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ABSTRACT

Our study documents a "Lemons" market failure of Chinese firms listed in the US in 2011 and a subsequent rebound by 2013. Our tests reveal that there was little difference in *ex ante* observable characteristics of fraudulent and non-fraudulent Chinese firms listed in the US prior to 2011 while entrepreneurs appear to have known their type. We document substantial costs of dishonesty and the failure of traditional market signaling mechanisms such as auditor or underwriter quality. We also show a return of Chinese firms after US and Chinese regulatory intervention in 2013 although this intervention was insufficient to fundamentally change the character of this market. Importantly, we find that factors capturing *ex post* settling up costs such as North America sales and CEO's US education reduced the probability of financial fraud. Our results support the importance of legal and regulatory institutions as a necessary condition for properly functioning capital markets.

JEL Codes: D81, D82, G15, G18, M41

Keywords: Chinese Firms, IPOs, Frauds, Lemons market, Information Asymmetry.

Market Failure and Redemption: A Study of Chinese Firms Listed in the US

1. INTRODUCTION

Numerous studies in economics have examined the impact of information asymmetry in markets (e.g., see Stiglitz 2000, Riley 2001). Akerlof's (1970) seminal work characterizes a "Lemons" market and discusses the consequences of quality uncertainty for market failure. The notion of a market failure has been widely accepted and is characterized by a number of key features including quality uncertainty, significant information asymmetry, and high cost of dishonesty. In Akerlof's model, asymmetric information may result in thin or nonfunctioning markets. However, a market failure has been rare because information asymmetry can be mitigated by private information search, mandatory disclosures, or court imposed penalties. In the US capital market, for example, we occasionally observe misrepresentation and financial fraud among public companies (e.g., Enron and WorldCom), but these incidents tend to be sporadic and have not led to widespread collapse of public markets.

Recent developments in law and finance focus on the importance of strong regulatory and legal institutions as a precursor to developed markets. For example, La Porta, Lopez-de-Silanes, Schleifer, and Vishny (1997, 1998) and La Porta, Lopez-de-Silanes, and Schleifer (2006) emphasize the enforcement of property rights, private contracts, and investor rights as essential to well-functioning capital markets. When legal institutions are unable to protect private property rights or facilitate private contracting, securities markets are unlikely to flourish.[1] Thus, the law and finance perspective suggests that a market failure may arise when regulatory and legal institutions are unable to protect private property rights.

[1] Klein and Leffler (1981) describe the origins of the implicit belief that enforcement is essential to well-functioning markets to early work by Hobbes (1651). Hobbes' argument suggests that it is in societies' best interest to accept a sovereign to assure fulfillment of agreements because "the bonds of words are too weak to bridle men's ambition, avarice, anger, and other Passions without the fear of some coercive Power".

In this paper, we investigate the importance of regulatory and legal institutions in a segment of the US market characterized by substantial asymmetric information and complex legal and regulatory issues. We exploit the group of Chinese firms listed in the US to examine the effect of quality uncertainty and regulatory structures on capital markets. The market for Chinese firms listed in the US is an anomalous case which exhibits features of a market collapse and subsequent reemergence. Specifically, rampant financial misrepresentations were discovered among the Chinese firms listed in the US in 2011. The large scale of suspected frauds significantly eroded investor confidence and precipitated a dramatic market collapse. Our study documents pervasive negative equity returns for 2011 to 2012, severely constrained liquidity, and very few new Chinese firm US IPOs (only 2 in 2012). This severe market implosion imposed significant costs on firm owners and investors. Since the market failed with existing market mechanisms, US and Chinese regulators intervened during 2011 to 2014 to facilitate Chinese firms' reentry into the US equity market. Studying the US listed Chinese firm market collapse and reemergence helps us understand the necessary market, regulatory, and legal institutions required for a functioning capital market.

Our pre-2011 and post-2011 samples consist of 279 and 25 Chinese firms traded on NYSE, AMEX, and NASDAQ, respectively.[2] We capture the notion of "bad" firms (Lemons) as firms subject to: a SEC AAER (Accounting and Auditing Enforcement Release), class action lawsuit, or accusation of fraud by the major Western media. We classify the remaining firms as "good" (Non-Lemons). This binary classification is the basis of a series of tests leading to the conclusion that the market for Chinese US listed firms was a "Lemons" market before 2011 and collapsed during 2011.

[2] The pre-2011 firms include both IPOs and reverse mergers. A reverse merger allows a firm to become publicly traded by merging a shell company from a US public exchange with a non-listed company. No Chinese firms entered US markets post – 2011 using the reverse merger structure.

First, we document that pre-2011, investors were not able to differentiate good firms from bad firms using traditional signals of firm quality including a firm's stock returns, earnings performance, accounting quality, and external monitoring mechanisms such as auditor and underwriter quality. In contrast, entrepreneurs knew their types. A number of firms announced privatization plans after the revelation of numerous frauds. These privatized firms paid large premiums (36.8% on average) to exit the US market and were less likely to be bad firms, consistent with significant information asymmetry between investors and entrepreneurs.

Second, we demonstrate that the dishonesty of bad firms spread suspicion to all good Chinese firms listed in the US. We identify two firm specific events and find that the events lead to a spillover effect for all Chinese firms. For example, the 2011 Citron Research criticism of Harbin Electric Inc. led to a negative 6.1% return for the US-listed Chinese firms. This broad indictment of Chinese US listed firms made it very costly for new firms to raise capital in the US, suggesting a pervasive suspicion of all Chinese firms and entrepreneurs.

Third, we investigate several market monitoring mechanisms to determine if these methods are effective in separating good from bad firms. Early literature suggests that counteracting institutional arrangements such as guarantees, reputation, and licensing can mitigate the impact of information asymmetry (e.g., Akerlof 1970, Klein and Leffler 1981). We find that typical proxies for these mechanisms such as auditor quality and underwriter reputation did not provide credible signals of firm quality.

Finally, we provide evidence on the effect of regulatory and legal institutions on the reemergence of the US market for Chinese firms in 2013 and 2014. In response to the market collapse, the US and Chinese regulators employed the authority of each government to impose sanctions on Chinese firms seeking equity capital both domestically and globally. On May 7,

2013, US ("PCAOB") and Chinese regulators ("CSRC" and "MoF") signed a Memorandum of Understanding (MOU) regarding their cooperation on production and exchange of audit documents relevant to their enforcement activities. On January 22, 2014, SEC Administrative Law Judge Cameron Elliot found that the Chinese affiliates of BDO, Ernst & Young, KPMG, Deloitte, and PricewaterhouseCoopers violated provisions of the Sarbanes-Oxley Act of 2002 and the Dodd-Frank Wall Street Reform and Consumer Protection Act. Judge Elliot's ruling censured and denied Chinese affiliates of the global CPA firms the privilege of practicing before the SEC for a period of six months.[3] Coincidently, the CSRC halted the approval of IPO applications on November 3, 2012, and restarted the process on December 30, 2013. These regulatory interventions sought to improve the quality of financial disclosures by Chinese firms by increasing governmental oversight of financial experts (auditors) and Chinese firms' management. We demonstrate that the Chinese firm IPO market reacted favorably (or unfavorably) to revelation of increased (decreased) probability of cooperation between US and Chinese regulators. With these interventions, the Chinese firm IPO market re-emerged in 2013 and 2014. A total of 25 Chinese firms were able to raise $26.17 billion in the US IPO market. As a result of these regulators' interventions, we show that the recent Chinese US IPO firms are quite similar to domestic US IPO firms.

We also document an increase in the prevalence of the VIE structure, no reverse mergers, and greater use of prestigious underwriters as well as Big 4 Affiliates after regulatory

[3]Judge Elliott's ruling would have had a profound impact on US listed global companies. Not only could it cause the loss of over $100 million in audit fees for Big 4 affiliated auditors in 2013 which accounts for 85% of all audit fees paid by US listed Chinese firms, it could also affect the audits of all US listed global firms with operations in China. Importantly, Judge Elliot's decision imposed extraordinary pressure on auditors to remedy deficiencies in their Chinese affiliates. This ruling was appealed by the global firms and the ruling was stayed as negotiations between the US and China sought a solution to the issue of access to audit work papers. On February 6, 2015, the SEC announced a settlement with the Chinese affiliates of the Big 4. They each were required to pay a $500,000 penalty and take steps to provide audit work papers to the SEC investigators over the next four years.

intervention. The post-2011 Chinese firms listed on US markets exhibited increased assets, less profitability, negative accruals, and more losses than prior to the market failure. Finally, the post regulatory intervention Chinese IPO firms had greater post-IPO abnormal returns, greater institutional holdings, and lower return variability. However, nine of the twenty-five post -2011 IPO firms are currently the subject of class action lawsuits suggesting continuing regulatory challenges.

To further examine the effect of legal enforcement (Shleifer and Vishny 1997), we identify CEO's US education and North American Sales as proxies for the degree of legal protection and test for an association between both North America sales and CEO's US education and the likelihood of financial frauds. We find that firms with North America sales or CEOs who were educated in US are less likely to misrepresent their firm's financial condition. The evidence is consistent with the argument that strong legal enforcement provides a market bonding mechanism.

Our study contributes to the literature on several dimensions: First, it is one of the few empirical studies documenting a market failure. Prior studies largely focus on stable, well-functioning markets. Market failure is rarely observed in these markets as investors' diligent information search effectively reduces information asymmetry. However, we observe the Chinese firms listed in the US demonstrate all the features of the "Lemons market" discussed in Akerlof (1970). In this case, sovereignty issues create severe information frictions, limited regulation, and problems with property right enforcement that may lead to market failure.

Second, we use a unique market setting to show that legal protection could play a significant role in governance of capital markets, supporting arguments in Shleifer and Vishny (1997). Proxies for legal enforcement – North America Sales or US educated CEOs – are

significantly associated with a lower likelihood of financial information misrepresentation. Our results suggest that regulators must design approaches to either provide oversight that assures the production and dissemination of high quality information or enforce property rights across national boundaries. Since national sovereignty and jurisdictional concern are major obstacles to the enforcement of property rights in the Chinese IPO market in the US, a well-functioning market for information, including effective monitoring of repeat players, is important to avoid future market failures.

Our study is different from other work which examines various issues related to US listed Chinese firms. These other studies focus on specific aspects of Chinese reverse mergers such as earnings quality, fundamental performance, and price response and spillover effects (Lee, Li, and Zhang 2015, Chen et al. 2016, Givoly, Hayn, and Lourie 2014, Darrough 2015). In contrast, our study seeks to understand the impact of regulatory and legal institutions on global markets.

Section 2 describes institutional background of the Chinese firm US securities market. Section 3 presents our research design and descriptive statistics. Sections 4 presents the evidence of market failure. Section 5 discusses the intervention of US and Chinese regulators and the reemergence of the market, and Section 6 concludes.

2. INSTITUTIONAL BACKGROUND

Chinese firms started to go public globally in the 1990s.[4] From 1993 to 2001, the main source of overseas listed Chinese firms was State Owned Enterprises (SOE). Because overseas listings need special approval from the China Securities Regulatory Commission (CSRC), Chinese firm IPO decisions are influenced by noneconomic factors such as political connections, geographical quotas, and industry status (Hung, Wong, and Zhang 2012). The first privately

[4] Qingdao Beer became the first Chinese IPO on the Hong Kong Stock Exchange on June 29, 1993 and Sinopec Shanghai Petrochemical was the first Chinese firm listed on NYSE on July 26, 1993.

controlled firm from China (Qiao Xing Universal Resources) went public in the US on February 17, 1999. Since then, private Chinese firms have become major players in foreign capital markets. The popularity is also due to the fact that private firms in China find it very difficult to borrow money from local banks (Allen, Qian, and Qian 2005) and the existing debt market is small (Allen, Qian, Zhang, and Zhao 2013).

CSRC imposes stricter requirements for firms listed domestically in China than internationally (CSRC 1999, 2006, 2009, 2012). These requirements consist of financial performance as well as political and government policy considerations. The Chinese government specifies industries in which foreign investments are encouraged, restricted, or prohibited. For example, foreign investors cannot invest directly in some industry sectors such as Internet, Telecommunication, Media, and Technology. The strict control over foreign investments by the Chinese government weakens China's access to foreign financing.

Chinese entrepreneurs creatively bypass the CSRC regulations through the Variable Interest Entity (VIE) corporate structure. Entrepreneurs set up an offshore company typically in the Cayman Islands, and then register a Chinese subsidiary in China as a wholly foreign owned enterprise (WFOE). The WFOE, the entrepreneurs, and the existing Chinese domestic company sign a series of contracts that transfer the WFOE resources into the domestic firm operating in the industry sectors not open to foreign investors. This structure gives the WFOE the right to claim economic benefits and impact operations of the domestic firm.[5] Following this innovation, all Chinese firms from restricted industry sectors use the VIE structure to list in the US. The VIE structure remains controversial because it only provides foreign investors contractual control rather than ownership. If the contracts are breached, then the shareholders of the offshore

[5] According to FASB Interpretation No. 46 "Consolidation of Variable Interest Entities", which became effective in 2002, the offshore company can consolidate all economic activities of the Chinese domestic company into its financial statements. SINA Corp. was the first firm to adopt a VIE structure for its IPO on April 13, 2000.

company may lose control of the domestic company.[6]

Chinese entrepreneurs have also chosen another controversial approach, the reverse merger, to access US equity markets. When a Chinese firm is acquired by a shell firm publicly traded on a US stock exchange and the Chinese firm controls the shell company, the Chinese firm effectively becomes a US publicly listed firm.[7]

These aggressive approaches to circumvent Chinese governmental restrictions and SEC scrutiny create uncertainty about ownership and managerial willingness to follow conventional norms of behavior. Thus, it would not be surprising to observe substantial information asymmetries in the Chinese firm US securities market.

Chinese firms listed on US exchanges are subject to US domestic laws and regulations. Civil litigation can be pursued against the Chinese firms, auditors, and underwriters in US courts. However, there are a number of impediments to cross-border litigation that are unique to the case of Chinese firms. China prohibits depositions from being taken in China. Document discovery is similarly problematic. In a number of recent class action lawsuits, plaintiffs have sought to compare SEC financial reports with financial reports filed with the Chinese State Administration for Industry and Commerce (SAIC) and State Administration of Taxation (SAT) to support their claims. In response to these requests, China restricted access to these filings of Chinese companies. Also, China's state secrecy laws have made document discovery cumbersome at best. Finally, enforcement of a US judgment is problematic because Chinese courts do not enforce US settlements in China.

The financial information contained in an IPO registration statement must be certified by

[6] The dispute between Alibaba and Yahoo! over the ownership of Alipay illustrates potential problems with this corporate control structure (Chao and Efrati, 2011).

[7] The reverse merger structure avoids the increased scrutiny of the SEC inherent in the registration process.

an independent accountant that is permitted to practice before the SEC.[8] Many global auditing firms are structured as limited liability partnerships with the audit being done by their affiliates. Thus, SEC sanctions and US civil lawsuits are restricted to the Chinese affiliate of the global partnership, with all of the attendant problems of discovery and deposition prohibition limiting the effectiveness of enforcement of mechanisms to protect property rights.[9] However, US courts do have wide discretion to enforce judgments against Chinese firms operating in the US.[10]

In sum, responding to a highly regulated and restrictive domestic IPO market, some Chinese firms developed innovative structures and financing approaches to overcome restrictions. Although the innovations have been successful at circumventing the regulations, the resulting Chinese firm US securities market is a unique information environment that encouraged greater information asymmetry than in a strictly domestic market. Also, legal recourse against Chinese firms and their auditors and underwriters is significantly more difficult because of differences in US and Chinese law. Finally, US and Chinese regulatory action in response to the 2011 market collapse sought to strengthen the quality of information available in this market by increasing direct monitoring and possible sanctions against repeat players in the market. Thus, we consider the Chinese firm US securities market to be an ideal setting to examine the role of information asymmetry and legal and regulatory institutions on capital markets.

3. RESEARCH DESIGN AND SAMPLE

3.1 Research Design

Our tests are designed to assess the vibrancy of the US market for Chinese firms after

[8] See Securities Act of 1933.

[9] Auditor liability for Chinese financial statement frauds in the US is limited by an elevated scienter pleading requirement of the Private Securities Litigation Reform Act of 1995 and the global network of auditing firms that limits liability to individual member firms not the consolidated entity (Barber 2013).

[10] D. Harris and R. Carlson, "Suing Chinese Companies: The New Wave," Bloomberg Law Reports, June 10th 2011. The observation that US Courts can compel firms with US operations to pay damages suggests that firms with operations in North America and US educated executives will be less likely to provide misleading financial reports.

revelation of numerous accounting irregularities. We also compare the pre- and post-2011 US Chinese firm market to assess the impact of intervention by the US and Chinese regulators.

A necessary condition to observe a market failure is that the market has a significant number of "Lemons." Upon exposure of these "Lemons", we expect market disruption to occur. Thus, our first tests examine stock returns, liquidity, and the vibrancy of the US Chinese firm market before the 2011 scandal.

Our second tests examine the extent of information asymmetry between investors and entrepreneurs. For investors, we analyze the relation between the likelihood of a firm being a Lemon and traditional signals such as a firm's fundamental performance, earnings quality, and monitoring mechanisms. For entrepreneurs, we investigate the decision to exit the US market. If privatized firms are Non-Lemons but cannot signal type with *ex ante* observable signals, we conclude that there is severe information asymmetry between investors and entrepreneurs.

Our third tests are designed to highlight the costs of dishonesty. We identify two significant firm specific events to examine stock price reactions to all Chinese firms. If the entire portfolio of Chinese firm stock prices decline, we can infer that there is a significant cost of dishonesty – i.e., Non-Lemons are also being tarnished.

Our fourth tests examine the impact of market mechanisms that might help to overcome the information asymmetry problem. We examine the effect of both external monitoring and legal protection. We consider auditor quality and underwriter reputation to assess the impact of monitoring mechanisms. Our measures of legal protection include the firm's North American sales or CEO's educational background. While the proxies for external monitoring mechanisms are common in the literature, our proxies for legal protection innovate by capturing the

entrepreneurs' willingness to post a bond to assure quality.[11]

To examine the reemergence of Chinese firms listed in the US following the responses of both US and Chinese regulatory agencies to the 2011 market failure, we first analyze market reactions to regulatory intervention announcements to assess the importance of attempts by regulators to increase the quality of information available to investors. We then compare fundamental characteristics of pre- and post-2011 Chinese firm US offerings to provide evidence of differences in firm quality before and after the market failure. We also compare the proportion of fraudulent firms before and after the market failure to assess the impact of regulatory intervention. Finally, we show that two new measures, North American Sales and US Education, provide a bond to US investors as a mechanism to overcome the problem of legal protection in this market.

3.2 Sample

Table 1 Panel A describes the sources of our sample firms up to December 31, 2014. We compile the US listed Chinese companies from three different sources: (1) WIND database provided by Wind Information Co., Ltd — a leading service provider of financial data in China; (2) CV Source database provided by ChinaVenture who is a leading investment consulting firm in China; and (3) Compustat. We identify 316 firms listed on US markets by December 31, 2011 and 25 newly listed between 2012 and 2014. We exclude 19 cross-listed firms, 4 non-Chinese firms, 9 firms from Hong Kong, Macau, and Taiwan, 2 Chinese funds, and 3 Special Purpose Acquisition Companies (SPACs) after reviewing corporate profiles for firms listed prior to 2012. As a result, our final sample consists of 279 US listed Chinese companies that went public from

[11] The entrepreneur posts a bond from North American sales because damages in a successful lawsuit can be enforced by court order from local affiliates of the Chinese firm. The US executive's education may proxy for ownership of US assets or residence status.

1994 to 2011, and 25 firms newly listed from 2012 to 2014.

We hand-collect information on whether the Chinese firm is listed through the IPO process (F-1 or prospectus) or a reverse merger transaction.[12] We identify 140 firms entering the US market through the IPO process and 139 firms entering through a reverse merger between 1994 and 2011, 25 typical IPOs and 1 listing without equity offering between 2012 and 2014.[13] Financial data and stock returns are extracted from the Compustat and CRSP databases. We hand-collect governance characteristics, ownership structure, auditor and underwriter identity, offering price and gross proceeds in the listing year from SEC filings. Our analysis shows that the sample firms from 1994 to 2011 have a listing date market capitalization of $136.52 billion, among which IPO firms represent 83% ($113.52 billion) of the total market capitalization, while the sample firms from 2012 to 2014 have a listing date market capitalization of $36.05 billion. These results suggest that there has been and continues to be demand by US investors for Chinese firms in US markets.

Table 1 Panel B indicates that 41% (115 firms) adopt the variable interest entity (VIE) structure for all listings prior to 2012, and 59% (83 out of 140 firms) for IPOs prior to 2012. After 2012, 24 out of 25 (96%) IPO firms use the VIE structure. The abundance of VIE use over the entire sample period suggests a willingness of owners to finesse both Chinese and US regulators with these controversial structures. The recent evidence highlights the dominance of Chinese IPO firms (no reverse mergers) with a VIE structure in the most recent period, suggesting elimination of the highly risky reverse mergers but a concentration of new firms with

[12] The NYSE and Nasdaq published a list of 84 Chinese reverse mergers. For the remainder of our sample, we either review Form 8-K Item 5.06 or read through corporate history in their annual reports to identify reverse mergers.

[13]China Mobile Games & Entertainment Group (CMGE) filed an F-1 on August 20, 2012 and stated that its parent company VODone who owned 64% of the firm would distribute an ADS to VODone's shareholders and list it on a US stock exchange. There was no equity offering. The firm was listed on Nasdaq Global Market on September 21, 2012.

limited opportunity to perfect property rights in a court of law.

(Insert Table 1 here)

Table 2 compares US listed Chinese firms with firms listed in China and Hong Kong. The Hong Kong IPO market is the largest for Chinese firms listing overseas and the US IPO market is the next largest. The number of IPOs by Chinese firms in the US market peaks in 2010, and their proceeds were slightly higher than 10 percent of total IPO proceeds in the US market. By 2011, the number of US listed Chinese IPO firms had dropped to 10, compared to a robust 65 IPOs in Hong Kong. By 2012 there were 61 offerings by Chinese firms in Hong Kong, and offerings in the US market decreased dramatically to only 2. In addition, the Chinese firm global IPO proceeds increased 150 percent from $2.15 billion in 2010 to $5.32 billion in 2012 in Hong Kong but dropped an astounding 96 percent from $4.19 billion in 2010 to $0.15 and $0.80 billion in 2012 and 2013 in the US market. These results suggest that the Chinese firm accounting irregularities seriously damaged the US IPO market for Chinese firms by 2012.[14] In 2013 and 2014, the Chinese firm US IPO market reemerged with $26.17 billion in proceeds from 23 IPOs, which includes $21.77 billion for Alibaba's offering and $4.4 billion for the remaining 22 IPOs. In the next section, we analyze the US Chinese equity market prior to 2012.

(Insert Table 2 here)

4. THE MARKET MECHANISM AND QUALITY UNCERTAINTY

4.1 Descriptive Statistics

Panel A of Table 3 presents descriptive statistics for our sample in their listing year for the firms going public before 2012. 41 percent of the firms adopt the VIE structure to control their operations in China, whereas 50 percent are IPO firms. Firms on average are 8 years old on the

[14] Chinese regulator (CSRC) stopped approving any domestic IPO applications on October 11, 2012 and asked all IPO applicants to self-review the financial information of the firms. This regulatory process lasted 15 months.

listing date, and have $141.8 million total assets and low leverage of 29 percent. The firms are profitable and growing business enterprises in the listing year, with 7.1 percent ROA, and 95.9 percent sales growth (*Growth*).[15] Only 14.4 percent of firms have losses (*Loss*) in the listing year. Operating cash flow as a percentage of assets (*CFO)* has a positive mean of 0.059, indicating that sample firms generate positive net cash flows from their operating activities. The sample firms have low total accruals of 1.6 percent of total assets. While only 48 percent of the firms are audited by Big 4 auditor affiliates (Big4 AFF), most of the IPO firms (86 percent) hire Big4 AFFs. 16 percent of the firms have a non-standard audit opinion in the listing year. The firms have a mean market-to-book ratio (*MB*) of 3.87, and a mean Price/EBIT of 23.34. The average stock holdings by institutional investors (*TIO*) are 6.6 percent of outstanding common shares at the end of the listing quarter.

On average, these firms have negative cumulative abnormal returns after the listing date of -0.029, -0.206, and -0.163 for a 1-year, 2-year, and 3-year period respectively. The mean of volatility (standard deviation of daily stock return) is 0.055 during the 3-year period after the listing. Their average trading volume is 1.8% of total outstanding shares (turnover) during the 3-year period after the listing.

Overall, the sample descriptive statistics suggest that Chinese firms listing in the US appear to be established, profitable, and exhibit typical control mechanisms except for an unusually high proportion of firms adopting the VIE structure.

(Insert Table 3 here)

We further investigate whether US listed Chinese IPO firms before 2012 are comparable with their peer US IPO firms. For each sample year, we identify new US IPO firms from the

[15] Continuous variables are winsorized at the 1st and 99th percentiles.

SDC database and compare them with our Chinese IPO firms. Panel B of Table 3 shows that Chinese IPO firms are systematically more profitable and less risky than US IPO firms. First, Chinese IPO firms are younger but less underpriced. They appear to have greater return on assets and operating cash flows, fewer losses, and more unqualified auditor's opinions than US firms. Chinese firms also exhibit larger size, lower leverage, and smaller market-to-book ratio than US firms, consistent with lower risk. Moreover, there is no difference in the likelihood of hiring a large multinational auditing firm comparing Chinese and US IPO firms.[16] Finally, Chinese IPO firms have similar post-IPO stock performance and volatility to US IPO firms, but higher turnover rate. We further examine the survival rates three years after listing. Untabulated results show that, on average, Chinese firms listed in the US have similar survival rates to other US firms. After three years, 78 percent of Chinese firms and 76 percent of US IPOs survive. These descriptive statistics provide little evidence to suggest fundamental problems with these firms.

4.2 Market Failure

Several short sellers began publishing negative reports on Chinese firms listed in the US in 2011. On April 26, 2011, Citron Research accused Longtop, a NYSE listed firm, of falsely claiming substantial sales and cash. The accusation of Longtop's financial fraud proved to be accurate and Longtop became the first Chinese company delisted on a major US exchange. Numerous allegations of Chinese firm financial improprieties surfaced following Citron Research's Longtop report. These salient cases attracted a great deal of attention from regulators, investors, and the media. Subsequently, a number of Chinese firms were investigated by the SEC, involved in class action lawsuits, or mentioned by major media. A long list of fraud types has

[16] Although the IPOs are hiring multinational Big 4 firms, the Chinese IPOs are being audited by the local Big 4 affiliates. This distinction is important because the PCAOB and SEC are unable to monitor auditing in China in the same fashion as in the US. See Section 2 Institutional Background for further discussion of this point.

been asserted by the SEC, investor class action lawsuits, or the media.[17] The revelation of rampant financial fraud suggests there was substantial information asymmetry in the market for US listed Chinese firms.

To give an evolutionary view of the market for Chinese firms listed in the US, we present the cumulative raw returns of all US listed Chinese firms for the period from January 2, 2009 to December 31, 2014. Figure 1 shows the market experienced a significant rise and fall capturing optimistic investor expectations in 2009 and a market collapse in 2011. The buy and hold raw return plummeted from 60 percent at the beginning of 2011 to negative 15 percent by the end of 2011. The stock returns remain flat until the middle of 2013 and returned to 2009 levels by early 2014 (3.9% at the beginning of May 2013 and 83.6% by the end of Feb. 2014). At the same time, the China Domestic Market Index (also plotted in Figure 1) does not show a significant declining trend. The precipitous decline in buy and hold returns and subsequent rebound suggest that the entire market for Chinese firms listed on US exchanges was impacted by a pervasive negative exogenous shock.

(Insert Figure 1 here)

For the sample firms that went public before the market disruption, we use three approaches to identify firms suspected of accounting fraud. First, we collect information on SEC litigation from the SEC Accounting and Auditing Enforcement Releases (AAER) during 2000 to 2012. Second, we identify class-action lawsuits from the Stanford Securities Class Action Clearinghouse. Third, we search Lexis-Nexis for financial fraud or improper accounting practice alleged by the financial press or publicly published research reports. Panel A of Table 4 presents frequencies of fraud charges from each source (SEC, Class Action Lawsuit, and Media

[17] The fraud charges include inflating revenue or assets, CEO theft, market manipulation, failure to disclose, related party transactions, GAAP violations, internal control deficiencies, and many more.

Accusation). 15 of 21 SEC enforcement actions (SEC) are reverse merger firms, while 6 are IPO firms. 82 firms are charged for accounting irregularities by either the SEC or shareholders (class action), among which are 50 reverse merger firms and 32 IPO firms. 65 reverse merger firms and 54 IPO firms are suspected of wrongdoing by the SEC or shareholders or media accusations (media). These results show that a substantial proportion (43%) of our sample has elicited concern of financial reporting irregularities.

(Insert Table 4 here)

The market responded to these fraud accusations quite dramatically. Panel B of Table 4 show the number of new listings, the number of merger & acquisition or privatizations, and the number of delistings from 1999 to 2014. The new listings drop dramatically from 71 in 2010 to 2 in 2012. 37 firms were delisted by the end of 2011, which represents around 14.6% of active firms at the beginning of 2011. A further 22 firms were delisted in 2012.

Table 4 Panel C presents cumulative abnormal returns, turnover, and IPO proceeds from 1999 to 2014. While turnover shows a declining trend from 2007 until 2012, returns and IPO proceeds are very volatile. Turnover declined from .036 in 2004 to 0.010 in 2012, capturing a dramatic decline in liquidity by 2012. The market-adjusted abnormal returns for Chinese firms are -46.3% and -18.6% in 2011 and 2012, respectively. Only two Chinese firms tapped the 2012 US IPO market with IPO proceeds of a mere 0.15 billion in total.[18] The evidence shows that until 2013, the US market for Chinese firms exhibited diminished liquidity, a dramatic decline in returns, and precious few new IPOs after the revelation of extensive Chinese firm financial

[18] After seven months since the last Chinese IPO in the US, Vipshop Holdings Limited (VIPS) went public on March 23, 2012 with an offering price of $6.50 and raised gross proceeds of $71.5 million, 40 percent less than its plan of $125 million. Its stock price closed at $5.50 on the offering date on the NYSE, 15.38 percent below its IPO price. On November 21, 2012, YY Inc., went public in the US with an offering price of $10.50. Its first-day price closed at $11.31. The US market became so difficult for Chinese firms in the fall of 2012 that China Mobile Games and Entertainment Group Limited (CMGE) withdrew its equity offering plan and listed on Nasdaq on September 25, 2012 without issuing new shares. Since CMGE did not issue any equity, we do not treat it as an IPO in our sample.

frauds.

Information asymmetry in this market may result from Chinese entrepreneurs knowing their firm type while investors do not, or vice versa.[19] Our first evidence determines the extent that investors can differentiate "good" versus "bad" firms since market prices should reflect the risk associated with either type of investment. Panel D of Table 4 compares the stock returns of Non-Lemons and Lemons based on our three categorizations (SEC, SEC + Class Action, & SEC + Class Action + Media Accusation). Clearly, all three classes have similar negative and insignificantly different returns in 2011 and 2012. It is surprising that firms without an SEC Enforcement Action have worse returns (for example, -46.7% Non-SEC vs. -34.9% SEC in 2011) than firms with SEC Enforcement Action from 2010 to 2012, although the difference is statistically insignificant. Thus, investors did not appear to be able to separate Non-Lemons from Lemons.

Our next series of tests investigate the events associated with the revelation of information concerning US listed Chinese firm frauds. In order to identify major information events for our sample, we calculate the three-day cumulative abnormal return (CAR) for each trading date in 2010 and 2011. We then select the five dates with the most negative CAR. We identify related news events by reading Google Finance and Yahoo! Finance for the week surrounding each of these five dates. Panel A of Table 5 presents the three-day CAR for each date as well as identified news events. On June 2, 2011 and June 17, 2011, Muddy Waters Research and Citron issued negative research reports on Sino-Forest Corporation (a firm listed on the Toronto Stock Exchange) and Harbin Electric Inc. The entire US listed Chinese firm portfolio sank by 5.45% and 6.07% around these dates, respectively. On the other three event

[19] Jegadeesh, Weinstein, and Welch (1993) find that their results in IPO underpricing are consistent with the view that the market is better informed than the seller and the underwriter.

dates, articles by Reuters and the Wall Street Journal targeted a subset of the US listed Chinese firms, resulting in the portfolio return drop of more than 5%. The histogram in Panel B of Table 5 shows that the majority of the US listed Chinese firms suffered from significantly negative returns when firm specific events 1 and 2 occurred. The two highest concentrations in the bins are categories [-10%, -5%] and [-5%, 0%] returns, consisting of 112 and 142 firm-events, respectively. Overall, the entire set of US listed Chinese firms appear to have suffered cumulative abnormal declines of approximately 5-6% for each of these five events. This evidence suggests that there is a substantial cost of dishonesty due to spillover effects for stock returns.

(Insert Table 5 here)

4.3 Market Mechanisms Limiting Fraud

4.3.1 Audit Quality and Underwriter Reputation

When quality uncertainty exists, certifying institutions are expected to evolve to mitigate the effect of this uncertainty. Guarantees, agents with reputation capital, and licensing are a few popular mechanisms for overcoming information asymmetry. In the US Chinese IPO firm market, auditors and underwriters may provide quality certification services. Auditors provide an opinion on the fairness of financial statements disclosures before and after the IPO. Similarly, reputable underwriters may screen out "bad" firms in the underwriting process. Thus, we examine whether audit quality or underwriter reputation signals US Chinese IPO firm quality.

Table 6 Panel A describes audit firm market shares of the Chinese IPO firms and their percentages of fraud firms.[20] None of the firms audited by Ernst & Young Hua Ming or KPMG

[20] Big 4 CPA firms are multinational auditors (Deloitte & Touche, PricewaterhouseCoopers, Ernst & Young, KPMG, and Arthur Andersen & Co. ceased). Andersen & Co. ceased operations at the beginning of our sample period. The Big 4 - Non Big 4 classification has been used as a proxy for audit quality.

Huazhen were subject to an SEC AAER. When comparing the fraud rate between Big 4 affiliates and Non Big 4 firms, we calculate the number-weighted average of fraud rate, i.e., the fraud rate is weighted by the number of firms audited by each accounting firm. Big 4 affiliate auditors have an average likelihood of 3.4 percent that their clients are subject to an SEC AAER, while non-Big 4 auditors have an average likelihood of 5.3 percent. Conversely, the other two fraud classifications show that firms with Big 4 affiliate auditors have a higher likelihood of fraud charges than those with non-Big 4 auditors, but the differences are statistically insignificant. The evidence suggests that Big 4 affiliates do not provide a better signal of firm quality.

Table 6 Panel B presents evidence on how well underwriters provide certification to Chinese IPO firms. Panel B shows the number of firms underwritten by seven prestigious investment banks and the percentage of fraud firms in the IPO sample.[21] The number-weighted average comparison shows that prestigious underwriters have either approximately the same or a higher percentage of fraud firms than other underwriters. As in the case of auditor certification, the underwriter screening mechanism fails to identify Lemons.

(Insert Table 6 here)

4.3.2 Institutional Investors

Institutional investors are generally viewed as the most likely to be efficient producers of publicly available data and have incentives for private information search. Thus, we investigate the propensity of institutional investors to own Chinese firms listed in the US. If institutional investors are capable of using public or private information to identify firms that subsequently are the subject of accounting irregularities, one would expect them to avoid investing in these problematic firms. If institutional investors are unable to differentiate Non-Lemons from Lemons,

[21] For each IPO lead underwriter, we obtain prestige rankings from Ritter's website, based on Loughran and Ritter (2004).

it is likely that there is substantial information asymmetry even among sophisticated investors.

We use quarterly data to analyze how institutional holdings change after the firms listing dates. Panel A of Table 7 compares institutional holdings of Non-Lemons and Lemons at the end of the five quarters following the public offerings from 1994 to 2011. From the first quarter to the fifth quarter, there is no significant difference in institutional holdings between firms charged by the SEC and other firms. Firms subject to class actions have significantly higher institutional ownership than other firms from the fourth quarter to the fifth quarter after the listing date, and this result continues in the fifth quarter under our third classification of "bad" firms. Importantly, we observe that institutional investors are "loading up" on these firms and increasing their proportionate share to a greater degree in firms that ultimately became a problem. The fact that they are net buyers of these firms over time is inconsistent with institutional investors possessing superior information.

We further examine institutional trading around the IPO firm lockup expiration dates. If an institutional investor has private information about a fraud firm she owned prior to the IPO, we expect her to sell more immediately after the lockup expiration. We compare the buy and sell order imbalance of institutional investors in the different windows around expiration of the lockup period.[22] We find that institutional investors buy more stocks of Lemons (SEC or Action), but sell more stocks of other firms after the lockup expiration. For instance, as shown in Table 7 Panel B, within the month of the lockup expiration date, the order imbalance for other firms is -9.53% compared to 16.2% for Action. These findings are consistent with the quarterly trading results in Panel A of Table 7, suggesting that institutional investors do not appear to have access to private information.

[22] Field and Hanka (2001) and Brav and Gompers (2003) find that stock prices fall in the week that lockup expires. We obtain institutional daily trading data for the period from January 2000 to December 2011 from Ancerno Inc., a private data provider. Order imbalance is the difference between buy and sell volume divided by their sum.

(Insert Table 7 here)

4.3.3 Regression Analysis of Market Mechanisms

Next, we compare fundamental characteristics of "good" and "bad" firms. We expect that Lemons would be penalized in a well-functioning capital market if they could be easily separated from Non-Lemons. Thus, Lemons would have strong incentives to mimic all aspects of the Non-Lemons in hopes of being pooled with them. We estimate probit regressions to determine whether the fundamental characteristics in the listing year are significant in predicting fraud charges. Our dependent variables are the three indicator measures of fraud charges: *SEC*, *Action*, and *Charge*. The firms without a SEC AAER, class action lawsuit, or media accusation are considered "good" firms, with a value of "1" assigned to each indicator.

We follow prior literature (Dechow, Sloan, and Sweeney 1996 and Dechow, Ge, and Schrand 2010) considering size, leverage, performance measures (*ROA*, *Growth*, and *Loss*), market to book (*MB*), and total accruals (*Accruals*) as differentiators of firm quality. Audit quality measures (*Big4AFF* and *Opinion* indicators) and an institutional ownership measure *(TIO)* (Bushee 1998 and Hartzell and Starks, 2003) are included as additional explanatory variables. Since IPO firms are almost surely more carefully scrutinized than reverse merger firms, we include an IPO indicator. We also analyze the impact of the *VIE* structure on fraud charges. Finally, we control for listing year and industry indicators in our probit models.

Table 8 provides the regression results. Columns (1) - (3) measure fraud charges during 2000 to 2012, and column (4) - (6) measures fraud charges within 3 years after a listing. Table 8 shows that IPO firms are less likely to be charged by the SEC, sued by shareholders and accused of accounting fraud by the media. The five positive coefficients on the size variable suggest that larger firms are more likely to be targeted. Leverage is negatively associated with all three

measures of fraud charges, suggesting that firms with higher leverage are less likely to face fraud accusations. Our results suggest that creditors may have a monitoring role for Chinese firms listed in the US.

In addition, an audit opinion other than a standard unqualified opinion significantly increases the likelihood of fraud charges. But hiring a prestigious auditor (Big 4 Affiliate) has no impact on the likelihood of fraud charges. The results suggest that auditor identity does not play a major role in the decision by the SEC, lawyers, or reporters to pursue allegations of wrong doing.

Even though the VIE structure may impose firm regulatory and accounting risks, firms with the VIE structure are not more likely to face *ex post* scrutiny. The coefficients on the VIE indicator are not statistically significant across all models. Similarly, neither our proxy for earnings quality (*Accruals*) nor the institutional ownership measure (*TIO*) is significantly related to charges.

On balance, the multivariate analysis confirms the univariate test results in that there are few consistent conventional signals that investors can rely upon to detect accounting frauds in the US listed Chinese firms.[23]

(Insert Table 8 here)

4.3.4 Privatizations by Chinese Firms

Our next set of tests address the question of Chinese entrepreneurs' knowledge of their firm type. We examine whether Non-Lemons seek to exit the US market. Table 9 presents the comparison between privatized firms and others. We define "P" as the 46 firms that successfully privatized by the end of 2014 and "NP" as the other 233 firms. Table 9 shows that only one

[23] We used financial data in the year before the listing year and the year before the revelation of massive frauds (2010). We also analyzed using the restated earnings from the Audit Analytics for 16 firms in our sample with earnings restatements later. Our findings are robust to these alternative financial statement measures.

successfully-privatized firm is the subject of a SEC AAER, compared to 8.6 percent of non-privatized firms that are facing an SEC AAER. Similarly, privatized firms are significantly less likely to be charged by shareholders and media accusations. Privatized firms are more likely to be IPO firms, have larger assets, and have lower sales growth and market-to-book ratio in their listing year, consistent with the privatization firms being Non-Lemons. On balance, there is relatively little evidence of differences in other fundamental characteristics between privatized and other firms.

Untabulated results show that entrepreneurs are willing to pay a substantial premium to exit the market. On average, the premium - the difference between the offer price and the stock price at the privatization announcement day is 37.3%. This evidence suggests that quality uncertainty causes these firms to be traded at a price with close to a 40% discount. These results are also consistent with "good" firms exiting the US market by undertaking a costly privatization transaction. Our findings support the view that the costs of dishonesty in markets include the loss incurred from driving legitimate businesses out of existence.

(Insert Table 9 here)

In sum, the evidence presented in this section suggests substantial information asymmetry between investors and entrepreneurs. While investors cannot infer firm types or preemptively react to Non-Lemons and Lemons, entrepreneurs appear to know their firm types.

5. Regulatory Intervention and Reemergence of the Market

5.1 Spillover to China Stock Market?

We investigate whether the 2011 market failure is unique to the Chinese firms listed in the US but not to those listed in the Chinese domestic market. If Chinese investors suffer from the same type of information asymmetry and domestic regulations in China do not function well, the

spillover effect documented in the previous section may travel across the Pacific.

First, we observe that Chinese investors did not respond significantly to the firm specific events, while they responded to revelation of possible regulatory intervention. Specifically, the Chinese market returns in days (-1,+1) associated with the five events in Table 5 are -0.82%, -1.18%, -1.62%, -1.86%, and -0.92%, respectively. They are all negative but only significant for Event 3 (the announcement of the SEC's intention to regulate reverse mergers) and Event 4 (CRSC recommendation of cancelling the VIE structure). The evidence suggests that Chinese investors were less surprised by the magnitude of Lemons among Chinese firms listed in the US and they did not add the same discount to firms traded in China.

We further examine how Chinese investors responded to the 10 firms cross-listed in the US and China which are excluded from our final sample. Our analysis shows that CAR (-1,+1) in the US market associated with the five events are 1.22%, -1.19%, 0.13%, -2.75%, and -3.49%, respectively, suggesting that cross-listed firms are only affected by general events such as events 4 and 5. Meanwhile, CAR (-1,+1) in the Chinese market associated with the five events are -0.27%, -0.48%, 0.38%, 1.24%, and 0.44%, respectively. The evidence supports the argument that the spillover effect is primarily concentrated in the US market, indicating a barrier of information search across borders and the lack of regulatory oversight in the US.

5.2 Regulatory Actions Across Borders

Our previous tests are consistent with a market failure. Traditional market mechanisms such as auditor quality and underwriter reputation provide limited assurance regarding the quality of firms. Clearly, the fact that the firms are located in one country, possibly domiciled in a second country, and the investors reside in a third country demands robust information channels between entrepreneurs, regulators, and investors. However, issues of differing legal

systems, international treaties, and sovereignty introduce stumbling blocks which exacerbate asymmetric information problems in this market.

We now turn our attention to the effect of legal protection and regulations. Shleifer and Vishny (1997) suggest that effective legal protection is necessary for a well-functioning market. Since China does not regulate Chinese firms listed in the US and the SEC enforcement actions as well as US court's rulings are not enforced in China, ex post settling up costs from fraudulent reporting by Chinese firms are lower than for a typical domestic registrant. This lack of US regulatory and court enforcement power enhances the incentive for Chinese firms to provide lower quality and even misleading financial information. Without cooperation between Chinese and US regulators, investors will rationally price protect against incentives by Chinese firms to provide fraudulent financial reports. We investigate the effect of regulatory protection by documenting market price reactions to information concerning US and China regulators efforts to cooperate.

We search Lexis-Nexis to identify regulatory initiatives between the US and China over US listed Chinese firms. Our search begins in July 2011, after the start of the market disruption, and ends at the end of 2014. Panel A of Table 10 identifies 12 events addressing attempts at regulatory coordination and Panel B reports value-weighted raw and abnormal returns for US listed Chinese firms around these regulatory events.

The PCAOB announced on July 6, 2011 that a joint PCAOB and SEC delegation would meet the following week in Beijing with representatives from China's Ministry of Finance and the CSRC. The meeting was regarded as the opportunity to initiate a cooperative resolution to cross-border auditing oversight by James R. Doty, PCAOB Chairman. The abnormal return around the announcement is +2.6%, suggesting that investors had positive expectation for

US-China cooperation. According to the joint-press release on Aug. 8, 2011, however, "The Sino-US Symposium on Audit Oversight" did not reach any agreement on specific cooperation actions on audit oversight and resulted in an abnormal return of -3.8%.

Negative abnormal returns are also observed for US regulatory actions against US listed Chinese firms. In response to the large number of fraud charges against US listed Chinese firms, the PCAOB issued Staff Audit Practice Alert No. 8 - Audit Risks In Certain Emerging Markets on Oct. 3, 2011 (Event 3). The abnormal return for 1994 to 2011 listings was -5% around the alert. Somewhat surprisingly, there was no market reaction for Event 9 when the SEC filed litigation against the Chinese Affiliates of the global auditing firms for their refusal to cooperate on demands for access to audit working papers. On January 22, 2014, SEC Administrative Law Judge Cameron Elliot found that the Chinese affiliates of Ernst & Young, KPMG, Deloitte Touche Tohmatsu, PricewaterhouseCoopers, and BDO, violated provisions of the Sarbanes-Oxley Act of 2002 and the Dodd-Frank Wall Street Reform and Consumer Protection Act. Judge Elliot's ruling censured and denied them the privilege of practicing before the SEC for a period of six months. This decision would effectively limit the affiliates of global CPA firms from auditing Chinese firms seeking equity capital in the US or any other audit of Chinese subsidiaries of US registrants.[24] This ruling (Event 11) caused abnormal returns of US listed Chinese firms of -5.1%.

Cross-border oversight largely depends on the willingness of Chinese regulators to permit access to information about Chinese firms to US regulators. A Reuters report on Oct. 19, 2011 stated that Chinese regulators asked the Chinese affiliates of the Big 4 and two smaller audit

[24] The judge's decision describes a number of cases with the Chinese affiliate of the global auditing firm being hired to investigate fraud or misrepresentation. The Chinese affiliate finds itself unable to turn over working papers to US regulators because of Chinese law. Thus, the auditing firm faces a classic dilemma because of conflicting laws in the US and China.

firms to urgently review their work on US listed Chinese companies and give details of any information they may have provided to overseas regulators. The emphasis on confidentiality rules by Chinese authorities ratcheted up tensions between US and Chinese regulators on audit oversight. The abnormal return of this event (Event 4) is -2%. In an interview dated May 8, 2012, the chairman of the PCAOB said "we ought to be able to observe the inspections they conduct in the late summer or fall, and certainly by the end of the year." This statement captures the lack of progress in securing an agreement with Chinese regulators to assure oversight of information production (Event 5) resulting in a -1.2% abnormal return. On Oct. 5, 2012, China and the US reached an audit inspection agreement that allows US regulators to observe official auditor inspections in China (Event 7). The investors, however, showed no significant reaction to this agreement, showing their reservation. But the abnormal return of +1.7% around Event 8 suggests that investors reacted positively to the news that for the first time, US officials completed a round of observations of inspections of auditors in China, and it was expected that Chinese and US officials would discuss the access to audit documents by year-end . On May 24, 2013, China and the US signed a Memorandum of Understanding (MOU), opening the door for US regulators to access documents held by Chinese auditors (Event 10). This MOU was designed to provide some structure for the relationship between US and China regulators that oversee audit firms, which have been involved in audits of the financial statements of Chinese firms that have been raising capital in the US. Surprisingly, there is no significant abnormal return around the MOU. On April 21, 2014, China Ministry of Finance issued a draft of "Provisional Regulations on Cross-border Auditing Business of Accounting Firms" (Event 12). This draft provides the most definitive statement to date that the Chinese government intends to oversee auditing issues of overseas listings. This announcement resulted in a positive abnormal return of 1.8%.

To summarize, Table 10 shows that the market responded positively to events signaling increased cross-border oversight of US listed Chinese firms and negatively to events revealing no progress or unwillingness to coordinate. The mix of negative and positive market reactions indicates the difficulty the US and China faced in reaching an agreement. On balance, these results support the view that regulatory cooperation and protection of investor property rights is valued by market participants, but the present state of cross-border oversight is quite tenuous.

(Insert Table 10 here)

5.3 Reemergence of the Market

As noted in the previous section, the cross-border coordination efforts have made some tenuous progress in re-establishing trust in the financial disclosures of Chinese firms seeking funding through the US equity market. Even though existing Chinese firms had no significant reaction to the May 5, 2013 MOU, it ended a 6-month quiet period for Chinese firm US IPOs. Since May 5, 2013, there have been a number of highly visible Chinese firm US offerings (8 IPOs in 2013 and 15 in 2014, including Alibaba). We expect these new Chinese IPO firms to be similar to other well-known US firms. For example, Weibo and JD are quite similar to Twitter and Amazon, and Alibaba is a combination of Ebay and Paypal. In the post-MOU period, $26.17 billion of IPO proceeds were raised for the Chinese US IPO firms, with the $21.77 billion IPO proceeds by Alibaba in 2014 as the largest IPO to date. Finally, Figure 1 shows the Chinese firm portfolio of sample firms that went public from 1994 to 2011 rebounded and increased 50% after the MOU and by the end of 2014.

To assess the impact of regulatory intervention in this market, we compare fundamental characteristics of the Chinese firms going public in the US post 2011 with those of the firms pre 2011. Table 11 (Columns 1 and 2) presents the results. There are a few notable differences: The

new IPOs are more likely to adopt the VIE structure and hire more prestigious underwriters although the degree of underpricing is similar. New IPOs are substantially bigger and have longer histories. Profitability for these firms are lower than pre-2011. For example, average ROA decreases from 6.7% to 2.1%, and the percentage of loss increases from 13.8% to 40.0%. Accruals change from positive (0.007) to negative (-0.077). The market responds more positively to the post-2011 IPOs. Institutional holdings by the end of IPO quarter are significantly higher for the new IPOs (26.7% vs. 7%). These significant differences suggest that regulatory intervention has impacted the composition of Chinese firms electing to list in US capital markets.

Furthermore, Table 11 presents these characteristics of alternative benchmarking groups – Non-Lemons Chinese IPO firms in 1994 to 2011 (Column 3) and US IPO firms in 2012 to 2014 (Column 4). We compare the characteristics of new IPOs in 2012 to 2014 with Non-Lemon Chinese IPOs pre 2011. Unsurprisingly, all differences discussed in the previous paragraph remain. The t-values are reported in Column (1)-(3). When comparing new Chinese IPOs with US IPOs in the same period 2012 to 2014, there are many differences. Two notable differences are Age and ROA. While US IPOs have on average a 19.45 year history, Chinese new IPOs only have 8.21 year history although they are longer than pre-2011 Chinese IPOs (6.53 years). New Chinese IPOs are profitable while US IPOs lose money at the listing year (average ROA negative 12.4%). The t-values for the difference tests are reported in Column (1)-(4).

(Insert Table 11 here)

One may expect that these 25 new IPOs should be carefully selected after the market reemerged from the failure. Surprisingly, some firms are still involved in class action lawsuits. Even though the 2012 to 2014 listings have no SEC AAER during 2013 to 2015, they have 9 pending class action lawsuits. We examined each of these 9 cases for the reasons leading to law

suits, we find that new IPOs are still charged by investors for similar causes such as failure of disclosure and providing misstated financial conditions. These instances suggest that after going through market failure and benefiting from regulatory interventions, investors continue to seek Chinese firm exposure even though these firms are still the target of litigation at very high rates.

5.4 Legal Protection for Truthful Reporting

While traditional market mechanisms such as audit quality and underwriter's reputation fail, we turn our attention to our proxies for legal protection. Fines and civil lawsuit penalties imposed by the SEC or US Courts are more easily collected from the Chinese firms' US subsidiary that operate in the US product market. Thus, if misconduct is discovered, the potential cost is higher for a Chinese firm with US operations. Similarly, we investigate whether a CEO's US educational background is related to prevention of fraud. CEO US education may be correlated with the residence status (PR or citizenship) or property ownership, so it may be a good proxy for legal protection. We expect that firms with US operations and CEOs with US educational background are less likely to engage in accounting frauds.

We construct a variable to proxy for product penetration in North America market (NA Sales) from Compustat segment data. NA Sales is the percentage of sales revenue from North America in the listing year divided by the total revenue. We identify CEO educational background from the CEO's biography and construct an indicator variable (USEducation), equal to "1" if the CEO received degree(s) from US institutions.

We add NA Sales and US Education as two new variables in regressions featured in Table 8. For brevity, we only report the results for the two new variables in Table 12 because the coefficients for other variables are similar to those reported in Table 8. Our results indicate that CEO's US education significantly reduced the likelihood of accounting fraud in Chinese firms.

The coefficients on NA Sales are negative and significant in probit regressions in column (3) and (9), supporting the notion that operations in North America reduces the likelihood of accounting frauds in Chinese firms listed in the US when frauds are defined as media accusations. The evidence shows that the degree of legal protection proxied by North America sales and CEO's US education is associated with the lower likelihood of financial frauds. This implies that legal protection is an important substitute for ineffective cross border regulation.

(Insert Table 12 here)

6. CONCLUDING REMARKS

Prior literature in economics largely studies information asymmetry in well-functioning markets. For markets with severe information asymmetry and frictions, market failure is a possibility. This outcome is rarely observed because diligent information searches can mitigate information asymmetry and market mechanisms may prevent market failure. However, we document an exception to the norm. A number of Chinese firms elected to enter the US capital market over the last two decades. Unique governance structures, information environments, regulation, and legal systems impacting Chinese firms impose significant challenges for US investors in collecting and processing information.

The revelation of fraud for a substantial proportion of US listed Chinese firms in 2011 precipitated significant market return losses, decreased liquidity, and a cessation of Chinese firm US IPOs. We hypothesize and test whether a market failure occurred. Our tests reveal the existence of severe information asymmetry between investors and entrepreneurs and a resulting market collapse. We find little evidence that traditional market mechanisms such as auditor quality and underwriter reputation provide credible signals of firm quality. We find that firm-specific factors capturing the degree of legal protection, such as North America sales and

CEO's US education, are less likely to be associated with financial frauds.

Chinese and US regulators reacted to this market failure with a series regulatory initiatives to alleviate the conditions that led to this market turmoil. Both countries agreed to an information sharing agreement that provides a mechanism for the US to request access to Chinese audit firm work papers. However, the mechanism is cumbersome and information sharing is not assured. Furthermore, the agreement has a five-year statute of limitations. Responding to these regulatory actions, the IPO market for Chinese firms listed in US has returned in the past few years. However, fundamental protections of property rights for investors in US listed firms have not been assured by the recent regulatory interventions. This level of investor protection would require mechanisms to assure the ability to determine culpability and loss recovery across national boundaries. With this level of legal protection for property rights and regulatory cooperation, one would expect the US Chinese firm market to become a robust market attracting Chinese entrepreneurs seeking capital in the US. However, the problems of assuring property rights, high quality information, and legal recourse that led to the 2011 market failure have not been substantially changed as shown in our analysis. Thus, the US Chinese firm market is likely to remain as a fragile and high risk segment of the US securities market.

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Appendix 1
Variable Definition

Accruals	Total accruals divided by ending total assets in listing year
Action	Indicator variable, 1 if a firm faces either SEC litigation or class action regarding accounting issues during 2000-2012
Age	Number of years that a firm was established by the time of its listing, natural log is used in regressions
Big4 AFF	Indicator variable, 1 if a firm hires a "Big4 Affiliate" as its auditor in listing year, otherwise 0
BM	Book-to-market ratio in listing year, calculated by book value of common shareholder's equity divided by market capitalization of common stocks at the end of fiscal year
CAR	Cumulative abnormal returns, defined as the difference between raw returns and value-weighted market returns
CFO	Net operating cash flows divided by ending total assets in listing year
Charge	Indicator variable, 1 if a firm faces any charge from SEC or shareholder during 2000-2012 or media during 2009-2012
EBIT/Price	Earnings before interest and tax per share deflated by stock price per share at the end of fiscal year
Growth	Sales growth in listing year, defined as the percentage change in sales from the lag year to the current year
IB Rank	Rankings of lead underwriters, use average rankings if there is more than one lead underwriter; prestige rankings are obtained from Jay Ritter's website
IPO	Indicator variable, 1 if a firm is listed through regular IPO process, otherwise 0
Leverage	Total liabilities divided by ending total assets in listing year
Loss	Indicator variable, 1 if a firm has negative net income, otherwise 0
Opinion	Indicator variable, 1 if a firm gets audit opinion other than standard unqualified opinion in listing year, otherwise 0
NA Sales	The percentage of sales from North America over the total revenue in the listing year
Proceeds	Offering price multiplied by shares offered during the IPO, in $million
ROA	Return on assets in listing year, calculated by net income deflated by ending total assets
ROE	Return on equity in listing year, calculated by net income deflated by ending common shareholder's equity
SEC	Indicator variable, 1 if a firm faces any SEC litigation regarding accounting issues during 2000-2012
Size	Natural log of total assets in listing year
TIO	Ownership by institutional investors at the end of the quarter in which a firm gets listed, deflated by outstanding common shares
Turnover	The average of trading volume divided by shares outstanding
USEducation	Indicator variable, 1 if CEO studied in US universities and institutions, otherwise zero
VIE	Indicator variable, 1 if a firm uses variable interest entities for its operations in China, otherwise 0
Volatility	Standard deviation of daily stock returns

Table 1 Sample Selection and Characteristics

Panel A. Sample selection

US-listed Chinese firms	1994-2011	2012-2014
WIND & CV Source	312	25
Compustat additions	4	
Initial Sample	316	
Exclude:		
a. Cross-listing firms	19	
b. Non-Chinese Firms	4	
c. Firms from Hong Kong, Macau, and Taiwan	9	
d. Funds	2	
e. Special Purpose Acquisition Companies (SPACs)	3	
Sub-total	279	25

Panel B. Sample composition

	IPO	Reverse Merger/Other	VIE Structure	Non-VIE Structure
1994-2011	140	139	115	164
2012-2014	25	1	24	2
Total	165	140	139	166

Table 2
Distribution of Sample Firms in Three Different Markets
This table presents the number and proceeds of Chinese IPOs in three different markets. US IPO and Hong Kong IPO data are obtained from Securities Data Corporation (SDC) Global New Issues database. IPOs in China are obtained from WIND dataset. We exclude IPOs with an offer price of less than $1, Unit offerings, Real Estate Investment Trusts (REITs) offerings, funds, and cross-listing offerings. Proceeds are in $billions.

	Listed in China		Listed in US			Listed Hong Kong		
Year	N	Proceeds	N	Proceeds	% of IPO proceeds	N	Proceeds	% of IPO proceeds
1999	94	6.17	2	0.09	0.15	4	0.06	14.2
2000	145	10.37	6	0.53	0.94	2	0.17	11.9
2001	64	6.71	0	0	0	4	0.16	26.1
2002	71	6.25	0	0	0	15	0.23	11.9
2003	66	5.48	1	0.08	0.7	17	1.17	66.9
2004	98	4.27	10	2.65	7.0	28	1.73	65.0
2005	15	0.71	9	1.74	5.4	23	2.77	60.5
2006	71	21.04	10	2.15	5.3	23	3.72	84.0
2007	121	61.19	30	8.28	17.7	35	9.14	59.2
2008	77	15.13	6	0.3	1.2	16	0.5	29.2
2009	111	29.62	12	1.94	12.7	37	3.58	45.5
2010	347	74.19	40	4.19	10.9	45	2.15	9.40
2011	277	43.07	10	1.86	5.3	65	4.89	38.7
2012	150	15.83	2	0.15	0.4	61	5.32	94.8
2013	0	0	8	0.80	1.4	8	11.86	54.05
2014	125	10.79	15	25.37	52.8	30	15.88	55.23

Table 3 Descriptive Statistics in Listing Year

The table compares firm characteristics in the listing year among US listed Chinese firms and other US IPO firms during 1994-2011. We exclude ADRs, unit offers, closed-end funds, REITs, IPOs with an offer price lower than $1.00, IPOs in financial industries (SIC code in 6000s), and IPOs not covered by CRSP and/or Compustat. Variable definition is provided in Appendix 1. *, **, *** indicate significance levels of 10%, 5%, and 1% respectively.

Panel A. Descriptive Statistics for sample firms listed between 1994 and 2011

Variable	Mean	Std. Dev.	Q1	Median	Q3
Offering Structure					
IPO	0.50	0.50	0	1	1
VIE	0.41	0.49	0	0	1
Size and Leverage of the Offering					
Size	18.77	0.98	18.22	18.76	19.40
Leverage	0.290	0.194	0.125	0.243	0.426
Age	8.08	4.32	5	7.25	10.58
Profitability					
ROA	0.071	0.204	0.046	0.095	0.148
Growth	0.959	1.412	0.293	0.536	1.038
Accruals	0.016	0.179	-0.049	0.016	0.1
Loss	0.144	0.352	0	0	0
CFO	0.059	0.15	-0.022	0.069	0.139
Monitors, Opinion, and Valuation Metrics					
Big4 AFF	0.48	0.50	0	0	1
Opinion	0.159	0.366	0	0	0
MB	3.87	3.86	1.57	2.73	4.76
Price/EBIT	23.34	63.84	5.14	11.46	31.10
TIO	0.066	0.102	0	0.022	0.093
Stock performance					
1-year CAR	-0.029	0.981	-0.632	-0.154	0.326
2-year CAR	-0.206	1.138	-0.925	-0.373	0.288
3-year CAR	-0.163	1.404	-1.067	-0.337	0.389
1-year volatility	0.055	0.037	0.037	0.046	0.061
2-year volatility	0.055	0.034	0.038	0.047	0.064
3-year volatility	0.054	0.032	0.039	0.047	0.061
1-year turnover	0.022	0.038	0.004	0.009	0.025
2-year turnover	0.018	0.029	0.004	0.010	0.019
3-year turnover	0.018	0.029	0.005	0.010	0.017

Panel B. Comparisons of Chinese IPOs and US IPOs between 1994 and 2011

Variable	Chinese IPOs	US IPOs	T-test
Offering			
Age	6.63	15.10	-4.54***
Underpricing	0.198	0.329	-2.52**
Size and Leverage of the Offering			
Size	19.19	18.72	3.63***
Leverage	0.240	0.371	-8.59***
Profitability			
ROA	0.067	-0.116	13.14***
Growth	1.025	1.930	-5.96***
Accruals	0.007	-0.062	5.55***
Loss	0.138	0.520	-12.10***
CFO	0.060	-0.051	8.17***
Monitors, Opinion, and Valuation Metrics			
Big4 AFF / Big4	0.86	0.89	-1.34
Opinion	0.138	0.220	-2.63***
MB	4.032	7.342	-3.98***
Price/EBIT	36.656	17.240	1.38
Stock performance			
1-year CAR	-0.178	-0.090	-1.29
2-year CAR	-0.304	-0.226	-0.86
3-year CAR	-0.133	-0.238	1.16
1-year volatility	0.050	0.050	0.09
2-year volatility	0.050	0.052	-1.10
3-year volatility	0.049	0.053	-1.81*
1-year turnover	0.036	0.009	6.26***
2-year turnover	0.028	0.009	5.85***
3-year turnover	0.027	0.009	5.48***

Table 4 Fraud Charges and Market Performance of Chinese Firms Listed in US during 1994-2011
Panel A defines the three classes of bad firms: (1) Classification 1 - firms are subject to SEC litigation (SEC) during 2000-2012; (2) Classification 2 - firms are subject to class action or SEC litigation (Action) during 2000-2012; (3) Classification 3 - firms are accused by the SEC or shareholders or major US media (Charge) during 2009-2012. Panel B summarizes the evolution of the market for Chinese Firms Listed in the US from 1999-2014. Panel C shows stock returns, turnover, and change in IPO proceeds for Chinese firms listed in NYSE, AMEX, and NASDAQ. Market adjusted CAR is the difference between the cumulative return of each stock and the equal-weighted market returns. The portfolio rebalances when a firm is added or dropped from the sample. Turnover is the average of each stock's turnover which equals to daily trading volume divided by shares outstanding. Panel D compares the stock returns of "bad" and "good" firms in 2009-2012.

Panel A. Frequency of fraud charges

	Reverse mergers	IPOs	Total
SEC AAER (2000-2012)	15	6	21
Either SEC AAER or Class Action (2000-2012)	50	32	82
SEC AAER, Class Action or Media Accusation	65	54	119

Panel B. Distribution of firm status

Year	# Stocks at Year Start	New listings	Privatization or M&A	Delisted	# Stocks by Year end
1999	2	2	0	0	4
2000	4	7	0	0	11
2001	11	1	0	0	12
2002	12	1	0	0	13
2003	13	1	0	0	14
2004	14	13	0	0	27
2005	27	16	0	0	43
2006	43	16	0	1	58
2007	58	49	0	2	105
2008	105	27	0	1	131
2009	131	58	0	2	187
2010	187	71	2	3	253
2011	253	15	10	37	221
2012	221	2	14	22	188
2013	188	8	15	10	171
2014	171	15	19	5	162

Panel C. Time series of the performance of Chinese portfolio based on old listings

Year	Market adj. CAR	Volatility	Turnover	IPO proceeds ($Billion)
1999	1.263	0.143	0.014	0.09
2000	-0.210	0.101	0.009	0.53
2001	0.540	0.090	0.005	0.00
2002	0.919	0.143	0.005	0.00
2003	1.356	0.106	0.046	0.08
2004	0.159	0.054	0.036	2.65
2005	-0.159	0.039	0.026	1.74
2006	0.243	0.043	0.024	2.15
2007	0.260	0.048	0.031	8.28
2008	-0.235	0.056	0.019	0.30
2009	0.230	0.052	0.015	1.94
2010	-0.265	0.038	0.014	4.19
2011	-0.463	0.048	0.014	1.86
2012	-0.186	0.050	0.010	0.15
2013	0.416	0.048	0.018	0.80
2014	-0.060	0.042	0.025	25.37

Panel D. Market adjusted CAR for different subsamples of old listings in 2009-2012

Year	Listing type		Classification 1		Classification 2		Classification 3	
	IPO	RM	No SEC	SEC	No Action	Action	No Charge	Charge
2009	0.068	0.365	0.226	0.270	0.245	0.199	0.159	0.320
2010	-0.188	-0.343	-0.270	-0.196	-0.252	-0.295	-0.321	-0.186
2011	-0.378	-0.582	-0.467	-0.349	-0.460	-0.474	-0.464	-0.462
2012	-0.143	-0.255	-0.187	-0.126	-0.178	-0.219	-0.152	-0.250

Table 5 Market Responses to Significant Negative Events and Fraud Types

The table documents five dates with the worst three-day returns for 2010-2011. The portfolio level CAR[-1,1] is the mean of the abnormal returns for all Chinese firms listed in US. CAR[-1,1] is the difference between the cumulative return of each stock and the value-weighted market returns in the three day window around the five event dates. We identify the related significant news by reading through business news within a week of each date in Panel A. Panel B presents the distribution of CAR [-1,1] around the five events.

Panel A. Five significant negative events

	Event Date	Portfolio CAR (-1,+1)	Possible related news within the week
Firm Specific Events			
Event 1	June 7, 2011	-5.45%	Muddy Waters Research on Sino-Forest Corporation on 2011/6/2 (Thursday), Wall Street Journal reported on Saturday that Sino-Forest shares take a tumble and federal regulators also are investigating some accounting firms over their audits of the US-listed Chinese firms.
Event 2	June 17, 2011	-6.07%	Citron research on Harbin Electric Inc. on 2011/6/17.
Events Impacting all Chinese Firms			
Event3	June 8, 2011	-5.37%	Interactive Brokers was barring its clients from using borrowed money to buy the shares of more than 130 Chinese companies (WSJ, 2011/6/8); SEC issued an investment warning for reverse merger firms on 2011/6/9.
Event 4	Sep. 23, 2011	-5.49%	Reuters published on 2011/9/18: "internal research report of CSRC recommended to cancel VIE structure of Chinese firms"; On 2011/9/20, China's Ministry of Commerce Spokesman said that the Ministry would explore ways to regulate VIE.
Event 5	Sep. 30, 2011	-5.29%	"Justice Department probing Chinese accounting" by Reuters on 2011/9/29

Panel B. Frequency Distribution of CAR (-1, 1) for two firm specific events

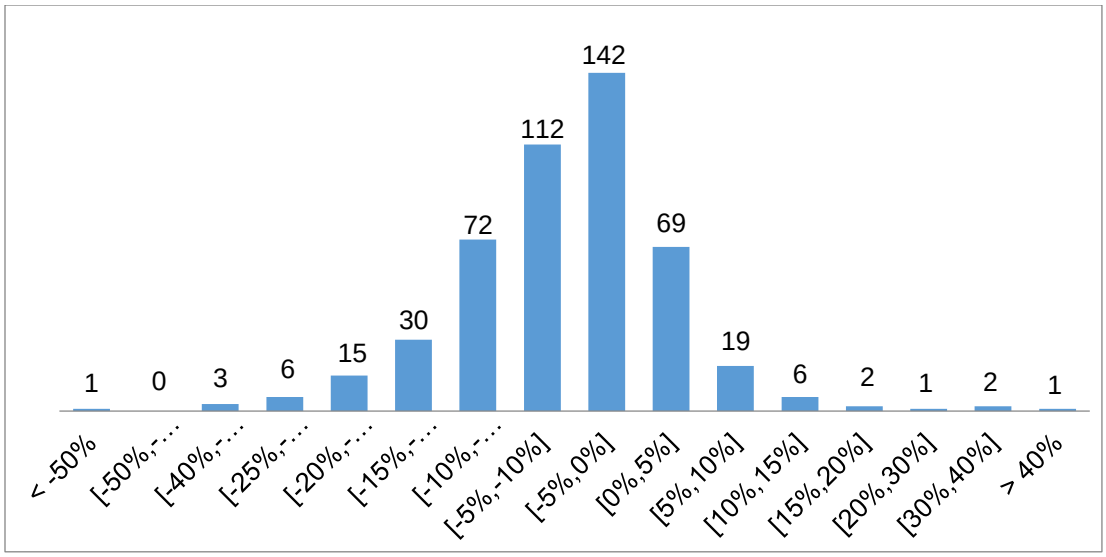

Table 6 Auditors, Underwriters and Charge Measures for the 1994-2011 IPOs

The table compares the likelihood of frauds for the IPO firms during 1994-2011 audited by Big 4 affiliates and non-Big 4-affiliate auditors (Panel A) or the firms underwritten by prestigious and non-prestigious banks (Panel B).

Panel A. Auditors				
Auditor	**N**	**SEC**	**Action**	**Charge**
Deloitte Touche Tohmatsu	53	1.8%	22.6%	41.5%
PricewaterhouseCoopers Zhong Tian	29	10.3%	27.6%	37.9%
Ernst & Young Hua Ming	19	0%	10.5%	31.6%
KPMG Huazhen	17	0%	23.5%	35.3%
Arthur Andersen & Co	3	33.3%	66.7%	66.7%
Big 4 affiliates	118	3.4%	22.0%	38.1%
Non Big 4	19	5.3%	21.1%	36.8%
Difference	99	-1.9%	0.9%	1.30%

Panel B. Underwriters				
Underwriter	**N**	**SEC**	**Action**	**Charge**
BoA Merrill Lynch	31	6.5%	12.9%	32.3%
Credit Suisse	31	0.0%	19.4%	35.5%
Morgan Stanley	28	3.6%	17.9%	28.6%
Goldman Sachs	19	5.3%	31.6%	47.4%
Deutsche Bank Securities	16	12.5%	25.0%	56.3%
Citigroup	16	0.0%	0.0%	12.5%
J.P. Morgan	15	0.0%	6.7%	20.0%
Prestigious Underwriters	156	3.8%	16.7%	33.3%
Other Underwriters	76	2.6%	18.9%	23.7%
Difference	80	1.2%	-2.2%	9.6%

Table 7 Institutional Investors and Charge Measures for the 1994-2011 Listings

Panel A compares institutional holdings of "bad" firms and "good" firms for the 1994-2011 listings. Institutional holdings are measured as the shares held by institutions over outstanding common shares at the end of each quarter, in percentage. Q1 indicates the quarter of listing date, and Q2 - Q5 are the four quarters following Q1. Panel B describes buy and sell imbalance of institutional trading around IPO lockup expiration. *, **, *** indicate significance levels of 10%, 5%, and 1% respectively.

Panel A. Institutional holdings in five quarters after the listing date

	Non SEC	SEC	Diff t-value	Non Action	Action	Diff t-value	Non Charge	Charge	Diff t-value
Q1	6.78%	5.81%	0.40	6.38%	7.50%	-0.80	6.36%	7.18%	-0.64
Q2	9.85%	10.91%	-0.33	9.23%	11.62%	-1.32	9.17%	10.96%	-1.07
Q3	9.88%	11.74%	-0.61	9.21%	11.95%	-1.61	9.45%	10.77%	-0.85
Q4	11.23%	16.19%	-1.46	10.42%	14.29%	-2.04**	10.55%	12.99%	-1.38
Q5	12.11%	16.71%	-1.18	11.07%	15.56%	-2.20**	10.84%	14.62%	-1.99**

Panel B. Buy and sell imbalance of daily trading by institutional investors around IPO lockup expiration

	Non SEC	SEC	Diff t-value	Non Action	Action	Diff t-value	Non Charge	Charge	Diff t-value
[0,+1]	-8.05%	24.70%	-1.038	-9.24%	-0.78%	-0.669	-6.60%	-8.61%	0.144
[0,+5]	-5.72%	-9.01%	0.102	-10.43%	7.02%	-1.368	-8.41%	4.53%	-0.917
[0,+10]	-3.71%	-15.04%	0.342	-8.42%	8.05%	-1.252	-3.79%	-5.18%	0.095
[0,+20]	-2.82%	-0.22%	-0.42	-9.53%	16.20%	-1.917*	-0.77%	-10.62%	0.657
[0,+30]	-4.54%	16.13%	-1.718	-11.21%	16.55%	-2.085**	-3.63%	-4.87%	0.083
[0,+40]	-3.74%	5.35%	-1.03	-10.53%	16.30%	-2.134**	-3.99%	-1.26%	-0.194
[0,+60]	-6.77%	-2.63%	-0.303	-13.24%	11.78%	-2.052**	-7.43%	-3.47%	-0.29

Table 8 Regression of Fraud Charges on Different Signals for Old Listings

The table presents regression results on firm characteristics for three measures of fraud charges: *SEC* - an indicator variable, "1" if a firm faces any SEC litigation regarding accounting issues during 2000-2012, "0" otherwise; *Action* - an indicator variable, "1" if a firm faces any SEC litigation or class action regarding accounting issues during 2000-2012, "0" otherwise; *Charge* - an indicator variable, "1" if a firm faces any charge from SEC or shareholder during 2000-2012 or media during 2009-2012, "0" otherwise. Industry dummy is based on 2-digit SIC code. See Appendix 1 for definition of other variables. All continuous variables are winsorized at the 1st and 99th percentile. Robust z-statistics are reported in parentheses. *, **, *** indicate significance levels of 10%, 5%, and 1% respectively.

	Charges during 2000-2012			**Charges within 3-year after listing**		
	SEC	**Action**	**Charge**	**SEC**	**Action**	**Charge**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
IPO	-1.916**	-0.964**	-0.758**	-1.923*	-0.672*	-0.659**
	(-2.53)	(-2.45)	(-2.22)	(-1.89)	(-1.68)	(-2.00)
VIE	-0.122	-0.585**	-0.204	-0.534	-0.324	-0.129
	(-0.28)	(-1.99)	(-0.81)	(-0.66)	(-1.10)	(-0.52)
Size	0.311	0.730***	0.450***	0.754*	0.619***	0.467***
	(0.96)	(3.23)	(2.80)	(1.74)	(3.18)	(2.88)
Leverage	-1.847	-3.184***	-2.139***	-4.983*	-2.654***	-1.895***
	(-1.12)	(-3.96)	(-3.35)	(-1.79)	(-3.43)	(-3.03)
ROA	0.592	-1.050	-0.098	6.597**	-0.162	0.557
	(0.58)	(-1.25)	(-0.14)	(2.27)	(-0.19)	(0.82)
Growth	0.216	0.090	0.115	0.370*	0.101	0.108
	(1.56)	(1.14)	(1.41)	(1.92)	(1.27)	(1.34)
MB	-0.707	1.603*	0.150	0.191	1.846*	-0.272
	(-0.53)	(1.76)	(0.20)	(0.10)	(1.74)	(-0.36)
Accruals	-0.027	0.043	0.032	-0.051	0.030	0.025
	(-0.41)	(1.38)	(1.11)	(-0.40)	(0.93)	(0.86)
Big4AFF	-0.040	-0.612	-0.478	-0.443	-0.737	-0.678*
	(-0.06)	(-1.23)	(-1.20)	(-0.41)	(-1.46)	(-1.73)
Opinion	1.280**	0.608**	-0.122	2.682***	0.439	-0.093
	(2.51)	(2.06)	(-0.42)	(3.07)	(1.47)	(-0.32)
TIO	-0.958	0.343	0.746	0.789	0.663	0.701
	(-0.43)	(0.36)	(0.79)	(0.39)	(0.67)	(0.75)
Constant	-3.233	-5.266	-1.942	-21.662	-14.479***	-12.851***
	(-0.54)	(-1.31)	(-0.67)	(0.00)	(-4.28)	(-4.40)
Year	Included	Included	Included	Included	Included	Included
Industry	Included	Included	Included	Included	Included	Included
N	269	269	269	269	269	269
Pseudo R^2	59.51%	39.13%	32.52%	62.04%	36.73%	31.98%

Table 9 Comparison between Privatized Firms and Other Firms

We define "P" as firms that privatized successfully by the end of 2014 and "NP" as other firms. *SEC* - an indicator variable, "1" if a firm faces any SEC litigation regarding accounting issues during 2000-2012, "0" otherwise; *Action* - an indicator variable, "1" if a firm faces any SEC litigation or class action regarding accounting issues during 2000-2012, "0" otherwise; *Charge* - an indicator variable, "1" if a firm faces any charge from SEC or shareholders during 2000-2012 or media during 2009-2012, "0" otherwise; refer to Appendix 1 for definition of other variables. All continuous variables are winsorized at the 1st and 99th percentile. *, ** indicate significance levels of 10% and 5% respectively, based on one-tail test.

	N	NP	N	P	Difference (NP-P)	T or Z test
SEC	233	0.086	46	0.022	0.064	1.51*
Action	233	0.322	46	0.152	0.170	2.31**
Charge	233	0.446	46	0.326	0.120	1.51*
IPO	233	0.476	46	0.630	-0.154	-1.91**
VIE	233	0.408	46	0.435	-0.027	-0.43
Age	233	7.960	46	8.681	-0.721	-1.05
Size	225	18.721	46	19.026	-0.305	-2.14**
Leverage	225	0.292	46	0.280	0.012	0.42
ROA	225	0.068	46	0.088	-0.020	-1.08
Growth	224	1.000	46	0.761	0.239	1.52*
Accruals	225	0.014	46	0.030	-0.016	-0.82
Loss	225	0.156	46	0.087	0.069	1.21
CFO	225	0.059	46	0.059	0.001	0.02
MB	224	3.969	46	3.121	0.848	1.80**
Price/EBIT	224	23.321	46	23.412	-0.091	-0.01

Table 10 Events around regulatory actions between 2011 and 2014

Panel A. Description of regulatory actions

Event	Event date	Event type
1	July 6, 2011	PCAOB Statement on Delegation to China: commencement of efforts on cooperative resolution to cross-border auditing oversight
2	Aug. 8, 2011	US-China Joint Press Release on audit oversight of public companies: discussed a series of arrangements aiming to build mutual understanding and cooperation in the near future
3	Oct. 3, 2011	PCAOB: Staff Audit Practice Alert No. 8 - Audit Risks in Certain Emerging Markets
4	Oct. 19, 2011	China quizzes audit giants on foreign regulator contact: to ensure that firms do not succumb to pressure to hand over documents to regulators outside of China
5	May 8, 2012	Regulator Predicts U.S. Will Soon Take Part in Chinese Inspections of Auditors: "ought to be able to observe the inspections they conduct in the late summer or fall, and certainly by the end of the year"
6	Sep. 21, 2012	PCAOB: Speech of Investor Protection through Audit Oversight
7	Oct. 5, 2012	China, US reach audit inspection agreement: allowing the latter to observe official auditor inspections in China
8	Nov. 8, 2012	U.S. sees talks with China on corporate audits: "on access to audit documents"
9	Dec. 3, 2012	SEC Charges China Affiliates of Big Four Accounting Firms
10	May 24, 2013	PCAOB Enters into Enforcement Cooperation Agreement with Chinese Regulators(MOU)
11	Jan. 22, 2014	SEC judge rule against China Affiliates of Big Four Accounting Firms
12	Apr. 21, 2014	China MOF: Provisional Regulations on cross-border auditing business of accounting firms (Draft)

Panel B. Market responses

Event	Event date	Expected sign	N	CAR(-1,1)	t-stat	
1	July 6, 2011	+	223	0.026	3.43	***
2	Aug. 8, 2011	?	226	-0.038	-6.26	***
3	Oct. 3, 2011	-	222	-0.050	-7.44	***
4	Oct. 19, 2011	-	220	-0.020	-4.29	***
5	May 8, 2012	?	204	-0.012	-2.09	**
6	Sep. 21, 2012	?	194	0.003	0.60	
7	Oct. 5, 2012	+	194	0.000	0.08	
8	Nov. 8, 2012	+	190	0.017	3.10	***
9	Dec. 3, 2012	-	187	0.000	-0.01	
10	May 24, 2013	+	176	0.002	0.24	
11	Jan. 22, 2014	-	162	-0.051	-9.78	***
12	Apr. 21, 2014	+	160	0.018	4.25	***

Table 11 Comparison of New Chinese IPOs (2012-2014) and Other Three Benchmarking Groups

The table presents the characteristics of Chinese IPOs in 2012-2014 and 1994-2011, Non-Lemon Chinese IPOs in 1994-2011, and US IPOs in 2012-2014. The differences between the characteristics of Chinese IPOs in 2012-2014 and those of other groups are tested and t-values are reported. *, **, *** indicate significance levels of 10%, 5%, and 1% respectively.

Variable	2012-2014 Chinese IPOs	1994-2011 Chinese IPOs	1994-2011 Non-Lemon Chinese IPOs	2012-2014 US IPOs	t-value	t-value	t-value
	(1)	(2)	(3)	(4)	(1) - (2)	(1) – (3)	(1) – (4)
Offering Structure							
Underpricing	0.200	0.201	0.147	0.177	-0.02	0.87	0.61
VIE	23/25	83/140	51/86		3.22***	3.05***	
Size and Leverage of the Offering							
Size	19.924	19.185	19.089	19.704	3.34***	3.18***	0.69
Leverage	0.325	0.240	0.259	0.459	2.23**	1.71*	-3.64***
Age	8.213	6.530	6.771	19.452	2.25**	1.81*	-8.20***
Profitability							
ROA	0.021	0.067	0.074	-0.124	-1.63	-1.97*	5.66***
Growth	1.228	1.025	0.898	0.685	0.72	0.62	1.04
Accruals	-0.077	0.007	0.005	-0.0616	-2.65***	-2.98***	-0.88
Loss	0.400	0.138	0.105	0.558	3.39***	3.45***	-1.36
CFO	0.093	0.060	0.068	-0.059	1.01	1.04	6.65***
Monitors, Opinion, and Valuation Metrics							
IB Rank	8.196	6.642	6.571	7.786	3.94***	4.88***	1.35
Big4 AFF	0.958	0.877	0.860	0.774	1.17	1.36	2.14**
Opinion	0.040	0.138	0.151	0.082	-1.34	-1.47	-0.71
MB	3.621	4.032	3.851	3.948	-0.49	-0.34	-0.3
Price/EBIT	16.552	36.656	32.481	-4.696	-1.14	-0.99	1.28
TIO	0.267	0.070	0.068		6.08***	3.48***	
US Bonding							
NA Sales	0.020	0.032	0.052		-0.47	-1.59	
USEducation	0.360	0.216	0.221		1.56	1.41	

Table 12 The Effect of Legal Protection on Fraud Charges

Legal protection is proxied by North America Sales and US Education. NA Sales: the percentage of sales from North America over the total revenue in the listing year. US Education: indicator variable, "1" if the CEO receives degree(s) from US institutions, '0" if otherwise. Industry dummy is based on 2-digit SIC code. *, **, *** indicate significance levels of 10%, 5%, and 1% respectively.

	SEC	Action	Charge	SEC	Action	Charge	SEC	Action	Charge
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
NA Sales	-0.465	-3.872	-3.900**				-0.177	-2.524	-3.056*
	(-0.15)	(-1.51)	(-2.40)				(-0.06)	(-1.08)	(-1.90)
US Education				-8.357***	-1.249***	-0.831***	-5.947***	-1.078***	-0.654**
				(-7.52)	(-3.01)	(-2.79)	(-5.60)	(-2.71)	(-2.11)
Controls, year, industry	Included	Included	Included	Included	Included	Included	Included	Included	Included
N	268	268	268	268	268	268	268	268	268
Pseudo R^2	59.52%	40.47%	34.22%	58.91%	41.34%	33.99%	36.28%	41.84%	34.88%

Figure 1 The figure summarizes equal-weighted raw returns of the portfolio of our sample of US Chinese firms and the China Domestic Market Index from January 2, 2009 to December 31, 2014.