Insider privatization with a tail: the screening contract and performance of privatized firms in rural China

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Abstract

This paper studies insider privatization in rural China and provides an explanation of why some firms have performed well after privatization but others have not. We show theoretically that the underperformance of insider-privatized firms could be due to the manager-cum-owner’s lack of incentives after privatization. A screening theory predicts that the buyout price is correlated with the postprivatization incentives, and a firm’s postprivatization performance increases with both the buyout price and postprivatization incentives. Drawing on data we collected in China, we find evidence supporting the theory. We also find that the buyout price decreases with the degree of information asymmetry.

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1. Introduction

Insider privatization is widely observed in transition economies. In a typical insider privatization, the former manager purchases the firm from the government. The practice has been widely documented in Russia (Boycko et al., 1995; Blanchard and Aghion, 1996; Earle and Estrin, 1996), in many Eastern European countries (Carlin and Aghion, 1996;
Frydman et al., 1999) and in Asian countries such as Mongolia (Anderson et al., 1999) and China (Cao et al., 1999).\(^1\)

Despite its pervasiveness, the record of insider privatization on improving performance has not always been positive. Earle (1998) finds that the performance of insider-privatized firms does not improve in Russia. Using a sample of firms in the Czech Republic, Hungary and Poland, Frydman et al. (1999) find that privatization has a greater effect on performance when outsiders buy the firm. Barberis et al. (1996) show that privatization improves a firm’s postprivatization performance only when old managers are replaced by more capable ones during the privatization process. Lacking both the necessary financial and human capital for enhancing the performance of firms, insiders frequently fail to improve their firms after privatization (Frydman and Rapaczynski, 1994; Black et al., 2000).

In this paper, we provide a new explanation for why insider privatization in some cases may fail to improve performance and why it can succeed in others. We argue that in some cases new owners may suffer from poor incentives that are imbedded in the privatization contract. The design of the contract is created to address one of the main problems that plague insider privatization, the asymmetric information that characterizes the relationship between the original owner, the government, and the buyer, the former manager (Frydman and Rapaczynski, 1994; Putterman, 1997). The information problem is that the official in charge of privatization usually does not have a reliable way of assessing how valuable a firm will become after ownership is transferred to its manager. In contrast, the manager possesses insider information about the firm’s earnings potential. As a consequence, government officials cannot rely totally on the manager’s valuation of the firm since there are substantial rewards to the manager for understating the firm’s value. It also is difficult to elicit authoritative assessments from objective third parties, such as Certified Public Accountants (CPAs), since such services are underdeveloped in transition economies (Black et al., 2000). Moreover, even if eliciting a CPA’s assessment were possible, it would be based on imperfect information itself and at most would only be effective at placing a book value on the firm’s physical assets. Without a mechanism to reveal additional information about the firm’s true value, an official might have no alternative but to accept the price offered by the manager and leave the buyer with large rents. Alternatively, the official could abandon plans to privatize government-owned firms and forego the potential gains.

One way to avoid having asymmetric information interfere with the move to privatize firms in a transition economy would be to encourage officials to develop a screening mechanism to elicit private information from the manager about the firm’s future profitability. A contract with such a mechanism could have two parts: a buyout price and a contingent payment in the form of a claim on future firm profits by the official. A screening contract of this type is similar to the one described by Laffont and Tirole (1986); the contracting parties trade ex post incentives for ex ante information revelation. At one extreme, the final contract is one in which the manager pays a high price for the firm and keeps all of the firm’s future profits. Contracts at the other end of the spectrum allow the

\(^1\) See also Djankov and Murrell (2002) and Megginson and Netter (2001) for two recent surveys of empirical studies on privatization.
manager to pay a low price in exchange for sharing future profits with the government. When an official shares the privatized firm’s future profits, following a Chinese proverb, we call it “privatization with a tail.” In coming to a final agreement, the seller offers a menu of contracts to the buyer. The buyer then chooses the terms of privatization and manages the firm under the agreed upon sharing rules after paying the buyout price. Although such a contract maximizes the revenue of the seller when information is asymmetric, it reduces the efficiency of firms that continue to share profits after privatization. If such contracts are used in transition economies, they may account for both how officials deal with insiders during the buyout negotiations and why the performance of some firms does not improve after privatization.

Our paper investigates one of the largest privatization movements in the world: the privatization of China’s rural industrial sector. As an important part of China’s economic revival, rural industrial enterprises, which began as locally government-owned units, still were producing nearly half of China’s industrial output in the mid-1990s (Walder, 1995). In the late 1990s, however, local governments privatized more than half of their firms, up to two million of them (Nyberg and Rozelle, 1999). During the wave of privatization, officials sold almost all firms to insiders.

Although we have data on firms in only two coastal provinces, Jiangsu and Zhejiang, the study sites are good laboratories for studying insider privatization. According to our 600-enterprise survey, local officials privatized 65% of their firms between 1993 and 2000. They sold more than 90% of the firms to the managers. During our fieldwork, some officials told us that they sold their firms for a lump-sum amount and forfeited all rights to the future earnings of the firms. Others told us that, although they sold their firms to the former managers for relatively low buyout prices, they expected to share in the future earnings of the firms. These anecdotes suggest that officials indeed may be trying to use screening contracts to overcome the information problems that they face during privatization negotiations. Such a conclusion also may be bolstered by the observation that although the performance of some firms has improved after privatization, that of others has not. In fact, scholars and policymakers in China still debate the record of rural China’s privatization movement (Du and Yuan, 2000).

In this paper, we systematically examine the nature of the buyout agreements that local officials have used to overcome information asymmetries during the late 1990s to transfer ownership rights of government firms to private individuals and seek to improve the performance of the rural firms (henceforth the screening hypothesis). Using our data, the empirical exercises robustly support the theoretical predictions of the screening hypothesis. Descriptive data and regressions find that the buyout price and the size of the tail are negatively correlated (which means that the buyout price and the new owner’s incentives are positively correlated). The econometric results

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2 In Chinese, “with a tail” or “leaving a tail” means that things are not completely finished. Specifically, in this paper, it means that privatization does not give the new owner full incentives, since the original owner, the government, retains rights to part of the future profits.

3 Another survey of 16 villages in Wuxi County also shows that village-owned firms were almost exclusively sold to the original managers (Kung, 1999).
show that a firm’s postprivatization performance increases with the buyout price. The results hold up when holding constant the inherent quality of the firm by a firm fixed-effect model. The results of our empirical models that directly use a variable that measures the size of the tail demonstrate the independent explanatory power of the screening hypothesis. In our multivariate analysis of the buyout price, we also find support for the screening hypothesis. While we cannot rule out the quality and induced earnings potential also play a role in explaining the correlation between the buyout price and postprivatization performance, we have evidence from several sources that show screening is important.

The structure of the rest of the paper is as follows. Section 2 describes the screening theory and generates testable hypotheses. Section 3 introduces the data. Section 4 examines privatization trends in China and seeks to generally describe screening contracts, in particular, the relationship between the buyout price and the tail. Sections 5–7 provide econometric tests of the theoretical predictions. Section 8 concludes.

2. Screening theory and hypotheses

In this section, we explain how officials can use a Laffont and Tirole screening mechanism to elicit information from managers, to execute successful insider privatization and to maximize the government’s revenues from privatization. To do so, we first describe the theory and generate testable predictions.4 We then extend the theory and show how the degree of information asymmetry affects the size of buyout price. In this section, we seek to explicitly generate testable hypotheses that are consistent with the screening theory, as well as discuss the implications of two competing hypotheses.

2.1. The basic theory

The model contains two risk neutral players: an official that represents the government, the seller of the firm, and a manager, the buyer.5 Both the official and the manager care only about their own benefits.6 The official has a firm to sell and the only buyer is the firm’s manager.

After taking possession of the firm, the manager will run a “one-shot” project and then shut down the firm. The profit of this project is \( \pi = e + \epsilon \), where \( e \), the deterministic part, denotes the manager’s effort level and \( \epsilon \), the stochastic part with mean zero, is determined by some set of exogenous factors. Implicitly, the price of the manager’s effort is 1. There is a personal cost to the manager for his effort, \( C(e; \theta) \). The parameter \( \theta \) can either be the

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4 See Li (2001) for the formal model and its proofs and Li (2003a) for a similar model.
5 Risk neutrality is not crucial in this paper. We could have a risk averse manager or even a risk adverse official. But since the focus of the paper is not risk sharing, risk neutrality can simplify the analysis.
6 Township officials have strong personal incentives to maximize revenues, because they need to use these revenues to pay their own wages and increase expenditures of the local government, which if done successfully could lead to promotion. See Qian and Weingast (1997).
manager’s ability to manage a firm or the quality of the firm that is only known by the manager.\(^7\)

Both the manager’s type ($\theta$) and effort ($e$) are the manager’s private information. Thus, the official does not know ex ante the expected profits of the firm under the manager’s ownership. The official only knows the distribution of $\theta$ and observes the firm’s profits when the production process has finished. The manager’s type $\theta$ has a p.d.f. $f$ and a c.d.f. $F$ on $(\underline{\theta}, \bar{\theta})$.\(^8\)

The screening contract has two parts: a buyout price for the firm, $V$, and a future payment contingent on the privatized firm’s profitability, $\alpha$, which specifies that $\alpha$ share of the profits are kept by the manager and $1 - \alpha$ share goes to the official. The official offers the manager a menu of contracts, each one consisting of some combination of the two key terms. For managers that pay a lower buyout price, the government will have the right to take a share of the firm’s postprivatization profits. Such a contract is said to “leave a tail” in the hands of government officials. For managers that are willing to pay more for the firm ex ante, the government will take a smaller (or no) part of the firm’s postprivatization profits. In equilibrium, good managers will be separated from bad managers.\(^9\) Good managers that believe they can make substantial profits if they put all of their effort into the firm, would prefer to pay a higher buyout price ex ante and keep most or all the profits in the future. Bad managers, in contrast, knowing that they are not likely to achieve much postprivatization, will pay only a small amount up front and share earnings with the government if they make a profit in the future.

As discussed in Laffont and Tirole (1986), however, there is a tradeoff between inducing revelation ex ante and inducing effort ex post from this kind of contractual mechanism. Specifically, although the contract makes it possible for the government to elicit important information ex ante, and to maximize revenues from privatization, there is a cost. The contract terms accepted by some managers will not provide strong ex post incentives. In a subset of cases, the manager’s ownership rights are incomplete and their postprivatization performance will be lower. The postprivatization effort of managers also cannot be negotiated because there is a moral hazard problem; the manager’s effort at improving the firm efficiency is not completely observable or contractible. Under some circumstances, however, the cost is worth it as long as the benefits of the better screening mechanism allow local officials to execute privatization successfully and to maximize their revenues from privatization. As is common in this setup, in equilibrium the official gives full incentives to the best managers but not to the others.

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\(^7\) We implicitly assume that privatization is beneficial for the local governments. This could be true if managers exert lower effort under government ownership than under private ownership, and privatization is efficiency enhancing. Government-owned firms may have used incentive contracts before privatization, but privatization will most likely strengthen incentives of the managers and increase a firm’s efficiency (McMillan, 1997; Chen and Rozelle, 1999). Also see Li (2003b) on the determinants of privatization.

\(^8\) $F$ is such that the hazard rate $h(\theta) = f(\theta)/(1 - F(\theta))$ is weakly increasing. This assumption is needed to show that there exists a unique equilibrium.

\(^9\) In our paper, managers are good if they either have an inherent ability to manage firms and make them perform better or if they are the managers of firms that ex ante have a high potential to earn future profits (but this potential is unobserved by outsiders).
The screening theory generates several testable hypotheses. First, the two components in the screening contract, the buyout price and the tail should have a negative correlation. In other words, when the manager pays more up front, he will have to make lower payments to the government in the future. We examine the relationship between the buyout price and the tail in Section 4. Second, a firm’s postprivatization performance decreases with the size of the tail, because larger tails mean lower postprivatization incentives of the manager. Finally, following from the first two hypotheses, a firm’s postprivatization performance increases with the buyout price. The relationship between the contractual terms—the buyout price and the size of the tail—and the firm’s performance are empirically tested in Sections 5 and 6.

2.2. Extensions of the basic theory

In the basic version of our model, our screening theory has several simplifying assumptions. First, all officials face the same degree of information asymmetries. Second, managers are risk neutral. And, third, managers do not face wealth constraints when they buy a firm. Although there are reasons to believe these assumptions do not always hold in reality, relaxing them does not change our basic theoretical findings. In fact, showing that variations in the degree of information asymmetries affect the buyout prices provides another way to test the screening hypothesis.

Empirically, one of the most important determinants of the buyout price may be information. If the equilibrium buyout price and the profit sharing rule depend on the degree of information asymmetry, officials with better information should be able to refine contracts to better fit the manager’s type. If this is the case, then the official with better information before privatization can request the manager pay more up front and provide him with better rights postprivatization (that is a higher $a$). In such a case, the government would earn more from privatization and (or) the firm would perform better postprivatization.

One easy way to demonstrate this is as follows.\textsuperscript{10} Suppose that the official’s information about the manager’s type becomes more precise in such a way that she knows that $\theta$ is no worse than $\theta_0$, or $\theta$ is distributed between $(\theta_0, \tilde{\theta})$, where $\theta \leq \theta_0 \leq \tilde{\theta}$. In this case, the more precise information structure will not change the sharing rule $a$ but will increase the buyout price $V$. The better-informed official (who knows the manager is not lower than a certain quality $\theta_0$) can raise the buyout price since she can eliminate certain sets of contracts, the ones with low buyout prices ($V$) and low sharing rules ($a$) for types lower than $\theta_0$. When these contracts are not available, the official does not need to worry that the remaining managers will pretend to be poor managers (there are none) and select to choose a contract that allows them to pay a low buyout price. The official can then raise the buyout prices for all of the remaining contract choices, while leaving the sharing rule unchanged. When the upper bound of the distribution is reduced and the lower bound raised, both $a(\theta)$ and the $V(\theta)$ could increase. At the extreme, when the upper bound fades enough and the lower bound rises enough so that $\theta = \theta_0 = \tilde{\theta}$, then information becomes symmetric. In this case, the first best outcome, $a = 1$ and $V=$ the firm’s true value, can be achieved.

\textsuperscript{10} See Laffont and Tirole (1993) for a more detailed argument.
When explaining the buyout price, we also have to consider the role of wealth constraint and the level of risk faced by the new owner. Clearly, both wealth constraints and risk may have a role in justifying a smaller share of future profits and a smaller buyout price. When a high quality manager is credit constrained, the problem is that although his optimal contract is one with a large buyout price and a sharing rule near one, he is unable to produce enough cash to pay the buyout price. In this case, the official needs to redesign the contract, dropping both the buyout price and the sharing rule, which means that the official will be worse off than if there was not a wealth constraint. The lower welfare position of the official is not surprising since the new problem that she is solving is one with an additional constraint. Making the manager risk averse will affect the outcome of the problem similarly. Although variables measuring the wealth constraint and risk do not directly help test the screening hypothesis, we attempt to hold them constant when we try to measure the effect of asymmetric information on the buyout price.

Following Laffont and Matoussi (1995), in our empirical analysis in Section 7, we attempt to test several hypotheses about the factors that affect contract design. The buyout price should fall as the severity of information asymmetries rise. Additionally, we will examine if the buyout price falls as wealth and risk constraints grow in importance.

2.3. Competing hypotheses

Before proceeding with the empirical tests, we also need to describe two competing hypotheses on the relationship between the buyout price and performance. The first one is the induced earnings potential hypothesis, which asserts that the buyout price reflects nothing but the future earnings potential of the privatized firm. According to this hypothesis, firms with a larger buyout price perform better because the privatization process has increased the firm’s future earnings potential. Since the screening theory also predicts that the earnings potential determines a firm’s buyout price, the two hypotheses are consistent in this dimension. In fact, the only prediction of the induced earning potential hypothesis is that the performance of firms that had a higher buyout price exceeds that of firms with lower buyout prices. In contrast, the induced earnings potential hypothesis differs from the screening hypothesis in two ways. First, the government does not share in the profits of the privatized firm on a contingent basis. Second, the induced earnings potential hypothesis does not predict that the buyout price varies with information asymmetries. Therefore, it has no predictions on the correlation between the buyout price and the tail, between information asymmetries and the buyout price, or between the tail and the postprivatization performance.

The third hypothesis, the quality hypothesis, states that the buyout price does not reflect either the firm’s induced earnings potential or the government’s use of a screening contract; rather, the higher buyout price is merely a reflection of the firm’s inherent quality. The main difference between the quality hypothesis and the induced earnings potential hypothesis is that the quality hypothesis suggests that the pre- and postperformance of the privatized firm should both be correlated with the buyout price (a quality firm demands a

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11 See Laffont and Matoussi (1995) for a more detailed argument.
higher price) and the induced earnings potential hypothesis predicts a positive correlation between the buyout price and the increase of firm performance after privatization.

In the rest of the paper, we will empirically test these hypotheses as well as the screening hypothesis. It should be kept in mind that the purpose of the tests is not to disprove the quality or induced earnings potential hypotheses. Indeed, it is likely that they are true. Rather in searching for evidence for the screening hypothesis, we often have to construct our analyses to isolate findings that are consistent with more than one of the hypotheses from those that are unique to the screening hypothesis. In other words, although some of the test results are consistent with the quality and induced earnings potential (as well as the screening hypothesis), others confirm the unique predictions of the screening hypothesis.

3. Data

The data set used in this paper is from a survey we conducted with colleagues in 1998. The survey concentrated on township enterprises (TEs) and private firms and focused on the period from 1994 to 1997. We randomly sampled 168 enterprises in Jiangsu and Zhejiang Provinces, 2 of China’s most developed coastal provinces, 1 north of Shanghai and the other south. Enumerators visited firms in 59 randomly selected townships in the 15 randomly selected counties. Thirty-three out of the 168 firms were originally established as private firms (henceforth private firms), and 135 were owned by the government (henceforth government-owned firms) in 1993. During the study period, only part of the government-owned firms (88 out of 135) were sold off to private owners, or in our terminology became privatized firms. We chose 1994 as the starting time because most privatization has occurred since the mid-1990s. Although we tried during the pretest period to elicit information as far back as 1990, we found that the recall of officials and managers, and secondary accounting and financial data, deteriorated when trying to answer questions on activities that had occurred more than 5 years before. A detailed description of the sample design is included in Li and Rozelle (2003).

The firm-level survey form included two main parts. Enumerators conducted a sit-down survey with the firm manager. The manager survey elicited detailed information on firm ownership during the survey period, the privatization process (including how firms were evaluated), and on the buyout negotiation during which the buyout price was established (including the size of the buyout price). We also asked the manager about other property

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12 The township (town) is the lowest level of government in China’s administrative hierarchy. Township governments established many enterprises in the 1980s, which are called township enterprises. This paper will use TEs and (locally) government-owned enterprises interchangeably. Most of the literature puts township and village enterprises together and call them TVEs, although TEs and VEs have some fundamental differences. For more information on China’s TVEs, see Che and Qian (1998), Chen and Rozelle (1999), Putterman (1997) and Walder (1995).

13 Private firms in the sample are those firms that had never been government-owned. In other words, they were originally established as private firms. To put it in perspective, the firms are from nine industries and the average privatized firm has 14 million yuan in asset and 172 employees in 1997.
rights, corporate governance, the firm’s production and marketing activities, and his or her human capital attributes. The survey also includes questions on the nature of the profit sharing rules after privatization and we have information on how profits were distributed between managers and the government for those firms that were required by contract to share profits. Unfortunately, after coding the data, we have been unable to distinguish between those firms that had no obligation to share profits after privatization and those firms that were but had not earned a profit (both these types of firms left the cell blank). Consequently, we have information on postprivatization profit sharing rule on only 25 firms. The accountants of all firms completed the other part of the survey, a set of tables from the firm’s financial and cost accounting records.

One of the most important goals of the survey was to collect good measures of the manager’s effort level and the firm’s performance. In order to do this, we took great effort to record detailed information on performance from the interviews and the firm’s income statements and balance sheets. In this paper, we focus on three effort and performance measures: the manager’s weekly work time, accumulated inter-firm arrears to asset ratio and value added per worker. The manager’s weekly work time is a straightforward measure of effort and is defined in Table A1 in Appendix A.

To create a good measure of accounts receivable management, we start with the inter-firm arrears rate, which is defined as a ratio of accumulated accounts receivable to total assets. We then turn this variable into a “positive” measure of performance, called accounts receivable management, a new variable that is defined as \((1 - \text{inter-firm arrears rate})\). We argue that the way a firm manages its accounts receivable provides a measure of managerial behavior since unpaid accounts or arrears tend to accumulate in firms in which managers have poor incentives to collect overdue accounts.\(^{15}\) For example, in firms in which managers or salespeople sell products for a personal rebate (or kickback) instead of increasing the firm’s income, firm arrears could easily accumulate. Even worse, managers sometimes divert cash by providing trade credit to other firms that are owned by their relatives or friends. At the very least, managers with poor incentives are not willing to put in the effort to collect firm arrears.

We also use the firm’s labor productivity to directly measure the firm’s performance. Specifically, we use value added per worker as a proxy of the firm’s labor productivity, where value added is defined as the difference between output value and materials costs. We then define value added per worker as the value added to worker ratio, and deflate all years to the 1994 price level. In estimating the study’s production functions, we use the log of value added per worker as the dependent variable.

In 2000, we revisited a subset of the townships in sample to conduct a supplemental township survey. During this fieldwork, our enumerators collected additional information in the sampled townships. In particular, we asked township officials about the nature of their ongoing relationship with firms after privatization. Township officials told us whether some firms in their township were required to share profits with the government if they made a profit.

\(^{14}\) Some could be missing values as well.

\(^{15}\) Inter-firm arrears are used in Frydman and Rapaczynski (1994), World Bank (1996) and Havrylyshyn and McGettigan (1999) in studying privatization.
4. Privatization and the screening contract

According to the data, township enterprises have experienced a dramatic shift in ownership from government to private. We define privatization as shifting all or part of a firm’s share from the government to the manager or employees. According to this definition, of the 135 firms that were owned by local governments at the end of 1993, 88 had been privatized by the time of the survey in the summer of 1998. The ownership share of private individuals increased sharply during the privatization movement. The government’s share of the 88 firms that privatized between 1994 and 1997 fell from 96% to only 12%.

Most firms (92%) also exercised insider privatization. In a typical case, the original manager (or the manager that ran the firm preprivatization) bought out the firm completely or partially. In only seven cases did outsiders buy the firm. Even in these cases, however, the outsiders were local businesspersons who knew the firms well, and in all cases these “local outsiders” were the only bidders for the firms they bought. During the privatization process in our sample sites, managers increased their share of the firms dramatically. By 1997, the fraction of the privately owned shares owned by former managers rose to nearly 70%.

Our data also suggest that during the buyout process officials may be disadvantaged in accessing information. Typically, officials did not know how efficient a firm could become after ownership was transferred to its manager. Since township governments usually owned multiple firms (the sample median was 12 firms per township), it was not possible for officials to know each one well. Furthermore, each firm may sell its products to markets in many localities (the sample median was four county market destinations per firm). Officials had little idea where these markets were located and who the firm’s customers were. Officials also did not have enough time to become familiar with other information about the general business practice of firms because they were charged with many administrative duties. In contrast, managers almost certainly better understood the firm’s future profit-earning potential and had a more informed basis for knowing how much effort would be needed to overcome any serious inefficiencies in the preprivatized firms. In most cases managers had been running the firms for many years (the sample median was 5 years as the manager and additional 7 years as a firm’s employee before becoming the manager). The main point here is that managers had a more accurate basis for assessing the true value of firms than officials when the privatization deals were negotiated.

Although preprivatization evaluations were developed to overcome some of these information asymmetries, evaluations do not always completely overcome the information

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16 Although there were different degrees of shifts in shares among the sample firms as they privatized, most became fully or almost fully owned and controlled by the new owner. More specifically, the smallest private share after privatization was 14%. In the case of 85% of privatized firms, more than 50% of the shares moved into the possession of private individuals. Alternatively, we could have used stricter definitions for privatization. For example, we could have defined privatization as any firm in which the majority of shares shifted from government to private. Or, we could have defined it as the firms in which became fully owned by individuals. Since the main results of our empirical analysis are not sensitive to the choice of the definition of privatization, we use the least strict definition. Among other reasons, in a number of our empirical exercises, we control for the government’s paper share to control for any possible effects caused by using our broader definition.
problem. Most evaluations (67%) were carried out by the local governments without an independent CPA. Even if there were CPAs, their ability may have been questionable. In the end, the evaluation team usually ends up assessing the value of the firm’s assets and debts. In doing so, their most important job is to establish the book value of the firm’s assets. After enumerating the values of both the firm’s assets and debts, the evaluation team then sets the firm’s equity value—the difference between the values of its asset and debts. We define this as the firm’s base value.

The buyout prices that managers pay for firms vary sharply across the sample. In Table 1, we divide the privatized firms into groups, ranking them by the ratio of the buyout price (BP) to the base value (BV), a normalized measure of the buyout price. We will call this ratio the BPBV ratio. On one hand, 21 firms (row 1) have a BPBV ratio close to 0 (9 of them are zero). Managers of these firms did not have to pay much, or in some cases did not have to pay anything, to buy the firm. On the other hand, there are 27 firms that were sold at a price higher than the firm’s base value. These 27 firms include 20 firms that have a BPBV ratio exceeding 1 (row 5) and 7 firms that have a negative BPBV ratio (row 6). A negative BPBV ratio occurs when a firm was sold for a non-negative price, even though CPAs determined that the firm had a negative base value (i.e., the firm’s debts exceeded its assets). The rest of the firms had a BPBV ratio between 0.2 and 1 (rows 2–4).

The last column of Table 1 shows the premium rate, another measure of normalized buyout price, associated with each BPBV category. We define *premium* and *premium rate* respectively by using the formula: premium = buyout price - base value and premium rate = premium / book value of asset. The premium rate is a better analytical measure than the BPBV ratio for a number of reasons. First, as discussed above, seven firms have a negative equity value and, as a result, a negative BPBV ratio. The negative ratios are

<table>
<thead>
<tr>
<th>Buyout price to base value ratioa (BPBV ratios)</th>
<th>Number of firms</th>
<th>Buyout priceb (million yuan)</th>
<th>Base valuec</th>
<th>Asset valued</th>
<th>The premiume</th>
<th>The premium ratef</th>
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<tr>
<td>(%)</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
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<tr>
<td>0–0.2</td>
<td>21</td>
<td>0.78</td>
<td>7.16</td>
<td>18.06</td>
<td>−6.39</td>
<td>−0.32</td>
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<td>14</td>
<td>1.48</td>
<td>4.65</td>
<td>11.67</td>
<td>−3.17</td>
<td>−0.29</td>
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<tr>
<td>0.51–0.75</td>
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<td>16.61</td>
<td>−0.70</td>
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<td>7</td>
<td>0.20</td>
<td>−0.69</td>
<td>6.22</td>
<td>0.89</td>
<td>0.18</td>
</tr>
</tbody>
</table>

a The ratio is calculated by dividing column 2 by column 3.
b The buyout price is the cash paid by the new owner to the government at the time of privatization.
c The base value is the book value of equity, which is the difference of the book value of assets and the book value of debt.
d The asset value is the book value of assets.
e The premium is the difference of the buyout price and the base value, or column (5) = column (2) – column (3).
f The premium rate is the ratio of premium to the asset value, or column (6) = column (5)/column (4). The premium rate is used as the normalized buyout price in the following tables.
g The BPBV ratio is negative because the book value of equity is negative.
difficult to compare to the positive ones, since, in fact, managers paid a positive premium for these firms. Second, there are also some firms with small equity positions, that have BPBV ratios that are very large. Hence, the BPBV ratio has a skewed distribution, with the 90th percentile almost 5000 times as large as the 10th percentile. The buyout price is not subject to this problem since its distribution is smoother. In the rest of the paper, we will call the premium rate the normalized buyout price or just buyout price.

4.1. The screening contract

Our interviews with both government officials and managers reveal that many of our sample townships used screening contracts in the privatization process. One piece of direct evidence comes from a set of supplemental surveys done of township officials in 2000. During the interviews, we asked the following question to government officials: Are there firms that you privatized for which you received only a small buyout price, but from which you expect to receive future payments? Officials in 15 out of 38 townships answered “yes” to this question. Unfortunately, some respondents did not answer (21 townships—the difference between our 59 townships in the initial survey and the 38 townships covered in the supplemental survey). One official said it did not matter since all of the firms in his township were losing money and had no profits to share. Another official told us that this question was fairly sensitive because the central government had been cracking down on illegal fee collecting activities by the local governments.\textsuperscript{17} Despite the lack of response from a subset of townships, 40% of those that did respond clearly stated that they did share profits with privatized firms according to the contractual arrangements made at the time of the buyout. We consider this to be prima facie evidence that such contractual forms do exist, and we believe that this information can help us to establish a lower bound for the number of firms that use screening contracts. To facilitate our analysis, we define a new variable, the screening contract indicator, which equals one if a township used a screening contract, and zero otherwise.

Our survey instrument also provides direct evidence about the existence of the tail. For each privatized firm, we asked the manager the amount of profit he turned in to the government after privatization.\textsuperscript{18} We then define a normalized measure, the government’s realized profit share. This variable was created by dividing the profit turned in to the government by firm’s total profit. Out of our sample’s 88 privatized firms, 24 reported that the government’s realized profit share after privatization was greater than 0. The typical privatized firm (both those that remitted profits and those that did not) remitted 17% of its profits to the local government. If we restrict our attention to those firms that reported remitting a positive profit, the mean was 55%.

Our data also illustrate that the agreements between buyers and sellers have characteristics that are mostly consistent with screening contracts (Table 2). For example, our data show that in the townships in which officials used screening contracts, i.e., the screening

\textsuperscript{17} Although the central government actions are mainly targeted at reducing the fees collected from farming households, we believe that in some cases the local officials were being careful when being interviewed by our enumerators.

\textsuperscript{18} The submitted profit differs from normal taxes, which firms of all ownership types are subject to.
contract indicator equals one, the buyout price (or premium rate) of privatized firms are 33% lower than those in townships in which officials did not use the screening contract (row 1). The government’s realized profit share also is larger in townships using screening contracts (0.658 vs. 0.511—row 2). We argue that the realized profit share is the best measure of the tail since it would be the revealed outcome of all implicit and explicit agreements on the split of profits after privatization. In contrast, the government’s fraction of paper shares that were explicitly written on the privatization contract during privatization is a less comprehensive measure of the tail. If so, then this explains why the government paper shares are actually lower in townships that have used screening contracts (0.159 vs. 0.187—row 3). Because the realized profit share is the best measure of the tail, we call it the tail in later analysis.

Examining the data further reveal that the buyout price is negatively correlated with both the government’s paper share and the realized profit share, although the association is stronger with the latter. The correlation between the government’s paper share and the buyout price is negative, albeit small (−0.04). The correlation between the buyout price and realized profit share is also negative, but in this case it is much larger in absolute value and significantly different from zero (−0.44). Although these are unconditional correlations, the negative correlations are consistent with the screening hypothesis.

One subtlety of the analysis of the raw correlations is that the correlation between the realized profit share and the buyout price could be partially caused by the correlation between the government’s paper share and the buyout price. The effect on the realized profit share may be expected because the realized share is theoretically determined by both the paper share (which may be an explicit contractual measure of the government’s interest in the firm) and the more implicit agreement about how contingent profits should be shared (the tail). Although it is doubtful that most of the correlation between the realized profit share and the buyout price rate is caused by the weaker association between the paper share and the buyout price, we still want to control for the association. To do this, we employ multiple regression analysis and explain the realized profit share as a function of government’s paper share, the buyout price, the size of the firm’s assets and the manager’s education and level of experience.

Table 2
The buyout price and government claim on profits after privatization in Jiangsu and Zhejiang provinces, 1999

<table>
<thead>
<tr>
<th></th>
<th>Townships in which officials report that they use screening contracts</th>
<th>Townships in which officials report that they do not use screening contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>The buyout price (premium rate)</td>
<td>−0.079 (0.211)</td>
<td>−0.059 (0.151)</td>
</tr>
<tr>
<td>The tail (the government’s realized profit share)</td>
<td>0.658 (0.328)</td>
<td>0.511 (0.309)</td>
</tr>
<tr>
<td>The government’s paper share</td>
<td>0.159 (0.275)</td>
<td>0.187 (0.300)</td>
</tr>
</tbody>
</table>

*Figures in column 1 are from the privatized firms in the 15 townships that report using screening contracts; figures in column 2 are from privatized firms in townships that did not admit to using screening contracts. Standard deviations are reported in parentheses.
The results of the regression analysis continue to show that the realized profit share is mostly the result of the implicit tail (Table 3). The realized profit share is still highly correlated with the buyout price, even after we control the government’s paper share and other variables. The coefficient of the variable the buyout price is negative and significant at the 5% level (row 1). The magnitude of the coefficient also is fairly large. An increase of the premium rate by 10 percentage points will reduce the realized profit share by 7 percentage points.

To summarize, the analysis in this section shows that privatization has in practice been incomplete in many cases. The local government in many rural communities continues to have a significant financial interest in many of the firms, even when it does not retain a large number of the paper shares. Our data also show that the realized profit share is highly correlated with the buyout price. These tests support the screening hypothesis, which predict such a negative correlation. These relationships form the empirical basis for the rest of inquiry into why some privatized firms succeed and others fail. In the rest of our analysis, we use the realized profit share as the proxy for the tail, or the share of the firm’s profits that do not accrue to the manager. We attempt to show that when the local government continues to have a claim on residual profits, performance suffers. Such a finding is consistent with the prediction of our screening theory. The existence of such screening contracts are themselves consistent with the presence of information asymmetries.

5. Performance and the buyout price

To test the relationship between performance and the buyout price, we initially employ OLS and call the results from the OLS regressions our baseline findings. The baseline model is specified as

\[ \pi = \beta_0 + V \beta_1 + X \beta_2 + Z \beta_3 + \epsilon, \]  

(1)

where the \( \beta \)'s are a set of coefficients, \( \epsilon \) is the residual and the variables are defined as follows. In our baseline analysis, we use two alternative measures of the dependent
variable, \( p \): the manager’s working time and the variable that represents the firm’s accounts receivable management. The variable, \( V \), represents the buyout price and \( X \) includes a set of variables representing the firm’s size, the level of assets and two attributes of the manager, his education and managerial experience. We include \( X \) to control for factors that can be observed about the quality of the firm. Following Groves et al. (1994) and Frydman et al. (1999), we also include \( Z \), which represents a set of province*year and industry*year indicators to control for local policies and market conditions in each year of the sample period. All variables and their definitions are listed in Table A1 in Appendix A.

Following Groves et al. (1995), we also estimate an “institutionalized” production function, using the log of the firm’s value added worker ratio as the dependent variable. The OLS model to be estimated is:

\[
\log y = \alpha_0 + V \alpha_1 + (\log L) \alpha_2 + (\log k) \alpha_3 + Z \alpha_4 + \epsilon_2, \tag{2}
\]

where \( \log y \) is the log of the value added per capita, \( \log L \) is the log of the employment and \( \log k \) is the log of the capital labor ratio.

To measure the impact of the buyout price on the performance of the privatized firm (postprivatization), we use a subsample to estimate Eqs. (1) and (2). In this subsample, we use all postprivatization years for the privatized firms. For each firm in this sample, we can have at most four observations (1994–1997), if the firm was privatized in 1994, and at least one observation, if the firm was privatized in 1997.19

The OLS estimates using both the partial and full specifications perform fairly well (Table 4, columns 1–3). The \( R^2 \) statistics range between 0.15 and 0.64, and the \( F \)-statistics are also significant, at least at the 10% level. Many coefficients on the variables representing firm size (assets and employment) and the manager’s human capital, however, are not significant.

The baseline specification lends support to the screening hypothesis that firm performance increases with the buyout price. The signs on the coefficients of the buyout price variable are all positive. When managers pay high premia for their firms, they appear to work more hours per week, reduce the proportion of the assets accounted for by accounts receivable, and increase labor productivity. The effect of the buyout price on performance is statistically significant for two of our effort measures: the manager’s work time and the accounts receivable management.

Although the positive association between the buyout price and performance is consistent with the existence of screening contracts, the baseline specification also supports the quality and induced earnings potential hypotheses. Despite the inability to disprove the other hypotheses, it is possible to interpret our findings (from the regressions using the two effort measures—the manager’s work time and accounts receivable management—as dependent variables) as being consistent with the screening hypothesis. This is because managers may not necessarily work longer hours in a quality firm; in fact, it is possible that they may even work shorter hours in a higher quality firm since the same

19 Unfortunately, we can only use this sampling strategy for two performance measures—accounts receivable management and value added per worker. We have to use a smaller sample for the manager’s work time since we only collected data on work time for 1997.
task may require less effort. The screening hypothesis, however, predicts that managers may work longer hours since they are provided with better incentives.20

Although the OLS results show that performance increases with the buyout price, this finding could be consistent with not only the screening hypothesis but also with the quality hypothesis. If a firm performed well in the past because it is an inherently good firm or because it had a good manager, it should have commanded a high buyout price. Moreover, a firm that performed well in the past should also be expected to perform well after privatization. Because we are interested in isolating the effect on performance of the

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20 Barberis et al. (1996) also find managers and workers with better incentives work longer hours after privatization.
buyout price that is being used for screening, from that which is connected with a firm’s past performance, we need to control for the inherent quality of the firm.

To control for the quality of a firm, we employ a firm fixed-effect model. The firm fixed-effect model requires that we use a panel data of the privatized firms from 1994 to 1997. To implement this estimation strategy, we include a firm-level indicator variable, which measures the firm’s unobserved quality (or the unobserved quality of the manager). The firm fixed-effect model will essentially estimate the effect of the buyout price on the improvement of firm performance after privatization, and eliminate the effect of the time-invariant quality of the firm on the estimated parameters.

The independent variables in the firm fixed-effect models, however, must be specified differently from those in previous models. Since we include all observations for each individual firm (that is observations from both before and after privatization), we need to include an additional indicator variable to capture the effect of privatization. The postprivatization indicator is needed since the privatization effect must first be removed in order to isolate the buyout price effect. Since the buyout price could only affect performance in the years after privatization, the postprivatization indicator is essentially a time-varying variable, which equals zero for preprivatization years and equals a non-zero value for postprivatization years. The fixed effects specification also requires us to drop all variables that do not vary across years. The findings of the fixed-effect model support the hypothesis that an increase in the buyout price leads to improved firm performance even when controlling for the firm’s quality (Table 4, columns 4 and 5). The signs on the coefficients of the buyout price variables are positive and significant in both equations (row 2). The magnitude of the effect is also larger. An increase in the buyout price by one standard deviation (0.21) decreases the firm arrears rate by 20% and increases the value added per worker by 17%.21

In summary, the fixed-effect regression results provide evidence in favor of the screening hypothesis. Our results show that postprivatization effort and performance increase with the buyout price even when holding the quality effects constant. Unfortunately, the results still do not definitively prove the screening hypothesis. The main reason is that the fixed effect model does not distinguish whether the coefficient on the buyout price variable is due to screening or if it is an effect of the increase in quality that is created by privatization that both the government and manager can anticipate (as predicted by the induced earnings hypothesis). If both the government and manager know such an effect exists then such a rise in earnings potential could plausibly be captured in the buyout price. Because of our inability to distinguish among the screening and induced earnings potential hypotheses, additional analysis is needed.

6. Performance and the tail

In this section, we use two methods to directly measure the correlation between the tail and the firm’s postprivatization effort and performance. In the first part of the section, we

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21 The effect on firm arrears rate is $0.188 \times 0.21 = 0.04$ and the effect on value added per worker is $\exp(0.75 \times 0.21) = 0.17$. 
use only firms on which we have information on the postprivatization profits that were
shared with township officials. In the second part of the section, we use data from the
supplemental township survey on a subset of the townships.

To directly test the relationship between performance and the tail, we employ OLS to
estimate:

\[ \pi = \beta_0 + T\beta_1 + X\beta_2 + Z\beta_3 + \epsilon_1, \] (3)

where \( T \) is the postprivatization sharing rule, or the tail \((1 - \alpha)\) in the theory). Other
variables and parameters are defined as before. Following the discussion in Section 4.1
and the data presented in Table 3, we assume that the government’s realized profit share is
the best measure of the tail. In some models, however, we also include a measure of the
government’s paper share as a control variable.

To measure the impact of the tail on the performance of the privatized firm
(postprivatization) with Eq. (3), we use the subsample of all postprivatization years
for the privatized firms that reported information on the contingent payments to the
township. We have 24 observations when using the manager’s work time as a dependent
variable and 39 observations when using accounts receivable management and the value
added per worker as dependent variables. For each of the dependent variables, we also
have two models, one that controls the paper share of the township and the other that
does not.

Even using such small samples, the OLS estimates still perform fairly well (Table
5). The \( R^2 \) statistics range between 0.45 and 0.79. The \( F \)-statistics are significant, at
least at the 5% level. Not surprisingly given the descriptive findings, the govern-
ment’s paper share does not have a significantly positive effect on performance in any
of the six models. This finding may mean that a shareholder’s paper shares may not
matter. If so, in the context of our problem, this may mean the incentives of the new
owners of privatized firms may not be affected by the paper shares held by the
government.

If the government’s realized profit share is a better measure of the tail, the OLS
estimates in Table 5 provide direct evidence that supports the screening hypothesis. The
signs on the coefficients of the tail variable are all negative. Five out of six are statistically
significant. When there is a larger tail, managers appear to work fewer hours per week,
have more accounts receivables, and have lower labor productivity. According to this
analysis, we have direct evidence to support the claim that screening contracts have played
an important role in rural China’s privatization movement and the impact that it has had on
performance.

We also use the information from the supplemental township survey to conduct
additional tests on the effect of the tail on performance. Specifically, we test if firms in
townships in which officials used the screening contract, on average, perform better after
privatization than firms in townships in which officials did not use the screening contract.
Since officials that do not use screening contracts do not keep hold of tails after
privatization, the owners of the newly privatized firms should face better incentives and
their firms should perform better.
The model used to make this additional test is specified as:

\[ \pi = \beta_0 + S\beta_1 + X\beta_2 + Z\beta_3 + \epsilon_1, \]  

(4)

where \( S \) is the screening contract indicator variable as defined in Section 4.1. Other control variables are as defined as before. Since only 39 out of 59 township officials answered this question, we conduct the analysis with fewer observations than those in Table 4. We use both OLS and firm fixed-effect models to estimate Eq. (4).

The OLS and firm fixed-effect estimates both support the screening hypothesis (Table 6). The signs on the coefficients of the screening contract indicator are all negative and significant. When officials use screening contracts, managers of their privatized firms work fewer hours per week, have more assets accounted for by accounts receivable and have lower labor productivity. The firm fixed-effect results also indicate that the improvement in firm performance after privatization is systematically correlated with the use of a screening contract. Given our experimental design, this improvement should be due to the screening contract and not from the induced earnings potential effect.

The regression analyses in this and the previous sections demonstrate that leaders do apparently use the screening contracts. We also find that their use has an important effect on the firm’s postprivatization performance. Firms perform better when governments do not play a role in the firm after privatization. When the government keeps a relatively large
tail, privatized firms perform relatively worse. In the next section, we show that governments use screening contracts and continue to hold a residual claim on firms because of information asymmetries.

7. Determinants of the screening contract

In this section, we examine the determinants of the buyout price. The screening theory in Section 2 predicts that the buyout price decreases with the degree of information asymmetry. If we find a systematic relationship between the buyout price and variables that measure the severity of information asymmetries that exist between the buyer and seller, we will add to the evidence that supports the screening hypothesis.

To investigate the determinants of the buyout price, we employ an OLS estimator to estimate the buyout price equation. The dependent variable is our normalized measure of

<table>
<thead>
<tr>
<th>Dependent variables</th>
<th>OLS</th>
<th>Firm fixed-effect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Manager’s work time</td>
<td>Accounts receivable management</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Postprivatization indicator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The screening contract indicator</td>
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<td>−0.053**</td>
</tr>
<tr>
<td>(−2.39)</td>
<td>(−2.10)</td>
<td>(−2.59)</td>
</tr>
<tr>
<td>The government’s paper share</td>
<td>−0.006</td>
<td>−0.001**</td>
</tr>
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<td>(−0.08)</td>
<td>(−2.26)</td>
<td>(−0.12)</td>
</tr>
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<td>Asset</td>
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<tr>
<td>(−0.31)</td>
<td>(0.82)</td>
<td>(2.57)</td>
</tr>
<tr>
<td>Employment (log)</td>
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<td>0.075</td>
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<tr>
<td>(0.02)</td>
<td>(1.08)</td>
<td></td>
</tr>
<tr>
<td>Capital-labor ratio (log)</td>
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<td>−0.035</td>
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<tr>
<td>(12.40)</td>
<td>(−0.35)</td>
<td></td>
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<td>Manager’s education</td>
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</tr>
<tr>
<td>(0.84)</td>
<td>(−0.23)</td>
<td>(−3.15)</td>
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<tr>
<td>Manager’s experience</td>
<td>0.559</td>
<td>0.004</td>
</tr>
<tr>
<td>(1.52)</td>
<td>(1.43)</td>
<td>(−0.76)</td>
</tr>
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<td>Industry*year indicators</td>
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<td>Yes</td>
</tr>
<tr>
<td>Province*year indicators</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
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<td>107</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.31</td>
<td>0.33</td>
</tr>
<tr>
<td>F-statistic</td>
<td>1.58</td>
<td>1.06</td>
</tr>
</tbody>
</table>

a $t$-statistics are reported in parentheses; significance levels of 10%, 5% and 1% are represented by *, ** and ***.
the buyout price, the premium rate. Following the theory in Section 2, in addition to the measures of information asymmetry, the independent variables include variables that control for wealth constraints and risk levels. Our wealth constraints variable is created from information derived directly from managers during our survey. If the manager said he was wealth-constrained, the wealth constraints variable is set equal to 1; if the manager did not believe he was wealth constrained, the variable is set equal to 0. Twenty-four percent of the managers reported facing wealth constraints. The variable risk level is measured as the standard deviation of a firm’s sales growth. We expect that both variables have a negative sign in the regressions. Wealth-constrained managers will not be able to afford to pay the “optimal” buyout price; risk-averse managers facing higher risk levels will only purchase the firm for a lower price.

The two variables we use to measure information asymmetry in the analysis are the number of government-owned firms in the township in 1993 and the number of markets in which each firm sells its products. We use the number of firms and the number of markets as measures of information asymmetries because in townships where there are a large number of firms or where firms, preprivatization, operate in a large number of markets, township officials have relatively less information about any given firm. Ceteris paribus, officials that have less information about the firm will receive a relatively lower buyout price for that firm (and vice versa), since the manager can more effectively use his inside knowledge of the firm to bargain for a good price. The buyout price should decrease with both the number of government-owned firms and the number of market destinations.

The regression results show that our model performs well and support our theory that information asymmetries play an important role in establishing the size of the buyout price. The coefficients on both wealth constraint and risk consideration variables are negative as expected (Table 7). Managers facing wealth constraints have a normalized buyout price more than half a standard deviation lower (columns 2, 3 and 5). The risk level also has a negative but more modest effect. An increase of the risk level of one standard deviation (3.4) reduces the normalized buyout price by about one-sixth of one standard deviation. Most importantly, in regressions that control and do not control for the effects of wealth constraints and risk level, a manager pays a relatively larger buyout price when the official knows relatively more about his firm. Our measures of information asymmetries, both the number of firms and the number of market destinations, have significant effects on the buyout price (columns 1, 3, 4 and 5). The coefficients on both variables are robust to different specifications.

Although the findings of the regressions are consistent with the screening hypothesis, they also may be consistent with the quality hypothesis. Even without information asymmetries or screening, wealth-constrained managers would pay a lower price. More risky firms should also be worth less if managers are risk-averse. More importantly, our measures of information asymmetries could also be interpreted as measures of firm quality. For example, more firms and more markets could mean that a firm’s performance is being affected by some diseconomy of scale, which in turn may mean that the buyout price of the firm is lower. More markets could also mean that the firm’s market power was weaker.

To test whether our measures of information asymmetries actually are picking up the quality effect directly, we take advantage of the fact that our data cover both pre- and postprivatization periods. If the variables, the number of markets and the number of firms,
are picking up firm quality rather than the degree of information asymmetries, then these variables should affect a firm’s quality both before and after privatization. This is because if the variables were actually measuring quality effects, such characteristics of the firm (such as the severity of diseconomies of scale that it faces and the extent of its market power) would have been present both before and after privatization. To distinguish between these two explanations, we regress our performance indicators on the two measures of information asymmetries and other control variables for the preprivatization subsample. The OLS regression results suggest that the two variables, the number of firms and the number of markets in which they operate, are measures of information asymmetries and not of firm quality. Neither variable is significant in either of the two regressions using the preprivatization subsample. This indicates that the two variables are mainly affecting performance after the privatization process.

8. Conclusion

In our efforts to explain the heterogeneous performance of insider privatized firms across China’s townships during the late 1990s, we have provided a theoretical explanation. Our screening theory suggests that in the face of information asymmetries

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Table 7

<table>
<thead>
<tr>
<th>Information asymmetries variables</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of firms</td>
<td>−0.009*</td>
<td>−0.010**</td>
<td>−0.009*</td>
<td>−0.009***</td>
<td>(−1.86)</td>
</tr>
<tr>
<td>Number of market destinations</td>
<td>−0.006***</td>
<td>−0.005**</td>
<td>−0.007***</td>
<td>−0.006**</td>
<td>(−2.74)</td>
</tr>
<tr>
<td>Wealth constraints</td>
<td>−0.139***</td>
<td>−0.106**</td>
<td>−0.121***</td>
<td>(−2.67)</td>
<td>(−2.03)</td>
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<tr>
<td>Risk level</td>
<td>−0.011**</td>
<td>−0.010**</td>
<td>−0.011**</td>
<td>(−2.29)</td>
<td>(−2.04)</td>
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<tr>
<td>Asset (lagged)</td>
<td>−0.001</td>
<td>−0.001</td>
<td>−0.001</td>
<td>−0.001</td>
<td>(−0.54)</td>
</tr>
<tr>
<td>Observations</td>
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<td>86</td>
<td>86</td>
<td>86</td>
<td>86</td>
</tr>
<tr>
<td>R²</td>
<td>0.11</td>
<td>0.13</td>
<td>0.15</td>
<td>0.16</td>
<td>0.21</td>
</tr>
<tr>
<td>F-statistic</td>
<td>3.44**</td>
<td>4.32***</td>
<td>3.64***</td>
<td>3.76***</td>
<td>4.25***</td>
</tr>
</tbody>
</table>

*a t-statistics are reported in parentheses. Significance levels of 10%, 5% and 1% are represented by *, ** and ***.

*b Wealth constraints is an indicator variable, equal to 1 if the manager reported that he was wealth constrained when buying a firm.

*c Risk level is the standard deviation of the firm’s sales growth.
between the seller and buyer of a firm, the buyout price and a contractually contingent payment in the form of a claim on future firm profits by the government official—or a tail—can be used to elicit private information from the buyer about the firm’s future profitability. Using such a contract, officials can maximize their revenues and keep privatization from becoming stalled. Although some inefficiency arises due to the poorer incentives that some managers face, “privatization with a tail” allows officials to separate good managers from poor managers (or strong firms from weak firms) and attain a second-best solution.

In the empirical part of the paper, by drawing on a data set that we collected in 1998 (and supplemented with data collected in 2000), we provide a number of pieces of empirical evidence that support the hypothesis that China’s township leaders use screening contracts: in descriptive data and in multivariate analysis, the buyout price and the tail are correlated. We also show that the buyout price indeed has a negative correlation with the firm’s postprivatization performance. Even more convincingly (although on a smaller sample), we demonstrate that the size of the tail is negatively correlated with the performance of the privatized firm. Finally, we are also able to show that information asymmetries affect the buyout price. Although some of these results are also predicted by the quality and induced earnings potential hypotheses (which may suggest that other factors also affect the performance of privatized firms, a fact we do not dispute), some are unique to the screening hypothesis.

Although our study centers on the case of a subset of firms from Jiangsu and Zhejiang Provinces, it may help in explaining a number of empirical regularities both for China as a whole and for transition economies beyond China. For example, the study’s findings are consistent with the mixed results that frequently appear in studies of the effects of insider privatization (Earle, 1998; Havrylyshyn and McGettigan, 1999; Nellis, 1999). Although there are other explanations for why insider privatization may not succeed in all cases, the results of our empirical work suggest that perhaps if other studies grouped privatized firms that were sold to their managers on the basis of the size of the buyout price and/or tail, they might have found that some privatized firms consistently outperform those of others. Whether or not the buyer was an insider did not have an effect in and of itself; the incentives resulting from the way the government has to privatize a firm to an insider is what matters.

The results of our study, however, still leave a number of questions unanswered. It is still unclear why it is that China’s rural officials have depended so heavily on insider privatization and “privatization with a tail” while officials in other countries have not. The fact that China’s rural firms are smaller and that formal and informal credit markets in China are more developed, may facilitate sales to individuals or sets of individuals where such transactions are not possible elsewhere. It could also be that outsiders in China possess so little information about these rural firms that buying them could be extremely risky investments. Likewise, insiders in China may already have an overwhelming advantage. Because reforms to China’s management system in the rural sector have been unfolding since the mid-1980s, many income and control rights had already been shifted to managers by fixed lease contracts. Privatization in this case is merely the shift of ownership of the firm’s assets. Or there might be a winner’s curse—if outsiders win an auction they must have overpaid because of the lack of information.
But, privatization, in general, and insider privatization, in particular, are flourishing in rural China. And it is happening on its own. In many cases, privatized firms are succeeding. In this aspect, our study is among the first to provide a systematic explanation—both theoretical and empirical—of how insider privatization can be successfully executed and why some firms outperform others after privatization.

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Appendix A

Table A1: definition of variables

<table>
<thead>
<tr>
<th>Performance measures</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Manager’s work time: number of hours the manager worked per week</td>
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<tr>
<td>Inter-firm arrears rate: firm trade arrears/assets</td>
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<td>Accounts receivable management: (1 – inter-firm arrears rate)</td>
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<tr>
<td>Value added: sales – materials cost</td>
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<td>Value added per worker: value added/number of workers</td>
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<tr>
<td>Firm valuation</td>
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<tr>
<td>Base value: book value of assets-book value of debt</td>
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<tr>
<td>Premium: buyout price-base value</td>
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<tr>
<td>Premium rate: premium/assets; also called the normalized buyout price</td>
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<tr>
<td>Ownership and contracting variables</td>
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<tr>
<td>Postprivatization indicator: an indicator variable which equals 1 if the firm is has been privatized in the current year and equals 0 otherwise</td>
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<tr>
<td>The government’s realized profit share: the percentage of realized firm profit that is turned in to the government</td>
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<td>The tail: the government’s realized profit share</td>
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<tr>
<td>The government’s paper share: the postprivatization share of the firm that is explicitly written on the contract</td>
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<tr>
<td>The screening contract indicator: an indicator variable that equals 1 if the township government leader used the screening contract and equals 0 otherwise</td>
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<tr>
<td>Firm size measures</td>
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<tr>
<td>Employment: number of employees in the firm</td>
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<td>Sales: gross income from sales</td>
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<td>Asset: value of total assets</td>
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<td>Log of employment: natural log of employment</td>
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<tr>
<td>Log of capital-labor ratio: natural log of capital labor ratio</td>
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<tr>
<td>Manager’s attributes</td>
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<td>Education: years of schooling</td>
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<tr>
<td>Experience: number of years as the firm’s manager</td>
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</tbody>
</table>
Appendix A (continued)

Measures of information asymmetry
- Number of firms: number of township government-owned firms in each township
- Number of market destinations: number of market destinations (counties) to which a firm sells its output

Other variables
- Wealth constraints: an indicator variable which equals 1 if the manager is wealth-constrained when buying a firm
- Risk level: the standard deviation of a firm’s sales growth
- Industry sector indicators: 8 industry indicators (see Table A1)
- Provincial indicator: an indicator variable which equals 1 for Zhejiang Province and equals 0 for Jiangsu Province
- Year indicators: 3-year indicators for 1995, 1996 and 1997

References


