMs spend a (statistically) significantly lower amount on R&D per dollar of total assets than Chinese IPOs. Chinese IPOs in our sample are also subject to litigation sooner after listing than CRMs, however, this difference is only significant for medians. The median time from listing or IPO to the private class action lawsuits is 637 days (1.7 years) and 516 days (1.4 years) for CRMs and Chinese IPO firms, respectively.

4.3. *Multivariate logistic analysis*

Table 5 reports our multivariate comparison between CRMs and Chinese IPOs. Each regressions model estimates the probability of listing in the US via a reverse merger. In each regression, we include the previously described control variables: Tobin's Q, leverage, R&D, and CAPEX as well as industry fixed effects. To test the bonding hypothesis, we include in column (1) the measures of analyst following, number of institutional owners, and ownership by the largest blockholder. Since CRMs and Chinese IPOs are different in terms of firm size, the differences in analyst and institutional following observed in the univariate results could be due to size differences between CRMs and Chinese IPO firms. Hence, we also report results based on orthogonalized analyst following, number of institutional owners, and ownership by the largest blockholder relative to the other firm characteristics in

---

[7]We reach similar conclusions when we use revenue as a measure of firm size.

Table 5.   Logistic regression analyzing the probability of Chinese reverse merger.

	(1)	+ (2)	(3)	(4)	+ (5)	+ (6)
Number of Analysts	−0.429***	−0.251**			−0.316*	−0.297*
	(0.002)	(0.030)			(0.083)	(0.057)
Number of Institutional	−0.042***	−0.014			−0.001	0.004
Owners	(0.003)	(0.241)			(0.944)	(0.811)
Top Shareholder	−1.967	−1.401			−0.219	0.084
Ownership	(0.616)	(0.689)			(0.964)	(0.983)
CAR (1, 36 months)			0.031		0.070	−0.004
			(0.635)		(0.584)	(0.972)
Log(Total Assets)				−1.411***	−1.360***	−1.215***
				(0.000)	(0.000)	(0.000)
(Cash+Cash				−6.069***	−6.021***	−6.051***
Equivalents)/				(0.000)	(0.000)	(0.000)
Total Assets						
Operating CF/				3.758**	3.974**	4.387**
Total Assets				(0.040)	(0.040)	(0.012)
Tobin's Q	0.006	0.027	0.017	−0.062	−0.054	−0.048
	(0.841)	(0.334)	(0.513)	(0.303)	(0.400)	(0.434)
Leverage	1.759	2.281*	2.946**	1.998	1.292	1.839
	(0.197)	(0.065)	(0.013)	(0.276)	(0.505)	(0.323)
R&D/Total Assets	2.818	1.001	−4.686	−0.215	5.039	−1.340
	(0.746)	(0.896)	(0.537)	(0.982)	(0.618)	(0.898)
Capex/Total Assets	5.421**	4.189*	3.440	−0.693	−0.560	−0.484
	(0.047)	(0.062)	(0.105)	(0.841)	(0.879)	(0.878)
Industry FE	Yes	Yes	Yes	Yes	Yes	No
Pseudo R-Squared	0.521	0.390	0.339	0.712	0.724	0.670
Pr(Likelihood Ratio)	0.000	0.000	0.000	0.000	0.000	0.000
N	198	198	198	198	198	198

Note: This table shows estimates of logistic regressions modeling the probability of a Chinese firm listing via reverse merger. The reference group comprises Chinese IPOs. The sample is describe in Table 1. All variables are measured at the fiscal year end after the uplisting to an exchange for reverse merger and after the IPO for other firms and are described in prior tables. + denotes that Number of Analysts, Number of Institutional Owners, and Top Shareholder Ownership variables are orthogonalized with respect to Log (Total Assets). Numbers in parentheses show *p*-values associated with individual coefficients. ***, **, and * indicate statistical significance at 1%, 5%, and 10%, respectively.

columns (2), (5), and (6). We use three-year post-listing CAR in regression in column (3) to analyze the post-listing stock performance explanation of the litigation risk differential. Column (4) tests the "deep-pockets" explanation using the log of total assets, cash holdings, and operating cash flows. In column (5), we include all three sets of test variables and control variables. Regressions in columns (1) through (5) include industry fixed effects based on

the Fama-French 12-industry groups. Regression in column (6) follows the specification of column (5) but omits industry fixed effects.

The results in columns (1), (2), (5), and (6) show that the coefficient on the number of analysts is consistently negative and significant at the 0.01 level, 0.05 level, 0.10 level, and 0.10 level, respectively. This indicates that CRMs have fewer analysts following the firm compared to Chinese IPOs (even after controlling for effect of firm size on analyst following). In column (1), we also note that the coefficient on number of institutional owners is negative and significant at the 0.01 level, however, the significance goes away in columns (2), (5), and (6). Based on the similarities of the coefficients in columns (5) and (6), we note that industry clustering does not appear to affect our results. Overall, these results are consistent with the bonding hypothesis.

The results in columns (3), (5), and (6) of Table 5 indicate that the CRMs and Chinese IPOs are comparable in terms of post-listing stock performance. Hence, the post-listing stock performance is an unlikely explanation of the litigation risk differential. The results in columns (4) through (6) suggest that the litigation risk differential is also unlikely to be explained by the "deep-pockets" of the sued firms. The negative significant coefficients on total assets and cash indicate that compared to Chinese IPOs, CRMs are smaller and hold less cash. Cash flow enters with a positive coefficient, significant at the 0.05 level. We interpret the finding of higher operating cash flows of CRMs as being potentially consistent with the "deep-pockets" explanation of the litigation risk differential. However, several factors from Table 4 are inconsistent with "deep pockets" being a primary motivation for increased litigation risk of CRMs. First, CRMs are, on average, about 14 times smaller and the size of operating cash flows to total assets is similar when comparing CRMs and Chinese IPO firms. In addition, the percentage of cash and cash equivalents to total assets is substantially and significantly lower for CRMs than for IPOs averaging 23% and 55%, respectively. Hence, we conclude that the evidence is not consistent with the "deep-pockets" explanation of the litigation risk differential. Finally, we note that industry effects due to industry clustering are not important in our sample since the coefficients on the independent variables are similar in columns (5) and (6).[8]

---

[8] Kim and Skinner (2012) posit that industry proxies do a relative poor job in predicting litigation risk on their own but adding firm-specific characteristics such as firm size, growth, and stock volatility substantially improves the ability to determine litigation risk. See also Jayaraman and Milbourn (2009), Brown and Tucker (2011), Donelson *et al.* (2012), and Hribar *et al.* (2014) for evidence on using an industry proxy to measure litigation risk.

Overall, our findings point to the relevance of the bonding hypothesis in explaining the litigation risk differential of CRMs and Chinese IPO firms. Hence, the improved protection of shareholders' rights via US-listing explains the increase in CRMs litigation risk. Our findings are inconsistent with the post-listing stock performance and the "deep-pockets" explanations of the litigation risk differential in private class action lawsuits involving Chinese firms listed in the US.

5. Conclusion

In this paper, we analyze the litigation risk of Chinese firms listing their shares on a US exchange using either a reverse merger or an initial public offering. Chinese firms have experienced an increase in warnings by the Public Company Accounting Oversight Board (PCAOB), enforcement actions by the SEC, and investigations by the US Justice Department. These actions were followed by an increase in litigation, resulting in a large number of lawsuits against Chinese firms. We find that the previously documented factors related to the probability of litigation do not affect the risk of litigation in our sample of Chinese firms. In fact, the only characteristic affecting litigation risk in our sample is the method by which Chinese firms list in the US. Specifically, our findings indicate that the increased litigation risk resides with Chinese firms listing on US exchanges via a reverse merger.

We analyze CRMs' heightened risk of facing private class action lawsuits, focusing on three established explanations of litigation risk: bonding, post-listing stock performance, and "deep-pockets" of sued firms. We do not find support for either the post-listing stock performance or the "deep-pockets" explanations. However, our findings are consistent with the bonding hypothesis. Specifically, we argue that different levels of pre-issuance and post-issuance monitoring by regulators, analysts, investment bankers, institutional investors, and other stakeholders are consistent with the litigation risk differential.

Acknowledgments

colleagues upon the staff of the Commission. The views expressed in this paper are solely those of the authors, who are responsible for the content, and do not necessarily represent the views of The Brattle Group.

References

Adjei, F., K. Cyree, and M. Walker, 2008, The Determinants and Survival of Reverse Mergers Vs IPOs, *Journal of Economics and Finance* 32, 176–194.

Aguilar L. A., 2011, *Speech at Council of Industrial Investors*, *Spring Meeting*, Washington, D.C., 4 April.

Arena, M., and B. Julio, 2015, The Effects of Securities Class Action Litigation on Corporate Liquidity and Investment Policy, *Journal of Financial and Quantitative Analysis* 50, 251–275.

Asquith, P., and K. Rock, 2011, A Test of IPO Theories Using Reverse Mergers, Unpublished Working Paper, Massachusetts Institute of Technology.

Aydogdu, M., C. Shekhar, and V. Torbey, 2007, Shell Companies as IPO Alternatives: An Analysis of Trading Activity Around Reverse Mergers, *Applied Financial Economics* 17, 1335–1347.

Brown, S., and J. Tucker, 2011, Large-Sample Evidence on Firms' Year-Over-Year MD&A Modifications, *Journal of Accounting Research* 49, 309–346.

Caglio, C., K. Hanley, and J. Marietta-Westberg, 2013, Going Public Abroad, Unpublished Working Paper, Federal Reserve Board.

Chaplinsky, S., and D. Haushalter, 2010, Financing under Extreme Risk: Contract Terms and Returns to Private Investments in Public Equity, *The Review of Financial Studies* 23, 2789–2820.

Chemmanur, T., J. He, and P. Fulghieri, 2008, Competition and Cooperation Among Exchanges: Effects on Corporate Cross-Listing Decisions and Listing Standards, *Journal of Applied Corporate Finance* 20, 76–90.

Cheng, B., S. Srinivasan, and G. Yu, 2014, Securities Litigation Risk for Foreign Companies Listed in the U.S., Unpublished Working Paper, Harvard Business School.

Choi, S., 2004, Evidence on Securities Class Actions, *Vanderbilt Law Review* 57, 1465–1518.

Choi, S., and A. Pritchard, 2016, SEC Investigations and Securities Class Actions: An Empirical Comparison, *Journal of Empirical Legal Studies* 13, 27–49.

Christensen, D., 2016, Corporate Accountability Reporting and High-Profile Misconduct, *The Accounting Review* 91, 377–399.

Dechow, P., R. Sloan, and A. Sweeney, 1996, Causes and Consequences of Earnings Manipulations: An Analysis of Firms Subject to Enforcement Actions by the SEC, *Contemporary Accounting Research* 13, 1–36.

Doidge, C., 2004, U.S. Cross-Listings and the Private Benefits of Control: Evidence from Dual-Class Firms, *Journal of Financial Economics* 72, 205–238.

Doidge, C., G. Karolyi, and R. Stulz, 2004, Why are Foreign Firms Listed in the U.S. Worth More? *Journal of Financial Economics* 71, 205–238.

Donelson, D., J. McInnis, R. Mergenthaler, and Y. Yu, 2012, The Timeliness of Bad Earnings News and Litigation Risk, *The Accounting Review* 87, 1967–1991.

Floros, I., and T. Sapp, 2011, Shell Games: On the Value of Shell Companies, *Journal of Corporate Finance* 17, 850–867.

Gleason, K., L. Rosenthal, and R. Wiggins, 2005, Backing into Being Public: An Exploratory Analysis of Reverse Takeovers, *Journal of Corporate Finance* 12, 54–79.

Hanley, K., and G. Hoberg, 2012, Litigation Risk, Strategic Disclosure and the Underpricing of Initial Public Offerings, *Journal of Financial Economics* 103, 235–354.

Hribar, P., T. Kravet, and R. Wilson, 2014, A New Measure of Accounting Quality, *Review of Accounting Studies* 19, 506–538.

Jayaraman, S., and T. Milbourn, 2009, Does Equity-Based CEO Compensation Really Increase Litigation Risk? Unpublished Working Paper, Washington University.

Jones, C., and S. Weingram, 1996, The Determinants of 10b-5 Litigation Risk. Unpublished Working Paper, Stanford University.

Kim, S., and D. Skinner, 2012, Measuring Securities Litigation Risk, *Journal of Accounting and Economics* 53, 290–310.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. Vishny, 2002, Investor Protection and Corporate Valuation, *Journal of Finance* 57, 1147–1170.

Lang, M., K. Lins, and D. Miller, 2003, ADRs, Analysts, and Accuracy: Does Cross Listing in the United States Improve a Firm's Information Environment and Increase Market Value? *Journal of Accounting Research* 41, 317–345.

Reese, W., and M. Weisbach, 2002, Protection of Minority Shareholder Interests, Cross-Listings in the United States, and Subsequent Equity Offerings, *Journal of Financial Economics* 65, 65–104.

Siegel, J., and Y. Wang, 2013, Cross-Border Reverse Mergers: Causes and Consequences, Unpublished Working Paper, Harvard Business School.

Sjostrom, W. Jr., 2008, The Truth About Reverse Mergers, *Entrepreneurial Business Law Journal* 2, 743–759.

Stulz, R., 1999, Globalization of Equity Markets and the Cost of Capital, *Journal of Applied Corporate Finance* 12, 8–25.

Stulz, R., 2009, Securities Laws, Disclosure, and National Capital Markets in the Age of Financial Globalization, *Journal of Accounting Research* 47, 349–390.

Walker, T., H. Turtle, K. Pukthuanthong-Le, and D. Thiengtham, 2015, Legal Opportunism, Litigation Risk, and IPO Underpricing, *Journal of Business Research* 68, 326–340.