



Ownership structure, corporate governance, and fraud: Evidence from China

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Abstract

Our study examines whether ownership structure and boardroom characteristics have an effect on corporate financial fraud in China. The data come from the enforcement actions of the Chinese Securities Regulatory Commission (CSRC). The results from univariate analyses, where we compare fraud and no-fraud firms, show that ownership and board characteristics are important in explaining fraud. However, using a bivariate probit model with partial observability we demonstrate that boardroom characteristics are important, while the type of owner is less relevant. In particular, the proportion of outside directors, the number of board meetings, and the tenure of the chairman are associated with the incidence of fraud. Our findings have implications for the design of appropriate corporate governance systems for listed firms. Moreover, our results provide information that can inform policy debates within the CSRC.

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1. Introduction

China began a process of economic restructuring in the late 1970s and these reforms continue to this day. Principal aims of the reforms include the modernization of industry, stimulation of

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growth, reduction of poverty, and improvements in economic efficiency. To implement these reforms, China has moved towards a free-enterprise system that has included, among other things, the privatization of many state owned enterprises (SOEs), the formation of joint stock companies, and the development of stock markets. The trials and tribulations of the reform process have been well documented (Cao et al., 1999; Gao, 1996; Groves et al., 1994; Lin and Zhu, 2001) and analyses of the effectiveness of these reforms have begun to appear in the literature (Allen et al., 2005; Chen et al., 1998, *in press-a*). In a detailed analysis of national economic statistics, Allen et al. (2005) conclude that it is the private non-listed sector of the economy that has driven China's economic growth. They argue that poor governance has constrained the performance of listed firms. Chen et al. (1998, *in press-a*) concur with the arguments of Allen et al. and they further demonstrate that the performance of partially privatized SOEs deteriorates in the years after the IPO.

China's reform process has been gradual and contrasts with the wholesale and 'overnight' reforms undertaken in many ex-Soviet-bloc countries. The reforms have borrowed concepts and "best practices" from the U.S. and other capitalist nations. For example, the governance of listed firms follows, in many respects, practices from the U.K. and the U.S. Firms have boards of directors who are charged with running the organization and the chairman of the board is the main power and takes on an executive role. Boards are required to have outside directors although, only recently, have they been required to be independent.¹ Appointment committees, compensation committees, and other committees are now becoming common in Chinese listed firms. Although there is widespread adoption of western² corporate governance practices, the effectiveness of them has yet to be fully evaluated. The particular issue we examine in this study is whether the style and form of corporate governance has an effect in deterring financial fraud. Our research follows the line of enquiry of Beasley (1996) but does so in a major transition economy, namely China.

The China Securities Regulatory Commission (CSRC) is charged with enforcing all aspects of the securities laws in China and its powers and operations are not dissimilar to those of the SEC in the U.S. The CSRC investigates allegations of corporate and securities fraud and makes enforcement actions in cases where fraud and malpractices are proved. We examine these enforcement actions and develop a model to explain why some firms succumb to financial fraud while others do not. In particular, we examine whether the ownership and governance structures of firms have an impact on the propensity to commit fraud.

Our study contributes to the literature in the following ways. First, China has a relatively underdeveloped legal environment when compared to the U.S. and so the role and impact of regulation and corporate governance differs across the two countries (we compare China to the U.S. because most prior research has used data from American enforcement actions). La Porta et al. (1998, 2002) and Roe (2002) show that the legal environment of a country has a significant impact on firm performance and corporate governance.³ In China, civil litigation is very rare and thus the regulator, in this case the CSRC, is the prime discipliner of firms and their

¹ The China Securities Regulatory Commission (CSRC) issued Statement 102 'Guidelines for Establishing an Independent Directors System for Listed Companies' in August 2001 and it stipulated that by June 2003, one-third of the directors should be independent and non-executive.

² By "western" we mean developed or capitalist countries such as Australia, the U.K., and the U.S.

³ Supporting evidence comes from an international study by Haw et al. (2004) who find that well developed legal and extra-legal institutions (such as the tax authorities) help reduce earnings management. Note, however, that they did not include China in their sample countries.

managements. In contrast, in the U.S., legal actions against firms can be criminal (e.g. the SEC) and/or civil (e.g. shareholder class action lawsuits). The threat of civil litigation is a major factor in influencing corporate behavior in the U.S. Second, the ownership structure of listed firms in China is unique. For example, blockholders are usually the state and quasi-state institutions (such as SOEs) and we investigate if they have an impact on corporate fraud. These blockholders are very different from those in the U.S. or Europe and so they have different influences on the firm. Third, while Chinese boardrooms have similar setups to those in western companies, their dynamics are quite different. For example, chairmen are full-time executives and they wield significant power. As another example, senior management typically started their careers as government bureaucrats and so they may have different mindsets than top executives in U.S. firms. We examine specific boardroom characteristics including outside directors, board size, number of board meetings in a year, chairman tenure, and chairman/CEO duality to see if they help explain the incidence of enforcement actions. Fourth, China's auditing profession is relatively new and it has faced a steep learning curve. We examine whether certain audit firms are more likely to deter fraud. Fifth, we employ bivariate probit regression with partial observability to model the multivariate relationships with fraud. One problem of the existing approach to modeling corporate fraud is that we can only observe fraud that is detected. Bivariate probit with partial observability allows us to model the observed outcome (detected fraud) as a function of the joint realizations of the propensity to commit fraud and the probability of detection. Our results provide some inputs for the deliberations of policy makers and regulators as they review the effectiveness of current laws and procedures and as they consider extensions and improvements to the regulations.

In the multivariate tests we find that firms that have a high proportion of non-executive directors on the board are less likely to engage in fraud. This evidence is consistent with outside directors monitoring the actions of managers and thus helping deter fraudulent acts. Firms that have chairmen with shorter tenures are associated with higher incidences of fraud. Short-tenure may imply the chairman lacks experience in the firm and so deterring fraud is more difficult. Board meeting frequency is positively associated with fraud. This may imply that a firm's questionable or illegal activities were discussed by the board over a number of meetings. There is weak evidence from the multivariate analysis that firms where one person occupies the positions of both the chairman and the CEO have higher frequencies of fraud. This finding is consistent with the argument that handing one person a lot of power (chairman and CEO positions) makes it easier for that person to abuse their power and engage in fraudulent activities. Duality of chairman and CEO positions reduces the checks and balances in the top management of the firm.

Ownership characteristics appear to be less important in explaining fraud. Legal entity stockholders are positively associated with fraud although only the univariate analysis, which compares fraud and no-fraud firms, is statistically significant. Legal entity investors, such as parent SOEs, are charged with making profits and so they may encourage listed firms in which they are invested to falsify their financial statements and engage in fraud. We also find that firms with foreign shareholders are less likely to have enforcement actions against them. We believe foreigners monitor the firms they invest in and this helps deter fraud. However, the importance of ownership characteristics disappears in the multivariate setting.

The paper proceeds as follows. First, we give a brief discussion of China's enterprise reforms and the workings of CSRC (Section 2). Section 3 describes our research design, introduces the sample data, and develops testable hypotheses. The results are reported and discussed in Section 4 and our conclusions are presented in Section 5.

2. China's economic restructuring, regulatory reforms, and prior research

2.1. Economic reforms

China's enterprise reforms have been far-reaching. From a centrally planned economy where managers of SOEs followed orders from government ministries, the reforms have devolved powers to the restructured enterprises and given managers a lot of discretion over funding, products, pricing, and labor practices. Managers are increasingly being appointed on merit rather than political patronage and personal connections.

The enterprise reforms involve carving out the operational units of the SOEs⁴ and reorganizing them as limited liability companies with share capital and with profit making objectives. Many of these companies have subsequently listed on the stock market and raised capital by IPOs. A major characteristic of China's enterprise reforms is the state's retention of a controlling stake in listed firms.⁵ This stake is held directly by central government and its associated ministries (including state asset management bureaus), and by city, regional, and local government. On average, about 30% of the shares are owned by the state (central government), its ministries, and local and regional government. Another 30% of the shares are owned by legal entities and most of these entities are ultimately owned by the state. One type of legal entity is an SOE. An SOE typically floats off part of its activities into a listed firm but it retains a majority or controlling stake in it. The listed entity is often the profitable operations of the SOE. Legal entities are required to maximize the return on their investments. The shares held by the state and legal entities are not tradable on the two stock exchanges.⁶ The state and legal entity shareholders are typically blockholders and the largest blockholder often controls the firm as they have substantially larger investment stakes than the second largest blockholder (there might not even be a second blockholder) (Xu, 2004). On average, about 40% of a listed firm's shares is owned by private individuals and private institutions, and these shares (called A-shares) are actively traded on the exchanges.⁷ About 10% of listed firms have also issued shares to foreigners (called B-, H-, and N-shares). All the shares, tradable and non-tradable, rank *pari-passu* in terms of dividends and voting. In China, managerial and director stockholdings are very small and executive stock option schemes are rare during the period we investigate. For this reason we do not examine executive stock ownership in our analysis of corporate financial fraud.

The designation of shares into state, legal entity, and individual is enshrined in China's company law. Note that legal entities are ultimately owned by the state. However, legal entities (such as SOEs) have somewhat different objectives than state stockholders. Legal entities are usually charged with making profits, whereas for state stockholders profit may not be the sole

⁴ The SOE, itself, remains 100% owned by the central or regional government. The SOE has a number of social and political objectives that go beyond the making of profits (Bai et al., 2000).

⁵ Bortolotti and Faccio (2004) show that many governments keep a controlling or dominant ownership stake in privatized SOEs. Thus China is not the only country where 'partial privatizations' occur. Bortolotti and Faccio also find that high state ownership in privatized SOEs results in superior financial performance (measured by the market to book ratio). Gupta (2005) finds that partial privatizations in India have a positive impact on a firm's sales, profits, and labor productivity. These findings stand in contrast to the results from China's privatizations (Chen et al., 1998, in press-a), where high state ownership was found to be detrimental to financial performance.

⁶ The Shanghai Securities Exchange (SHSE) opened in December 1990 and the Shenzhen Stock Exchange (SZSE) opened in July 1991.

⁷ Shares owned by individuals are very actively traded. The average holding period has been estimated to be as little as 2 months (Poon et al., 1998).

objective.⁸ There is a greater alignment of control rights and cash flow rights for legal entities vis-à-vis the state, and so their influences on listed firms may be different (Xu, 2004). For this reason we distinguish between the type of owner in our empirical tests.

The reform process is meant to give autonomy to managers and boards of directors to run the firms without interference from the state. Although the state and its agencies often have voting control of a listed firm, they are supposed to act as dispassionate profit maximizers rather than as agents to force political or social agendas on the company.⁹ Individual shareholders and non-state institutional investors are meant to monitor and discipline company managers in much the same way as happens in capitalist countries. Institutional investors (not affiliated to the state) are viewed as being major agents of change in the U.S., U.K., and other western nations (Chung et al., 2002). In China, however, institutional investors (pension funds, insurance companies, mutual funds) are very small and they provide little monitoring of company management.

The enterprise reforms have brought with them a change in agency problems. Under the old system, shirking was a major problem as managers had little incentive to work hard and planning and decision-making were deferred to central or regional government. Managers produced to the budget and their salaries were fixed and were little different from the average worker although benefits were higher. After privatization and listing, different agency problems emerged that are similar to those in capitalist nations. Principal among the ‘new’ agency problems are the diversion of resources to managers and controlling shareholders, the manipulation of stock prices, and the expropriation of minority stockholders.

As part of the reform process, China has written new commercial and securities laws, introduced accounting and disclosure standards, and built regulatory agencies. These institutional changes were designed to reduce uncertainty for investors and to deter or reduce the new agency problems. More specifically, laws have been enacted that seek to establish property rights and protect investors’ interests.¹⁰ To help enforce the laws and to encourage good governance practices, the state developed a number of regulatory agencies. In 1998 the state reorganized the regulatory agencies that cover companies and the securities business into one ministry rank unit, the CSRC. In general, the securities laws, accounting standards, disclosure requirements, and regulatory agencies are modeled on those of other jurisdictions, most notably the U.S. and Hong Kong.

2.2. The China Securities and Regulatory Commission (CSRC)

At the beginning of the reform period China had few laws covering commercial transactions and no laws relating to property rights. The lack of laws meant that the regulators made ad-hoc and inconsistent decisions. This situation put in peril the economic reforms already underway. Even after the establishment of the two stock exchanges in 1990 and 1991, there was confusion over the roles of regulators as there were three regulatory agencies, the State Council Securities Commission (SCSC), the People’s Bank of China (the *de facto* Central Bank), and the CSRC, and they had overlapping duties.

⁸ Note that the state wants listed firms to be profitable but there may be other objectives that occasionally impinge on the maximization of profit. Li and Zhou (2005) show that the state uses economic performance as a criterion in promoting provincial leaders.

⁹ The state deems some industries to be especially important to the national interest. In these cases the state exercises close control over the enterprises. Typically firms in these industries are not listed and so they do not form part of our study.

¹⁰ Daouk et al. (2006—this issue) show how securities laws lead to different types of corporate governance and how this affects company performance.

To remedy for this somewhat chaotic situation, the state in 1998 ruled that the CSRC was to be the main regulator of securities markets in China (this role is stipulated in *The Securities Law*, which was promulgated in 1998).¹¹ The CSRC may delegate some work to the stock exchanges but in these cases they must report back to the CSRC. *The Securities Law* also gave more power to the CSRC to investigate and sanction firms and individuals over securities and corporate fraud. The CSRC is also responsible for advising on changes to laws, formulating regulations for the securities markets, vetting listing applications, and supervising companies, securities firms, investment institutions, sponsors, stock exchanges, and professional bodies and persons (auditors, securities lawyers, stockbrokers).

The CSRC investigates allegations of company and securities fraud and malpractice. Examples include embezzlement by company officials and securities firms, expropriation of assets that hurt minority investors, false and inadequate financial disclosures, and stock market manipulation. The CSRC was modeled after the SEC in the U.S. and the Securities and Futures Commission (SFC) in Hong Kong. Some very senior staff at the CSRC were recruited from regulatory agencies in other jurisdictions, most notably Hong Kong. There is an aggressive campaign to recruit and train accountants and lawyers to staff the mid-level and low-level of the CSRC. Members of staff are also seconded to the CSRC from audit and law firms to help on specific assignments.

The CSRC has a practice of regular reviews as well as random inspections of companies and securities firms. It also has a division that surveys companies and securities firms by looking for ‘red flags’. The CSRC receives information and complaints from investors, current and former employees, insiders, newspapers, stock exchanges, legal proceedings, and police investigations, and all of these may lead to investigations.

The CSRC publishes information on its investigations if wrongdoing is found. However if the infraction is deemed very minor, then the CSRC will give an internal warning or reprimand to the offending party and this will not be disclosed to the outside world. The CSRC divides its sanctions of companies into four categories: public criticism, public condemnation, official warning, and monetary fines (Mao, 2002). Suspension of trading and withdrawal of licenses to act as a securities firm are possible penalties. For individuals, the enforcement actions can lead to criminal prosecution with significant penalties that include the death penalty.

Published reports on investigations vary from one page or less to those that are very lengthy and go into substantial detail. Therefore the reporting of enforcement actions varies quite a lot and makes analysis quite difficult. The reports are published in national newspapers.

The aim of our research is to examine whether ownership structure and governance mechanisms have an influence on corporate fraud in China. Civil lawsuits against companies and securities firms are a very recent development in China and to date there have been very few successful prosecutions.¹² Civil proceedings can only take place after a CSRC investigation and so far they have provided limited remedies to investors. Unlike the U.S., the threat of civil litigation is very weak and so the actions of the CSRC assume more importance as a deterrent to corporate fraud. In the absence of civil litigation, we use enforcement actions of the CSRC as our sample of corporate financial fraud. These enforcement actions are similar in spirit to those of the SEC in the U.S.

¹¹ The Ministry of Finance also has some jurisdiction over financial statements and so some confusion over the roles of the regulators may still arise (Li, 2001).

¹² China's first successful civil lawsuit against a listed company was concluded in November 2002.

2.3. Prior research

Using data from SEC accounting and auditing enforcement releases, [Beasley \(1996\)](#) found that financial statement fraud in the U.S. was lower for firms that had a higher proportion of outside directors, longer tenure of outside directors, higher outside director share ownership, and fewer other outside directorships held by the outside directors. He also found that the presence of an audit committee did not significantly affect the likelihood of financial statement fraud. In contrast, other U.S. research ([Dechow et al., 1996](#); [McMullen, 1996](#); [Beasley et al., 2000](#)) found that audit committees were associated with lower levels of fraud. [Dechow et al. \(1996\)](#) report that fraud was more likely in firms where the chairman doubled as the CEO, did not have a large blockholder, and the inside directors had substantial share ownership.

[Uzun et al. \(2004\)](#) examined U.S. firms that were accused of fraud in the period 1978 through 2001. The source of the data was the Wall Street Journal and so many of the frauds were not related to SEC enforcement actions. They examined the relationships between corporate fraud and a long list of governance variables. Their major finding is that if the board (and audit committee) had a high percentage of independent outside directors then corporate fraud is much less likely. Other board characteristics (including size of the board, frequency of meetings, and CEO/chairman duality) were not significant. In contrast to their expectations, the authors found that firms with nomination committees were more likely to have corporate fraud. In another U.S. study, [Agrawal and Chadha \(in press\)](#) examined firms that made earnings restatements that involved the correction of prior period earnings errors or manipulations. They found that if the outside directors had at least one member with an accounting or finance background then earnings restatements were less likely. The absence of accounting or financial expertise rendered the outside directors ineffective in curbing accounting errors and fraud. Similarly, they found that the presence of an audit committee was associated with fewer earnings restatements only when at least one of the committee's independent members had an accounting or finance background. [Agrawal and Chadha](#) conclude that it is only when outside directors and outside audit committee members have accounting or finance expertise that the board and audit committee become effective in deterring earnings misstatements. [Denis et al. \(2006—this issue\)](#) show that executive stock options can lead managers to commit fraud. Here, managers may be tempted to take actions that artificially inflate stock prices so that they can maximize their payoff from the options.

There have also been studies that examine whether ownership and boardroom characteristics are associated with earnings management. Although earnings management is not necessarily illegal it is regarded as being opportunistic and it distorts financial statements ([Chung et al., 2002](#)). Using data from Canada, [Park and Shin \(2004\)](#) find that it is only when the outside directors have financial expertise that they are able to deter earnings management. Increasing the proportion of outside directors per se does not deter earnings management; what is needed is the presence of outside directors who have backgrounds in accounting or finance. [Park and Shin's](#) findings echo those of [Agrawal and Chadha \(in press\)](#). Interestingly, in the U.K., [Peasnell et al. \(2000\)](#) find that outside directors only become effective in reducing earnings management after the publication of the Cadbury Committee corporate governance guidelines; prior to the publication of Cadbury, outside directors were ineffective. Thus it took the spur of an influential quasi-government report to change the behavior of outside directors. [Peasnell et al. \(2005\)](#) find that firms with a high proportion of outsiders on the board are less likely to engage in opportunistic earnings management. They also find no evidence that the presence of audit committees deters the use of earnings management.

China has unique ownership characteristics and governance structures (Clarke, 2003) and so our hypotheses are somewhat different from those in the U.S. General hypotheses are developed in the next section. There is little research on corporate and securities fraud in China and none examines corporate governance issues. Two related papers that examine the CSRC's investigations are Chen et al. (in press-b) and Firth et al. (2004). Chen et al. (in press-b) examines stock prices and finds that negative stock returns accompany announcements of enforcement actions. Firth et al. (2004) analyse the CSRC's implicit views on auditors' responsibilities for detecting fraud; here, the main focus is on auditors.

3. Research design

3.1. Corporate governance in China and testable hypotheses

As mentioned earlier, China's modern enterprise system reform has restructured former SOEs along the lines seen in western countries. The main differences are the state retaining a large investment stake and the rapid pace of change that places strains on top management resources and institutional frameworks. Many SOEs were reformed into limited liability companies with share capital and charters or articles of association. The boards of directors have similar structures and responsibilities as those in capitalist societies. However, the appointment of top management and directors is different from the U.S. and other developed countries. In the early years, the state, its ministries, and local government appointed the directors, or had veto power over the appointment. The Communist Party also had to approve senior level appointments. In more recent years, the state's role in appointing top managers and directors has diminished (the roles of ministries, local government, and the Communist Party have also declined). There is also a supervisory board although this has little influence on a firm's activities (Dahya et al., 2003; Tong, 2003). One of the functions of the supervisory board is to review the financial statements and auditor's report. The supervisory board therefore has duties similar to an audit committee although the level of expertise may be lower.

A prime focus of our study is to see whether corporate governance (broadly defined) has an impact on fraud. Three main aspects of corporate governance are examined, boardroom characteristics, ownership, and audit. The board is responsible for making major policy decisions as well as monitoring the day-to-day operations of the business. We believe the board has a major responsibility to deter corporate fraud. Our first general hypothesis is:

H₁. Boardroom characteristics have an impact on a firm's propensity to commit fraud.

To examine this hypothesis we collect data on the make-up of the board. In particular, we determine the proportion of outside directors, the number of directors, the number of board meetings, the tenure of the chairman, and whether the same person occupies both the chairman and CEO positions.

Boards can more effectively carry out their duties to safeguard the interests of shareholders (especially minority shareholders) if there is a heavy presence of outside (or non-executive) directors (Fama and Jensen, 1983). Using data from the U.K., Dahya and McConnell (2005) conclude that boards with a greater proportion of outside directors make better decisions (in particular, better decisions on the appointment of CEOs). During the time of our study there was a requirement for firms to have non-executive directors but it was not until June 2003 that they needed to be 'independent'. The non-executive directors are often representatives of the major shareholders. Beasley (1996) and Uzun et al. (2004) found that firms with a high percentage of outside directors had less financial fraud. They argued that outside directors have fewer

incentives for firms to commit fraud and so the greater their number, the more likely they can prevent or reduce the fraudulent behavior of the executive directors.

Jensen (1993) argued that large corporate boards are less effective and CEOs find it easier to control them. Yermack (1996) provides support for Jensen when he found that firms with small boards had superior financial performance. However, Uzum et al. (2004) found that board size had no association with corporate fraud. The evidence from the U.S. is therefore mixed.

Some corporate boards may be more active and vigilant than others. However it is impossible to directly measure activity and vigilance. What can be measured is the number of board meetings per year and this can be used as an admittedly rough proxy for board activity. Frequent board meetings may be a signal of increased vigilance and oversight of the top management of the firm. Alternatively, the frequency of board meetings may increase in times of financial distress or in times of controversial decisions that may involve illegal or questionable activities. Using U.S. data, Vafeas (1999) found that more frequent board meetings followed poor performance and they heralded improvements in profitability.

The tenure of the company chairman or CEO may have an impact on corporate fraud (Beasley, 1996).¹³ In China, the post of chairman is an executive position and it ranks higher than the post of CEO. For this reason we focus our attention on company chairmen. On the one hand, a new chairman may have limited knowledge of the firm and so fraud perpetrated by others may be easier to accomplish. On the other hand, long tenure may lead to entrenchment and over-confidence if the chairman feels he can get away with fraud.

In the Anglo-Saxon model of corporate governance, the dual appointment of chairman and CEO is seen to give too much power to the individual (Jensen, 1993) and this can make it easier to reach a decision that results in fraudulent actions and decisions that are not in the best interests of the minority shareholders. However, an alternative view of corporate governance argues that separating the roles of chairman and CEO can create paralysis if the two powerful positions do not agree on decisions and strategies. Consequently, many American corporations have the same person occupying the chairman and CEO positions. Beasley (1996) and Uzun et al. (2004) found that the duality of CEO and chairman positions does not have an impact on fraud in the U.S. although Dechow et al. (1996) found the opposite.

The broad ownership structure of a firm is exogenously determined by the state. For example, the decision to divide shares into state shares, legal entity shares, and individual (or tradable) shares is made by the central or regional authorities prior to listing and any transfers between these categories are very rare. Transfers between different types of state stockholders (e.g. between different government ministries or state asset management bureaus) and between different legal entities (e.g. different SOEs) needs approval from the state. Tradable shares are traded freely on the stock exchange. Our second general hypothesis is:

H₂. Ownership structure has an impact on a firm's propensity to commit fraud.

To examine this hypothesis we collect data on the proportion of shares held by the state (and its ministries and asset management bureaus), the proportion of shares held by legal entities, the proportion of shares held by individuals (tradable shares), the existence of foreign stockholders, the proportion of shares held by the single largest stockholder,¹⁴ and the concentration of ownership in the hands of the second to tenth largest stockholders.

¹³ Park and Shin (2004) find no association between the tenure of directors and earnings management in Canadian firms. We do not have data on the tenure of directors in Chinese firms.

¹⁴ The proportion of shares held by the state (legal entities) is the total of shares held by all state stockholders (legal entity stockholders) in a firm. A listed firm may have more than one state stockholder (legal entity stockholder), e.g. several ministries and several state asset management bureaus may own shares in one firm.

Legal entities are charged with making profits and so they may have incentives to divert resources from the listed firm in which they are invested,¹⁵ or to encourage firms to inflate their earnings. In such cases, legal entity stockholders may influence a firm's managers to engage in questionable or unlawful practices that lead to enforcement actions against the firms they invest in. In contrast, state stockholders have less motivation to persuade listed firms to engage in fraud.

Individual investors have vested interests in guarding against corporate fraud and especially those acts that expropriate wealth to the benefit of the major shareholders. Although individual stockholders have limited influence on company managers because of the presence of a majority or dominant owner, they may nevertheless be able to exert pressure to discourage fraud if the combined individual ownerships are high. Companies that have a high percentage of tradable shares are closely scrutinized by security analysts and by the financial media and so this may help deter fraud.

Some listed firms have foreign stockholders (B-, H-, N-shares and others). B-shares are issued to foreigners and these are traded on the domestic exchanges (shares quoted in U.S. dollars on the SHSE, and shares quoted in Hong Kong dollars on the SZSE). H-shares are listed in Hong Kong, N-shares in New York, and there are a few listings in London and Singapore. Foreign-invested firms are likely to insist on higher standards of governance and protection of minority rights (Khanna and Palepu, 2000). Note, however, that the foreign shares almost always represent a minority stake in the business. We expect that foreign invested firms will be less likely to engage in corporate fraud.

Chinese firms are characterized by having a dominant or block stockholder (invariably a state bureau or ministry or a legal entity) whose stockholdings far exceed the second largest stockholder (Xu, 2004). The larger the percentage of shares held by the blockholder the more influence they have over the firm's management. The dominant or block stockholder may have incentives to either deter fraud or to encourage fraud. In addition to the largest stockholder, other substantial investors may have an influence on a firm's propensity to commit fraud. To test this, we use a concentration ratio of the stockholdings of the stockholders ranked from the second largest to the tenth largest. If the combined stockholdings of these investors is high this gives them more influence on a firm's strategies and decisions.

Auditors can have a profound effect on corporate fraud by deterring it (i.e. the fraud will be reported) and by correcting it (by forcing the revision or restatement of financial statements). Independent audits are quite new in China and although there has been rapid progress in developing audit standards, the lack of trained personnel means the standards are not yet being fully implemented. Audit quality is likely to be much more variable than in industrialized nations and so it may help explain the incidence of fraud. Measuring audit quality is notoriously difficult and this is especially so in China (Qiu, 2004). One approach we adopt is to use audit firm size as a proxy for audit quality (see DeAngelo, 1981).¹⁶ Another possible approach is to categorize as high quality those auditors that have joint ventures with the international Big 5. Our hypothesis states that:

H₃. Fraud is less likely if the firm has a high quality auditor.

¹⁵ We acknowledge that in some cases the reverse may be true. Legal entity stockholders may inject assets into the listed firm at a cheap price so as to help the firm retain a listing (if it is in danger of losing it) or to otherwise help the firm.

¹⁶ We inherently assume that audit quality depends on the audit firm. This assumption is used in most studies of audit quality.

3.2. Sample selection

We examine all published CSRC enforcement actions from 1999 to 2003. These cover all cases where fraud is found, although, as noted before, cases of minor infractions are not publicly disclosed. The starting date coincides with the implementation of *The Securities Law* (promulgated in December 1998) that enshrined the CSRC as the sole regulator of listed companies, stock exchanges, and securities firms. The original data are collected from the newspapers *Securities Times* and *Shanghai Securities Daily*, annual reports, CSRC official news releases, and stock exchange year books. The total sample is 169 regulatory enforcements over the 5-year period. The yearly and industry distribution of firms is shown in Table 1. The industry distribution of fraud is representative of the number of listed firms in an industry sector, except for the property sector, which has a higher incidence of financial fraud. According to the enforcement releases, the average length of time over which the fraud is committed is between 1 and 2 years.

In panel C we show the distribution of cases across provinces. Column 1 lists the province, column 2 gives a development score to the province, column 3 shows the number of fraud cases, and column 4 expresses the number of fraud cases as a proportion of the total number of listed firms in the province. A strong characteristic of China's reform process is the uneven distribution of wealth and growth across the different provinces (Demurger et al., 2002). As the degree of market development could have an effect on the propensity to commit corporate fraud, it is important that we account for this in our model. To accomplish this we use a comprehensive index compiled by Fan and Wang (2003) as a proxy of the market development of a province.¹⁷ The index captures the regional market development from the following aspects: (1) relationship between government and markets, such as the role of markets in allocating resources and enterprise burden in addition to normal taxes; (2) the development of non-state business, such as the ratio of industrial output by the private sector to total industrial outputs; (3) development of product markets, such as regional trade barriers; (4) development of factor markets such as FDI and mobility of labor; (5) development of market intermediaries and legal environment such as the protection of property rights. Higher scores equate to greater market development. According to panel C, Guangdong, the province next door to Hong Kong, has the highest development score of 8.41. During the period of our study 23 enforcement actions were made against firms located in Guangdong and this represents about 20% of the listed firms in the province. There is no obvious pattern in panel C. For example, Guangdong has a ratio of fraud firms of 20%, while Zhejiang, another well-developed province, has a fraud ratio of only 4.5%. Fraud does not appear to be confined to those provinces with high development scores nor to those with low scores. To more formally test this, we use the index of market development (MINDEX) in our univariate and multivariate analyses.

Our research design requires the creation of a control sample of firms that is not subject to an enforcement action.¹⁸ Each fraud firm is matched with a no-fraud firm based on the following requirements (these requirements are similar to those used by Beasley, 1996):

1. Stock Exchange: The common stock of a fraud firm and its matched no-fraud firm trade on the same stock exchange (Shanghai stock exchange or Shenzhen stock exchange).

¹⁷ Demurger et al. (2002) also compile indices of regional development in China using data up to 1999. The Fan and Wang index is more up to date and more appropriate for our needs.

¹⁸ A matched firm control sample is also used by Agrawal and Chadha (in press), Beasley (1996), and Uzun et al. (2004) in their studies of corporate fraud and earnings restatements in the U.S.

Table 1

Descriptive statistics for regulatory enforcements during the 1999–2003 period

Panel A: By year and stock exchange						
Year	Shanghai (%)		Shenzhen (%)		Total (%)	
1999	12	(7.10)	6	(3.55)	18	(10.65)
2000	9	(5.32)	5	(2.96)	14	(8.28)
2001	26	(15.39)	43	(25.44)	69	(40.83)
2002	16	(9.47)	18	(10.65)	34	(20.12)
2003	19	(11.24)	15	(8.88)	34	(20.12)
Total	82	(48.52)	87	(51.48)	169	(100)

Panel B: By industry

	Number of occurrences	Percentage of the total number of companies in the corresponding industry	Percentage of cases	Average fraud (time span in years)
Finance	1	11.11	0.59	2.00
Utilities	8	8.79	4.73	1.25
Property and construction	8	21.05	4.73	2.00
Conglomerates	31	13.08	18.34	1.62
Industrial and manufacturing	110	13.84	65.09	1.72
Commercial	11	10.19	6.51	1.55
Total	169	13.22	100.0	1.69

Panel C: By province

Province	MINDEX Score	Number of fraud cases	Ratio of frauds	Province	MINDEX Score	Number of fraud cases	Ratio of frauds
Guangdong	8.41	23	0.2019	Henan	5.64	7	0.1538
Zhejiang	8.32	5	0.0454	Hubei	5.61	10	0.1200
Fujian	8.1	8	0.1186	Jilin	5.51	7	0.1538
Jiangsu	7.9	5	0.0351	Hunan	5.48	6	0.0893
Shandong	7.15	7	0.0652	Jiangxi	5.46	2	0.0667
Shanghai	7.04	20	0.0909	Heirongjiang	5.16	8	0.2000
Tianjin	6.89	2	0.0741	Yunnan	4.89	0	0.0000
Hainan	6.41	5	0.1724	Ganxu	4.86	1	0.0435
Anfei	6.4	3	0.0484	Neimengru	4.76	3	0.1304
Liaoning	6.4	13	0.1875	Guizhou	4.62	0	0.0000
Hebei	6.39	1	0.0227	Jiangxi	4.53	2	0.0714
Chongching	6.33	3	0.0938	Shanxi	4.15	1	0.0357
Guangxi	5.95	3	0.1250	Ningxia	4.02	2	0.1667
Beijing	5.74	8	0.0619	Qinghai	3.4	0	0.0000
Sichuan	5.7	12	0.1507	Xingjiang	3.5	2	0.0606

MINDEX is a comprehensive index to capture the regional market development from the following aspects: (1) relationship between government and markets, such as the role of markets in allocating resources and enterprises' burden in addition to normal taxes; (2) the development of non-state business, such as the ratio of industrial output by private sector to total industrial outputs; (3) development of product markets, such as regional trade barriers; (4) development of factor markets such as FDI and mobility of labor; (5) development of market intermediaries and legal environment such as the protection of property rights.

Ratio of frauds is the number of fraud cases divided by the number of listed firms in a province.

2. Firm Size: A fraud firm is matched to other firms listed on the same stock exchange that are similar in size. Firms are considered similar in size if the total assets of the control firm are

within $\pm 30\%$ of the total assets of the fraud firm in the year preceding the year of the financial statement fraud.

3. Industry: All firms identified in steps 1 and 2 are reviewed to identify a no-fraud firm within the same industry as the fraud firm. The industry is defined by the stock exchanges and follows the classification of the CSRC.
4. Listing age: All firms identified in the above 3 steps are scanned to identify a no-fraud firm having a similar listing age (within 1 year) as the fraud firm.
5. Time Period: A no-fraud firm identified in steps 1 through 4 is included in the final sample if financial statement data are available for the same time period used to collect the data from the financial statements of the related fraud firm.
6. The identification of no-fraud firms will result in some misclassifications if a firm classified as a no-fraud firm had an occurrence of financial fraud that had yet to be detected. To minimize this likelihood, the annual reports of the selected no-fraud firms from 1995 (3 years before the sample period) through 2003 are reviewed to verify that there is no report of a fraud for each no-fraud firm.¹⁹ We also compared a control firm's accruals (scaled by total assets) to the industry median for all years up to 2004.²⁰ Any control firm that had accruals greater than 1.3 or less than 0.7 of the industry median were discarded and a new control firm, that satisfied the conditions, was found. In this way we are assured that none of the control firms had excessive earnings management. Substantial earnings management may indicate financial statement misrepresentation or fraud.

The sample size for the univariate and multivariate analyses is 338 (169 pairs).

3.3. Variables

Data on boardroom characteristics are collected from firms' annual reports. These characteristics are the proportion of outside directors (OUT), the size of the board (BOARDSIZE), number of board meetings (MEETING), and tenure of the chairman (CHATEN). The duality of chairman and CEO positions (DUAL) is obtained by examining the names of the individuals holding these positions. The boardroom variables are used to test hypothesis H_1 .

Hypothesis H_2 relates to ownership. To test this hypothesis we collect stockholding data from firms' annual reports. We collect the percentage stock ownership by the state (GOVERN), legal entities (LEGAL), and individuals (tradable shares) (INDIV). The state shareholdings are used in the univariate analyses. A dummy variable is used to capture whether a firm has foreign stockholders (FOR). The percentage ownership of the major stockholder is collected (TOP). The stock ownership of the second through tenth largest owners is recorded as a Herfindahl index (TOP10).

The auditing profession is relatively new in China and as yet there is no clearly defined set of 'well-known' or 'prestigious' auditors. Nevertheless we do attempt to partition auditors on the basis of size and international brand name (AUDITOR). For the size measure, we rank Chinese CPA firms by market share of clients' assets and the 10 highest are coded one (1). Using market share to measure audit quality is very common (DeAngelo, 1981). This generally manifests itself in the use of the Big 8/6/5/4 partition in Australasia, Europe, the U.K., and the U.S. Chen et al.

¹⁹ Summers and Sweeney (1998) use a similar approach. They screen the litigation history of their control firms for 7 years after the sample period to ensure none of them were accused of fraud.

²⁰ We thank a referee for this suggestion.

(2001) and Qiu (2004) use a Big 10 classification (auditors with the 10 highest market shares) as a proxy for high audit quality in China. We use the same proxy. An alternative measure of audit quality is to use the international Big 5 name. Here auditors that are joint ventures with one of the international Big 5 are coded one (1). In China the foreign audit firms cannot directly audit domestic companies. However, many of the large international audit firms have joint ventures with Chinese CPAs to which they provide training and inculcate western audit philosophies. It is generally believed that Chinese CPAs that have joint ventures with the international Big 5 are higher quality firms (Qiu, 2004). These two auditor quality variables (the domestic Big 10 and auditors with affiliations with the international Big 5) are used to test H_3 . The names of auditors are obtained from annual reports.

3.4. Univariate tests

To test the relation between fraud and ownership and governance structures we use both univariate comparisons and a multivariate probit regression. For the univariate tests we compare the experimental and control variables across the fraud firms and the no-fraud firms to see if there are significant differences. We use *t*-tests and *Z*-tests to check for significant differences in means and medians.

3.5. Multivariate tests

In addition to the univariate tests we also use a multivariate probit model to test our hypotheses. Similar to Beasley (1996), Agrawal and Chadha (in press), and Uzun et al. (2004), the estimation is based on a choice-based sample where half the firms have financial fraud and half have not. This approach is acceptable as the aim of the model is to explain rather than to predict (Maddala, 1991; Palepu, 1986). The simple probit regression model is as follows:

$$\begin{aligned} \text{FRAUD} = & \beta_0 + \beta_1 \text{OUT} + \beta_2 \text{BOARDSIZE} + \beta_3 \text{MEETING} + \beta_4 \text{CHATEN} \\ & + \beta_5 \text{DUAL} + \beta_6 \text{LEGAL} + \beta_7 \text{INDIV} + \beta_8 \text{FOR} + \beta_9 \text{TOP} + \beta_{10} \text{TOP10} \\ & + \beta_{11} \text{AUDITOR} + \beta_{12} \text{GROWTH} + \beta_{13} \text{LOSS} + \beta_{14} \text{LEV} \\ & + \beta_{15} \text{RETURN} + \beta_{16} \text{MINDEX} \end{aligned} \quad (1)$$

where:

FRAUD A dummy variable taking the value one (1) if the firm is subject to an enforcement action.

OUT Proportion of outside (or non-executive) directors on the board.

BOARDSIZE The number of directors on the board.

MEETING Number of board meetings held in a year.

CHATEN The number of years that the chairman has served in that position.

DUAL A dummy variable taking the value one (1) if the chairman and CEO positions are held by the same person.

LEGAL Proportion of shares owned by legal entities.

INDIV Proportion of shares owned by individual stockholders.

FOR A dummy variable taking the value one (1) if the firm has foreign stockholders.

- TOP The percentage of shares held by the largest stockholder.
- TOP10 A Herfindahl index that measures the concentration of shares held by the top 10 stockholders excluding the controlling one. It is computed as $\sum_{n=2}^{10} \left(\frac{S_n}{S}\right)^2$ where S_n is the number of shares held by the n th largest stockholder, and S is the number of total outstanding shares.
- AUDITOR A dummy variable coded one (1) if the auditor is one of the 10 biggest auditors by market share.²¹
- GROWTH Sales growth in the 2 years prior to the date of the financial fraud.
- LOSS A dummy variable coded one (1) if the firm has recorded a loss in each of the 2 years prior to the financial fraud. If a third year of losses is reported then trading of the shares will be suspended on the stock exchange.
- LEV Debt to total assets.
- RETURN Annual stock return.
- MINDEX A market development score.

The Big 10 auditors are Da Hua, Zhong Tian Qin,²² Zhongtian, Huaming, Shenzhen Pengcheng, Shu Lun Pan, Beijing Jingdu, Shanghai Zhonghua Hu Yin, Shanghai Shanghui, and Huaqiang. These auditors had the 10 largest market shares based on the assets of listed companies.

The independent variables are measured in the year before the fraud commences. GROWTH, LOSS, LEV, and RETURN are used in the detection of fraud model (see below). In the U.S., [Loebbecke et al. \(1989\)](#) and [Bell et al. \(1991\)](#) contend that very rapid growth is an indicator of fraud. They further argue that firms in financial trouble are more likely to be examined for financial statement fraud.²³ We use the existence of a loss and stock return to proxy for financial distress. LEV is also a measure of financial difficulties and companies with high leverage are more likely to be investigated by the CSRC.

The univariate and multivariate analyses compare a sample of fraud firms with a sample of no-fraud firms. However, it is possible that the no-fraud firms have committed fraud but they have not been caught. This identification problem will reduce the ability of our model to explain fraud.²⁴ The probability of a detected fraud is different from the probability of a fraud occurrence (unless all frauds are detected, which is extremely unlikely). As [Wang \(2004\)](#) points out, the identification problem can make it difficult to interpret the empirical results from a simple probit model. A specific independent variable (e.g. a corporate governance variable) could have a negative effect on committing fraud but a positive effect on detecting fraud. The simple probit model will not catch such subtleties and the coefficient on the variable will be difficult to interpret. To resolve the inherent problem of treating non-observed fraud as no-fraud, we make use of a bivariate probit model with partial observability; see [Poirier \(1980\)](#) for details of the technique. Here, we model detected fraud as a function of the joint realizations of two latent variables (fraud and fraud detection).²⁵

²¹ In an alternative formulation we code AUDITOR one (1) if the auditor has a joint-venture with one of the international Big 5 auditors.

²² By way of note, the auditing license for Zhong Tian Qin was subsequently withdrawn given its role in the Yin Guangxia corporate scandal.

²³ Note, [Beasley \(1996\)](#) examined growth and financial health (losses) in his study but found they did not help predict corporate fraud.

²⁴ As previously described, we try to reduce the identification problem by insisting that the no-fraud control firms have not been the subject of an enforcement action throughout the period 1995 to 2003, and that they have no evidence of substantial earnings management.

²⁵ The following section draws heavily on [Poirier \(1980\)](#) and [Wang \(2004\)](#).

Fraud: $F_j=1$ if firm j commits fraud. Otherwise, $F_j=0$.

Fraud detection: $D_j=1$ if the CSRC detects the fraud of firm j . Otherwise $D_j=0$.

From this we have the following reduced form equations.

$$F_j = x_{1j}\beta_1 + u_j \quad (2)$$

$$D_j = x_{2j}\beta_2 + v_j \quad (3)$$

where x_{1j} is the vector of corporate governance variables that helps explain a firm's propensity to commit fraud, and x_{2j} is the vector of variables that helps explain why fraud is detected. u_j and v_j are the disturbance terms.

The interaction of F_j and D_j is denoted by Z_j . Thus:

$$Z_j = F_j * D_j \quad (4)$$

Then $Z_j=1$ indicates a detected fraud. The empirical model for Z_j is

$$P(Z_j = 1) = P(F_j = 1 \& D_j = 1) = P(F_j = 1)P(D_j = 1|F_j = 1) = \Phi(x_{1j}\beta_1, x_{2j}\beta_2) \quad (5)$$

$$\begin{aligned} P(Z_j = 0) &= P(F_j = 0 \text{ or } D_j = 0) = P(F_j = 0) + P(F_j = 1)P(D_j = 0|F_j = 1) \\ &= 1 - \Phi(x_{1j}\beta_1, x_{2j}\beta_2) \end{aligned} \quad (6)$$

The log-likelihood function for the model is

$$L(\beta_1, \beta_2) = \sum \{z_j \ln [\Phi(x_{1j}\beta_1, x_{2j}\beta_2)] + (1 - z_j) \ln [1 - \Phi(x_{1j}\beta_1, x_{2j}\beta_2)]\} \quad (7)$$

Full identification of the model parameters requires that x_{1j} and x_{2j} do not contain exactly the same variables.

Note that a simple probit model, which has been used in most prior fraud studies, is as follows

$$Z_j = F_j = x_j\beta + \varepsilon_j$$

$$Pr(Z_j = 1) = Pr(F_j = 1) = \Phi(x_{1j}\beta) \quad (8)$$

If D_j is not always 1, the coefficients in the simple probit model will differ from those in the bivariate probit model. Wang (2004) used a similar bivariate probit with partial observability approach in her study of securities class action litigation in the U.S. Abowd and Farber (1982) and Chidambaran and Prabhala (2003) are others who have used this method.

We use the variables OUT, BOARDSIZE, MEETING, CHATEN, DUAL, LEGAL, INDIV²⁶, FOR, TOP, TOP10, AUDITOR, and MINDEX to model the propensity to commit fraud. The first 11 variables are used to test H1 to H3. The market environment where the firm is located may have an effect on the propensity to commit fraud. For this reason we add MINDEX as a control variable in the model. GROWTH, LOSS, LEV, RETURN, and AUDITOR are used to model the detection of fraud. Poor financial performance often triggers an initial investigation by the regulator. Additionally, we believe that poor financial performance may be a trigger for investor complaints to the CSRC and these complaints may be followed up by an investigation. Wang

²⁶ The third type of stockholder, the government (GOVERN), is not included in the model as GOVERN, LEGAL, and INDIV sum to one (1) and hence there would be perfect collinearity.

(2004) also used financial performance as a variable for the detection of fraud in her bivariate probit model of corporate fraud in the U.S. AUDITOR is used as a variable in the propensity to commit fraud model and in the detection of fraud model.

4. Results

4.1. Details of enforcement actions

Table 2 gives a breakdown of the type of enforcement actions classified by the types of violation (the classifications are from the CSRC). The main violations relate to financial statement fraud including failure to disclose information, delays in disclosure, and inflated profits. False statements cover fabrication of facts that appear in prospectuses and other financial reports (other than the annual financial statements). There are 278 violations cited in the 169 enforcement actions as many firms have multiple violations. The enforcement actions place blame on named directors and chairmen. General managers, chief accountants, and supervisors are also named and blamed in CSRC reports. The chairman is replaced in 51% of fraud cases, whereas the percentage for the control sample is 26%. Table 3 indicates that our matching process is satisfactory. Sample and control firms are of similar size (assets and market value) and age. They are also matched on industry and listing exchange.

4.2. Univariate results

There are no significant differences in the proportion of outside directors, board size, and chairmen/CEO duality across the fraud and no-fraud firms. Fraud firms have more board meetings and their chairmen have shorter tenures. Legal entity stockholdings (LEGAL) are higher for fraud firms than for no-fraud firms and the difference in medians is statistically significant. State ownership (GOVERN) is lower for the fraud firms although this is only statistically significant in the test of medians. Foreign invested firms (FOR) are less likely to suffer enforcement actions. There are no significant differences between fraud and no-fraud firms for the other ownership variables (INDIV, TOP, TOP10). Table 4 shows that the size of the audit firm (AUDITOR) is not significant. AUDITOR is also not significant if we use the Big 5 to measure large size auditors. Thus there is no support for H₃.

Table 2
Breakdown of enforcement actions by type of violation

	Number of occurrences	Percentage
Illegal share buybacks	6	0.022
Inflated profits	22	0.079
Fabrication of assets	7	0.025
Unauthorized change in use of funds	10	0.036
Postponement/delay in disclosure	51	0.183
False statements	51	0.183
Violations of fund provisions	7	0.025
Major failure to disclose information	78	0.281
Embezzlement by major shareholder	7	0.025
Others	39	0.140
Total	278	1.000

This table provides a breakdown of the types of violation (the classifications are from the CSRC).

Table 3
Comparison of fraud firms and control firms

Currency: RMB (mn=million)				
	Fraud-firms	Control firms	<i>t</i> -value	Z-value
<i>Total assets (mn)</i>				
Mean	2192.46	2301.44	– 0.4732	– 1.3521
Median	1584.69	1406.70		
Standard deviation	1730.15	2614.79		
<i>Net sales (mn)</i>				
Mean	1110.46	1540.89	– 1.6874	– 1.3932
Median	696.90	507.72		
Standard deviation	1314.14	3212.49		
<i>Current market value (mn)</i>				
Mean	4136.23	3919.07	0.5792	– 0.3892
Median	3116.42	2802.35		
Standard deviation	3907.27	3328.42		
<i>Listing age (year)</i>				
Mean	6.04	6.31	– 0.8806	0.9023
Median	6.00	7.00		
Standard deviation	2.87	3.13		
<i>Firm age (year)</i>				
Mean	8.34	8.53	– 0.4152	0.0339
Median	8.00	8.00		
Standard deviation	4.20	4.84		

This table compares the basic characteristics between fraud firms and control firms. The matching sample is selected based on similar industry, listing exchange, and firm size.

It is apparent that fraud firms have poor financial performance when compared to the no-fraud firms. Fraud firms have lower growth, suffer more losses, and have lower stock returns. Fraud firms have a higher mean leverage, but lower median, than no-fraud firms. There is no difference across fraud and no-fraud firms as regards the development index (MINDEX) of their locations.

4.3. Multivariate tests

The results of the probit regressions are shown in Table 5. The first column lists the variables. The second and third columns show the coefficients and *t*-statistics of the simple probit model. Columns 4 and 5 show the coefficients and *t*-statistics of the model of the propensity to commit fraud and columns 6 and 7 show the coefficients and *t*-statistics of the model of the detection of fraud.

The number of outside directors (OUT) has a negative sign in the $P(F_j=1)$ regression and is statistically significant at the 0.05 level (one tail test). Firms with a large proportion of outside directors commit less fraud. Outside directors monitor a firm's actions and they help deter fraud. Agrawal and Chadha (in press) and Park and Shin (2004) find that outside directors only become effective in deterring fraud and earnings management in the U.S. and Canada when at least one of those directors has an accounting or finance background. Unfortunately we do not have this type of data for our sample and so we cannot test whether it is the financial expertise of the outside directors that helps prevent fraud. The number of board meetings (MEETING) is also

Table 4
Univariate comparisons of fraud and no-fraud firms

Variable	Mean	Standard deviation	Lower quartile	Median	Upper quartile
<i>OUT</i>					
Sample	0.1333	0.1425	0.0000	0.1010	0.2592
Control	0.1342	0.1460	0.0000	0.1111	0.2500
Difference	– 0.0009			– 0.0101	
<i>BOARDSIZE</i>					
Sample	9.4038	2.4404	8.0000	9.0000	11.0000
Control	9.3631	2.3053	8.0000	9.0000	11.0000
Difference	0.0407			0.0000	
<i>MEETING</i>					
Sample	7.9298	3.9797	5.0000	7.0000	9.3333
Control	6.7428	3.0919	4.5000	6.0000	9.0000
Difference	0.1870***			1.0000***	
<i>CHATEN</i>					
Sample	1.6641	0.7782	1.0000	1.5000	2.0000
Control	1.9766	0.8021	1.0000	2.0000	3.0000
Difference	– 0.3125			0.5000***	
<i>DUAL</i>					
Sample	0.0928	0.2856	0.0000	0.0000	0.0000
Control	0.0783	0.2637	0.0000	0.0000	0.0000
Difference	0.0145			0.0000	
<i>GOVERN</i>					
Sample	0.2546	0.2511	0.0000	0.2420	0.4787
Control	0.3112	0.2474	0.0000	0.3156	0.4959
Difference	– 0.0566			– 0.0736**	
<i>LEGAL</i>					
Sample	0.3380	0.2656	0.0624	0.3367	0.6000
Control	0.2789	0.2539	0.0488	0.2150	0.4929
Difference	0.0591			0.1217***	
<i>INDIV</i>					
Sample	0.3978	0.1271	0.3108	0.3727	0.4539
Control	0.3996	0.1267	0.3023	0.3907	0.4929
Difference	– 0.0018			– 0.0180	
<i>FOR</i>					
Sample	0.0328	0.1789	0.0000	0.0000	0.0000
Control	0.0526	0.2240	0.0000	0.0000	0.0000
Difference	– 0.0198***			0.0000	
<i>TOP</i>					
Sample	0.3802	0.1737	0.2605	0.3376	0.5164
Control	0.4137	0.1653	0.2900	0.3835	0.5255
Difference	– 0.0335			– 0.0459	

Table 4 (continued)

Variable	Mean	Standard deviation	Lower quartile	Median	Upper quartile
<i>TOP10</i>					
Sample	0.0218	0.0252	0.0011	0.0114	0.0371
Control	0.0185	0.0255	0.0009	0.0079	0.0241
Difference	0.0033			0.0035	
<i>AUDITOR</i>					
Sample	0.1182	0.3160	0.0000	0.0000	0.0000
Control	0.1155	0.3184	0.0000	0.0000	0.0000
Difference	0.0027			0.0000	
<i>GROWTH</i>					
Sample	0.0310	1.0583	− 0.6236	− 0.1105	0.3727
Control	0.4489	0.7992	− 0.0702	0.3272	0.7787
Difference	− 0.4179***			− 0.4377***	
<i>LOSS</i>					
Sample	0.1176	0.3239	0.0000	0.0000	0.0000
Control	0.0305	0.1679	0.0000	0.0000	0.0000
Difference	0.0871**			0.0000	
<i>LEV</i>					
Sample	0.5510	0.1648	0.0000	0.1370	0.6466
Control	0.4770	0.0703	0.0000	0.2160	0.6450
Difference	0.0740***			− 0.0790	
<i>RETURN</i>					
Sample	− 0.1701	0.3600	− 0.4143	− 0.2328	0.0581
Control	− 0.0834	0.3525	− 0.3072	− 0.1726	0.0115
Difference	− 0.0867			− 0.0602**	
<i>MINDEX</i>					
Sample	6.4787	1.2161	5.6100	6.3975	7.1500
Control	6.5062	1.3623	5.6100	6.4000	7.9000
Difference	− 0.0275			− 0.0025	

*** (**, *) statistically significant at the 0.01 (0.05, 0.10) levels.

OUT=proportion of outside directors on the board; BOARDSIZE=the number of board directors; MEETING=the number of board meetings held per year; CHATEN=the number of years that the chairman has served in that position; DUAL=a dummy variable taking the value one (1) if the chairman and CEO positions are held by the same person; GOVERN=proportion of shares owned by government; LEGAL=proportion of shares owned by legal entities; INDIV=proportion of shares owned by individual stockholders; FOR=a dummy variable taking the value one (1) if the firm has foreign stockholders; TOP=the percentage of shares held by the largest stockholder; TOP10=a Herfindahl index that measures the concentration of shares held by the top 10 stockholders excluding the controlling one. It is computed as $\sum_{n=2}^{10} \left(\frac{S_n}{S}\right)^2$ where S_n is the number of shares held by the n th largest stockholder, and S is the number of total outstanding shares; AUDITOR=a dummy variable coded one (1) if the auditor was one of the 10 biggest auditors by market share; GROWTH=sales growth in the 2 years prior to the date of the financial fraud; LOSS=a dummy variable coded one (1) if the firm had recorded a loss in each of the 2 years prior to the financial fraud. If a third year of losses is reported then trading of the shares will be suspended on the stock exchange; LEV=debt to total assets; RETURN=annual stock return; MINDEX=a comprehensive index to capture the regional market development from the following aspects: (1) relationship between government and markets, such as the role of markets in allocating resources and enterprises' burden in addition to normal taxes; (2) the development of non-state business, such as the ratio of industrial output by private sector to total industrial outputs; (3) development of product markets, such as regional trade barriers; (4) development of factor markets such as FDI and mobility of labor; (5) development of market intermediaries and legal environment such as the protection of property rights.

Table 5

Probit regression results of the impact of corporate governance on corporate fraud

	$P(Z_j=1)$		$P(F_j=1)$		$P(D_j=1 F_j=1)$	
	Coefficient	<i>t</i> -statistic	Coefficient	<i>t</i> -statistic	Coefficient	<i>t</i> -statistic
INTERCEPT	0.43	0.45	1.19	0.75	0.81	1.88*
OUT	- 1.52	- 2.18**	- 2.10	- 1.82*		
BOARDSIZE	0.00	0.07	0.02	0.34		
MEETING	0.08	2.95***	0.12	2.34**		
CHATEN	- 0.28	- 2.60***	- 0.37	- 1.97**		
DUAL	0.45	1.42	0.49	1.11		
LEGAL	0.28	0.76	0.36	0.71		
INDIV	- 0.33	- 0.37	- 0.40	- 0.29		
FOR	- 6.13	- 0.89	- 6.78	- 0.82		
FOR*LEGAL	13.01	0.86	13.74	0.75		
TOP	- 0.26	- 0.38	0.74	0.56		
TOP10	- 0.07	- 0.02	8.15	0.57		
AUDITOR	0.08	0.30	0.42	0.61	- 0.26	- 0.38
GROWTH	- 0.24	- 2.16**			- 0.37	- 2.12**
LOSS	0.62	1.61			3.03	1.14
LEV	- 0.32	- 0.29			- 0.58	- 0.53
RETURN	- 0.31	- 1.10			- 0.43	- 1.04
MINDEX	- 0.04	- 0.67	- 0.12	- 0.95		
Pseudo R^2		0.1288				
Chi-square		45.45			35.25	

This table reports the estimates for the simple probit model and bivariate probit models. The first column shows the regression variables. The second and third columns report the coefficient estimates and their *t*-statistics for the simple probit model. The fourth and fifth columns report the results for bivariate probit model 1. The sixth and seventh columns report the results for bivariate probit model 2.

*** (**, *) statistically significant at the 0.01 (0.05, 0.10) levels.

OUT=proportion of outside directors on the board; BOARDSIZE=the number of board directors; MEETING=the number of board meetings held per year; CHATEN=the number of years that the chairman has served in that position; DUAL=a dummy variable taking the value one (1) if the chairman and CEO positions are held by the same person; LEGAL=proportion of shares owned by legal entities; INDIV=proportion of shares owned by individual stockholders; FOR=a dummy variable taking the value one (1) if the firm has foreign stockholders; TOP=the percentage of shares held by the largest stockholder; TOP10= a Herfindahl index that measures the concentration of shares held by the top 10 stockholders excluding the controlling one. It is computed as $\sum_{n=2}^{10} \left(\frac{S_n}{S}\right)^2$ where S_n is the number of shares held by the n th largest stockholder, and S is the number of total outstanding shares; AUDITOR=a dummy variable coded one (1) if the auditor was one of the 10 biggest auditors by market share; GROWTH=sales growth in the 2 years prior to the date of the financial fraud; LOSS=a dummy variable coded one (1) if the firm had recorded a loss in each of the 2 years prior to the financial fraud. If a third year of losses is reported then trading of the shares will be suspended on the stock exchange; LEV=debt to total assets; RETURN=annual stock return; MINDEX= is a comprehensive index to capture the regional market development from the following aspects: (1) relationship between government and markets, such as the role of markets in allocating resources and enterprises' burden in addition to normal taxes; (2) the development of non-state business, such as the ratio of industrial output by private sector to total industrial outputs; (3) development of product markets, such as regional trade barriers; (4) development of factor markets such as FDI and mobility of labor; (5) development of market intermediaries and legal environment such as the protection of property rights.

significant in the regression of the propensity to commit fraud (the $P(F_j=1)$ regression in columns 4 and 5). The positive sign indicates more board meetings imply more fraud. At first sight the positive sign is puzzling as more board meetings should imply more monitoring and this will deter fraud. Our explanation for the positive sign is that the directors know there are some questionable activities that the firm has engaged in (or about to engage in) and this requires

a lot of debate, which results in more meetings.²⁷ The chairman's tenure (CHATEN) has a negative sign and is statistically significant. Firms with chairmen with shorter tenure are more likely to commit fraud. Chairmen with short tenures have less experience of the business and they may be less able to deter fraud. BOARD SIZE and DUAL are not significant. The results indicate that some board characteristics are important in explaining corporate fraud. The evidence supports H_1 .

The ownership variables are not significant although LEGAL, INDIV, and FOR have their expected signs. We also add an interactive term FOR*LEGAL to examine whether the presence of a foreign investor affects the influence of legal entity stockholders.²⁸ However the main effects (LEGAL, FOR) and the interactive effect (FOR*LEGAL) are not significant. The ownership variables results provide no support for H_2 .

We include AUDITOR in both the propensity to commit fraud model ($P(F_j=1)$) and the fraud detection model ($P(D_j=1|F_j=1)$). In the fraud propensity model the sign on AUDITOR is positive. In the detection model, the sign on AUDITOR is negative indicating that if there is fraud then it is more likely to be detected if the auditor is not a prestige name. This suggests the CSRC is more likely to launch an investigation if the auditor is not a major firm. Note, however, that the coefficients on AUDITOR are not significant. Hence there is no statistical support for H_3 . In additional regressions we use the international Big 5 as our measure of prestige auditors. AUDITOR remains not significant in these regressions.

The fraud detection model uses AUDITOR and the financial performance measures as independent variables. The signs on the coefficients are consistent with our expectations. Poor financial performance is likely to trigger fraud detection. The CSRC uses reports of losses, low growth, and poor stock returns as indicators of fraud and therefore launches investigations. While the signs on the coefficients are consistent with our predictions, only GROWTH is statistically significant.

For our sample, the simple probit model yields results that are similar to those of the propensity to commit fraud model in the bivariate probit framework. Nevertheless, we believe the bivariate probit model is the appropriate method when there is partial observation of the event under examination. Using the bivariate probit approach gives us more confidence in the results.

5. Conclusions

Transition economies provide much scope for corporate fraud. Controlling stockholders and managers, newly freed from the constraints imposed by central planning, and faced with opportunities to increase their personal wealth, may be tempted to engage in, or acquiesce to, corporate fraud. The emphasis on making higher profits and increasing the stock price represent new pressures on top managers and some of them may resort to fraud to meet these objectives. There is also pressure to expropriate assets for the benefit of controlling stockholders or the personal business interests of the managers. In an attempt to reduce egregious acts of fraud, China has scrambled to introduce commercial and securities laws and, equally important, strengthen the powers and effectiveness of the regulator, the CSRC. The enforcement actions of the CSRC provide the fraud data for our study.

²⁷ Note the agendas and minutes of directors' meetings are not available to us and so we have no way of knowing what discussions took place.

²⁸ We thank a reviewer for suggesting this analysis.

The particular concern of our research is whether the ownership and governance characteristics of firms play a role in the propensity to commit fraud. We use both univariate analyses and bivariate probit models with partial observability to test our hypotheses. Based on our multivariate results we find that boardroom characteristics are a factor in explaining fraud while ownership patterns appear to be unimportant. Increasing the proportion of outsiders on the board is one way to reduce fraud. Outsiders monitor management (including the executive directors) and help deter fraud. The fact that firms that commit frauds have more board meetings suggests the directors realize some acts or decisions are borderline legal and so there is more debate about them resulting in more meetings. Chairmen with shorter tenure appear less able to deter fraud.

The type of stockholder is significant in the univariate analysis with legal entities encouraging fraud while foreign investors inhibit fraud. The significances of these variables disappear in the multivariate analysis. In the probit model, the type of owner (legal entity, individual, foreign) has little impact on the propensity for a firm to commit fraud. Prestige auditors (based on size and based on the international Big 5) do not deter corporate fraud any more than other auditors.

Corporate fraud is an unwelcome accompaniment to China's modern enterprise reforms and the China Securities Regulatory Commission is empowered to investigate and penalize fraud. The make-up of the board of directors is important in monitoring top management. Increasing the proportion of outside directors will help deter fraud and investors should factor this into their investment decisions. The CSRC's recent move to require more outside directors is a move in the right direction.

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