Why Do Governments Privatize?

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Abstract

Drawing on a unique data set we collected in 1998 and 2000, this paper examines the determinants of privatization both theoretically and empirically. Our theoretical model explicitly considers the role of banks in determining privatization. We find that improved human capital and incentives of bank managers or/and deteriorating bank liquidity constraint lead to privatization. We also analyze the conditions under which shutdown might be preferred as a method to divest of government-owned firms. We find empirical evidence that is consistent with our model's predictions.

1 Introduction

Through the first decade and a half of economic reform in China, township and village owned enterprises (TVEs) were the most dynamic sector of the economy. Over this period, real growth in these enterprises averaged more than twenty percent annually. By the early 1990s, these local government-owned enterprises totaled more than 1.25 million, and employed 135.1 million individuals, an increase of more than 100 million since 1980. The contrast with the performance of state-owned enterprises over the same period is fairly stark. Estimates suggest that the rate of growth in output and productivity in SOEs was only about half of that in the TVEs (Jefferson and Rawski, 1994).

The rapid rise of TVEs has been linked to the imperfect institutional environment of the period. In the 1980s private firms were heavily regulated and private property was not well protected. In addition, township governments enjoyed preferential access to newly emerging product and input markets, while local government leaders had superior human capital in operating firms (Byrd and Lin, 1990; Weitzman and Xu, 1994; Che and Qian, 1998b; Chen and Rozelle, 1999; Oi, 1999; Whiting, 2001). China's state-owned banks, especially the rural branches of the Agricultural Bank of China and the Rural Credit Cooperatives, also figured prominently in the fast growth of TVEs. During this period, township-owned firms typically had better access to loans from these institutions and usually on soft terms (Che and Qian, 1998a).

However, in the early 1990s, these same firms, which had fueled such striking growth and had been argued by some observers to be the 'appropriate' ownership form in China, began to be privatized (Oi, 1999; Whiting, 2001; Li and Rozelle, 2003). This followed a fundamental shift in central government policy that effectively allowed privatization as part of a program of enterprise restructuring, or *zhuanzhi*. In its implementation, this policy reflected the high degree of decentralization prevalent in China: Each level of government, e.g., province, municipality, county, township and village, was given discretion as to how to interpret and carry out this policy.

A number of recent papers provide explanations for this privatization (Cao et al., 1999; Li et al., 2000; Li, 2003), their major argument being that local governments choose to privatize TVEs because changes in the institutional environment altered the benefits and costs of government ownership. Property right reform, on the one hand, made government ownership less important in protecting property rights (Li and Rozelle, 2003). Market development and an increase in market competitiveness, on the other hand, reduced the advantages of government ownership, and encouraged leaders to voluntarily privatize their firms (Li et al., 2000; Li, 2003). Although retaining ownership provides a number of advantages to local government leaders, through the sale of the firm to its manager, a leader may exchange government control for revenue from the sale.

Largely overlooked in the literature on privatization is the general health and reforms of the banking sector. The accumulation of a huge amount of non-performing loans in China's banking system forced many bank branches to curtail lending to TVEs, which were usually less profitable than private firms. Bank reform dating from the early 1990s in turn improved the incentives and human capital of bank managers, and hardened the budget constraint of township governments. Starting in 1994, government-owned firms were required to provide "hard" collateral for all loans. Equally important, bank reform helped to insulate local banks from the influence of local leaders by recentralizing a significant part of the lending rights from township bank branches to upper level branches. This made it easier for local banks to decline loan applications from TVEs since the upper-level bank managers are superior in the political hierarchy to township government leaders. An important feature regarding the bank health and reforms is that there is a great heterogeneity across bank branches in China, and it is this heterogeneity that we link to privatization in this paper.

The financial health and reforms of banks affect the likelihood that a leader privatizes firms in two ways.[1] First, analogous to the changes occurring in other market forces, bank health and reforms alter the returns to government ownership and encourage privatization. For example, when the firm's budget becomes harder, leaders are more responsible for bank

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loans and thus, may find retaining a township enterprise (TE) less valuable compared to the benefits received from selling the firm. Second, uniquely, the financial health and reforms of banks may force leaders to privatize. When the bank refuses to lend to TEs either because the bank cares more about profitability or because it has serious liquidity constraints, TEs become less valuable to the leader, and the leader is forced (by the bank) to privatize.

In this paper, we develop a simple theoretical model that allows the bank to play an active role in privatization. In our model, privatization may occur when the bank is willing to lend to a government-owned firm but the leader finds that privatization maximizes her utility. Privatization could also occur when the bank is unwilling to lend to a government-owned firm but will lend to a more profitable private firm. Our comparative static results show that the likelihood of privatization increases with the hardness of the leader's budget constraint, the enterprise manager's human capital and the bank manager's human capital, but it decreases with the leader's perks from government ownership and human capital. We also find that the bank's profit incentives and liquidity constraint have positive effects on privatization, and these effects decrease with the hardness of the leader's budget constraint.

By drawing on unique data we collected on firms and banks in China, we test the above theoretical predictions. The data cover a sample of more than 600 firms in nearly 60 townships in the two provinces of Jiangsu and Zhejiang, and show a great deal of heterogeneity in both privatization and bank reforms. We find that the heterogeneity in bank characteristics and other institutional variables are correlated with privatization in the way that our model predicts. We have confidence that the causation is more likely to be running from bank heterogeneity to privatization because our empirical tests make use of a natural experiment. The relaxation of central government restrictions on enterprise privatization in 1994 essentially allowed all township governments to re-evaluate the returns to government ownership. Since privatization was largely prohibited before 1993, it is hard to make a valid argument of reverse causality, i.e., privatization affects bank reforms.

We also analyze the likelihood of a firm being shut down. Our model predicts that

the likelihood of shutdown increases with the bank's liquidity constraint, but it decreases with the firm's profitability, the leader's human capital, the manager's human capital, the bank's human capital, the leader's perks and the bank's perks. Moreover, it may increase or decrease with the leader's budget constraint and the bank's profit incentive. Our empirical findings in general support these predictions.

This paper contributes to the existing literature on privatization (Megginson and Netter, 2001) and transition in several ways. First, we explicitly consider the role of banks in determining privatization, and find both theoretically and empirically that improved human capital and incentives of bank managers or/and deteriorating bank liquidity constraint lead to privatization. This is in contrast to the literature, which generally sees causality running from privatization to changes in bank incentives and budget hardness; in other words, privatization is viewed as critical to improving bank incentives and hardening budget constraints of firms (Roland, 2000).[2] As a potential policy implication, our findings suggest that reforms that alter the human capital, incentives and control rights in financial institutions can play an important role in encouraging enterprises to restructure and to change ownership. Second, the unique survey data allow us to study shutdown behavior in a transition context, and in particular firm shutdown driven by bank reforms.

Our paper is organized as follows. In section 2, we provide additional background on local governments, firms and financial institutions. In section 3, we develop a simple model that sketches out the nature of the interaction between local agents, and generates hypotheses regarding the determinants of privatization and shutdown. In section 4, we describe our data. In section 5, we empirically test the theoretical predictions. Section 6 concludes.

2   Township Governments, Firms and Banks

An understanding of the institutional environment in which the township government leader, firm managers and banks interact with each other is essential to explaining why governments

privatize. To this end, we begin by describing these institutions, and how their evolution explains both the sudden rise and dramatic decline of township and village enterprises.

The township represents the lowest level of government in the state administrative hierarchy in China. A typical township has a population of 50,000, fifteen to twenty percent of which resides in the township center, and the rest in outlying villages. Township leadership is made up of the township party-secretary, the township head, and the director of the township enterprise committee, all of who are appointed by higher-level (or county-level) party/government authorities. Township leaders are evaluated on the basis of their ability to fulfill targets set by higher-level authorities, one of the most important of which is economic development, especially the development of local enterprises. Other targets include family planning, tax remission, safety etc. Bonuses and career prospects are tied to fulfilling these targets (Oi, 1999; Whiting, 2001). To generate fiscal revenues and fulfill their growth targets, township governments established many township-owned enterprises (TEs) in the first decade of the post-1978 reform. TEs, together with village enterprises (VEs) that were established by village cadres, are commonly referred to as township and village enterprises (TVEs).

Through the first decade and a half of economic reform in China, TVEs were the most important source of economic growth in rural China (Che and Qian, 1998b; Chen and Rozelle, 1999; Oi, 1999). Township leaders benefited from the TVEs in a number of ways. Since higher levels of government directly tie cadre bonuses and promotion to enterprise development and economic growth, township leaders profit directly from their expansion and growth (Manion, 1985; O'Brien and Li, 1999; Whiting, 2001; Li and Zhou, 2004). They also benefit from the control they exercise over these firms' assets, profits, and cash flow, because of the thin line that often separates government leaders and these firms. In TEs, enterprise management is overseen by the Township Economic Commission, which is often headed up directly by the Township Party Secretary. Firm resources can be diverted and used to support other local purposes, including paying cadre salaries and providing jobs for local residents. Leaders may also derive "private" perks from these firms, including access to

jobs for family members and friends, and often direct access to enterprise funds. Of course, this capacity to extract resources and rents from TEs is a function of their size, profitability, and cash flow (Shleifer and Vishny, 1994).

Several alternative explanations have been offered for the sudden rise of TVEs. One school links the success of TVEs to market failure. Chang and Wang (1994) and Li (1996), for example, argue that the success of TVEs is the result of local government monopolistic control over input and product markets. Related, government leaders possessed the human capital that was appropriate to running enterprises in such an environment (Chen and Rozelle, 1999). Both the market failure and human capital theories suggest that government ownership (i.e., TVEs) was superior to private ownership in this period. A third school links local government ownership to state failure. When the state cannot commit to act non-predatorily against private firms, local government ownership best protects local firms' property rights (Qian and Weingast, 1997; Che and Qian, 1998a, b).

China's state-owned banks have also played a very important role in the fast growth of TVEs. Throughout this period, the township branches of two financial institutions, the Agricultural Bank of China (ABC) and Rural Credit Cooperatives (RCC), largely serviced rural China. Both institutions are found in most townships. Combined, they held nearly eighty percent of all rural deposits and were the source of an equal percentage of loans, nearly half of which went to township and village enterprises (Park et al., 1997).[3]

At the outset of economic reform, these financial institutions were like other state-owned enterprises and were subject to centralized management and economic planning. The government provided no incentives to motivate bank managers and staff, and their pay was pre-determined and thus independent of performance. Bank managers also had no formal training, and lacked the skills either to screen loan applicants or monitor firms after loans were made. Even more serious, loans to government-owned firms were soft. Although TVEs typically faced much harder budget constraints than state-owned enterprises (SOEs), local governments could still use their political power to influence local banks' lending decisions

(Che and Qian, 1998a). This behavior was reinforced by the indirect role of township leaders in the appointment of township branch bank managers, and a variety of perks that government leaders were able to extend to bank managers. Officially, township branch managers were appointed by higher level bank officials. When projects were unsuccessful, loans to township-owned firms that were guaranteed by the township government (or other township-owned firms) were typically rolled over, and without penalty. A combination of the lack of incentives and skills of bank managers, and the nature of the government-bank relationship contributed to the significant accumulation of non-performing loans, and jeopardized the liquidity of the banking system.

To summarize, the rise of TVEs in the 1980s and early 1990s occurred in an institutional environment in which product and input markets were imperfect, and property rights were not well protected. As well, banks were typically more willing to lend to TVEs than private firms and on softer terms (Brandt and Li, 2003). Despite agency costs of government ownership caused by the separation of ownership and control, and firm goals other than profit maximization, a case can be made that government ownership and firms ran by government leaders could be optimal (Che and Qian, 1998a; Chen and Rozelle, 1999).

The extraordinary performance in the 1980s and early 1990s of China's TVEs did not prevent these firms from being privatized in large numbers beginning in the mid 1990s. According to our recent survey in China's Lower Yangtse Delta region, which we discuss in more detail below, more than half of all enterprises owned by township governments in 1994 had been partially or completely privatized by the end of 1997. Oi (1999) and Whiting (2001) also document large privatization efforts by local governments.

This privatization has been linked to changes in the institutional environment, which altered the benefits and costs of government ownership (Li et al., 2000; Li, 2003). Property rights reform, on the one hand, made government ownership less important in protecting property rights. Market development and an increase in market competitiveness also reduced the advantages of government-ownership, and encouraged leaders to choose voluntarily to

privatize their firms. Although retaining ownership still provides a number of advantages to leaders, through the sale of the firm to its manager, a leader may exchange government control for revenue from the sale.

Largely overlooked in the decision to privatize is bank reform. Bank reform brought major changes to all state-owned commercial banks, such as the ABCs, and also to the RCCs. First, as a major reform initiative to improve the performance of state-owned banks, the government initiated a bonus system in the early 1990s. The bank manager's year-end bonuses were tied to their performance in attracting deposits, reducing non-performing loans, and increasing bank profits. Second, many better-educated and more competent employees were promoted to branch managers. This contributed to improved screening of loan applications and to an increase in loan repayment rates through better project selection by firms. Third, starting from 1994, township-owned firms, as well as other ownership types, were required to provide "hard" collateral, e.g. bank deposits, buildings, machinery, etc, for their loans. This new collateral requirement helped to harden the budget constraints of the TEs. The new bank reform has also made the banks more willing to lend to private firms (Brandt and Li, 2003), which are usually more profitable. Finally, banks are more likely to decline loan applications from TEs. Reforms have recentralized a significant part of the lending rights from township branches to the upper (or county) level. Since the county bank managers are superior in the political hierarchy relative to township government leaders, it is easier for them to say "no" to township leaders. Moreover, the serious liquidity constraint of many bank branches has forced them to decline loan applications from TEs, which are likely to have unprofitable projects.

An important feature of the bank reform, like that of any other reforms in China, is that it has not been uniform across localities. In fact, there remains a great deal of heterogeneity across localities in terms of bank incentives, human capital and the hardness of the budget constraint (Brandt and Li, 2003). Moreover, for historical reasons, banks also differ in the size of non-performing loans across financial institutions. The existence of such

heterogeneity is important for our study. In the next section, we examine theoretically how the heterogeneity of these bank characteristics affects the decisions of township leaders on privatization and shutdown. We then empirically test these theoretical predictions that link bank heterogeneity to privatization and shutdown decisions in Section 5.

3   A Heuristic Model

We consider a very simple environment in which three risk-neutral players interact: a government (township) leader, an enterprise manager and a bank. The leader has one township enterprise that she can choose whether to retain, to privatize, or to shut down. We denote a retained township enterprise as TE and a privatized enterprise as PE.

3.1   A Township Enterprise

If the leader retains the firm, she will enjoy its profits and receive some perks or other benefits (α_{TE}) from owning the firm. An operating firm can borrow at cost R from the bank to undertake a potentially profitable project, where R is set administratively by higher-level government regulation and is unaffected by the parties modeled in this paper. We also assume that the size of the loan is fixed. All players are uncertain as to whether this firm (project) will be profitable (with a profit $\pi > R$) or not (with zero profit). However, the firm manager can directly affect this probability of success, $p(e)$, through his effort choice, e. For simplicity, we set $p(e) = e$. When the project succeeds, the firm pays R to the bank; when the project fails, the bank will seize the amount $\delta_{TE}R$, where $\delta_{TE} < 1$. The variable δ_{TE} serves to measure the hardness of the budget constraint for a TE, but could alternatively be interpreted as the amount of firm collateral. Thus, the TE's expected gross profit is $e(\pi - R) + (1 - e)(-\delta_{TE}R)$.

There are two costs for the government leader in operating the firm: the manager's wage $w = C(H, h, e) + \overline{w}$, which covers the manager's reservation utility $\overline{w}$ and his cost of effort $C(H, h, e)$, and the cost of monitoring the manager $M(g, e)$.[4] $C(H, h, e)$ is increasing

in the manager's effort and decreasing in his human capital H. We assume that it is also decreasing in the human capital of the bank manager h. This captures in a simple way that a skilled bank manager may be able to assist the firm in realizing profitable projects. The leader must also incur a monitoring cost $M(e, g)$ to induce effort from the manager. This monitoring cost increases with effort e, but decreases with the leader's human capital g. Thus, the leader's utility is $e(\pi - R) + (1 - e)(-\delta_{TE}R) - \bar{w} - C(H, h, e) - M(g, e) + \alpha_{TE}$.

The value of the firm to the government ultimately depends on the bank's lending behavior. If a project is not financed, the firm will not be retained. We restrict the bank to making a loan of fixed size. The bank is willing to lend as long as its participation constraint holds (or equivalently, its total expected rents from lending are positive). The bank's return from lending to a TE is given by $W_{TE} \equiv \gamma[eR + (1 - e)(\delta_{TE}R - (1 - \delta_{TE})f(R, l))] + \alpha_B$. The bank will lend if this is positive. The parameter γ measures the bank manager's profit incentive, while α_B measures the non-profit incentive or perks that the bank manager may enjoy from having a good relationship with the township leader.[5] The function $f(l)$ is an increasing, convex liquidity cost of lending money, where l is the current stock of bad loans.

Thus, as a firm owner, and conditional upon receiving bank finance, the leader's optimization problem is

$$\max_{e} e(\pi - R) + (1 - e)(-\delta_{TE}R) - \bar{w} - C(H, h, e) - M(g, e) + \alpha_{TE}$$

This yields a first order condition:

$$\pi - (1 - \delta_{TE})R = \frac{dC}{de} + \frac{dM}{de}.$$

This implicitly defines the optimal level of managerial effort, and thus, the value to the leader of retaining the firm, V_{TE}^*. If the bank is not willing to lend, the firm has no value and will not be retained as a TE. Thus, the value of a TE, $V_{TE} = V_{TE}^*$ if the bank lends; and $V_{TE} = 0$ otherwise.

3.2 A Private Firm

We focus on privatization through the sale of the firm to its manager, since this is the only type that is empirically relevant. The bank is willing to lend to the PE if $W_{PE} \equiv \gamma[eR + (1-e)(\delta_{PE}R - (1-\delta_{PE})f(R,l))] \geq 0$. No manager would ever buy a firm if this condition does not hold, since such a firm would have no value to him. As the owner, the manager's objective is

$$\max_e e(\pi - R) + (1-e)(-\delta_{PE}R) - C(H,h,e),$$

where δ_{PE} measures the budget hardness for a PE. The optimal effort choice is given by

$$\pi - (1-\delta_{PE})R = \frac{dC}{de},$$

which implicitly defines the value of a PE, $\hat{V}_{PE}$. We define the net value of a firm V^*_{PE} as $V^*_{PE} \equiv \hat{V}_{PE} - \bar{w}$. The value of a PE, $V_{PE} = V^*_{PE}$ if the bank is willing to lend; and $V_{PE} = 0$ otherwise.

A PE manager undertakes more effort than a TE manager if the hardness of the budget constraint is the same for the two types of firms ($\delta_{TE} = \delta_{PE}$) and all else is equal. This can be seen from the associated first order conditions. Given a government owned firm has to monitor its manager, managerial effort is more costly. Consequently, a lower level of effort will be demanded by a TE. This difference is magnified since PEs normally have harder budgets than TEs, i.e., if $\delta_{TE} < \delta_{PE}$. Additional responsibility or loss when a project fails (higher δ) encourages firms to induce additional effort in an attempt to reduce the probability of project failure. As a result of both of these effects, a TE will induce less effort and therefore will be less likely to succeed than a PE.

3.3 Privatization or Shutdown

The leader compares the value of a TE to the value she receives from the firm if she privatizes it at price n. We assume that this price arises from a Nash bargain between the leader and

the manager. A firm will be privatized if this price exceeds the value to the leader of retaining the firm. If a firm has a negative value for both ownership forms, it will be shut down.

In order to decide whether to privatize or shut down this risky venture, the leader takes into account that under either ownership structure, the bank will interact with the firm, determining whether or not to lend. We assume that the bank's lending decision is made prior to any firm manager's effort decisions. The timing of the whole game is as follows: (1) The leader decides to privatize, retain or shut down the firm; (2) the bank decides whether or not to lend a fixed amount of loan; (3) the firm effort decision is made; and (4) profits are realized and loans are repaid.

We are now ready to address the question that motivated our analysis: Should a leader privatize or shut down a firm? What factors make privatization and shutdown relatively more attractive? Naturally, a leader will compare her utility with a TE to her utility with a PE. In other words, if the price she gets from the sale of the firm is higher than the value to her of the retained firm, i.e., $n > V_{TE}$, she will choose to privatize. When will the firm manager be willing to buy the firm? If his value of the firm exceeds its price, $V_P > n$. So, a firm will be privatized if $V_{PE} - V_{TE} > 0$ and $V_{PE}^* \geq 0$. The value of $V_{PE} - V_{TE}$ will take the following values depending on the bank's lending decision,

$$V_{PE} - V_{TE} = \begin{cases} V_{PE}^* - V_{TE}^* & \text{if } W_{PE} \geq 0, W_{TE} \geq 0; \\ V_{PE}^* & \text{if } W_{PE} \geq 0 > W_{TE}; \\ -V_{TE}^* & \text{if } W_{TE} \geq 0 > W_{PE}; \\ 0 & \text{if } W_{PE} < 0, W_{TE} < 0. \end{cases}$$

First note that when $V_{PE}^* < 0$, privatization is not possible and the leader can only choose to retain or shut down the firm. The leader will shut down the firm voluntarily if $V_{TE}^* < 0$ and will be forced to shut it down if the bank does not lend to a TE. Since this case does not generate much insight, we will focus on the case of $V_{PE}^* \geq 0$ in the following discussion.

In the following, we examine the factors that affect the likelihood of privatization and shutdown. We only provide the intuition for these comparative static results in the text and leave detailed proofs in the Appendix. These comparative static results provide the

hypotheses for our empirical tests.

3.3.1 Privatization

When $V_{PE}^* \geq 0$, privatization may occur in two situations: (1) the bank is willing to lend to both TEs and PEs (i.e., $W_{PE} \geq 0, W_{TE} \geq 0$) and $V_{PE}^* - V_{TE}^* \geq 0$; and (2) the bank is only willing to lend to PEs (i.e., $W_{PE} \geq 0 > W_{TE}$). In the first case, the leader voluntarily chooses to privatize the firm. In contrast, in the second case, a firm is forced to be privatized because the bank does not lend to a TE. We will consider factors that drive privatization for both cases.

In case (1), the bank is willing to lend to the firm regardless of its ownership. Thus, the likelihood of privatization increases with factors that increase the value of a PE more than that of a TE, or increases $V_{PE}^* - V_{TE}^*$. We consider the following factors.

Budget constraint and perks. Privatization is more likely when a TE faces harder budget constraints (higher δ_{TE}), and/or when the leader derives smaller perks from a TE. When the leader's budget constraint becomes harder and/or the perks from owning a firm becomes smaller for the leader, the value of a TE decreases and privatization becomes more likely.

Profitability. Privatization is more likely when the firm is more profitable. Higher profitability π increases the value of a firm for both ownership forms, but it increases the value of a PE more because a PE is more likely to succeed.

Human capital. The likelihood of privatization increases with both the firm and bank manager's human capital, but decreases with the leader's human capital. Better firm manager and bank human capital reduces the cost of effort for both ownership forms, but it will reduce the cost for a PE more, since PEs have higher efforts. Higher leader human capital reduces the monitoring cost and increases the value of a TE.

If $V_{PE}^* - V_{TE}^* < 0$, which could happen because of large perks from a TE, the leader is not willing to privatize. However, the bank can force the leader to privatize by lending

to a more profitable PE, but not to a TE. Thus, in case (2), the likelihood of privatization increases with factors that increase the value for the bank from lending to a PE more than to a TE.[6] We focus on two bank characteristics: the bank incentives (γ) and the liquidity constraint (l). Moreover, we also examine how the likelihood of privatization is affected by the interaction of these two factors with the hardness of the budget for a TE (δ_{TE}).

Bank incentives. Privatization is more likely when banks have better incentives. Since PEs are more profitable than TEs, bank lending to a PE may be profitable when it is not to a TE for certain parameter values. In this situation, increasing bank incentives will increase the bank's value of lending to a PE, but reduce the value of lending to a TE (because the profit from lending to a TE is negative). Thus, privatization is more likely with better incentives for these parameter ranges.

The effect of bank incentives on privatization is decreasing in the hardness of the leader's budget constraint. Although more powerful bank incentives make the bank less willing to lend to an unprofitable TE, a harder government budget constraint reduces the loss of the bank in the case of default and therefore increases the profitability of lending to a TE, making the negative effect of bank incentives on the bank's lending to a TE weaker.

Liquidity. When the bank has many bad loans, it is very costly (perhaps prohibitively) difficult) to lend for new projects. It is even more difficult to lend to TEs than PEs because TEs generally have a lower probability of being profitable. As a result, TEs are more likely to be shut down. If TEs need to be shut down but PEs do not, privatization will occur.

The effect of bank liquidity on privatization is decreasing in the hardness of the leader's budget constraint. Although higher liquidity costs make the bank less willing to lend to a TE, a harder government leader budget constraint will increase the profitability of lending to a TE, making the negative effect of bank liquidity on the bank's lending to a TE weaker.

Hypothesis 1: The likelihood of privatization increases with the hardness of the leader's budget constraint, the firm's profitability, the manager's human capital, the bank's human capital,

the bank's incentives and liquidity constraint; it decreases with the leader's perks and human capital; the effect of the bank's incentives and liquidity constraint on privatization decreases with the leader's budget constraint.

3.3.2 Shutdown

When $V^*_{PE} \geq 0$, shutdown may also happen in two situations: (1) the bank is willing to lend only to a TE (i.e., $W_{TE} \geq 0 > W_{PE}$) and $V^*_{TE} < 0$; and (2) the bank is unwilling to lend to either firm type (i.e., $W_{PE} < 0, W_{TE} < 0$).

The comparative statics regarding shutdown are more straightforward. As discussed above, shutdown happens either because the bank is not willing to lend (to a TE or PE), or because the value of a firm (TE or PE) is negative when the bank lends. Thus, any factor that reduces the value of a TE and/or PE and/or reduces the likelihood of bank lending will make shutdown more likely. For example, shutdown is more likely when the human capital of any player deteriorates and when the liquidity constraint worsens. Larger perks of either the leader or the bank also reduce the chance of shutdown.

The effect of bank incentives is ambiguous. When the bank's expected profit from lending is negative, increasing the profit incentives of the bank will make lending less likely and shutdown more likely. However, when the bank's expected profit from lending (to either a TE or a PE or both) is positive, increasing the profit incentives of the bank will make lending more likely and shutdown less likely. Thus, the sign of this effect depends on the sign of the bank's expected profit from lending.

The effect of the leader's budget constraint is also ambiguous. On the one hand, an increase in the hardness of the budget constraint will reduce the profitability of a TE and thus make shutdown more likely. On the other hand, an increase in the hardness of the budget will make the bank's lending to a TE more profitable and make it more willing to lend, thereby reducing the probability of a shutdown.

Hypothesis 2: The likelihood of shutdown increases with the bank's liquidity constraint; it

decreases with the firm's profitability, the leader's human capital, the manager's human capital, the bank's human capital, the leader's perks and the bank's perks; it may increase or decrease with the leader's budget constraint and the bank's profit incentive.

4   Data

We start this section by introducing our survey and data. We then describe the patterns of privatization, in particular the heterogeneity across townships. Since several papers have described privatization using the same data (see Li, (2003), Li and Rozelle (2003; 2004)), we only summarize the key features here.

4.1   The Survey

There are not national data tracking the ownership changes that occurred in township enterprises over the 1990s. In order to analyze enterprise privatization, the authors and their Chinese colleagues carried out an extensive survey covering 59 townships drawn from 15 counties in the two provinces of Jiangsu and Zhejiang in 1998 and 2000. The selection of the counties and townships was designed to ensure a representative cross-section of the region. After stratifying all of the counties in each province into three income groups, we selected eight counties in each province. Within each county, we chose four townships also by stratifying on the basis of income. Administrative problems prevented the completion of the survey in one of the counties in Zhejiang, thus giving us data on 15 rather than 16 counties. Data were incomplete for three of the townships so that the total number of townships on which we have information is 57.

The survey consisted of four parts: 1) a census of all firms that were township-owned as of 1993 in order to track changes in ownership and key enterprise aggregates, e.g. output, employment, profits and assets, in these firms up through 1999; 2) an in-depth survey of three randomly selected enterprises in each township that collected detailed balance sheet data, bank loan history, and information on the privatization process (if the firm was privatized);

3) a survey of the local branches of ABC and RCCs that provided detailed information on bank behavior, including balance sheet data, as well as bank loan information on the three randomly selected firms; and 4) a survey of township leaders that provided data on cadre personnel, the local government, and the township economy.

In this paper, we utilize the census data, in combination with the bank branch manager and township leader surveys.[7] Altogether, we have information on ownership changes between 1993 and 1997 for a total of 643 township-owned firms, and for the period between 1993 and 1999, we have data on 390 firms. In the empirical work below, we primarily draw on the larger, but shorter sample of firms that goes through 1997. We do this for several reasons. First, it maximizes our sample size. Second, our ability to resurvey in townships in 2000 appears to be non-random, suggesting potential biases in analysis using the longer, but smaller data set.[8] And third, we are interested in how "initial" conditions, especially those in the financial institutions, influenced township government decisions once privatization became legal. To reduce the complications that arise because initial conditions may have changed over a longer period, we choose to use the data for the shorter period.

4.2   Privatization in Rural China

Changes in ownership took several forms. In a majority of cases, it entailed selling the entire firm to either a single individual or a group of individuals. In all but a few cases, the firm was sold to the incumbent manager. In other cases, however, only part of the firm was sold, and the township retained either a majority or minority position. This typically occurred as part of a process of converting the company to a joint-stock or share-holding company. In some cases, share-holding companies were subsequently completely privatized with the township's divesture of their remaining shares. Correspondingly, we utilize several alternative definitions of privatization. Our strictest definition, P1, defines as privatized only those firms in which 100 percent of the firm was sold. P2 adds to the list those firms in which a majority of shares (50 percent or more) were private, with the remaining shares retained by

the township government. Finally, P3 includes as private those firms with minority private shares.

Several features of these data are noteworthy. First, over the period between 1993 and 1997, privatization was pervasive. As shown by Table 1, altogether, 220 out of our sample of 643 firms, or 34.2 percent of firms, were fully privatized by 1997.[9] This consists of 210 firms that were fully privatized through a single sale, plus 10 more firms that were first converted into shareholding companies in which the township retained equity, and then became fully private when the township sold-off their remaining shares. If we also include as private those firms in which the township only had a minority position, then 290 out of 643, or 45.1 percent were privatized.[10]

Second, there is a marked increase over time in the rate of privatization activity, which peaked in 1998. This is true both in terms of the absolute number of firms affected, as well as in terms of the percentage of existing TEs privatized in a given year. Privatization began in earnest in 1993, with 11 townships starting that year (Table 2). From beginning to end, the length of time involved in the process was slightly more than two years, with a majority of townships reporting being completed in 1998. In 1996 and 1997, the rate of privatization nearly doubled that experienced between 1993 and 1995. The rate again doubled in 1998, before declining significantly in 1999.

Third, although provincial-level differences are modest, there is considerable heterogeneity across townships in privatization rates (Table 3). For example, in 10 out of the 57 townships (or 17.5 percent of all townships) less than 20 percent of all TEs were privatized by 1997. In 14 out of the 57 (or 24.6 percent of all townships), on the other hand, between 60 and 80 percent of all TEs were privatized by 1997.

And fourth, a significant number of firms in the survey were shut down. For the sample of 643 firms, 15.4 percent went out of operation by 1997. To put this in perspective, this is twice the number of firms in the same townships that went out of operation between 1980 and 1993. The high rate of shutdown effectively lowered (raised) the percentage of

government-controlled (private) firms in operation at the end of the period.

4.3 Explanatory Variables

The explanatory variables, or the potential determinants of privatization and shutdown, are organized into several groups: Firm attributes, human capital variables, budget hardness, and bank attributes. We describe each of them below. Summary information for each of these variables is provided in Table 4. Unless we note otherwise, information is reported for 1994, or before most privatization activities began in our sample.

We use two firm attributes as independent variables. Since the rent a township leader derives from a TE is positively related to firm size, we use firm size, or employment in this context to measure rent.[11] The other firm attribute we use is the profit rate, which is defined as profits divided by firm sales in the initial year 1994. Ideally, we would like the profit rate to measure only the *ex ante* likelihood of project success (or profitability), which is π in the model. However, since profitability is also correlated with firm rent, which we do not model in the theory, the profit rate may also pick up part of the effect of rents in a TE even after we control for firm employment.

Variables that measure the human capital of bank managers and township leaders are their age, years of education and origin. Unfortunately, we do not observe the human capital of firm mangers for the census data we use. While age (measuring experience) and education are related to their general human capital, the origin variable (1 if from the same township; 0 otherwise) measures location-specific human capital. However, the origin variables may also pick up other effects. For example, it may be that leaders (or bank managers) who work in the same township as they grew up in are more likely to produce rents from the privatization process because of long relationships in the community. These local leaders may also have superior information about local firms, which reduces the information cost in the process of privatization and thus makes privatization more likely to happen (Li and Rozelle, 2004). Because there are two offsetting effects, it is an empirical issue whether the

signs of the origin variables are positive or negative.

Our survey on the relationship between local governments and banks allows us to measure the hardness of the leader's budget constraint. The hardness is a qualitative variable based on township level interviews with government officials who provided an answer to the following question. 'How difficult is it to ask for an extension when a loan is overdue in 1994?' We consider the budget constraint to be hard (equal to one) if the local government official cannot persuade the banks to give extensions on overdue loans to township enterprises before liquidating them, and soft (equal to zero) otherwise.

Finally, the most important variables are measures of the bank' incentives and liquidity constraint. We use two variables to measure the bank manager's profit incentives, namely, the weight on profitability and the bonus-wage ratio, and also include the percentage of non-performing loans to measure bank liquidity. The weight assigned to profitability relative to non-profit duties (such as bank safety and party activities) by upper-level banks is an index from one to five, with five the highest. The bonus ratio, on the other hand, represents the manager's bonus relative to the base wage if all branch targets are fulfilled. Since both measures are *ex ante* measures, and are determined by higher level authorities, they are exogenous in our setup. On average, the bonus was equal to two-thirds of the base wage, or roughly forty percent of total compensation. We utilize information on the non-performing component of the bank's loan portfolio to capture bank liquidity. More specifically, we use the percentage of the bank loan portfolio that is overdue as the measure of the percentage of non-performing loans, with larger percentage indicating more serious liquidity constraint.[12]

5   Empirical Results

We are interested in the decision of local governments either to continue to operate TEs, privatize them, or shut them down. We use P1 or complete privatization as our definition of privatization, and use the 1994 information to explain privatization and shutdown that happened between 1994 and 1997. Although we have observations for most of the explanatory

variables for either both 1994 and 1997, or for the whole time series, we only use the initial year (1994) information to avoid potential simultaneity.[13]

Because the three choices, i.e., privatization, shutdown and remaining a TE, are un-ordered, it is natural to use the multinomial logit model. In the estimation, we use "continue to operate as a TE" as our base category, and report coefficients that have a linear effect on the log of the "odds ratio". The odds ratio is also known as the relative risk ratio. The odds ratio measures how likely privatization or shutdown is relative to the base category, i.e., remaining a TE. In the multinomial logit model, the log of the odds ratio is a linear function of the independent variables.

5.1 Determinants of Privatization

The first two columns of Table 5 report results of our baseline model, in which we include firm profitability, the number of employees in the firm, bank liquidity, the bank manager's incentives, the hardness of the leader's budget constraint, and bank manager and township leader attributes. In Model (2) reported as columns 3 and 4, we include interactions between the hardness of the budget constraint and bank liquidity, and between budget hardness and the weight on profitability in the bank's targets. Due to missing values of many independent variables, we have only 338 firms in the final sample for regressions.

5.1.1 Leader and Firm Attributes

We find considerable empirical support for Hypothesis 1, which concerns the determinants of privatization. First, the likelihood of privatization relative to remaining a TE increases with the hardness of the budget constraint. The variable hardness has a positive coefficient, and it is significant at the one percent level. Harder budget constraints effectively increase the liability of the local government in the event of project failure by the TE, and thus reduce the attractiveness of retaining government ownership.[14]

Second, privatization is significantly linked to the attributes of both the township leader as our model predicts. We find that the likelihood of privatization is lower in townships where

township leaders are better educated and have more experience (as captured by age). This reflects the fact that leaders with better human capital have a lower cost in the management and oversight of TEs, and thus have a larger value in retaining them. We also find that privatization is more likely if the leader is from the local township. One possibility is that leaders with long ties to the community are able to extract side-payments in the course of privatization.

Finally, privatization is less likely when the leader's perks associated with a TE are larger. Our first measure of the size of perks is the size of the firm as captured by total employment, which as expected has a negative and significant coefficient. The second measure, the firm's profit rate, is a more complicated measure. The impact of firm profitability on privatization is ambiguous because of two offsetting effects. On the one hand, our model predicts a positive effect of profitability because higher profitability (π in the model) increases the value of a PE more than that of a TE. Potentially offsetting this is the fact that rents or perks from government ownership will be positively correlated with firm profitability. We find that the firm profit rate has a negative sign, which suggests that profitability is more likely picking up the effect of perks to local leaders on privatization decisions. This finding is in sharp contrast with much of the experience in Eastern Europe, where more profitable firms in fact were the first to be privatized (Gupta et. al., 2001).

5.1.2 Bank Attributes

More important in this study, we find that the likelihood of privatization is related to bank attributes, such as the human capital and incentives of bank managers and the capacity of the bank to lend, in the way our model predicts. First, in terms of the bank manager's human capital, we find that the likelihood of privatization is positively related to the human capital of the bank manager. This is consistent with our model and the view that bank manager's human capital has a larger impact on private firms than TEs because of the agency problems in a TE. A related interpretation for this link between bank manager human capital and privatization is that "relationship-lending" and the rents from lending

to TEs are more important for less able managers. Lacking the human capital required to make lending decisions strictly on the basis of project profitability, these bank managers are more likely to be influenced by the potential rents via the local government from lending to TEs.

Second, consistent with Hypothesis 1, regression results show that firms are more likely to be privatized in townships where the evaluation of bank managers' performance gives more weight to profitability and when managers have stronger incentives (Table 5, column 1). Both the weight given to profits in managerial evaluation and the manager's incentives (measured by the manager's bonus to the base wage ratio) have a positive and significant effect on privatization. When bank managers are given greater profit incentives by higher-level bank authorities, they are more inclined to lend to PEs versus TEs, thereby increasing the value of a PE relative to a TE.

Third, we find that bank liquidity is important in exerting pressure on township leaders to privatize. Reductions in bank liquidity, as captured by an increase in the ratio of non-performing loans to the bank's total loan portfolio, significantly increase the likelihood that the firm will be privatized. The liquidity constraint reduces the likelihood that TEs will be able to access bank finance relative to PEs, because TEs generally have lower profitability. Thus, the bank liquidity constraint makes it harder for a TE to remain in operation.

Finally, our econometric model identifies important interaction effects involving budget hardness with bank attributes. Although more powerful bank incentives or more serious liquidity constraints make the bank less willing to lend to an unprofitable TE, a harder government budget constraint reduces the loss of the bank in the case of default and therefore increases the profitability of lending to a TE. This weakens the negative effect of bank incentives and liquidity constraint on the bank's lending to a TE, and implies that the effects of bank incentives and liquidity constraint on privatization should decrease in the hardness of the leader's budget constraint. We test this prediction by including two interaction terms, one for incentives with budget hardness and the other for the liquidity constraint with the

hardness (column 3).[15]   As predicted, the coefficients on both of these variables are negative, however, only the interaction with bank liquidity is significant. With the inclusion of these interaction terms, the coefficients on budget hardness, the bank manager incentives, and the liquidity constraints remain the same signs.

5.1.3   Alternative Definitions of Privatization

Table 5 is based on a definition of privatization that only includes firms that are fully privatized. We examine the robustness of our results by extending our definition to include those firms in which the township retained either minority (P2) or majority ownership (P3), or an additional 70 and 33 firms respectively. The role of the attributes of financial institutions remains significant in explaining privatization, however firm-level attributes (size and profitability) lose explanatory power, especially with the inclusion of P3.

5.2   Determinants of Shutdown

In columns 2 and 4 of Table 5 we report regressions examining the choice between shutdown and remaining in operation as a TE. According to Hypothesis 2, the likelihood of shutdown increases with the bank's liquidity constraint; it decreases with the firm's profitability, the leader's human capital, the manager's human capital, the bank's human capital, the leader's perks and the bank's perks; it is ambiguous with respect to the leader's budget constraint and the bank's profit incentive.

In general, the results are much weaker than we find for the decision to privatize versus remaining a TE, but several variables are suggestive. First, consistent with Hypothesis 2, the bank liquidity constraint has a significant positive effect on the likelihood that a firm is shut down. Clearly, in townships in which banks are handicapped in their ability to continue to lend to TEs, local leaders find it more difficult to continue to run these firms, and they are much more likely to be forced to shut down. Second, firm size and profitability have the expected negative signs, though their effects are statistically insignificant. Third, the findings regarding the human capital variables are mixed. On the one hand, all the human

capital variables of the bank manager have positive coefficients (though most of them are not significant), which contradicts Hypothesis 2. On the other hand, all the human capital variables of the leader have the expected negative sign, and are typically significant. All else equal, more able leaders are less likely to shut firms down in their townships. Finally, we find that the weight on profitability and the bank manager's profit incentives have negative effects on shutdown. As suggested by our theory, this could happen when lending to TEs is profitable, because in that case larger incentives will make a TE more valuable and less likely for leaders to shut down.

6 Conclusions

Government ownership confers a variety of benefits and perks on governments and their leaders. These benefits, however, are not determined in isolation, but rather depend crucially on the interaction between governments, financial institutions, and enterprise managers. Starting from this basic premise, in this paper we examine the decision of local governments in China to privatize township-owned firms in light of changes in these relationships. Our simple theory highlights not only how the government leader may voluntarily choose to privatize their firms when the environments in which they operate these firms change, but also how leaders are forced to privatize by local banks that have good profit incentives or face serious liquidity constraint. Drawing on unique data we collected from Jiangsu and Zhejiang provinces, we find evidence supporting the predictions of our theory.

Our study demonstrates an important linkage between changes in the financial sector and privatization decisions. In part, the fast growth of TVEs in the 1980s and early 1990s was due to the rapid credit expansion of banks operating under poor managerial incentives. One consequence of this expansion was the significant accumulation of non-performing loans. This same accumulation of non-performing loans also underlay bank reform. The privatization of TVEs we document for the 1990s is a response to a combination of improved bank incentives and worsening bank liquidity. In this sense, our work nicely illustrates how reform in one

sector, in this case the financial sector, can spur reform in others, notably, the enterprise sector.

Given the important role of financial institutions in the privatization process, in future work we plan to examine how these same institutions are influencing the returns to privatization. In addition to being a potential source of selection effects in the privatization process, banks can also affect firm performance through their willingness to lend and their monitoring role.

Appendix: Theoretical Results

Better bank incentives. Privatization is more likely when banks have better incentives. With higher γ, banks are more likely to lend ($\frac{dW_i}{d\gamma} > 0$) if projects are profitable $[e_i R + (1 - e_i))\delta_i R - f(R,l)] > 0$. It should also be noted that $\frac{dW_{PE}}{d\gamma} > \frac{dW_{TE}}{d\gamma}$. This is due to the fact that γ leads to a greater return to the extra effort put in by a private firm, making that a more advantageous ownership form.

Note as well that it is possible that higher γ increases the willingness to lend to private firms and reduce the bank's willingness to lend to TEs. This will arise when $e_{PE} R + (1 - e_{PE})[\delta_{PE} R - (1 - \delta_{PE}) f(R,l)] > 0 > e_{TE} R + (1 - e_{TE})[\delta_{TE} R - (1 - \delta_{TE}) f(R,l)]$, which implies $\frac{dW_{PE}}{d\gamma} > 0 > \frac{dW_{TE}}{d\gamma}$. The difference in these responses diminishes as δ_{TE} rises and as g rises (and therefore the cost of monitoring falls).

Increasing the Probability of Payment in the Default State. Conditional on receiving a loan, increasing δ_{TE} will reduce expected profit of the firm by increasing its potential losses. This makes government ownership less appealing, and the leader will have a greater incentive to privatize.

$$\frac{d}{d\delta_{TE}}[V_P - V_{TE}] = R(1 - e_{TE}) > 0$$
$$\frac{d}{d\delta_{PE}}[V_P - V_{TE}] = -R(1 - e_{PE}) < 0$$

Importance of Relationships. If relationships become more important to either the bank manager or the leader (increasing α_B or α_L), privatization is less appealing.

$$\frac{d}{d\alpha_{TE}}[V_P - V_{TE}] = -1 < 0$$
$$\frac{d}{d\alpha_B}[W_{TE}] = 1 > 0; \frac{d}{d\alpha_B}[W_{PE}] = 0$$

Project Profitability Increasing the profitability of the project (π) increases the likelihood of privatization.

$$\frac{d}{d\pi}[V_P - V_{TE}] = e_{PE} - e_{TE} > 0$$

Therefore, under private ownership firms realize this level of profits more often. So, increasing π has a larger impact on the value of private firms.

The effect of liquidity. When the bank has many bad loans, it is very costly (perhaps prohibitively difficult) to lend for new projects. Without further financing, firms cannot be retained. Higher l reduces the likelihood banks will lend. This effect is larger for TEs, which have a lower probability of being profitable.

$$\frac{dW_i}{dl} = -\gamma(1 - e_i)(1 - \delta_i)\frac{df}{dl} < 0$$

$$\frac{dW_{TE}}{dl} < \frac{dW_{PE}}{dl} < 0$$

The effect of liquidity on the ability of banks to lend depends on δ_{TE}, and γ. With larger δ_{TE}, bad loans are less important since the probability of default is lower. With higher γ, bad loans play a larger role in curtailing current loans.

$$\frac{d^2W_i}{dld\gamma} < 0; \frac{d^2W_i}{dld\delta_i} > 0$$

Firm and bank managers' human capital. Increasing the manager's human capital increases the value of both ownership structures, since it makes it less costly to induce effort, which increases the probability of project success. If the marginal cost of effort is falling in the manager's human capital, this effect will be larger in private firms since they undertake higher effort levels. As a consequence, privatization will be more likely. $\frac{d}{dH}[V_P - V_{TE}] = \frac{dC_{TE}}{dH} - \frac{dC_{PE}}{dH} > 0$ if $\frac{d^2C}{dHde} < 0$ $\frac{d}{dh}[V_P - V_{TE}] = \frac{dC_{TE}}{dh} - \frac{dC_{PE}}{dh} > 0$ if $\frac{d^2C}{dhde} < 0$

Leader's human capital. Increasing the leader's human capital makes it less costly to monitor manager's effort. This directly makes retained TEs more valuable and privatization less likely.

$$\frac{d}{dg}[V_P - V_{TE}] = \frac{dM}{dg} < 0$$

Endnotes

[1]Throughout the paper, we will use the term leader and local government interchangeably.

[2]There is a related literature on bank privatizations (see, for example, Clarke and Cull 2000 and 2002). Here we focus on the role of bank behaviour in firm privatization decisions.

[3]The ABC is one of four specialized state-owned banks and is responsible for lending to support agriculture and rural development. Officially, the RCCs are autonomous, collective-run local institutions, but up through the early 1990s were usually supervised by local ABC branches. However, in 1994 supervision of the RCCs shifted to China's central bank, The People's Bank of China (PBC), and the separation between the RCCs and ABCs became more distinct.

[4]This monitoring contract will dominate incentive contracts (with a minimal wage of zero in the default state) if $\frac{dC}{de} - \bar{w} > C(H, h, e) + M(g, e)$, for all e. This minimal wage restriction prevents the leader from effectively 'selling' the manager residual control rights to the firm and thereby inducing optimal effort. This restriction seems natural within the context of managerial contracts, especially since our focus is on 'real' privatizations.

[5]The manager may also enjoy perks from private firms, but probably of a lesser magnitude. So, we restrict ourselves to perks only from relationships with TEs. Therefore, $\alpha_B > 0$ for TEs and $\alpha_B = 0$ for private firms.

[6]For simplicity, we restricted the bank to only choose whether or not to lend, but not how much to lend. As a consequence, in case (1) in which the bank is willing to lend to

either ownership form, bank attributes do not affect the privatization decision. In a more general model, where the bank could choose the degree of its involvement, these variables might appear in the privatization decision.

[7]Li (2003) utilizes the random survey of 168 firms (3 per township) to examine how market competition and budget hardness affect privatization. Brandt and Li (2003) use the "matching" firm-bank data covering the same number of firms to investigate discrimination against private firms.

[8]A comparison of the two data sets reveals that townships in which we encountered administrative difficulty in resurveying in 2000 had higher than average privatization rates up through 1997. As a result, the 2000 sample of townships is under-represented by townships that privatized earlier, and more extensively.

[9]The trend for the smaller sample that runs through 1999 is similar. In that sample, 208 out of 390 firms, or 53.3 percent of firms, were fully privatized, and 64.9 percent were at least partially privatized by 1999.

[10]We do not report these data in the table, but they are contained in an earlier working paper available at: http://www.bus.umich.edu/KresgeLibrary/Collections/ Workingpapers/wdi/wp429.pdf

[11]We also experimented with total sales or fixed asset levels, which have a similar effect. Since these variables are highly correlated, we use only employment in this paper.

[12]Non-performing loans in China were divided in the early 1990s into three basic types: dead, inactive, and overdue. The balance sheet information we collected from the RCC and ABC branches included estimates of the stock of overdue loans, however, we collected much less information on loans classified as inactive and dead. Therefore, in the empirical work, we use the percentage of the portfolio that is overdue as the liquidity constraint measure in order to maximize our sample. In general, results using overdue plus inactive on a smaller sample are consistent.

[13]For example, profit and employment could be endogenous. Firms could lay off work-

ers before privatization, while managers may have incentives to reduce profit just prior to privatization in order to lower the price they pay. Li (2003) provides one way to partially address this concern, which is to use the initial year (1994) information to explain privatization that happened a few years later, so that the 1994 information will not pick up the pre-privatization activities such as layoffs. We experimented with this method by using 1994 information to explain privatization that happened in 1995-1997 or even in 1996-1997, and find that the results do not change much.

[14]A case can be made that the hardness of the budget is endogenous, and that governments may privatize to harden the budget constraint. We do not believe that this is an issue here because budget hardness is being measured prior to the year in which privatization became legal. Using a subset of our sample, Li (2003) shows that the hardness of the budget is exogenous in this context.

[15]We experimented including interactions between budget hardness and the manager's bonus, but multicollinearity prevents us from identifying the effects of all six variables, i.e., manager bonus, weight on profitability, bank liquidity, budget hardness, and budget hardness interacted with the first three variables.

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Table 1: Distribution of Firms Privatized and Shut Down by Year (1993-1997)

Year	Number of TEs at the beginning of the year	Privatized (number)	Privatized (percentage)	Shutdown (number)	Shutdown (percentage)
1993	643	15	2.3		
1994	628	29	4.6	4	0.1
1995	595	46	7.7	28	4.7
1996	521	57	10.9	26	4.9
1997	438	73	16.7	41	9.4
1998	324				
Total	643	220	34.2	99	15.4

Note: We use P1, or complete privatization, to derive numbers of firms privatized. The percentage privatized and shutdown are calculated relative to the number of TEs in operation at the beginning of the year.

Table 2: Distribution of Townships by Year Privatization Started and Completed (Number of Townships)

Year	Number of townships started privatization in that year	Number of townships Completed privatization in that year
1992	4	0
1993	11	2
1994	7	1
1995	6	1
1996	15	6
1997	14	6
1998	0	32
1999	0	3
Total	57	51

Note: We do not have information on the year privatization completed for six of the 57 townships in our sample.

Table 3: Distribution of the Pace of Privatization at the Township Level among Townships in China, 1994 to 1997

Percentage of Township Enterprises Privatized	Number of Townships	Percentage
0-20	10	18
21-40	9	16
41-60	17	30
61-80	14	24
81-100	7	12
Total	57	100

Table 4: Descriptive Statistics of Variables

Variables	Mean	Standard Deviation
Firm attributes in 1994		
Employment	164.3	402.5
Profit rate (profit/sales)	-0.01	0.54
The hardness of the leader's budget constraint	0.50	0.50
Bank attributes in 1994		
Weight on profitability (=1, 2, 3, 4 and 5, weight increases with value)	3.78	0.75
Manager's bonus-wage ratio	0.66	0.26
Percentage of non-performing loans	21.1	18.5
Bank manager's human capital in 1994		
Education	12.32	1.33
Age	39.94	5.05
Origin (1 if from the same township; 0 otherwise)	0.39	0.31
Leader's human capital in 1994		
Education	13.28	1.74
Age	43.03	4.53
Origin (1 if from the same township; 0 otherwise)	0.23	0.42

Table 5: Multinomial Logit Regressions Examining the Determinants of Privatization of Firms in Rural China

Independent variables	Dependent variables			
	Model (1)		Model (2)	
	Privatization vs. TE	Shutdown vs. TE	Privatization vs. TE	Shutdown vs. TE
Firm attributes in 1994				
Employment	-.004*	-0.005	-0.003*	-0.005
	(0.001)	(0.004)	(0.001)	(0.004)
Profit rate	-3.431**	-4.038	-4.124**	-4.238
	(1.614)	(3.763)	(1.874)	(3.864)
The hardness of the leader's budget constraint	1.036*	-0.139	5.570**	-0.193
	(0.272)	(0.700)	(2.446)	(3.432)
Bank attributes in 1994				
Weight on profitability (=1, 2, 3, 4 and 5,	0.580*	-0.913*	1.221**	-0.974
weight increases with value)	(0.214)	(0.389)	(0.561)	(0.66)
Manager's bonus-wage ratio	1.491*	-1.508	1.251**	-1.594
	(0.565)	(1.193)	(0.601)	(1.227)
Manager's bonus-wage ratio*hardness			-0.724	-0.145
			(0.611)	(0.765)
Percentage of non-performing loans	6.185*	15.086*	18.677*	14.567***
	(2.606)	(4.883)	(5.049)	(8.469)
Percentage of non-performing loans*hardness			-18.646*	3.890
			(6.112)	(10.66)
Bank manager's human capital in 1994				
Education	0.119*	0.108	0.056	0.172***
	(0.039)	(0.070)	(0.041)	(0.100)
Age	0.334**	0.048	0.361**	0.092
	(0.163)	(0.247)	(0.157)	(0.266)
Origin (1 if from the same township; 0 otherwise)	-0.482	0.952	0.212	1.036
	(0.556)	(0.877)	(0.618)	(1.118)
Leader's human capital in 1994				
Education	-0.129*	-0.143***	-0.100**	-0.128
	(0.047)	(0.085)	(0.051)	(0.085)
Age	-0.227*	-0.406	-0.139	-0.524***
	(0.111)	(0.254)	(0.115)	(0.305)
Origin (1 if from the same township; 0 otherwise)	0.747***	-1.510	0.606	-1.774
	(0.421)	(0.961)	(0.432)	(1.196)
Pseudo R-squared	0.19		0.20	
Pseudo Log likihod	-242.06		-236.61	
Observations	338		338	

Notes: Numbers in parentheses are standard errors. Significance levels of 0.1, 0.05 and 0.01 are noted by ***, **, and *.