

# WHO COOKS THE BOOKS IN CHINA, AND DOES IT PAY? EVIDENCE FROM PRIVATE, HIGH-TECHNOLOGY FIRMS

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**Research summary:** We document the extent of fraudulent reporting among 467 private Chinese technology companies. Comparing the financial statements concurrently submitted to two different state agencies, we demonstrate a systematic gap in reported profit figures in the two sets of books. We find: (1) more than half the sampled companies report incentive-compatible, materially discrepant profit numbers to the two agencies; (2) politically connected companies are approximately 18 percent more likely to commit fraud and those with venture capital backing are 19 percent more likely to do so; and (3) it pays to cheat. We estimate that companies who “cook” their books have considerably higher odds of receiving an innovation grant. Especially given its prevalence, we conclude that fraud can be a source of performance differential for emerging market companies.

**Managerial summary:** We document that more than half of a sample of 467 private, Chinese technology companies engage in fraudulent financial reporting. By comparing the financial statements companies concurrently submitted to two different state agencies, we demonstrate a systematic gap in reported profit figures in the two sets of books. Relative to the companies without these attributes, we find that politically connected companies are approximately 18 percent more likely to commit fraud and those with venture capital backing are 19 percent more likely to do so. Furthermore, we show that it pays to cheat. We estimate that companies who “cook” their books have considerably higher odds of receiving a government-sponsored innovation grant. Therefore, fraud can be a source of performance differential for emerging market companies. Copyright © 2015 John Wiley & Sons, Ltd.

## INTRODUCTION

A burgeoning literature finds that connections to government officials convey advantages to companies. The link between political connections and corporate performance exists in industrialized countries (e.g., Hillman, Zardkoohi, and Bierman, 1999;

Schuler, Rehbein and Cramer, 2002; Lester *et al.*, 2008), but it is especially pronounced in emerging economies (Li and Zhang, 2007; Malesky and Taussig, 2009; Peng and Luo, 2000; Siegel, 2007).

One regrettable channel through which political connections may contribute to corporate performance is to facilitate profit-enhancing fraud. This occurs because high-level ties to the state may deflect regulatory scrutiny from dubious forms of corporate conduct. Even in business environments characterized by strong market-supporting institutions such as the United States, evidence suggests that law enforcement is not universally applied in instances of suspected fraud, which

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creates asymmetric payoffs for firms to engage in fraudulent conduct (Correia, 2009; Fulmer and Knill, 2012; Yu and Yu, 2011).

In this article, we ask a set of related questions: How prevalent is fraud among *private*, technology-based companies in China? Do political connections and other entrepreneur- and firm-level characteristics correlate with fraudulent conduct in this sector of the Chinese economy? Under what conditions is fraud rewarded?

We emphasize three findings. First, we quantify the effect of political connections on the extent of fraud and the ability of firms to access state resources. We present a clear illustration of how political ties translate to a firm-level financial advantage because they enable firms to gain privileged access to scarce, state-allocated resources. Second, we demonstrate a link between company ownership structure and the propensity to commit fraud. Specifically, we (unexpectedly) find that venture capital-backed companies are *more* likely to perpetrate fraud and to benefit from government-dispensed resources. Finally, we demonstrate the base rate of fraud in an as-yet unexamined segment of the Chinese economy: the vast sector of young, private, entrepreneurial companies.

On the latter point, a sizable literature examines cases of large, public company fraud. In consequence of their economic scale, the actions of these organizations affect many thousands of employees, investors, suppliers, and customers. Therefore, large companies are subject to a more focused regulatory lens. But because media and regulatory attention concentrates on large companies, we know much less about the incidence of fraud at small, private companies. We believe that understanding this population is vital. First, in emerging markets, private firms are primary catalysts of economic growth (McMillan and Woodruff, 2002).<sup>1</sup> Second, major decisions in young companies set in motion path-dependent dynamics in which organizational practices and values are transmitted from one group

of employees to the next (Baron, Burton, and Hannan, 1999; Harrison and Carroll, 2006). Identifying the precursors of fraud in early-stage companies is likely to illuminate the set of companies in which unethical behaviors become cultural inheritances.

This article uses a unique approach to identify cases of fraud among entrepreneurial firms in China. Our analysis does not rely on the actions of regulatory agencies; rather, we directly observe instances of financial data manipulation by collecting and comparing two sets of financial books that are required to be identical under Chinese law. We consider incentive-compatible, *discrepant* reporting across the two sets of books to be evidence of financial fraud.

One set of books comes from corporate applications for a state-funded innovation grant. To apply for this grant applicants must submit audited financial statements to China's Ministry of Science and Technology (MOST). The MOST decision-makers exhibit a publicly stated preference for strong-performing companies, which creates an incentive for applicants to exaggerate profit levels and to over-state technical achievements. We study companies that applied for the MOST grants because, *for the same set of companies at the same points in time*, we were able to retrieve a second set of financial statements. These statements, which were required of all companies in China, were submitted to the local State Administration of Industry and Commerce (SAIC). The SAIC is one of China's primary regulatory bodies with broad jurisdiction. Although not directly responsible for detecting tax evasion, the SAIC does coordinate with taxation agencies in investigating so-called "irregular behaviors" (Tian, 2012).

Chinese law clearly states that companies must submit the same financial information in these two sets of books, but many firms may benefit from misrepresenting the numbers. In the typical case in our data, companies appear to fall within a range of financial performance in which they have incentive to overstate their profitability to the MOST, and possibly to understate it to the SAIC. To be up front about one limitation of the data: We never know the true numbers for the firms in our sample; we simply know whether these companies illegally report discrepant results across their two sets of books. As we show, however, in all but a handful of cases, reporting discrepancies are incentive-compatible: Financial performance is almost always stronger in the MOST books, relative to that disclosed to the SAIC.

<sup>1</sup>For instance, in China between 1998 and 2010, industrial output by large-firm-dominated state-owned enterprises increased from 2.22 to 6.67 trillion RMB. This compares to an astonishing increase from 0.32 to 25.23 trillion RMB for the private-company sector, which is dominated by small- and medium-sized firms (National Bureau of Statistics, 1998, 2010). The exchange rate between the Chinese RMB and the U.S. dollar was 0.121 (1 U.S. dollar = 8.27 RMB yuan) in 1998, and appreciated to 0.148 (1 U.S. dollar = 6.77 RMB yuan) in 2010.

In addition to providing evidence of the pervasiveness of fraud in China in an as-yet under-studied group of companies, this article offers a final contribution. Examinations of fraud typically rely on its detection for evidence of its existence (e.g., Uzun, Szewczyk, and Varma, 2004). In general, fraud is only observed when perpetrators are caught and the act(s) of fraud are publicized. Researchers typically observe detected instances of fraud, but not the underlying population of fraudulent acts (Fisman and Wei's, 2004, study of tax evasion is a notable exception). However, we know from the literature that fraud detection is nonrandom (Greve, Palmer, and Pozner, 2010), and also that entrepreneur and firm characteristics such as political connectedness may both negatively affect the detection of fraud and promote its perpetration. If firms with certain attributes are less likely to be investigated by regulatory authorities, there is an obvious bias in estimates of the effect of these attributes on the incidence of fraud in datasets that depend on the detection of fraud for its identification. The data we have collected enable us to avoid such bias.

## BACKGROUND, THEORY AND HYPOTHESES

A case illustrates the phenomena we study. The politically connected dean of a prominent engineering school founded a company, Taide Compressor, to commercialize a novel technology based on university research. Between 2001 and 2005, Taide reported a *net loss* in each year in financial statements submitted to a provincial agency, the SAIC, that is related to the local tax authorities. However, in its application for a state-awarded innovation grant in 2004, Taide submitted an income statement declaring a *net profit* of 1.25 million, 2.55 million, and 14.70 million yuan for 2001, 2002, and 2003, respectively. In reality, Taide's performance appeared to have been poor: Despite the claim of profits, illiquidity forced the company to restructure. The company nevertheless was awarded an innovation grant (Liu, 2011). Ultimately, the company's fraudulent financial claims were discovered and its award was revoked, but probably because of the founder's political connections, the financial fraud was detected only incidentally and its punishment was delayed by two years. The company's now-discredited founder also stood

accused of academic plagiarism, and it was only in the course of investigations of those allegations that the firm's financial misrepresentations were discovered (Peng, Li, and Li, 2011).

This anecdote illustrates three points. First, manipulating financial data can lead to access to state-controlled resources. Second, fraud in China's private sector, although prevalent in our data, does carry some risk. We show that cooking the books pays, but sanctions do occur. Third, well-connected actors may be able to delay punishment (or avoid it altogether) if their fraudulent conduct is detected. For this reason, actors whose connections or social positions deflect scrutiny may be the most emboldened to perpetrate fraud.

China is known to have weak market-supporting institutions. While China's economy has rapidly grown during the past few decades, a well-documented accompaniment to this growth has been prevalent corruption (Wademan, 2012). For example, Transparency International, a nongovernmental organization that monitors and publicizes corruption across the globe, consistently has ranked China high on its corruption index.

Although it is a challenge to comprehensively document occurrences of fraud, the literature nevertheless is replete with evidence of its existence. For example, Cumming, Hou, and Lee (2011) identified 604 fraud cases between 1999 and 2008 that were disclosed by the Chinese Stock Exchanges and the China Securities Regulatory Commission (CSRC), which corresponds to a roughly five percent incidence rate of *detected* cheating in that period.<sup>2</sup> Among the fraud convictions by the CSRC, a significant proportion involved misleading financial disclosures (Chen *et al.*, 2006).

While financial fraud in China is assumed to be widespread, law enforcement against it has been anemic. Between 2001 and 2006, only 92 listed companies received CSRC sanctions (Liebman and Milhaupt, 2008). Even though it is difficult to interpret the thoroughness of enforcement activities in the absence of knowledge of the true baseline rate of fraud, the general consensus among scholars is that the incidence of official sanctions is modest relative to the prevalence of false accounting, insider trading, and inaccurate financial disclosure

<sup>2</sup>Li *et al.* (2014) examined the performance of 1,217 firms listed on the two main Chinese stock exchanges from 2003 to 2009, and found that 33.6 percent of them had assets diverted by their controlling shareholders in 2005 for "nonoperational" purposes.

in China's equity markets (Liebman and Milhaupt, 2008; Pistor and Xu, 2005).

The literature suggests a set of firm-level factors influence the incentive to cheat, the risk of fraud detection, and conditional on its discovery, the speed and severity of any sanctions that are meted out. We focus on two, particular firm-level characteristics: political connectedness and capital structure.

### Political connections

High-level connections to government officials convey advantages to firms (e.g., Fisman, 2001; Hillman *et al.*, 1999; Li and Zhang, 2007; Peng and Luo, 2000; Siegel, 2007). One dimension along which political connections may contribute to corporate performance is by abetting profit-enhancing fraud. In the United States, for example, Yu and Yu (2011) find that lobbying expenditures significantly reduce the risk of fraud detection: Compared to nonlobbying firms, regulators are much less likely to identify acts of fraud perpetrated by lobbying firms. Moreover, if fraud is uncovered, lobbying firms evade detection for longer periods of time and receive lighter sanctions when caught (Fulmer and Knill, 2012). Likewise, Correia (2009) finds that politically connected firms are less likely to restate their earnings due to a comment letter from the Security Exchange Commission (SEC) and are less likely to become targets of SEC enforcement actions. It appears that even in advanced economies with strong, market-supporting institutions, political engagement may forestall fraud detection and reduce the severity of its punishment, conditional on detection.

There is reason to suspect that the link between political connections and the detection and punishment of fraud is stronger in developing economies characterized by still-nascent legal codes that are enforced sporadically. Even after three decades of reform, legal enforcement in China still is not transparent, which creates latitude for agents to pursue informal forms of influence with authorities as a means to eschew legal scrutiny (e.g., Tan and Litschert, 1994; Xin and Pierce, 1996). Whereas in most developed countries, companies engage in legalized lobbying activities, in many developing countries, Western-style lobbying is banned. In the absence of legal channels of political influence, bribery is commonplace.

Consistent with this view, studies have found that firms with political ties in developing economies often secure protections that are difficult to acquire through formally sanctioned channels. Faccio (2006) finds that politically connected firms sometimes avoid regulatory scrutiny. To the extent politicians provide protection to companies they favor, connected firms may be more likely to delay or distort information presented in financial disclosures to the firm's benefit. Likewise, Chaney, Faccio, and Parsley (2011) find that the quality of earnings reported by connected firms is significantly poorer than that of comparable, nonconnected firms.

In China, the influence of political connections may be amplified by the low base rate of legal enforcement, which enables discretion on the part of officials concerning the focus of their limited resources for regulatory scrutiny. The institutional, resource, and political constraints under which the CSRC operates are manifest in its meager prosecutorial activities. Given the minimal extent to which the CSRC prosecutes fraud, it comes as little surprise that it is hesitant to initiate enforcement actions against companies with strong ties to the state. And when actions against them are initiated, Firth, Rui, and Wu (2012) find that State-Owned Enterprises (SOEs) have an advantage as defendants in court trials against other parties.

Turning specifically to smaller firms, given that government officials exercise discretion in rule enforcement, it is unsurprising that Chinese entrepreneurs perceive regulatory affairs to be one of the most significant and least predictable environmental factors shaping their business prospects (Tan and Litschert, 1994). Likewise, entrepreneurs consider a connection to the state to be one of the most important assets for their companies, and they invest significant resources to develop state ties. For example, Ma and Parish (2006) show that Chinese entrepreneurs generously donate to government welfare projects to gain political access and social status via appointments to political councils. Similarly, Nee and Oppen (2010) find that connected firms invest more in "informal contributions" or outright bribes to state officials. Li and colleagues further show that such connections pay off in terms of company performance, particularly for firms operating in regulated sectors (Li and Atuahene-Gima, 2001; Li and Zhang, 2007).

While many entrepreneurs attempt to influence regulatory oversight, politically connected firms possess an advantage in that they are better

positioned to engage in gray, and even illegal, practices—including bribery—to avoid scrutiny. Because corruption of this nature is punished when it is discovered, it is risky to both participants in a bribe. On the respective sides of a would-be transaction, it can be difficult to gauge willingness-to-pay, willingness-to-accept a bribe, ability-to-pay, and capacity-to-deliver promised services. Politically connected actors are likely to have the knowledge and the connections regarding whom to bribe, how much to offer for a specific service, and how to deliver a bribe to minimize risk to the parties in a transaction.

In summary, politically connected firms are well positioned to manipulate their accounting books relative to their unconnected counterparts for several reasons. First, the incentive for a firm to engage in any form of fraudulent behavior depends on the risk of detection. We anticipate that connected firms are less likely to be scrutinized by regulators. Second, the incentive to perpetrate fraud depends on the anticipated sanctions, conditional on detection. Once again, we anticipate that even if their fraudulent actions are detected, principals at politically connected firms are likely to benefit from delayed, and possibly reduced, punishments. These considerations lead us to hypothesize:

*Hypothesis 1: Early-stage technology companies with one or more politically connected founders are more likely to manipulate their financial data.*

## Ownership and capital structure

Young companies are heterogeneous in their ownership structures. In particular, some companies have only individual owners, whereas others have organizational equity holders, such as venture capital investors, universities, and other corporations. For several reasons, firms with organizational equity holders may be less likely to manipulate their financial books. First, firms with organizational investors typically have access to greater resources, and thus, face a weaker incentive to commit acts of fraud to acquire additional capital. Second, as outside investors, organizational equity holders may be concerned about the accounting practices in their portfolios because companies that manipulate their financial reports to defraud the state also are more likely to misrepresent their books to investors. In addition, illegal activities by a portfolio company

reflect poorly on investors and may draw media or regulatory scrutiny. This partially explains why an investment from an external organization often is accompanied by the formalization of corporate governance practices, such as the creation of boards of directors and professionalization of the accounting function (Baron *et al.*, 1999).

When the organizational investor is a venture capital firm (VC), it may be particularly active in promoting financial transparency at the portfolio company. To steward their investments and to mitigate agency concerns, VCs insist on multiple control rights and typically implement extensive monitoring and advisory systems as conditions for making an investment. Through board participation and a hands-on relationship with senior management, VCs often are intimately involved in new ventures, playing roles such as hiring and firing the CEO (Kaplan and Stromberg, 2003), setting executive compensation, and electing members to the board (Hellmann and Puri, 2002). These pre-IPO roles dovetail an empirical literature that compares the performance of otherwise similar, post-IPO, VC- and non-VC-backed companies. This work typically finds evidence of better governance practices in VC-funded companies (e.g., Hochberg, 2012; Morsfield and Tan, 2006).

Although work on the governance structures of venture-backed companies admittedly is U.S.-centric, and there are reasons to believe that VCs in emerging markets are less able to institute good governance practices (e.g., Cumming and Walz, 2010; Johan and Zhang, 2014; White, Gao, and Zhang, 2005), we nonetheless hypothesize that VC backing will promote legal compliance. At minimum, VC firms are repeat players in the entrepreneurial process. If fraudulent conduct on the part of portfolio companies reflects on their financial backers, reputational concerns will encourage VC firms to promote integrity in the reporting of financial results. These arguments lead to two, additional hypotheses:

*Hypothesis 2: Compared to early-stage technology companies with only individual investors, those with organizational equity owners will be less likely to manipulate their financial data.*

*Hypothesis 3: Compared to early-stage technology companies with organizational equity owners, those with venture capital investors will be less likely to manipulate their financial data.*

Finally, we do not offer a specific hypothesis, but in the empirical analysis that follows, we investigate whether fraud increases the odds that a firm is awarded state resources. Our arguments for the hypotheses rest on the premise that companies have an incentive to misreport their financial information to one of two state agencies, often to bolster their results in the statements they submit in applications for a government grant. Therefore, in addition to being of interest in its own right, the logic underlying the hypotheses is strongest if the reporting of discrepant financial results correlates with higher odds of receiving a grant.

## DATA AND SUMMARY STATISTICS

### Financial data

Our data include 467 firms applying for an Innovation Fund (Innofund) grant from five cities in two Chinese provinces. Innofund is modeled after the U.S. Small Business Innovation Research (SBIR) program: It was specifically created to overcome a “market failure” by supporting innovative and commercially appealing projects at an early stage of development.<sup>3</sup> The Ministry of Science and Technology (MOST) administers Innofund. Grantees are awarded a sum of 500,000–1 million yuan RMB from the MOST, with a guaranteed match of 50–100 percent from local government.<sup>4</sup> For young Chinese companies, a grant of this magnitude, with no dilution to equity, is substantial. We chose to study the Innofund because all applicants must submit detailed financial statements to apply for grants and for the same set of companies at the same points in time, we were able to retrieve a second set of financial statements submitted to a different state agency.

Chinese law unambiguously states that all financial statements must be compiled according to the same accounting rules. Because there is no legitimate reason for discrepancies between the two sets of books and because there are very clear incentives to *directionally* (see below) report different results to the two agencies, we can use the presence of discrepancies to measure fraud. Another strength of the Innofund dataset is its coverage of

entrepreneurs’ employment histories and memberships in politically influential organizations, which allows us to construct measures of work experience and political connection.

Financial statements filed to the local State Administration of Industry and Commerce (SAIC) were used to compare with the financial statements from the MOST. The SAIC is the primary state agency responsible for regulating day-to-day commercial activities. According to China’s Company Law all commercial entities in the country must register with the SAIC at the time of establishment and must submit annual inspection documents to maintain their legal status (Company Law, 2006; SAIC, 2006). These documents include detailed financial statements that must be approved by registered accounting firms.

Several features of the Chinese accounting system make it appropriate to compare the MOST and SAIC financial statements. First, China has adopted a “unified accounting system” statute, with strict guidelines regarding how firms must prepare and file their financial documents (Accounting Law, 2000). This unified accounting system is overseen by a single national agency, the Ministry of Finance of the State Council, and the country’s accounting laws mandate its implementation. Second, the fiscal year for *all* companies in China is statutory: Fiscal years must correspond to the solar year of January 1 to December 31. Third, Chinese Accounting Law explicitly prohibits firms from creating different books or changing accounting measures in reports prepared for different users. For instance, the following acts are explicitly singled out as violations of accounting law, “... the measures for accounting arrangement are arbitrarily changed; ... the basis for preparing financial and accounting reports provided to different users of accounting documents is inconsistent” (Article 42). The Accounting Law further states, “Except for the statutory account books, a company shall not set up other account books” (Article 172).<sup>5</sup> To facilitate the implementation of

<sup>3</sup>See [http://www.innofund.gov.cn/english/02\\_fund\\_nature.htm](http://www.innofund.gov.cn/english/02_fund_nature.htm)

<sup>4</sup>The exchange rate on June 10, 2014, was \$1 = 6.22 yuan RMB.

<sup>5</sup>The following sections of the law also are relevant. Article 16 requires “All economic and business transactions that take place in a unit shall be recorded and calculated in the account books set up according to law, and no unit may, in violation of the provisions of this Law and the State’s unified accounting system, set up privately any other account book for recording and calculating such transactions.” Article 20 states, “Financial accounting statements shall be prepared on the basis of the examined and verified records of the account books and the related materials information and comply with the requirements set by this Law and the State’s unified accounting system.” Article 25

the Accounting Law, the State Council also publishes an accounting principles guideline with more than 150 pages of instruction for preparing and recording accounting statements.

Even though the MOST and SAIC books are submitted by the same firms covering the same accounting period, and are required by statute to report the same information, there are many instances of significant discrepancies in the two sets of books. Moreover, most firms have clear incentives to underreport their financial performance to the local SAIC for the purpose of tax avoidance. While not directly responsible for tax collection, the local SAIC collaborates with the State Administration of Taxation (SAT) to conduct joint inspections of and coordinate their administrative actions against tax evaders (Tian, 2012). Given the close relationship between these agencies, there is an incentive to underreport profits to the SAIC.

In contrast to the SAIC's problem of understatement of profits, the MOST is likely to receive overstatements of true profits. While modeled after U.S. SBIR grants to promote innovation, the Innofund expressly considers financial performance in its evaluation of candidates. Each applicant is rated by a panel of financial and technical experts. Regardless of other dimensions of merit, firms that receive a low financial rating are eliminated from further consideration. Thus, even if an applicant's technical merit is deemed to be outstanding, it is dismissed from the competition if it fails to meet certain financial thresholds.

The average grant-winning firm receives 1.18 million yuan RMB from the MOST and local governments.<sup>6</sup> This is a sufficiently large infusion for the capital-constrained, early-stage technology companies in our sample that the applicants have an incentive to take steps to secure a grant.

For the firms in our sample, Figure 1 illustrates the distribution of total profit across the MOST and SAIC books. We focus on total profit because interviewees informed us that the Innofund specifically evaluates profitability metrics and favors profitable companies in its funding decisions. As

a measure of profit, we use earnings before taxes. The Y-axis in Figure 1 represents the profit number reported to the MOST while the X-axis portrays the profit number report to the SAIC *for the same company*. Firms that report identical numbers to the two authorities populate the 45-degree line. Observations above the line indicate that greater profits are reported to the MOST than to the SAIC. Figure 1 illustrates a high level of inconsistency. Specifically, 60 percent of the firms in our data reported different profit numbers to the MOST and SAIC. The incidence of discrepancy falls by just five percent when we allow for "rounding error" as high as 20 percent of reported profits. Thus, 55 percent of firms report a profit discrepancy exceeding 20 percent between the two books.

To measure the discrepancy in total reported profit between the MOST and SAIC books, we subtract the latter from the former and label the difference, *Profit Gap*. Equating a profit gap to fraud, Panel A in Table 1 illustrates the percentage of fraudulent cases using different levels of discrepancy as cut points. (For the remainder of the article, we refer to a company as "fraudulent" when its profit numbers are discrepant between the two sets of books.)

The inconsistencies between the MOST and SAIC books cannot be explained by "creative accounting." Panel B in Table 1 shows that the mean value of profit reported in the MOST books is 1.392 million yuan RMB, which is a remarkable 3.12 times greater than the mean value reported to the SAIC, 0.338 million yuan. On average, firms in our sample report 1.054 million yuan in additional profits in their filing to the MOST, relative to their filing to the SAIC. Firms that switch from claiming to be loss-making to profit-making also are revealing. Specifically, 43.47 percent of firms stated that they made zero or negative profits in their SAIC filing, but only 18.42 percent reported nonpositive profits in their MOST filing.

Without knowledge of the actual profit level of a firm (i.e., we have no way to know whether *either* reported profit figure is accurate), we cannot calculate the relative magnitude of misrepresentation by weighing the discrepancy between the two sets of books as a percentage of true profit. Instead, in the multivariate regressions, we control for firms' registered capital base and employee headcount. For reasons we describe below, these two covariates are the most reliable indicators of firms' true sizes.

further requires firms to "confirm, calculate and record assets, debts, owners' equities, revenues, expenses, costs, and profits in accordance with the provisions of the uniform accounting system of the State on the basis of the economic transactions and operational matters which actually occur."

<sup>6</sup>In 2011, Innofund supported 6,545 projects with 3.77 billion yuan RMB in funding, and these funds were augmented with an additional 4 billion yuan RMB provided by local governments.

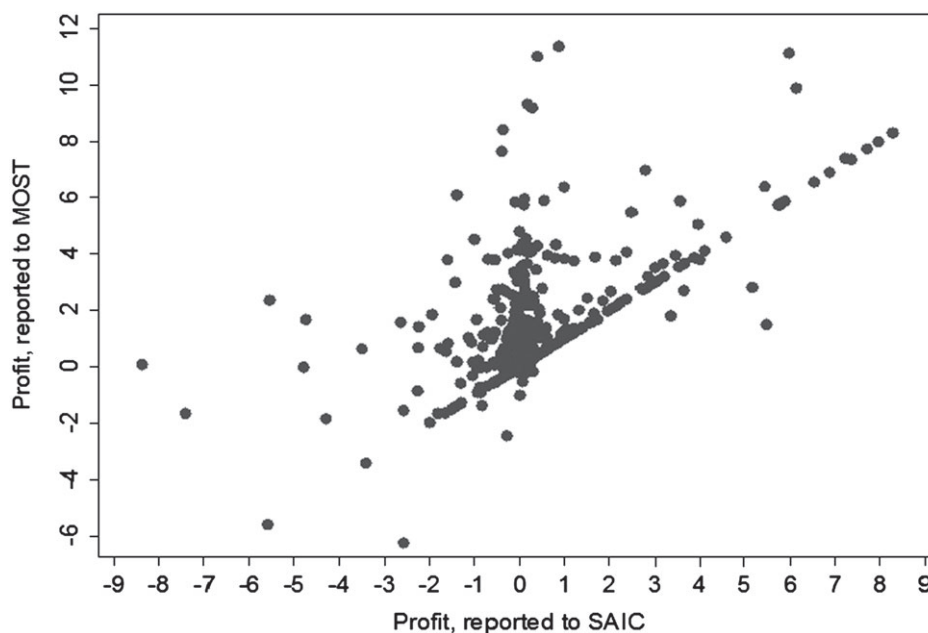


Figure 1. Total profit reported in two books. This figure plots, for financial statements that are matched to the same firm at the same time, the total profit (earnings before taxes) the firm discloses to the Ministry of Science and Technology (MOST) and the profit it discloses to the State Administration of Industry and Commerce (SAIC). The Y-axis reports the MOST profit number, and the X-axis reports the SAIC profit number for the same firm. Firms that disclose the same number to the two authorities fall on the 45-degree line. Observations above the line indicate that the corresponding firm reports a higher profit to the MOST than it does to the SAIC.  $N = 467$ .

Table 1. Magnitude and prevalence of profit manipulation among Chinese SMEs

| Panel A: Distribution of firms with different magnitudes of total profit discrepancy              |                |                                                             |                |
|---------------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------|----------------|
| $(\text{Profit}_{\text{MOST}} - \text{Profit}_{\text{SAIC}}) / (\text{Profit}_{\text{MOST}} + 1)$ | Percentage (%) | $\text{Profit}_{\text{MOST}} - \text{Profit}_{\text{SAIC}}$ | Percentage (%) |
| $\geq 0.05$                                                                                       | 58.67          | $\geq 10$ k yuan                                            | 59.74          |
| $\geq 0.10$                                                                                       | 57.39          | $\geq 50$ k yuan                                            | 57.39          |
| $\geq 0.20$                                                                                       | 54.82          | $\geq 100$ k yuan                                           | 56.53          |
| $\geq 0.30$                                                                                       | 53.10          | $\geq 500$ k yuan                                           | 43.90          |
| Panel B: Comparison of total profits across two accounting books (unit: million yuan)             |                |                                                             |                |
|                                                                                                   | Mean           | Median                                                      | Std. dev.      |
| Total profit reported to the MOST                                                                 | 1.392          | 0.812                                                       | 2.120          |
| Total profit reported to the local SAIC                                                           | 0.338          | 0.045                                                       | 1.723          |
| Total profit gap between the two books                                                            | 1.054          | 0.344                                                       | 1.790          |

This table describes the *discrepancy in total profit*, defined as earnings before tax, reported to the Ministry of Science and Technology (MOST) and the State Administration of Industry and Commerce (SAIC). Panel A is the proportion of firms that report profits to the MOST and SAIC that are discrepant by more than the percentages (raw numbers) given in the first (third) column. Panel B reports descriptive statistics in total profits reported in the two books. The exchange rate on June 10, 2014, was \$1 = 6.22 yuan RMB.  $N = 467$ .

### Political connections

We have hand-coded the resumes of all company founders to construct a measure of political ties. These resumes are submitted to the Innofund as a mandatory part of the grant application process.

They provide detailed information on founders' educational background, former employers, major career achievements, and recognitions from the government. We define an indicator variable, *Political Connection*, which denotes that one or more

Table 2. The magnitude and occurrence of profit manipulation, by firm type

|                                                               | Obs. | (1) Magnitude of profit gap, in million yuan |            | (2) Existence of nontrivial profit gap, dummy |            |
|---------------------------------------------------------------|------|----------------------------------------------|------------|-----------------------------------------------|------------|
|                                                               |      | Mean                                         | Std. error | Mean                                          | Std. error |
| Panel A: Connected vs. unconnected firms                      |      |                                              |            |                                               |            |
| Firms with no political connection                            | 365  | 0.882                                        | 0.088      | 0.496                                         | 0.026      |
| Firms with political connection                               | 102  | 1.667                                        | 0.200      | 0.735                                         | 0.043      |
| Difference between two groups                                 |      | −0.785***                                    | 0.197      | −0.239***                                     | 0.054      |
| Panel B: Organizational equity holder (OEH) vs. non-OEH firms |      |                                              |            |                                               |            |
| Firms w/o organizational equity holder                        | 287  | 1.095                                        | 0.103      | 0.599                                         | 0.029      |
| Firms with organizational equity holder                       | 180  | 0.988                                        | 0.140      | 0.467                                         | 0.037      |
| Difference between two groups                                 |      | 0.106                                        | 0.170      | 0.133***                                      | 0.047      |
| Panel C: VC vs. non-VC invested firms                         |      |                                              |            |                                               |            |
| Firms with no VC investor                                     | 407  | 1.027                                        | 0.087      | 0.550                                         | 0.025      |
| Firms with VC investor                                        | 60   | 1.235                                        | 0.247      | 0.533                                         | 0.065      |
| Difference between two groups                                 |      | −0.208                                       | 0.248      | 0.017                                         | 0.069      |

Asterisks denote significance levels of two-tailed test:  $+p < 0.10$ ,  $*p < 0.05$ ,  $**p < 0.01$ ,  $***p < 0.001$ .

This table shows the occurrence and magnitude of fraud by firm characteristics. The *magnitude of profit manipulation* is defined to be the difference of total profit filed in the MOST and SAIC books ( $\text{Profit}_{\text{MOST}} - \text{Profit}_{\text{SAIC}}$ ). A firm has a nontrivial profit gap when the MOST and SAIC profit numbers it reports are discrepant by more than 20 percent (i.e.,  $(\text{Profit}_{\text{MOST}} - \text{Profit}_{\text{SAIC}})/(\text{Profit}_{\text{MOST}} + 1) > .20$ ). Panel A compares politically connected to unconnected firms. Panel B compares firms with organizational equity holder with firms without organizational equity holder. Panel C compares firms with venture capital (VC) investors to those without them.

company founders, (1) previously worked in the Chinese government, or (2) once held membership in the People's Congress (PC) or the Chinese People's Political Consultative Conference (CPPCC).

By this definition, 102 firms (21.84% of the sample) qualify as politically connected. Using a similar definition, other studies have found that politically connected firms enjoy a set of advantages over nonconnected firms (e.g., Ang and Jia, 2014; Li and Zhang, 2007). Due to their privileged positions in Chinese society, these politically connected entrepreneurs often are called, “red capitalists.”

Panel A of Table 2 examines variation in fraudulent reporting between politically connected and unconnected firms. On average, connected firms have an additional three quarters million in profit discrepancy relative to unconnected firms (1.667 million yuan vs. 0.882 million yuan, respectively). Panel A also demonstrates that a far higher percentage of connected firms report discrepant profits (73.5% vs. 49.6%). Both bivariate differences are statistically significant at the  $p < 0.001$  level.

### Ownership structure

We create two dummy variables describing ownership structure. First, *Organizational Equity Holder* is 1 when *any* equity owner in the company is an

organization, such as another corporation or a university. Second, *Venture Capital Investor* is 1 if one or more of the organizational equity holders is listed as a VC firm by the State Development Planning Council and has a profile on the website of China's premier VC/PE information provider, Zero2IPO.

Panels B and C of Table 2 report cross tabulations showing fraudulent reporting between firms, with and without Organizational Equity Holders and VC investors. In neither case is there a statistically significant, bivariate association between the magnitude of the profit gap companies report and their ownership structures. However, when we examine the binary indicator of a reported profit discrepancy, companies with Organizational Equity Holders are statistically less likely to report a profit discrepancy (46.7% vs. 59.9%).

### Other entrepreneur and firm characteristics

We coded demographic and educational information for all entrepreneurs in the sample. *Founder Age* is the age of a firm's key founder in the year of its Innofund application. *Founder's Education* is a four-category measurement of the key founder's highest level of education.

*State Incubator* and *Hi-Tech Zone* are two dummy variables indicating whether a firm is located in a state-designated accelerator or a

Table 3. Profit manipulation and recipient of a MOST grant

|                                     | Obs | (1) Recipient of the grant |       | (2) Size of the grant |       |
|-------------------------------------|-----|----------------------------|-------|-----------------------|-------|
|                                     |     | Mean                       | S.E.  | Mean                  | S.E.  |
| Firms without nontrivial profit gap | 211 | 0.469                      | 0.033 | 28.152                | 2.172 |
| Firms with nontrivial profit gap    | 256 | 0.598                      | 0.031 | 39.609                | 2.171 |
| Whole sample                        | 467 | 0.540                      | 0.230 | 34.433                | 1.563 |
| Difference between two groups       |     | -0.128***                  | 0.046 | -11.457***            | 3.100 |

Asterisks denote significance levels of two-tailed test:  $+p < 0.10$ ,  $*p < 0.05$ ,  $**p < 0.01$ ,  $***p < 0.001$ .

This table compares the recipient and size of the MOST-administered Innofund grant between firms with and without discrepant profit reports. A firm is defined as having a nontrivial profit gap when the MOST and SAIC profit numbers it reports differ by more than 20 percent. The unit for the size of the grant is 10K yuan RMB.

high-technology zone. *Firm Age* is the number of years since establishment at the time of the Innofund application. The firms in the sample were relatively young, with an average age of five years. We use the natural logarithm of a firm's registered capital (*Registered Capital<sub>ln</sub>*) and number of employees (*Employees<sub>ln</sub>*) as proxies for size. Both variables are less likely to be manipulated than assets or other measures of size. In particular, as part of the submission process, Innofund applicants are required to submit a photocopy of their business licenses, which lists their registered capital.

We also collect data on firms' grant size requests and technical endowments. The Innofund expressly favors applicants with at least some track record of discovery. Because winning a grant is the major motivation for firms to exaggerate their financial performance to the MOST, those applying for larger grants may report a greater profit discrepancy. In contrast, firms with superior technical endowments may have a weaker incentive to exaggerate their financials because they can rely on their merits to win a grant.

To measure technical endowments, we construct a *Patents Applied* variable. We specifically avoid using data on R&D spending as applicant firms have an incentive to misrepresent this quantity in their applications.<sup>7</sup> By contrast, the patent count is verifiable to evaluators because the MOST requires actual copies of patents to be included in applications. Therefore, data on intellectual property filings should be accurate in our sample.

Finally, we control for industry and geographic location. Out of the 467 firms in the sample, 408

operate in the seven industries that are targeted by the Innofund. These include IT and electronics, biotech and medicine, advanced materials, automation, new resources and environmental protection, conservation and renewable energy, and high-tech services. All other firms are treated as a residual category.

### Innofund grant

From the Innofund website, we collected information on all grant recipients. Of the firms in our sample, 54 percent received Innofund funding, which is higher than the Innofund's 45 percent acceptance rate in the period of our data, 2005–2010. The higher award rate in our sample reflects several sampling choices. First, we excluded firms that were less than one year of age at the time of their Innofund application because these companies often have incomplete financial records. Second, we were only able to acquire the SAIC data for major metropolitan areas. The grant rejection rate was higher among very young firms and those from nonmetropolitan locales.

The first panel in Table 3 shows that firms that cook their books were 12.8 percent more likely to receive an Innofund grant than nonfraudulent firms. This difference is statistically significant at the  $p < 0.001$  level. Considering that 54 percent of firms in the overall sample received Innofund grants, the advantage that profit-manipulating firms garner is meaningful. The second panel in Table 3 shows that firms with discrepant financials on average received 114.57K more yuan RMB in Innofund grants. Given that the median total profit reported by our sampled firms to the MOST (SAIC) is 812K (45K) yuan RMB, an additional 114.57K is a significant sum.

<sup>7</sup>In fact, to qualify for consideration for an Innofund grant, firms are required to allocate a minimum of five percent of revenues to research activities.

## MULTIVARIATE RESULTS

We conduct the empirical analysis in two steps. First, we examine the antecedents of fraudulent reporting. Next, we investigate the relationship between fraudulent reporting and the odds of receiving a MOST grant.

### Political connections and financial data manipulation

We begin by regressing firms' profit discrepancy on political connections and control variables. We report models with three specifications of the outcome variables, and we then present additional analyses that shed light on the differences in results across functional forms. The first panel in Table 4 reports OLS regressions of the *Profit Gap*, the magnitude of the profit discrepancy reported to the MOST and the SAIC. To reduce the influence of extreme values, we Winsorized the *Profit Gap* at one percent. Panel B in Table 4 uses the natural logarithm of the *Profit Gap* to accommodate skew. As there are a small number of negative values in *Profit Gap*, the natural logarithm transformation drops six observations in the analyses.<sup>8</sup> Last, we run a logistic regression of *Nontrivial Fraud*, which is defined to be a substantial profit discrepancy between the MOST and SAIC books ( $\frac{\text{ProfitMOST} - \text{ProfitSAIC}}{\text{ProfitMOST} + 1} > 0.20$ ).

Across the columns of Table 4, three control variables are significant in the majority of specifications. First, companies with higher headcounts are more likely to cheat. Because the dependent variable is not scaled by firm size, however, it is unsurprising that larger firms report more discrepant numbers. Second, firms applying for a larger grant are more likely to cook their books. Third, the payoff to fraud appears to be a function of merit. The potential gains from presenting misleading information in financial disclosures depend on the counterfactual response that an applicant expects if it discloses accurate information. In general, the greater a company's odds of winning a grant on the merits, the lower will be its incentive to cheat. The cleanest measure of merit for an Innofund grant that is available to us is the number

of a company's patented inventions. As anticipated, companies with a strong patent portfolio generally are *less* likely to commit financial fraud.

Looking at the columns in the table, we find a strong, positive effect of political connections on fraudulent reporting. Column 1 in Table 4 indicates that a connected firm reports an additional 590,000 yuan RMB in profit to the MOST relative to the SAIC. To contextualize this number, the median of the distribution of profits reported to the MOST was 812,000 yuan. In contrast, the median of the distribution of profits reported to the SAIC was only 45,000 yuan. Thus, the estimated effect of political connections is almost three-fourths the size of the median profit *reported* to the MOST, and more than 13 times the profit reported to the SAIC.

Turning to the logistic regressions in Panel C, Column 9 shows a large effect of political connections on the likelihood that a company reports a nontrivial profit discrepancy between the two sets of books. The parameter estimate indicates a striking, 161 percent higher odds that politically connected firms commit fraud.

### Organizational equity holders and financial data manipulation

In Columns 2, 6, and 10 in Table 4, we add a dummy variable: The firm has one or more outside organizational equity holders (OEHs). As we anticipated in Hypothesis 2, in all three sets of regressions, we find a negative correlation between profit manipulation and having an OEH. The effect is strongly significant in the logit regressions of nontrivial discrepancy (Panel C, Col 10), though it is shy of statistical significance in the OLS models (Panel A, Col 2, and Panel B, Col 6). The magnitudes suggest that companies with an OEH have 42 percent lower odds of reporting a profit discrepancy than otherwise comparable firms. This accords with Hypothesis 2: Because they encourage transparency or because they provide access to capital, and therefore, weaken the incentive for companies to cheat to acquire resources, the presence of organizational owners on a company's capitalization table discourages fraud.<sup>9</sup>

<sup>8</sup>We reran the analyses implementing a cubic root transformation of the *Profit Gap*. This reduces skew, but does not require an adjustment to 0-valued observations. Results are highly similar across these and logarithmic transformations.

<sup>9</sup>Given the positive association between politically connected entrepreneurs and fraud, it is natural to ask whether companies with state-affiliated organizational equity holders behave differently from other firms. We identified 81 firms with OEHs that are either state-owned enterprises or state-affiliated VCs (i.e., the VC

Table 4. Determinants of fraud

|                                    | Panel A: Winsorized OLS        |                     |                     |                      | Panel B: Logarithm OLS         |                     |                     |                      | Panel C: Logit                 |                    |                     |                       |
|------------------------------------|--------------------------------|---------------------|---------------------|----------------------|--------------------------------|---------------------|---------------------|----------------------|--------------------------------|--------------------|---------------------|-----------------------|
|                                    | (1)<br>Political<br>connection | (2)<br>OEH          | (3)<br>VC           | (4)<br>Full<br>model | (5)<br>Political<br>connection | (6)<br>OEH          | (7)<br>VC           | (8)<br>Full<br>model | (9)<br>Political<br>connection | (10)<br>OEH        | (11)<br>VC          | (12)<br>Full<br>model |
| Pol. connection                    | 0.590**<br>(0.211)             |                     |                     | 0.602**<br>(0.207)   | 0.227**<br>(0.076)             |                     |                     | 0.233**<br>(0.075)   | 0.960**<br>(0.316)             |                    |                     | 1.009**<br>(0.317)    |
| Org. Equ. Holder (OEH)             |                                | -0.221<br>(0.181)   |                     |                      |                                | -0.081<br>(0.065)   |                     |                      |                                | -0.539*<br>(0.244) |                     |                       |
| Non-VC OEH                         |                                |                     | -0.316+<br>(0.188)  | -0.346+<br>(0.188)   |                                |                     | -0.117+<br>(0.068)  | -0.131+<br>(0.068)   |                                |                    | -0.713**<br>(0.255) | -0.793**<br>(0.266)   |
| VC OEH                             |                                |                     | 0.119<br>(0.355)    | 0.071<br>(0.343)     |                                |                     | 0.042<br>(0.122)    | 0.024<br>(0.119)     |                                |                    | 0.189<br>(0.450)    | 0.073<br>(0.445)      |
| Firm age                           | 0.001<br>(0.027)               | 0.005<br>(0.027)    | 0.006<br>(0.027)    | -0.002<br>(0.027)    | -0.008<br>(0.014)              | -0.006<br>(0.013)   | -0.005<br>(0.013)   | -0.009<br>(0.013)    | -0.006<br>(0.037)              | -0.002<br>(0.035)  | 0.000<br>(0.035)    | -0.011<br>(0.037)     |
| Ln reg. capital                    | 0.056<br>(0.073)               | 0.091<br>(0.077)    | 0.070<br>(0.080)    | 0.067<br>(0.079)     | 0.006<br>(0.032)               | 0.020<br>(0.033)    | 0.012<br>(0.034)    | 0.010<br>(0.034)     | -0.137<br>(0.112)              | -0.057<br>(0.115)  | -0.106<br>(0.118)   | -0.107<br>(0.117)     |
| Ln employees                       | 0.384***<br>(0.106)            | 0.416***<br>(0.110) | 0.444***<br>(0.114) | 0.411***<br>(0.108)  | 0.158***<br>(0.044)            | 0.170***<br>(0.045) | 0.180***<br>(0.045) | 0.168***<br>(0.044)  | 0.125<br>(0.183)               | 0.185<br>(0.186)   | 0.247<br>(0.188)    | 0.184<br>(0.185)      |
| Patent count                       | -0.044<br>(0.032)              | -0.048<br>(0.032)   | -0.056+<br>(0.030)  | -0.052+<br>(0.030)   | -0.023*<br>(0.012)             | -0.024*<br>(0.012)  | -0.027*<br>(0.012)  | -0.026*<br>(0.011)   | -0.217*<br>(0.087)             | -0.219*<br>(0.086) | -0.238**<br>(0.085) | -0.237**<br>(0.087)   |
| State incubator                    | -0.348<br>(0.304)              | -0.310<br>(0.302)   | -0.342<br>(0.316)   | -0.354<br>(0.317)    | -0.119<br>(0.104)              | -0.104<br>(0.104)   | -0.116<br>(0.107)   | -0.122<br>(0.108)    | 0.103<br>(0.402)               | 0.185<br>(0.411)   | 0.113<br>(0.414)    | 0.107<br>(0.417)      |
| Hi-tech zone                       | 0.120<br>(0.350)               | 0.213<br>(0.349)    | 0.151<br>(0.347)    | 0.097<br>(0.347)     | 0.004<br>(0.130)               | 0.038<br>(0.128)    | 0.017<br>(0.130)    | -0.003<br>(0.131)    | -0.203<br>(0.439)              | -0.069<br>(0.412)  | -0.174<br>(0.420)   | -0.238<br>(0.446)     |
| Appl. grant size                   | 0.013*<br>(0.006)              | 0.014*<br>(0.006)   | 0.013*<br>(0.006)   | 0.013*<br>(0.006)    | 0.005*<br>(0.002)              | 0.005**<br>(0.002)  | 0.005*<br>(0.002)   | 0.004*<br>(0.002)    | 0.018*<br>(0.007)              | 0.017*<br>(0.007)  | 0.017*<br>(0.007)   | 0.018*<br>(0.008)     |
| Constant                           | -1.981*<br>(0.898)             | -2.316*<br>(0.916)  | -2.232*<br>(0.914)  | -2.139*<br>(0.916)   | -0.587*<br>(0.287)             | -0.714*<br>(0.293)  | -0.681*<br>(0.293)  | -0.645*<br>(0.292)   | -0.741<br>(1.079)              | -1.419<br>(1.097)  | -1.246<br>(1.120)   | -1.243<br>(1.147)     |
| Fixed Effects                      | Yes                            | Yes                 | Yes                 | Yes                  | Yes                            | Yes                 | Yes                 | Yes                  | Yes                            | Yes                | Yes                 | Yes                   |
| D.F.                               | 29                             | 29                  | 30                  | 31                   | 29                             | 29                  | 30                  | 31                   | 29                             | 29                 | 30                  | 31                    |
| R <sup>2</sup> (Chi <sup>2</sup> ) | 0.225                          | 0.211               | 0.215               | 0.233                | 0.241                          | 0.226               | 0.230               | 0.249                | 80.151                         | 79.723             | 84.441              | 89.065                |
| Observations                       | 467                            | 467                 | 467                 | 467                  | 461                            | 461                 | 461                 | 461                  | 467                            | 467                | 467                 | 467                   |

Asterisks denote significance levels of two-tailed test: + $p < 0.10$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

This table examines how political connections and ownership structure are associated with fraudulent manipulation of profit data. Models in Panel A are ordinary least square (OLS) regressions, and the dependent variable (DV) is the Winsorized (at 1%) gap in profit between the financial statement a firm reports to the Ministry of Science and Technology (MOST) and the statement it disclosed to the State Administration of Industry and Commerce (SAIC). Models in Panel B are also OLS regressions, and the DV is the natural logarithm of the profit gap between the MOST and SAIC books (e.g.,  $\ln[1 + (\text{Profit}_{\text{MOST}} - \text{Profit}_{\text{SAIC}})]$ ). Models in Panel C are logit regressions, and the DV is a dummy variable that equals to 1 if nontrivial profit discrepancy exists between the MOST and SAIC books, that is  $(\text{Profit}_{\text{MOST}} - \text{Profit}_{\text{SAIC}}) / (1 + \text{Profit}_{\text{MOST}}) > 0.20$ . All models include unreported controls for founders' age, gender, and level of education as well as city, industry, and application-year fixed-effects. Robust standard errors are presented below the coefficients.

Table 5. Determinants of fraud, extension

|                                    | Panel A: Winsorized OLS |                   | Panel B: Logarithm OLS |                   | Panel C: Logit     |                    |
|------------------------------------|-------------------------|-------------------|------------------------|-------------------|--------------------|--------------------|
|                                    | (1)                     | (2)               | (3)                    | (4)               | (5)                | (6)                |
| Pol. connection                    | 0.224<br>(0.392)        | 0.261<br>(0.381)  | 0.058<br>(0.143)       | 0.071<br>(0.140)  | 0.699<br>(0.538)   | 0.751<br>(0.519)   |
| VC OEH                             | 0.760+<br>(0.446)       |                   | 0.264+<br>(0.148)      |                   | 1.103*<br>(0.521)  |                    |
| VC-only OEH                        |                         | 1.011+<br>(0.532) |                        | 0.354*<br>(0.177) |                    | 1.481*<br>(0.723)  |
| VC & non-VC OEH                    |                         | 0.540<br>(0.520)  |                        | 0.184<br>(0.180)  |                    | 0.800<br>(0.609)   |
| Firm age                           | 0.033<br>(0.046)        | 0.030<br>(0.045)  | 0.015<br>(0.018)       | 0.014<br>(0.018)  | 0.008<br>(0.057)   | 0.005<br>(0.058)   |
| Ln reg. capital                    | 0.018<br>(0.147)        | 0.037<br>(0.150)  | 0.019<br>(0.057)       | 0.026<br>(0.059)  | −0.011<br>(0.192)  | 0.023<br>(0.198)   |
| Ln employees                       | 0.437*<br>(0.183)       | 0.455*<br>(0.184) | 0.149*<br>(0.068)      | 0.155*<br>(0.068) | 0.116<br>(0.280)   | 0.143<br>(0.279)   |
| Patent count                       | −0.031<br>(0.047)       | −0.037<br>(0.047) | −0.016<br>(0.016)      | −0.018<br>(0.016) | −0.167<br>(0.138)  | −0.165<br>(0.127)  |
| State incubator                    | −0.462<br>(0.613)       | −0.457<br>(0.614) | −0.184<br>(0.192)      | −0.180<br>(0.191) | 0.292<br>(0.607)   | 0.267<br>(0.595)   |
| Hi-tech zone                       | 0.304<br>(0.526)        | 0.332<br>(0.524)  | 0.059<br>(0.179)       | 0.068<br>(0.179)  | 0.207<br>(0.616)   | 0.227<br>(0.609)   |
| Appl. grant size                   | −0.009<br>(0.010)       | −0.009<br>(0.010) | −0.005<br>(0.004)      | −0.005<br>(0.004) | −0.005<br>(0.017)  | −0.004<br>(0.017)  |
| constant                           | −2.167<br>(1.680)       | −2.222<br>(1.671) | −0.693<br>(0.580)      | −0.715<br>(0.578) | −3.594+<br>(2.074) | −3.723+<br>(2.086) |
| Fixed effects                      | Yes                     | Yes               | Yes                    | Yes               | Yes                | Yes                |
| D.F.                               | 30                      | 31                | 30                     | 31                | 30                 | 31                 |
| R <sup>2</sup> (Chi <sup>2</sup> ) | 0.216                   | 0.220             | 0.252                  | 0.256             | 44.776             | 44.763             |
| Observations                       | 180                     | 180               | 175                    | 175               | 180                | 180                |

Asterisks denote significance levels of two-tailed test: + $p < 0.10$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

This table examines whether different ownership structures are associated with fraudulent manipulation of profit data. All observations have organizational equity holders (OEH), and the omitted group is firms with only non-VC OEHs. All models include unreported controls at the firm and entrepreneur levels. Robust standard errors are presented below the coefficients.

### Venture capital investors and financial data manipulation

In Columns, 3, 7, and 11, we separate owners by type. The omitted category is companies owned entirely by individual shareholders, which we compare to (1) companies with organizational equity holders, none of which are VCs (*Non-VC OEH*); and (2) companies with VC investors (*VC OEH*). Surprisingly, we find that the negative effect of having OEHs on both the magnitude of the profit

discrepancy and on the probability of reporting a profit gap is driven entirely by *non-VC* investors. Moreover, in contrast to Hypothesis 3, we find tentative evidence that VC-backed companies in the sample actually are *more* likely to commit fraud.

To illustrate this, Table 5 shows regressions from the subsample of companies with one or more organizational equity holders. This table demonstrates that compared to companies that have non-VC organizational investors, VC-backed firms are more likely to report discrepant profits and also to report a larger profit gap. Therefore, the presence of a venture investor correlates with an *increase* in a portfolio company's proclivity to cook its books.

Why might VC-backed companies be more prone to fraud? Although VCs have been shown to promote good corporate governance in the United States, their role in this regard is more ambiguous

firms in which the state is either a limited partner or a general partner in the fund). *T*-tests show no significant difference between firms with state-affiliated organizational owners and the remaining firms in the sample. There is, however, weak evidence that, among only firms with organizational equity holders, those with state-affiliated investors are more likely to manipulate their financial data. However, this difference is statistically significant only at the 0.10 level.

in other countries (Cumming and Johan, 2013; Cumming and Walz, 2010). Bruton and Ahlstrom (2013) compares the conducts of Chinese VCs to U.S. counterparts. These authors find that venture investors in China employ different selection strategies to identify investments and different contract terms to manage them. Likewise, White *et al.* (2005) find that native VC firms in China are less likely than U.S. firms to be activist investors. Similar patterns have been observed in other emerging economies (Bruton, Ahlstrom, and Singh, 2002; Cumming, Schmidt, and Walz, 2010).

With specific regard to fraudulent acts, VCs may be well positioned to engage in rent-seeking behaviors in emerging economies. First, VCs enjoy a halo effect with government officials because of a widespread belief that they have been central agents in the success of the U.S. technology sector. In consequence, governments often adopt pro-VC policy concessions, including expedited and reduced exposure to the regulatory process.<sup>10</sup> Second, many VC firms have close ties to the state through their limited partners, which can include pension funds and state agencies (White *et al.*, 2005). Third, rather than investing in one or two firms, VCs have a portfolio of companies under management. As a group, VCs and their portfolio companies can harvest the benefits of economies of scale in building relationships with the state. Therefore, a plausible explanation for the positive effect of the presence of a VC investor on fraud is that VC-backed firms are, like the politically connected companies in the sample, better shielded from judicial scrutiny.<sup>11</sup>

<sup>10</sup>In 1999, China's State Council dispatched a circular to encourage state ministries and local governments to take steps to develop China's VC industry for the creation of an innovation-based economy. This was a high-profile policy guideline and was jointly drafted by the Ministry of Science and Technology, the State Development Planning Commission, the State Economic and Trade Commission, the Ministry of Finance, the Central Bank of China, the State Administration of Taxation, and the China Securities Regulatory Commission. Enticed by the prospect of VC's role in nurturing the growth of high-tech firms, many local governments have offered very generous inducements to VC firms to invest locally. For example, one city in Anhui Province provides rent-free office spaces, tax reductions (for up to three years), state procurement of services and products, state protection against VC losses (up to 10 million yuan RMB), and streamlined regulatory procedures. For more detailed information, see: <http://www.whjhg.gov.cn/readnews.asp?id=25422>.

<sup>11</sup>We have conducted extensive, supplemental analyses of the venture capital ownership effect. In general, we find no differences in the effects when we distinguish among three types of venture investors: those with limited partner or general partner ties to the State, foreign VCs, and all other investors. However, we do find

## Does fraud pay?

Table 6 examines the correlation between financial fraud and receiving an innovation grant from the MOST. Panel A reports logit regressions of selection for a grant. Panel B reports OLS regressions of the size of grant that the MOST allocates to each applicant firm. We estimate these regressions to determine whether fraud pays.

Column 1 shows that firms with political connections and those with VC investors are much more likely to receive Innofund grants. Though there may be omitted variables that affect VC funding decisions and Innofund selection, this effect is particularly large: The coefficient on VC investment indicates that a company backed by VCs has approximately 162 percent higher odds of being awarded an Innofund grant than does an otherwise similar firm with no VC on its capitalization table. Technological merit also appears to be a relevant criterion in Innofund's selection strategy. The coefficient for firms' patent count varies between 0.128 and 0.152. This implies that each additional patent is associated with approximately 13.7–16.4 percent higher odds of being awarded a MOST grant.

Columns 2–4 examine whether reporting discrepant results to the two agencies correlates with the probability of being selected for a grant. Across the three columns of results, we find a positive association between financial data manipulation and receipt of governmental grants, though the results exhibit a notable nuance, which we describe below.

Column 2 includes the magnitude of the profit discrepancy between the MOST and SAIC books as an explanatory variable. Controlling for various observable firm and entrepreneur-level characteristics, we find *no effect* of the continuous measure of profit discrepancy. In Column 3, however, we include a dummy variable that is set to 1 if a nontrivial profit gap exists between the MOST and SAIC books. Using a dummy variable to indicate the existence profit discrepancy, we find a positive, statistically significant association between cooking the books and receiving a grant. When other covariates are set to their means, fraudulent firms have approximately 66.7 percent higher odds (or a 10.8% higher chance) of receiving an Innofund grant.<sup>12</sup>

suggestive evidence that portfolio companies of larger venture firms are more likely to commit fraud.

<sup>12</sup>We should caution that a causal interpretation of these findings is premature because it remains possible that an unobserved variable

Table 6. Financial data manipulation and receipt of governmental grants

|                                     | Panel A: Logit models on receiving an Innofund grant or not |                   |                   |                   | Panel B: OLS models on size of the Innofund grant received |                     |                     |                     |
|-------------------------------------|-------------------------------------------------------------|-------------------|-------------------|-------------------|------------------------------------------------------------|---------------------|---------------------|---------------------|
|                                     | (1)                                                         | (2)               | (3)               | (4)               | (5)                                                        | (6)                 | (7)                 | (8)                 |
| Size of profit gap                  |                                                             | 0.090<br>(0.064)  |                   |                   |                                                            | 1.637+<br>(0.968)   |                     |                     |
| Existence of nontrivial gap         |                                                             |                   | 0.511*<br>(0.229) |                   |                                                            |                     | 8.739*<br>(3.438)   |                     |
| Top-quartile of reported profit gap |                                                             |                   |                   | −0.204<br>(0.242) |                                                            |                     |                     | 5.610<br>(4.335)    |
| Fraudulent, non-top quartile        |                                                             |                   |                   | 0.554*<br>(0.236) |                                                            |                     |                     | 10.966**<br>(3.818) |
| Pol. connection                     | 0.542*<br>(0.270)                                           | 0.495+<br>(0.273) | 0.454+<br>(0.276) | 0.520+<br>(0.278) | 10.845**<br>(3.829)                                        | 9.859*<br>(3.899)   | 9.272*<br>(3.886)   | 9.536*<br>(3.889)   |
| Non-VC OEH                          | −0.022<br>(0.247)                                           | 0.003<br>(0.248)  | 0.052<br>(0.252)  | 0.045<br>(0.249)  | −2.358<br>(3.605)                                          | −1.792<br>(3.619)   | −1.018<br>(3.651)   | −0.700<br>(3.633)   |
| VC OEH                              | 0.962*<br>(0.413)                                           | 0.970*<br>(0.415) | 0.973*<br>(0.413) | 0.962*<br>(0.420) | 10.691+<br>(5.759)                                         | 10.575+<br>(5.693)  | 10.603+<br>(5.649)  | 10.285+<br>(5.661)  |
| Firm age                            | 0.023<br>(0.036)                                            | 0.024<br>(0.035)  | 0.025<br>(0.035)  | 0.020<br>(0.035)  | 0.350<br>(0.498)                                           | 0.354<br>(0.493)    | 0.373<br>(0.491)    | 0.342<br>(0.490)    |
| Registered capital, logged          | 0.124<br>(0.113)                                            | 0.116<br>(0.113)  | 0.131<br>(0.113)  | 0.151<br>(0.114)  | 2.335<br>(1.610)                                           | 2.224<br>(1.612)    | 2.483<br>(1.600)    | 2.692+<br>(1.611)   |
| Employee number, logged             | 0.077<br>(0.163)                                            | 0.047<br>(0.166)  | 0.064<br>(0.164)  | 0.050<br>(0.164)  | 1.015<br>(2.339)                                           | 0.341<br>(2.390)    | 0.710<br>(2.316)    | 0.367<br>(2.318)    |
| Patent count                        | 0.128+<br>(0.076)                                           | 0.135+<br>(0.077) | 0.152+<br>(0.078) | 0.148+<br>(0.079) | 1.955*<br>(0.777)                                          | 2.041**<br>(0.780)  | 2.235**<br>(0.789)  | 2.256**<br>(0.799)  |
| State incubator                     | 0.056<br>(0.424)                                            | 0.085<br>(0.426)  | 0.046<br>(0.434)  | 0.011<br>(0.436)  | 2.636<br>(5.901)                                           | 3.215<br>(5.932)    | 2.515<br>(5.970)    | 2.676<br>(5.964)    |
| Hi-tech zone                        | −0.397<br>(0.391)                                           | −0.397<br>(0.392) | −0.358<br>(0.396) | −0.238<br>(0.403) | −7.184<br>(5.161)                                          | −7.343<br>(5.189)   | −6.788<br>(5.291)   | −5.552<br>(5.439)   |
| Applied grant size                  | 0.005<br>(0.006)                                            | 0.004<br>(0.006)  | 0.004<br>(0.006)  | 0.004<br>(0.006)  | 0.295***<br>(0.078)                                        | 0.274***<br>(0.077) | 0.271***<br>(0.079) | 0.268***<br>(0.078) |
| Constant                            | 0.453<br>(1.143)                                            | 0.641<br>(1.158)  | 0.300<br>(1.162)  | 0.360<br>(1.166)  | 10.265<br>(16.404)                                         | 13.767<br>(16.381)  | 7.601<br>(16.446)   | 8.707<br>(16.523)   |
| D.F.                                | 31                                                          | 32                | 32                | 33                | 31                                                         | 32                  | 32                  | 33                  |
| Chi <sup>2</sup>                    | 60.259                                                      | 61.561            | 62.698            | 62.901            |                                                            |                     |                     |                     |
| R <sup>2</sup>                      |                                                             |                   |                   |                   | 0.188                                                      | 0.193               | 0.201               | 0.203               |

Asterisks denote significance levels of two-tailed test: + $p < 0.10$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .  $N = 467$ .

This table examines the association between firms' manipulation of profit data and their receipt of a MOST-funded innovation grant. All regressions in Panel A are logits, and the dependent variable = 1 if a firm receives an Innofund grant. All regressions in Panel B are ordinary least square (OLS) regressions, and the dependent variable is the size of the Innofund award received (unit = 10K RMB). All regressions include unreported controls for founders' age, gender, and level of education. There also are controls for firm location in accelerator or high-tech zone as well as city, application year, and industry sector fixed-effects. Robust standard errors are presented below the coefficients.

Given the inconsistent results between the continuous *Profit Gap* (Col 2) and the dummy variable specification (Col 3), in Column 4 of Table 6,

influences both companies' propensity to commit fraud and to receive an innovation grant. We believe this is unlikely given the functional form described below. Though we cannot claim that the specifications are persuasive, we have run Model 3 in Table 6 with selection-on-observables estimators, and we continue to find that fraud predicts Innofund grants. Results are available on request.

we explore the functional form of the relationship between the reported profit gap and the probability of winning an Innofund grant. Specifically, the Column 4 regression includes a three-category spline: an indicator for the top quartile of the distribution of the MOST-SAIC profit gap,<sup>13</sup> an indicator for a

<sup>13</sup>To be concrete, we rank all the relative ratios  $\left(\frac{\text{ProfitMOST} - \text{ProfitSAIC}}{\text{ProfitMOST} + 1}\right)$  of profit data manipulation and create an

reported profit gap that is below the 75th percentile, and an omitted category comprising all companies that report consistent profit numbers to the MOST and SAIC.<sup>14</sup>

Here, we find an interesting relationship: This specification sheds light on the insignificant coefficient on the linear *Profit Gap* in Column 2. Specifically, we believe that the financial evaluators at the MOST often are able to detect fraud when it is blatant, which occurs when the profit number is out of whack in relation to other information available about a focal company. In this and other regression (e.g., Model 8 in Panel B), we consistently find that companies that report a profit number to the MOST that is highly misaligned with the number reported to the SAIC are no more likely to obtain a grant than are companies that report consistent profits in the two sets of books. Therefore, the MOST selection committee appears to be able to identify many of the egregious instances of manipulation of financial data, and to eliminate such firms from consideration for a grant.

Finally, Panel B in Table 6 examines the association between fraudulent reporting and the size of the grant the MOST allocates to each applicant. We find a similar pattern among the control variables as reported in Panel A; namely, firms with political connections, VC investors, and patent holdings receive larger grants from the MOST. In Columns 6 and 7, we observe positive, statistically significant associations between the magnitude and existence of profit manipulation and the size of Innofund grants. In Column 7, the coefficient for profit manipulation is 8.74, suggesting that switching an otherwise similar firm from being honest to cheating increase its Innofund award size by 87.4k yuan RMB. However, the predicted financial gains almost surely underestimates the full benefit of the award, which include significant public relations

coverage and a much-enhanced corporate reputation in the eyes of potential customers, the state, and would-be investors.

## DISCUSSION AND CONCLUSIONS

Using a unique dataset with two theoretically identical sets of financial books filed by the same set of companies in the same period of time, we examine the determinants of fraudulent financial reporting among an economically significant but as-yet understudied population of companies: private, technology firms in China. These unique data enable us to avoid the common selection bias in research on corporate fraud, which occurs when researchers must rely on regulatory actions or media coverage to identify fraudulent conduct. To the best of our knowledge, this study is the first to document the prevalence of fraudulent reporting among the high growth, private-company sector in China. We find strong evidence that politically connected firms and highly suggestive evidence that venture-backed companies are prone to commit fraud. Conversely, companies with non-VC, organizational (vs. individual) investors are less likely to report discrepant financial results. We also find that firms that report discrepant financial statements are more likely to receive government innovation grants.

This study builds on prior literature on the benefits of political connections in emerging markets. In particular, we demonstrate a new means through which government ties create an advantage. Past studies have documented that state officials favor politically connected firms in resource allocation and judicial decisions. We take an additional step here, showing that even when applicants are evaluated on their merits, connected firms still are advantaged in gaining access to state-controlled resources because they are better positioned to manipulate their financial disclosures to (appear to) perform well in merit-based evaluations. This shines a new light on the advantages of political connections.

We also present novel results regarding the role of venture capital in developing countries. Venture capital in the United States is known to enhance corporate governance practices at portfolio companies. In China, we find suggestive evidence to the contrary. Although we obviously cannot offer direct evidence to this effect, our empirical results are consistent with the *possibility* that VCs in China encourage profit-seeking behavior even when

indicator variable that a company's profit data manipulation ratio is in the highest quartile of this distribution.

<sup>14</sup>This split of data is based on our interviews with the Innofund officials and external experts. These interviews suggest that they are well aware that applicant firms have incentives to inflate their financial results to increase their chance of receiving a grant. This is why the Innofund requires each application file to be graded by a financial expert, who has the power to reject any applicant suspected of fraud. Our interviewees also suggested that the financial experts pay particular attentions to firms whose financial statements appear to be "particularly out of line." We speculate that financial experts are more likely to deem fraudulent firms that significantly exaggerate their financial results.

it crosses the boundary of accounting laws. The caveat to this finding is that there are only 60 venture-backed companies in the dataset and the majority of the investors in these firms are local, Chinese VCs, not Western VCs with offices in China.

This project does have one particularly significant limitation, which we reiterate in conclusion: We have no information on firms' "true" financials, and therefore, we cannot know with complete certainty which companies are honest. When identical financial statements are filed with the MOST and SAIC, we have assumed this occurs because a firm reports accurate data to both agencies. However, it is possible that firms which report consistent data simply are submitting the identical set of fraudulent financials to both state agencies. If this is the case, it obviously (and distressingly) implies an even higher base rate of fraud than what we report, though it also would likely introduce some bias in the regressions. While we cannot definitively rule out this possibility, we do know that firms that do misreport almost always do so in a manner that is consistent with incentives: They either overreport to the MOST, underreport to the SAIC, or do both. Moreover, we know that if firms do take the risk of reporting fraudulent results, they have a strong incentive to produce discrepant results for the two agencies.

Though we wished for a different message, the findings of the article reveal one form of potential, firm-level performance difference in emerging markets: The set of firm-level characteristics that lead to heterogeneity in the propensity to perpetrate fraud. Though these dynamics regrettably evolve on an unlevel playing field, the financial benefits of garnering nondilutive investment capital and the halo of a prominent, government-granted award early in the lifetime of nascent enterprises may ultimately engender longer-term, positional advantages to companies that cook their books.

Finally, we consider a potential, broader implication of our findings. We believe that knowing the incidence of fraudulent behavior among small companies is a matter for public policy. Across the world, myriad policy initiatives aim to develop vibrant, local entrepreneurship sectors. Some studies suggest that these state-initiated efforts could be a major driver for growing the competitiveness of high-tech industries in the developing world (e.g., Hout and Ghemawat, 2010). While these policies are well-intended, their effects have been limited and there is evidence suggesting possibly

even deleterious impact (e.g., Gorg and Strobl, 2007; Lerner, 2009; Wallsten, 2000). While never before explored, one potential factor contributing to this policy failure may be that a nontrivial fraction of the private-sector beneficiaries of state aid receive resources under fraudulent representations of merit. If fraud is widespread among early-stage, innovation-focused companies, its ubiquity may distort the allocation of public-sector resources to the entrepreneurial sector (e.g., Wang and Li, 2014). This could be particularly true in the developing world where corruption is widespread and political insiders are positioned to capture state-dispersed resources for private gains (e.g., Hellman, Jones, and Kaufmann, 2003).

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