

# ***Why do Governments Privatize?***

*By: Loren Brandt, Hongbin Li, and Joanne Roberts*

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Loren Brandt, Hongbin Li, and Joanne Roberts<sup>1</sup>

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<sup>1</sup>Brandt: Department of Economics, University of Toronto, 150 St. George St. Toronto, ON M5S 3G7 CANADA brandt@chass.utoronto.ca; Li: Department of Economics, The Chinese University of Hong Kong, Shatin, New Territories, Hong Kong, lhongbin@cuhk.edu.hk; Roberts: Department of Economics, University of Toronto, roberts@economics.utoronto.ca. Earlier versions of this paper benefited from comments received at the ISNIE meetings in Germany in the fall 2000, the AEA meetings in New Orleans in January 2001, and seminars at Michigan State, Hong Kong University of Science and Technology, and University of Quebec at Montreal. Brandt and Roberts acknowledge financial support from Canada's Social Sciences and Humanities Research Council. We also thank Aloysius Siow for helpful comments. All remaining errors and omissions are ours.

## Abstract

The role of township-owned enterprises in the rapid growth of the Chinese economy during reform is widely acknowledged. Beginning in the mid-1990s, however, these firms began to be privatized. Perhaps the most striking feature of this process is that it has not occurred uniformly across townships. This raises the simple question: When and why do government leaders privatize? Drawing on a unique data set we collected in the summers of 1998 and 2000, this paper provides a simple theoretical and empirical investigation into this question. We focus on the effect of bank liquidity and bank objectives in determining the value of the firm in the event of privatization. We consider how bank decisions interact with those of governmental leaders and firm managers and ultimately determine the attractiveness of privatization. We also analyze the conditions under which shutdown might be preferred to privatization as a method to divest of government-owned firms. We find that this simple model of the privatization decision yields insights which can be tested with this unique data set.

Geographic Area: China

Keywords: Privatization, Township and Village Enterprises, Financial Institutions.

# 1 Introduction

Since the early 1980s, privatization has become a widely-used strategy for addressing problems in state-owned enterprises. Its use has not been limited to firms in the former socialist countries, but extends to state-owned firms that were established in the post-WW II period in predominantly market economies as well. Megginson and Netter (2001), in a recent survey of privatization studies, point out that the goals in both cases appear to be fairly similar. They include the desire to increase enterprise efficiency through improvements in corporate governance; the need to reduce government subsidies and raise fiscal revenue; and the desire to limit government interference in the economy. Although considerable attention has been given in the literature to differences in how firms have been privatized—primarily because of the implications for firms’ post-privatization governance and performance—no work has been done explaining differences across countries in the use of privatization.

In China, privatization has been generally avoided as a policy tool for dealing with the ailing state enterprise sector. State sector privatization has been limited to smaller state-owned firms, and then only in the last few years (Cao et al., 1999; Lin and Zhu, 2001). In contrast, since the mid-1990s, there has been a massive privatization of firms owned and managed by lower levels of government, namely, China’s township and village enterprises (TVEs).<sup>1</sup> A growing number of local governments have also shut down their firms. Ironically, these same firms are credited with having been the most dynamic segment of the Chinese economy since reform, and a major source of economic growth (Che and Qian, 1998; Oi, 1999; Chen and Rozelle, 1999). Perhaps the most striking feature of this process is that it has not occurred uniformly; instead, we observe considerable

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<sup>1</sup>In Chinese, these firms are officially referred to as *jiti qiye* or collectively-owned firms, but were largely owned and controlled by local governments.

heterogeneity across China.

Our objective in this paper is to provide an explanation for the differences we observe in privatization behavior. Our basic premise is that governments and politicians derive a variety of economic, social, and political benefits from the control over enterprises that comes with ownership. The size of these benefits, however, is not determined in isolation, but rather depends on the rest of the economic environment, including, for example, the choices of enterprise managers and the nature of local financial institutions. We argue that differences across localities in these institutions affect the private and public returns to government ownership, and thus the incentives of governments and politicians to privatize firms.

Formally, we develop a simple environment to analyze how the privatization decision is affected by the interactions of three key players: the government, a bank, and a firm manager/owner. Our model links the government's privatization decision to their ability to extract perks through ownership, the hardness of the the firm's budget constraints, the human capital of enterprise managers, firm monitoring costs, and the incentives and constraints of the banks. These factors ultimately imply how the value of the firm varies with ownership. Although privatization can be beneficial to a government since it eliminates the agency cost inherent in government ownership, it also implies a loss of political capital or perks by the leader. In essence, the decision to privatize is a weighing of these costs and benefits. Theoretically, we find that privatization is more likely when perks to the government from owning firms are smaller, when leaders have low human capital, and when managers have high human capital. We also find that some factors have an ambiguous effect on privatization, including the hardness of the firm's budget, the bank's concern about profits, the bank manager's hu-

man capital, and the costs associated with bank illiquidity. However, when the budget is much harder for privately-owned than for government-owned firms, these factors have unambiguously positive effects on privatization.

The model also allows us to study the shutdown behavior of government-owned firms. Shutdown is appealing for a leader when the firm is of a negative value if retained as government-owned, and when the leader is unable to sell it to the manager for a positive price. Thus, shutdown is less likely when either the value of a government-owned firm or that of a private firm increases.

In the empirical part of the paper, drawing on a unique data set on township governments, firms and local financial institutions we collected in 1998 and 2000, we test hypotheses generated from the theoretical model and explain the heterogeneity of privatization and shutdown patterns across townships. We first employ a Probit model to identify factors affecting the probability of privatization. To capture differences in the timing of privatization and deal with the censoring of the data, we also estimate a Cox Hazard Rate function. Results from both the Probit model and the Hazard model support our theoretical predictions: Privatization is more likely when leaders have low human capital, when it is difficult for leaders to extract perks from government-owned firms, when bank managers have high human capital, and when bank managers have good incentives and are more liquidity constrained. Furthermore, we find that when the government-owned firm's budget is hard, some of the above effects on privatization become weaker. Finally, we apply a Multinomial Probit model to study firm's shutdown behavior. Results of these regressions also support our theoretical predictions on shutdown.

The structure of the rest of the paper is as follows. Section 2 provides background information on township firms and the privatization movement in

rural China. Section 3 sets up the theoretical model. Section 4 solves the model and conducts comparative statics on factors affecting privatization and shutdown. Section 5 extends the theoretical model to allow for banks to make decisions on loan size. Section 6 describes the survey and data. Section 7 presents the empirical model and regression results. Section 8 concludes.

## 2 Background: Local Governments, Firms, and Financial Institutions

The township represents the lowest level of government in the state administrative hierarchy in China.<sup>2</sup> A typical township has a population of 50,000, fifteen to twenty percent of which reside in the township center, and the rest in outlying villages. Township leadership is made up of the township party-secretary (*xiang shuji*), the township head (*xiang zhang*), and the director of the township enterprise committee, all of whom are appointed by higher-level party/government authorities. In some townships, the party secretary or the township head simultaneously hold the position of director of the township enterprise committee. Leaders tend to rotate positions every three years or so on average, but there are considerable differences in leader tenure. Township leaders are evaluated on the basis of their ability to fulfill targets set by higher level authorities. The most important of these targets relate to family planning, tax remission, and economic development, especially the development of local enterprises. Bonuses and career prospects are tied to fulfilling these targets (Oi, 1999; Whiting, 2000). Revenue from township-owned firms has been central to financing a growing list of local expenditures mandated by higher levels of government.

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<sup>2</sup>Villages are below townships, but are not formal governmental units. They still perform, however, some governmental functions. Altogether, there are more than 25,000 townships in China.

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 (Che and Qian, 1998; Chen and Rozelle, 1999; Oi, 1999). Over this period, real growth averaged more than twenty percent annually. By the early nineties, these enterprises totaled more than 1.25 million in number, and employed 135.1 million, an increase of more than 100 million since 1980. At its peak, employment in these firms represented more than a third of total non-agricultural employment in the economy, and nearly 75 percent of non-agricultural employment in the rural sector. These firms were also the source of more than a third of the gross value of industrial output (GVIO), and a quarter of all exports.

There is an extensive literature debating the reasons for the growth and success of these firms, which were government-owned and managed.<sup>3</sup> The contrast with the performance of state-owned enterprises over the same period is fairly stark.<sup>4</sup> The emerging consensus is that it was a combination of historical legacy, e.g. the accumulation of human and physical capital under the communes, better access to resources and inputs in an environment in which input and product markets were imperfect, harder budget constraints, fiscal imperatives, and leader incentives that gave these firms a critical institutional advantage over other ownership forms during this period.

Throughout this period, China's rural economy and local enterprises were largely serviced by two financial institutions, the Agricultural Bank of China (ABC), and Rural Credit Cooperatives (RCC). Both institutions could be 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

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<sup>3</sup>See, for example, Byrd and Lin (1990), Che and Qian (1998), Oi (1999), Weitzman and Xu (1994), and Whiting (2000).

<sup>4</sup>Estimates suggest that the rate of growth in SOEs was only about half of that in the TVEs. Moreover, productivity growth in SOEs was only 1-2 percent annually, compared to 3 percent in TVEs. See Jefferson and Rawski (1995).



went to township and village enterprises (Park, Brandt, and Giles, 1997). The ABC was one of four specialized state-owned banks and was responsible for lending to support agriculture and rural development. Officially, the RCCs were autonomous, collective-run local institutions, but up through the early 1990s were usually supervised by local ABC branches. In some cases, the same individual managed the two institutions. 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. Branch managers of both institutions were appointed by higher level branches, but throughout much of this period, these decisions were heavily influenced by township level governments.

## 2.1 Enterprise Privatization

In the early 1990s, China's central government effectively allowed local governments to begin to privatize firms as part of a nationwide program on enterprise ownership restructuring, or *zhuanzhi* (Cao et al., 1999).<sup>5</sup> Prior to then, privatization was strictly prohibited. The goal of this policy was to redefine the role of government in the economy and better define property rights in the firm as a way of promoting efficiency. Reform was not limited to privatizations, but also included the conversion of local government-owned firms into joint stock or shareholding companies in which the government held only partial ownership. Reflecting the high degree of decentralization in China, each level of government was effectively given discretion as to how to interpret and carry out this policy. Throughout much of the nineties, privatization at the township and village-level went largely unnoticed inside and outside of China.

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<sup>5</sup>These initiatives were related to the implementation of a new strategy for establishing a modern enterprise system as spelled out in November of 1993 at the Third Plenum of the 14th Party Congress.

There are no national data on the ownership changes that occurred as part of this policy initiative, but in the tables below we summarize data collected by the authors that provide estimates at the township level for the two coastal provinces of China, Jiangsu and Zhejiang.<sup>6</sup> The data, in fact, are a census of 643 township-owned firms (TEs) drawn from 15 counties and 57 townships surveyed in these two provinces.<sup>7</sup> On average, a township had 11 firms, with the maximum (minimum) of 20 (2).<sup>8</sup> For all of these firms, we have information on any changes that occurred in ownership between 1993 and 1997, and the year of the change. For 390 of these firms, we have additional information on any changes in 1998 and 1999.<sup>9</sup> These changes include outright privatization of these firms, as well as conversions to joint-stock or shareholding companies.

In Table 1, we summarize information on the year in which townships began to carry out ownership reform, and the expected year of completion. A total of 57 townships reported information on the year in which restructuring began, 51 of which also reported the year of completion. Implementation began in earnest in 1993, with 11 townships starting that year. Half of all townships initiated programs in either 1996 or 1997. There is a significant provincial difference, with townships in Zhejiang starting on average a year and a half earlier than those in Jiangsu. 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.

Changes in ownership took several forms. In a majority of cases, it entailed

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<sup>6</sup>For nationwide data on the restructuring of SOEs, see Lin and Zhu (2001).

<sup>7</sup>In some townships, township-owned firms were actually private firms that used the township designation for political reasons. In the survey, these ‘red-hat’ firms were classified from the outset as private firms.

<sup>8</sup>To help put these firms in perspective, average employment in 1994 was 180 (median, 80), output was 13.9 million RMB (median, 4.0), and total fixed assets were 25.3 million RMB (median, 4.4).

<sup>9</sup>These data were obtained in a supplemental survey carried out in May and June of 2000. Administrative difficulties prevented us from updating information in all townships.

selling the entire firm to either a single individual or a group of individuals.<sup>10</sup> 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 share-holding company. In still other cases, share-holding companies were completely privatized with the sale of the township's remaining share. The survey also collected information on firms that were shutdown, and ceased operations.

In Table 2, we present annual information on the number and percentage of firms that were affected by these changes. We use as our definition of privatization the sale of 100 percent of the firm.<sup>11</sup> In calculating annual privatization rates, we normalize by the number of collectively-owned firms that were in production at the beginning of the year. In the top half of the table, we present information for those firms for which we have data up through 1997 and in the bottom half report similar information for the smaller sample of firms in townships for which we have information for the slightly longer period between 1993-1999. In 1997, for example, there were 438 firms in operation that were classified as collectively-owned. Out of these firms, 73 (16.7%) were privatized, 13 (3.0%) were converted into share-holding companies in which the township retained only a minority position, and an equal number were converted into share-holding companies in which the township had a majority share. There were also nine share-holding companies in which the township sold off their minority share, and thus became fully private. Finally, there were 41 (9.4%) firms that were shutdown in that year. Table 3 provides a breakdown for the two

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<sup>10</sup>In all but a few cases, the firm was sold to the incumbent manager.

<sup>11</sup>A broader definition of privatization would include as private those township firms that were converted into joint-stock companies in which the township only retained a minority position. Using this definition, the percentage of firms that were privatized between 1994 and 1997 increases from 34.2% to 45.1%. Our ability to explain differences in privatization across townships using this broader measure of privatization is considerably weaker, suggesting important differences between these kinds of firms.

provinces drawing on the longer, but smaller survey.

Several features of the data are noteworthy. First, over the period between 1993 and 1999, privatization was pervasive. Altogether, 208 out of our sample of 390 firms, or 53.3 percent of firms were fully privatized. This consists of 157 firms that were privatized through a single sale, plus 51 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.

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 firms privatized. In 1996 and 1997, the rate of privatization was nearly double that experienced between 1993 and 1995. The rate again doubled in 1998, before declining significantly in 1999.

Third, although the differences across provinces are modest,<sup>12</sup> there is considerable heterogeneity across townships in privatization rates. In Table 4, we report the cumulative distribution for the percentage of firms that were privatized at the township level. We report these percentages for both samples, the larger sample that runs up through 1997 and includes 57 townships, and the smaller one that extends to 1999, but only covers 43 townships. The distributions are similar, and suggest a fairly uniform distribution for privatization rates at the township level.

And fourth, a significant number of firms in the survey were shutdown. For the sample running up through 1999, 68 out of 390, or slightly more than one-sixth of the firms, went out of operations. For the sample running up through 1997, 99 firms, or 15.4 percent, were bankrupt. To put this into perspective, this

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<sup>12</sup>In Jiangsu, 51.8 percent were privatized, while in Zhejiang the percentage is 57.0.

is two times the number of firms in the same townships that went out of operations between 1980 and 1993.<sup>13</sup> The high rate of shutdown effectively lowered (raised) the percentage of government-controlled (private) firms in operation at the end of the period.

### 3 The Model

In our model, a government's decision to privatize a township-owned firm depends on the ex-post value of the firm under the two alternative forms of ownership. If the value of the firm is higher if it is ran as a privatized firm, it is sold; otherwise, it remains government owned.<sup>14</sup> In either case, the value of the firm depends on the combined behavior of the firm manager, the bank, and the government leader. In order to solve for this privatization decision, we must consider the value of the firm under each of these ownership structures. If the firm is not profitable under either ownership structure, the government will choose to shut it down.

We consider a simple two period game. At the outset, a township government owns an enterprise, and is therefore actively involved in its management.<sup>15</sup> The firm is defined in terms of a project that requires outside (bank) funding to finance. In period one, the leader faces the problem of deciding whether to remain active in the management of the firm, to sell it to a manager, or to shut it down. If the firm ceases operating, the game ends. In the second period, once the privatization decision has been made, the bank and the current owner

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<sup>13</sup>Information on firm shutdown prior to 1993 in these locality was obtained in the supplementary survey.

<sup>14</sup>Note however this is only an efficient allocation in a weak sense, since the agents' respective valuations are a function of the effort levels chosen. However, these choices may not be optimal. For example, agents do not internalize all of the costs associated with default.

<sup>15</sup>We use the leader as the representative of the government, and use the two words, leader and government, interchangeably throughout the rest of the paper.

simultaneously choose how much effort to exert in the project.<sup>16</sup>

Bank effort can be interpreted either as monitoring effort or as financial and productive expertise that directly improves the probability of the firm's success. If the firm is township owned, the leader needs to decide how much effort to induce from the manager. If the firm is privatized, the manager must decide his own effort level. After these costly efforts are undertaken, the profitability of the project is realized, determining the value of the firm.

In Section 7, we extend our model to allow the loan (or project) size to be endogenously chosen by the bank as well. This extension does not qualitatively change the model's predictions.

Both the government-owned firm and the private firm have limited liability. When or if the project fails, the leader (manager) needs only to pay the bank the firm's total production and any other predetermined collateral.<sup>17</sup>

We initially take the bank loan as given, and assume that the firm has a project that requires a fixed amount of capital  $K$  to implement.<sup>18</sup> The rate of interest  $R$  is also taken as given.<sup>19</sup> We assume that neither the leader nor the firm manager has the capacity to self finance.<sup>20</sup>

We assume that the bank provides loans and makes its monitoring decisions to maximize an objective function that includes bank profitability, costs of illiq-

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<sup>16</sup>We make these decisions simultaneous. First, it seems plausible that effort decisions could be adjusted easily. And secondly, the simultaneous nature of play implies that the manager or leader cannot commit to their effort levels. It is this lack of commitment on the part of the manager of a newly privatized firm which seems like a central feature that needs to be captured.

<sup>17</sup>We assume that the legal framework, including bankruptcy laws and the bank's capacity to collect on bad debt, is taken as given by the players.

<sup>18</sup>Or equivalently, that continued production requires a minimal operating loan of  $K$ .

<sup>19</sup>This assumption reflects the fact that interest rates are fixed by the government.

<sup>20</sup>Although such operating loans have often been difficult for private firms to acquire, we take the loan as given for now and return to the question of loan size later. Of course, the capacity to receive external finance will be a crucial feature in determining the value of a firm to a manager.

uidity, and perks associated with relationships with township-owned enterprises.<sup>21</sup>

The technology of the project is assumed to take on the following simple structure: An investment  $K$  can either generate a successful gross revenue of  $SK$  (where  $S > 1$ ) or nothing.<sup>22</sup> The project's probability of success  $P$  depends on the effort levels of the bank and the firm manager  $P(a_B, a_F)$ . We assume that this probability has the following properties:  $P_1 = \frac{\partial P}{\partial a_B} > 0$ ,  $P_2 = \frac{\partial P}{\partial a_F} > 0$ ,  $P_{11} = \frac{\partial^2 P}{\partial a_B^2} < 0$ ,  $P_{22} = \frac{\partial^2 P}{\partial a_F^2} < 0$ ,  $P_{12} = \frac{\partial^2 P}{\partial a_B \partial a_F} > 0$ ,  $P_{11}P_{22} - P_{12}^2 > 0$ ,  $P_{112} = \frac{\partial^3 P}{\partial a_B \partial^2 a_F} < 0$ , and  $P_{122} = \frac{\partial^3 P}{\partial a_B \partial^2 a_L} < 0$ . These imply that the probability of success increases in both effort levels but at a decreasing rate. Moreover, these efforts are complementary, but this complementarity diminishes. We also assume  $P$  satisfies the following initial conditions:  $P(0, 0) = 0$ ,  $P(0, +) > 0$ ,  $P(+, 0) > 0$ ,  $P_{12}(0, +) = P_{12}(+, 0) = \infty$  and  $P_{12}(\infty, +) = P_{12}(+, \infty) = 0$ .<sup>23</sup> These assumptions mean that neither the firm's nor the bank's effort are absolutely critical, but the project will fail without effort from at least one of them. Also, the complementarity is extremely strong when one of their efforts is low and weakens when one of the efforts is very high.

Beyond the revenue from such a sale, the primary advantage to the leader of selling the firm is that it saves the leader the costs associated with inducing managerial effort. However, aside from sacrificing a claim to the firm's profits, selling the firm also has the drawback of diminishing the perks (or political capital) of the leader.<sup>24</sup> We assume that the township leader maximizes the

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<sup>21</sup>There are many reasons that banks may provide loans to private firms. They may be interested in profits. They may also provide loans to private firms with the intention of using the profits generated to maintain their valuable relationships with TEs. In this way, the decision to loan to private firms is not motivated by a decreased interest in the TE sector ( $\alpha_B$ ), or even necessarily an increased interest in profit ( $\beta$ ), but rather by a continued commitment to investment in TEs.

<sup>22</sup>This structure could be enriched without qualitatively affecting the results.

<sup>23</sup>These assumptions guarantee that there is a unique solution to the game.

<sup>24</sup>These perks associated with township ownership can be interpreted in many ways. Cynically, they can be viewed as private benefits derived from the de facto control of firm assets by the leader. More optimistically, they can be viewed as political capital obtained from

following objective function of revenue and perks minus costs if the firm is township owned:

$$U_L = \alpha_L K + P(a_B, a_F)(S - R)K - \delta_L(1 - P(a_B, a_F))K - C^L(a_F, \phi_L). \quad (1)$$

$\alpha_L K$  is the perk the leader associates with a project or firm of size  $K$ ,<sup>25</sup>  $(S - R)K$  is the profit from a successful project, and  $\delta_L K$  is the collateral that must be paid if it fails. We use  $\delta_L$  to represent the softness of the budget. If the budget is hard,  $\delta_L = 1$ , the leader is fully responsible for the debt and interest, i.e. must provide collateral having the same value as the investment. If  $\delta_L = 0$ , then the leader incurs no cost in the event of a failure. In reality, one would imagine that  $\delta_L$  lies between 0 and 1.<sup>26</sup> If the firm is privatized, the leader is paid a price  $p$  for the firm determined by Nash bargaining and incurs no costs.

The leader's cost function  $C^L(a_F, \phi_L)$  captures in a simple reduced form way the cost to the leader of inducing a level of effort  $a_F$  from the firm manager.<sup>27</sup> This cost captures both the compensation for the disutility of effort experienced by the manager and the monitoring costs and incentives required to induce the desired level of effort.  $\phi_L$  is the level of human capital of the leader. This variable captures how easily or cheaply the leader can monitor and induce effort. This variable can also capture the outside opportunities of the manager; when these opportunities are high it is costly to induce effort (low  $\phi_L$ ). We assume that this cost function has the following properties:  $C_1^L = \frac{\partial C^L}{\partial a_F} > 0$ ,  $C_{11}^L = \frac{\partial^2 C^L}{\partial a_F^2} > 0$ ,

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guaranteeing employment and promoting economic activity in the township. See Shliefer and Vishny (1994), Boyco et al. (1995) and McMillan (1997).

<sup>25</sup>Note the perks are increasing in the size of the project. This could capture promotion possibilities, community employment concerns, other political economy stories, or perhaps more direct personal benefits associated with controlling more assets. We could generalize this specification to allow perks to vary with the project's output or profit.

<sup>26</sup>We treat this as exogenous in this simple model. More realistically, one could imagine it at least partially being determined within a bargaining game over the terms of the loan contract. This capacity to negotiate such terms may only be partial as a consequence of directives from higher level authorities.

<sup>27</sup>For simplicity, we collapse the entire principle-agent solution into this simple function.



$C_2^L = \frac{\partial C^L}{\partial \phi_L} < 0$ . Lastly, we assume that  $C_{12}^L = \frac{\partial^2 C^L}{\partial a_F \partial \phi_L} < 0$ . So, more able leaders find it less costly to induce effort from their managers.<sup>28</sup>

If the firm is privatized, the manager will purchase the firm at price  $p$  and become the residual claimant. The utility of the manager when he runs the firm is  $U_M$ , which can be expressed as

$$U_M = P(a_B, a_F)(S - R)K - \delta_M(1 - P(a_B, a_F))K - C^M(a_F, \phi_M). \quad (2)$$

Notice that the manager's utility is the same as the leader's except that there are no perks for a private firm from getting a loan and that the penalty for default is perhaps different. We assume that the project chosen by the firm is the same regardless of ownership.<sup>29</sup> Naturally, we assume that the cost to the leader of inducing a level of effort  $a_F$  must be at least as large as the cost of the manager in providing it. This captures that one component of the leader's cost is a payment to the manager that guarantees the manager's participation and therefore must at least offset the manager's effort costs.<sup>30</sup>

The bank's (or equivalently, in this framework, the bank manager's) utility function consists of four components: the perks associated with lending to TEs, the expected profit or loss from lending, a penalty for illiquidity, and the cost of monitoring effort. This is given by

$$U_B = \gamma_B K + \beta\pi - IQ(P, F) - C^B(a_B, \phi_B), \quad (3)$$

where  $\gamma_B = \alpha_B$  if the firm is a TE, and  $\gamma_B = 0$  if it is a privately owned firm. The term  $\alpha_B K$  represents perks from loaning to a TE. There are many

<sup>28</sup>Although we could more explicitly model the nature of the agency relationship between the leader and manager, this cost function captures the basic dynamics in a simple manner without affecting any of the results qualitatively. The important thing here is that the leader must exert some effort or bear some cost, i.e. monitoring or agency cost, not required in a private firm.

<sup>29</sup>One could imagine a situation in which a manager may have superior information and therefore be able to pick a higher profit project. Alternatively, an owner with less liability for losses might choose a riskier project. We abstract from these dimensions.

<sup>30</sup>Of course, beyond participation, the payment must also induce the desired effort level.

benefits to the bank manager and the bank, both private and political, from maintaining close relationships with the leader and local government. We let  $\beta$  represent the intensity of the bank manager's profit incentive as set by higher level authorities, and  $\pi$  is the profits from loaning to this firm. In a parallel fashion to the effort costs of the leader and manager,  $C^B(a_B, \phi_B)$  is the cost of bank monitoring, where  $C_1^B > 0$ ,  $C_{11}^B > 0$ ,  $C_2^B < 0$ , and  $C_{12}^B < 0$ . This effort on the part of the bank can be thought of as direct intervention into the firm's operation or into the monitoring of firm workers by the bank manager leading to a higher probability of firm success.

If the bank becomes illiquid, it incurs a cost of  $I$ . This can be interpreted in a variety of ways including as a personal cost to the manager associated with their future career prospects; the costs of a bailout from higher-level authorities; or the opportunity cost associated with having to forego future profitable investments due to insufficient funds. The probability of the bank being illiquid arises endogenously and is denoted  $Q(P, F)$ . Here  $Q$ , or the probability of becoming illiquid, decreases in the success probability of this project, and possibly decreases in a measure of loan portfolio diversification  $F$ . We assume that  $F$  is a decreasing function of loan size.<sup>31</sup> To simplify the analysis, we assume  $Q$  is a linear function of  $P$ , or  $Q = A(K) - F(K)P$ .

## 4 Township Enterprises, Private Firms or Shut-down

In the first stage of the game, the leader makes a decision about firm ownership. The leader compares the value of the government owned firm ( $U_L$ ) to the revenue ( $p$ ) associated with privatizing the firm, and sells the firm if and only if this

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<sup>31</sup>And we assume that  $F^{00}(K) \leq 0$ .

revenue exceeds his valuation of the retained TE. At the same time, the manager is willing to buy the firm if and only if the price he pays is less than the value of the firm under his ownership,  $U_M > p$ . Thus, a necessary condition for privatization is that  $U_L < U_M$ . We assume the price of the firm to be privatized is determined through Nash Bargaining. So, the transacting price is  $p = (1 + \lambda)U_M - \lambda U_L$ , where  $\lambda \in [0, 1]$  represents the bargaining power of leader.<sup>32</sup> This implies that  $U_L < U_M$  is a sufficient condition for privatization. So, the leader will allocate ownership to whoever values the firm most *ex post*.<sup>33</sup> If no one places a positive value on the firm, i.e.  $U_L < 0$  and  $U_M < 0$ , then the leader will shutdown the firm in order to avoid losses.

In order to solve for this decision, we must first consider the two subgames: a government-owned firm and a private firm. First, we solve for the optimal effort choice by the leader or manager as a function of the bank's decision. We then solve for the bank's monitoring decisions for both the government-owned firm and the private firm. These effort decisions yield the optimized leader's utility of a township-owned firm  $U_L^*$ , and the optimized manager's utility of a private firm  $U_M^*$ . As discussed, if  $U_M^* - U_L^* > 0$ , the leader will privatize. We conduct comparative statics on this privatization decision in order to see what increases the surplus (and therefore the likelihood) of privatization. If  $U_L^* < 0$  and  $U_M^* < 0$ , the leader will shutdown the firm.

#### 4.1 Within-Firm Decisions

There are two firm subgames: a township-owned firm and a private firm. In either case, the owner has to select a level of managerial effort  $a_F^i$  where  $i = L, M$

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<sup>32</sup>The size of this parameter  $\lambda$  can reflect the competition amongst possible buyers, the outside option of the manager, or unmodelled asymmetric information.

<sup>33</sup>Preliminary evidence on the improved performance of firms after privatization seems consistent with this intuition.

in the township-owned firm and the private firm, respectively. A firm owner chooses managerial effort  $a_F^i$  to solve

$$\max_{\{a_F\}} \gamma_F K + P(a_B, a_F)(S - R + \delta_i)K - \delta_i K - C^i(a_F, \phi_i), \quad (4)$$

where  $\gamma_F = \alpha_L$  if the firm is a TE, and  $\gamma_F = 0$  if it is a privately owned firm. The solution equates the marginal benefit of increasing the project's probability of success to the marginal cost of effort.<sup>34</sup>

$$P_2(a_B, a_F)(S - R + \delta_i)K - C_1^i = 0. \quad (5)$$

This provides some insight into within-firm decisions. Focusing attention on decisions in these subgames, we see the following:

*Lemma 1: Fixing bank effort, the firm manager's effort level*

1. *increases with his ability, the successful return of the project, the budget hardness, and the size of the project;*
2. *does not vary in the perks the leader derives from a loan;*
3. *decreases with the interest rate.*

All of these results are quite intuitive. The owner chooses a higher level of managerial effort when the cost of this effort falls (high  $\phi_i$ ), the returns to effort rise (high  $S$ , low  $R$ , high  $K$ ), and the penalties for failure rise (high  $\delta_i$ , high  $K$ ). In addition, the effort choice does not vary in the perk parameter. This is due to the fact that we have modeled perks in a very simple way so that they do not depend on the success of the project. If they were to be increasing in this probability, increasing  $\alpha_L$  would increase the return to the leader's effort.

<sup>34</sup>The second order condition is  $P_{22}(S - R + \delta_i)K - C_{11}^i < 0$ . Thus, we have a global interior maximum.

*Lemma 2: Increased bank effort induces an increase in the firm manager's effort level.*

When bank effort increases, this increases the return to within-firm effort by the firm manager through the complementarity between bank and manager effort that is assumed in the probability of investment success.

Note that if a private firm does not have a much softer budget than the TE, i.e.  $\delta_M$  is not significantly smaller than  $\delta_L$ , that it is always the case that a manager in a privately owned firm will choose a higher level of effort than the leader would have in the TE subgame. This follows from the fact that for all  $a_F$  the cost of that level of effort to the manager is no larger than the cost of inducing that level of effort for the leader.

*Lemma 3: If  $\delta_M \geq \delta_L$ , a manager in a privately owned firm will have a higher level of effort than a firm manager in a township owned firm. So,  $a_F^M > a_F^L$ .*

We assume that  $\delta_M \geq \delta_L$  throughout the rest of the paper. In other words, that a TE's budget constraint is not harder than that of privately-owned firm.

## 4.2 The Bank

The bank makes a monitoring decision at the same time as the leader's privatization decision. The bank maximizes the following expression:

$$\max_{\{a_B^i\}} \gamma_B K + \beta \pi(a_B^i) - IQ(P(a_B^i), F) - C^B(a_B^i, \phi_B) \quad (6)$$

where  $\pi = P(a_B^i, a_F^i)(R - \delta_i)K - (1 - \delta_i)K$ , and  $Q = A - F(K)P$ . This yields the following first order condition<sup>35</sup>

$$[\beta(R - \delta_i)K + IF(K)]P_1 - C_1^B = 0. \quad (7)$$

We have the following insights into bank activities:

*Lemma 4: Fixing the within-firm effort choice, the bank manager's effort level*

1. *increases with his ability, the cost of illiquidity, the intensity of his profit incentive, the interest rate, and in the size of the project;*
2. *does not vary with a change in the percentage of perks the leader or the bank manager derives from a loan, or a change in the successful return of the project;*
3. *falls in the hardness of the firm's budget.*

The bank manager's effort increases with his ability since this makes effort less costly; increases in the cost of illiquidity since it increases the cost of project failure; and increases in the intensity of his profit incentive since it increases his benefit from success. His effort falls in the softness of the firm's budget since this reduces the costliness of project failure. Fixing firm effort, the bank's payoff does not directly depend on the leader's or the bank's perks or the successful return to the project.

The ambiguity with respect to the interest rate and the size of the project arises from two countervailing effects. A higher interest rate raises the benefit

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<sup>35</sup>The second order condition is

$$[\beta(R - \delta_i)K + IF(K)]P_{11} - C_{11}^B < 0.$$

to effort and larger project size increases the cost of failure, thereby increasing the return to effort. Both of these factors increase the expected liquidity of the bank, however, making effort less necessary. As a result, bank effort may rise or fall with a change in the interest rate or project size.

### 4.3 Equilibrium Effort Decisions

The second stage of this game has unique effort choices by the firm and the bank jointly solving the first order conditions listed above.

*Lemma 5: There is a unique equilibrium to the effort choice subgame.*

These equilibrium effort choices vary in most of the parameters of the model in relatively predictable ways.

*Lemma 6: The equilibrium effort levels within the firm and of the bank*

1. *increase with the bank manager's ability, the firm manager or leader's ability, the cost of illiquidity, the intensity of his profit incentive, the successful return of the project, and the size of the project;*
2. *do not vary with a change in the percentage of perks the leader or the manager derives from a loan;*
3. *are ambiguous in the hardness of the private firm's budget and the interest rate.*

Many of these parameters have the same effect on the best response of the firm owner and of the bank, which induces more effort. The complementarity of

their efforts reinforces this effect in equilibrium. The magnitude of these comparative statics is also larger when the firm (project size) is larger, the budgets are harder, the bank is more profit motivated, or more liquidity constrained. All of these factors increase the willingness of agents to increase their efforts in response to changes in the environment.

The ambiguity in Lemma 6 arises from the conflicting incentives of the two agents. For example, when the private firm's budget is hardened, the private firm wants to work harder since it is responsible for more of the firm's potential losses. Through effort complementarity, this makes effort more appealing to the bank. However, the harder budget makes the bank directly responsible for fewer losses, which causes them to want to reduce their effort. The reduction in bank effort implies that effort is less appealing to the firm. As a result, effort may rise or fall. The same basic conflict arises when the interest rate changes. In the case of both of these variables, however, the implied ambiguity is less likely, i.e. we can more easily say efforts will increase, if effort has a bigger impact on the firm owner's and bank manager's payoffs. In particular, if project size is larger, profit motives are stronger, illiquidity is more costly, and budgets are harder, then efforts are more likely to increase with a small change in either the rate of interest or the level of hardness of the firm's budget.

## 5 Shutdown

Shutdown is only an appealing option for a leader when the firm is unprofitable if retained as a TE,  $U_L^* < 0$ , and the leader is unable to sell it to the manager for a positive price,  $U_M^* < 0$ . Then, the leader can only avoid the losses associated with this unprofitable venture by closing it down. We define these values as



follows:

$$U_M^* = P(a_B^{M*}, a_F^{M*})(S - R + \delta_M)K - \delta_M K - C^M(a_F^{M*}, \phi_M) \quad (8)$$

$$U_L^* = P(a_B^{L*}, a_F^{L*})(S - R + \delta_L)K - \delta_L K + \alpha_L K - C^L(a_F^{L*}, \phi_L). \quad (9)$$

The intuition for what makes shutdown more or less likely is relatively simple. Shutdown is less likely when the firm has more value to either party. These values are of course a function of firm and bank efforts.

*Proposition 1: Factors that make shutdown less likely:*

- *high leader perks, high bank human capital, intense bank concern about profits, increasing illiquidity costs, high leader human capital, high manager human capital, high payoff of a successful project, and large project size;*

*Factors that have an ambiguous effect:*

- *hardness of the firm's budget, and high rate of interest.*

The firm has more value to the township leader if the leader's perks are higher. Thus, higher leader perks make shutdown less likely. The possibility of shutdown is also reduced by higher effort levels of either firm or bank managers. Since these effort levels are unambiguously positively correlated with factors such as higher bank human capital, bank concern about profitability, etc., increases in the latter also reduce the likelihood of the firm ceasing operations.

The ambiguity in the proposition arises from the fact that some of these factors have two countervailing effects on effort. As noted above, however,

efforts are more likely to increase and therefore to increase the value of the firm if effort matters more. This implies that increases in these variables will likely reduce the prospect of shutdown when projects are larger, profit motives are more powerful, illiquidity costs are higher, and budgets are harder.

## 6 Privatization Decision

The leader will privatize if and only if the surplus to privatization is positive,  $U_M^* - U_L^* > 0$ . We define this difference as  $G$ , the gain from privatization. So, the surplus to privatization is given by:

$$G = P(a_B^{M*}, a_F^{M*})(S - R + \delta_M)K - \delta_M K - C^M(a_F^{M*}, \phi_M) - P(a_B^{L*}, a_F^{L*})(S - R + \delta_L)K + \delta_L K - \alpha_L K + C^L(a_F^{L*}, \phi_L). \quad (10)$$

Although the privatization decision is a discrete choice, i.e. the firm is either privatized or not, we want to know what factors make privatization more or less attractive. In other words, what factors increase the size of the surplus to privatization.

*Proposition 2: Factors that make privatization less appealing:*

- *high leader perks, and high leader human capital (or low outside options for managers);*

*Factors that make privatization more appealing:*

- *high manager human capital;*

*Factors that have an ambiguous impact:*

- *the hardness of the firm's budget, the bank's concern about profits, bank human capital, rate of interest, size of the project, payoff of a successful project, and the penalty associated with illiquidity.*

Increasing leader perks or his human capital, or reducing outside options for managers, increases the value of a retained firm without affecting the value of a privatized firm. Therefore, they are negatively related to the probability of privatization. Similarly, since it is unrelated to the value of a TE, manager human capital is positively related to the value of the private firm and therefore to the probability of privatization.

Increasing the hardness of the firm's budget can either increase or decrease its value to its owner. This ambiguity arises since a harder budget has ambiguous effects on both firm and bank efforts as discussed above. If efforts increase substantially, this can increase the value of the firm to its owner and offset the increased liability associated with the harder budget. However, if efforts fall, then the value of the firm will definitely fall. This decrease in value will make the other ownership structure relatively more appealing.

Illiquidity costs, bank manager human capital and incentives, and project size and payoff are positively related to the value of the firm under either ownership structure. Increasing any of these variables will lead to more privatization only if they increase the value of the private firm more than they increase the value of the township owned firm. The likelihood of this occurring depends on the relative hardness of the budget of the private and TE firm. The intuition is fairly straightforward.

Changes in parameters that induce either additional firm or bank effort have a larger impact on the value in a TE, where effort is more costly and therefore more scarce. As a consequence, on the margin, induced effort increases the value of a retained TE relative to a private firm. All else equal, this reduces the likelihood of privatization. However, private firms are riskier endeavors since they are responsible for more of their own losses, i.e.  $\delta_M \geq \delta_L$ . In this way, the

induced effort can increase the expected profit of the private firm by a larger amount than the TE since it decreases the probability that these large losses will be experienced. Essentially, if the budget of the private firm is much harder than that of the TE, the relative value of the private firm can increase.<sup>36</sup>

We illustrate this point further by looking at the effect of increasing the bank's profit motive. This increase induces more bank effort in the TE than in the private firm, which increases the TE's relative value. The effect of bank effort, however, is weighted by the hardness of the budget. As long as the hardness of the TE's and the private firm's budgets are similar, privatization is less likely. If the private firm has a much harder budget constraint, however, the effect can go either way, and may lead to more privatization. In a related way, the effect of increasing the illiquidity penalty or the bank human capital depends on budget hardness. Again, only if the private firm has a much harder budget will this change increase the gains to privatization.

A more profitable project (high  $S$  or equivalently low  $R$ ) can be more or less likely to be privatized. The ambiguity arises from two potentially offsetting effects. Since a private firm realizes a profit more often, a higher potential profit has a greater effect on the value of the privately owned firm. This makes privatization more likely. Project profitability, however, also increases bank effort. Unless private firms have much harder budgets, the increase in bank effort will have a bigger effect in TEs, which reduces the appeal of privatization to leaders.

Lastly, increasing the size of the firm,  $K$ , has the same conflicting effects as increasing the project's profitability  $S$ . However, it also implies that the leader receives more perks from retaining ownership, thereby lessening the incentive

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<sup>36</sup>This can be easily seen by comparing the firm's value under the two ownership structures described by equations (1) and (2).

to privatize.

## 7 Endogenizing Loan Size

In the previous analysis, we looked at how the value of the firm varies with firm and bank effort. More generally, the value of a firm depends on two things: the size of the loan a firm can get *ex ante*, and the efforts exerted by the firm and bank *ex post*. In this section, we focus on the bank's *ex ante* decision with respect to loan size. In other words, we endogenize the loan size  $K$ . Loan size can be thought of as capturing the size of the firm, or the amount of operating capital needed by the firm to implement some potentially profitable project. We allow loan size to be solely determined by bank decisions.<sup>37</sup> Banks determine their lending decisions by weighing the benefits associated with project perks and bank profits against possible losses and liquidity costs.

To simplify, we fix the bank and firm efforts and focus solely on the bank's *ex ante* lending decision in order to ask the following two questions: (1) Given the profitability of each ownership type, will the bank lend relatively more to a TE or private firm? (2) How does this lending decision affect the privatization decision?<sup>38</sup> We focus on this simple case to illustrate the additional impact of loan size. The bank's utility in this case is

$$\max_{\{K\}} \gamma_B K + \beta [P^i (R - \delta_i) K - (1 - \delta_i) K] - C^B - IQ(P^i, F(K)). \quad (11)$$

Immediately, banks lend less when liquidity is a major concern. They loan more

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<sup>37</sup>Within the context of our model, firms always prefer the maximum amount of credit. This is a simplification, but reflects the effect of interest rates set below market-clearing levels by the government.

<sup>38</sup>We can think of this as the bank making a lending decision conditional on the profitability of lending to firms of different ownership. This simplification amounts to assuming that the loan size does not change the probability of the project's success,  $P$ , and allows us to learn how the bank's lending decision is affected by the firm's profitability, bank's perks and changes in liquidity constraints.

to more profitable firms, and all else equal, to TEs to enjoy relationship perks  $\gamma_B K$ . This leads to the following results.

Privatization is more likely when the bank is more liquidity-constrained. Increasing the bank's liquidity constraint will decrease the loan size for both ownership forms, but it will decrease that of a TE more on the margin because TEs have larger loans to start with. This result is generated by our simple setup. Fixing efforts, the bank's marginal utility is a constant, but its marginal cost (of illiquidity) is an upward sloping and concave function of  $K$ . Because of the extra perks a bank can enjoy from lending to a TE, the marginal benefit of lending is higher for a TE, and as a result, the loans are larger for a TE. Increasing the liquidity constraint amounts to rotating the marginal cost curve up around the origin, and this will decrease the optimal loan size for both ownerships. But it decreases that of a TE more, because the marginal cost curve is flatter at larger loan size.

Since the loan size decreases more for a TE, the value of TE decreases more than that of a private firm. This is compounded by the reduction in the leader's perks since loans to TEs are now smaller. So, privatization is more likely. By a similar logic, privatization is also more likely when the punishment associated with illiquidity increases.

When the bank has stronger incentives, and therefore cares more about project profitability, it will choose to loan relatively more to private firms since they have a higher probability of project success. As a consequence, the value of private firms will increase relative to TEs, implying that privatization is more likely.

Privatization is also more likely when a bank manager enjoys fewer perks from lending to TEs (a smaller  $\gamma_B$ ).<sup>39</sup> When it is difficult for bank managers

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<sup>39</sup>Note, as well, that this result is preserved with different assumptions about the nature of

to generate perks from maintaining a relationship with leaders, e.g. frequent rotation of bank managers from posts or bank managers from outside the township, banks will be less willing to lend to TEs relative to private firms. Since a firm's value increases with the size of loan, a TE's value will decrease with the decrease in loan size, and privatization would thus be more likely.

The lack of ambiguity in these results may seem puzzling after the results in section 6. Here, it derives directly from an assumption made in the setup. In this section, we assume that firm efforts are fixed and are not responsive to loan size. Relaxing this assumption will cause larger loans to induce more effort within private firms. In this way, loan size can have an additional benefit for banks – it can be an instrument to induce more within-firm effort. Since this effort will be valued differently within firms depending on their ownership structures, this can lead to the type of ambiguity discussed earlier. Here, since our intention is merely to illustrate some aspects of bank actions that we have not already discussed, we abstract from these effects.

## 8 Data

The data we use are the product of a collaborative survey effort involving two of the authors that was carried out in the summer of 1998 in 15 counties and 57 townships in the coastal provinces of Jiangsu and Zhejiang. 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.<sup>40</sup> The counties are located in five regions of the two provinces: Northern Jiangsu, Central Jiangsu, Southern

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bank perks. In particular, the result obtains if bank perks are a function of TE profitability.  
<sup>40</sup>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.

Jiangsu, Northern Zhejiang and Southern Zhejiang. Within each county, we chose four townships also by stratifying on the basis of income.

The survey consisted of three parts: 1. a census of all firms that were township-owned in 1993 in order to track ownership changes up through 1997;<sup>41</sup> 2. a survey of the local branch of the Agricultural Bank of China (ABC) and the local Rural Credit Cooperative (RCC) that provided detailed information on bank behavior, including balance sheet data; and 3. a survey of township leaders that provided data on cadre personnel, the local government, and the township economy. A majority of the townships in which we surveyed had branches of both the ABC and a local RCC. These two institutions were the primary source of the formal credit received by township-owned firms, and combined were the source of more than three-quarters of all loans extended to either households or firms in the townships.

Below, we describe the variables used in our empirical work. The variables are organized into several groups: Privatization measures, firm characteristics, bank attributes and incentives, attributes of local leaders, budget hardness, and local market conditions. The one key variable we are missing is data on the human capital of firm managers.

1. Privatization Measures: For all firms, we know any changes that occurred in ownership structure and the year of the change. Our definition of privatization coincides with the sale of a hundred percent of the firm to either an individual or a group of individuals. This may occur through either a single sale of the firm, or may occur after a township-owned firm

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<sup>41</sup>As described in section 2.1, a supplementary survey in May 2000 provided information on ownership changes for 1998 and 1999 for two-thirds of all firms. In the empirical work reported in this version of the paper, we draw on the larger, but shorter data set. We do this to maximize sample size. In general, the results for the smaller, but longer, data set are similar, however, significance levels are lower. This reflects the difficulty of explaining changes in later years on the basis of information for 1994 or earlier.



was initially converted into a shareholding company, in which the township retained a share of the equity. In the latter case, the year of privatization is the year in which the township sold off its remaining shares.

2. **Firm Characteristics:** For each firm, we have annual information on profits, employment, output and fixed assets.
3. **Budget Hardness:** Hardness of the budget constraint of township-owned firms in 1994 is self-reported by township leaders. They were asked to rank how easy it was for them to persuade the banks to renegotiate loan terms for township-owned firms. We do not have a comparable measure for private firms, and so under the assumption that private firms faced hard budget constraints, we use this as a relative measure of the hardness of the budget for township-owned firms.
4. **Bank Attributes:** For each bank, we have personnel data on bank managers, information on managerial incentives and bank objectives, and bank liquidity.
  - (a) Personnel data on bank managers consists of their age, education, and if they are from the township.
  - (b) For each bank, we know the weight given to profitability in the evaluation of bank managers, and the ratio of the bonus to base income for the bank manager. These are typically set by a higher level banking authority.
  - (c) Bank liquidity is measured using two variables: the percentage of loans that were classified as non-performing<sup>42</sup> in 1994, and deposit growth over the period 1994-97.

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<sup>42</sup>Up until 1997, non-performing loans were classified into three categories: overdue, inactive and dead. We use some of these as our measure.

5. **Attributes of Local Leaders:** We know the age, tenure, and education of the township cadre including the party secretary, the township head, and the head of the township enterprise commission. Typically, the party secretary is the most powerful, and we use information on their attributes.
6. **Market Conditions:** For each township, we know if a manager of a township firm was lost to a private firm between 1990-1994. We use this information to construct a county-level variable that reflects the percentage of townships in the county that lost a manager to outside opportunities. The county is a better unit of observation than the township because markets for managers were not limited to the township they were currently in.

Summary information for key variables is provided in Table 5. Unless we note otherwise, information is reported for 1994, the first year of privatization activity that we examine. Especially important in our analysis are the differences across localities in the financial institutions, notably, in incentives and bank liquidity. The weight assigned to profitability by the bank branch among its objectives is measured on an index from one to five, with five the highest. The mean in our sample is 3.7, with a standard deviation of 0.8. Manager incentives, on the other hand, are captured by the *ex ante* ratio of the manager's bonus to total income if the branch fulfilled all of their targets. On average, these bonuses were equal to two-thirds of total manager compensation, with a standard deviation of a quarter. Bank liquidity is captured by the percentage of self-reported non-performing loans and deposit growth. On average, banks reported that 21.1 percent of their loan portfolio was non-performing, with the breakdown between overdue, inactive and dead roughly 40, 35 and 25 percent, respectively. Mean annual deposit growth in the financial institutions over the

three-year period between 1994 and 1997, on the other hand, was 26.9 percent, with a standard deviation of 11.3. Finally, township leaders were asked to self-report their ability to renegotiate loans that had been made by local financial institutions to township firms. Information from this question was used to construct a categorical variable that equals one if leaders felt re-negotiation was relatively unlikely. More than half reported that they were not able to renegotiate. In addition, thirty percent of all townships reported losing a firm manager to a private firm.

## **9 Empirical Results**

We are interested in both the decision to privatize as well as the likelihood that a collective firm ceases operation. We first examine the decision to privatize, ignoring the possibility that the collective firm may be shutdown. Next, we analyze the choice between privatizing the firm, maintaining the firm as a collective-owned firm, and shutting down the collective firm.

### **9.1 The Decision to Privatization**

In order to analyze the likelihood of privatization, we draw largely on a simple probit, supplemented with a hazard model. In the probit model, we estimate the probability of a firm being privatized between 1994-1997, conditioning on information for 1994. Although the probit model is simple and intuitive, it has several drawbacks that might bias our results. First, it does not capture differences in the timing of privatization. Empirically, we observe that some firms were privatized earlier than others. Both the rate of privatization and the results from the probit estimation might be sensitive to the ending date we use. Second, the probit model does not deal with the censoring of the data, and so we have nothing to say about firms that were privatized after 1997.

The hazard model, on the other hand, captures the timing of the privatization decision and deals with the censoring of the data. We estimate the Cox Proportional Hazard Rate function:  $h(t) = h_0(t)exp(X * \beta)$ , where  $h_0(t)$  is the baseline hazard (not estimated in this context),  $X$  is a matrix of independent variables influencing privatization, and  $\beta$  is the vector of coefficients to be estimated. The effect of the  $k$ th variable in  $X$ ,  $x_k$ , on the relative hazard rate is given by  $exp(\beta_k)$ . We report  $exp(\beta_k)$  below. If  $exp(\beta_k)$  is greater (less) than 1, we say that the variable  $x_k$  increases (decreases) the hazard of privatization. The hazard model is estimated using maximum likelihood.

The results of our estimation are provided in Table 6 and 7. The number of observations we use is considerably less than the sample size reported in Table 2 because of missing data for some key variables. We report results with (columns 3, 4 and 5) and without (columns 1 and 2) data on leader and bank manager attributes. We also report separate estimates for versions of the model that include interaction terms involving the hardness of the budget constraint with bank incentives and bank manager attributes (columns 4 and 5). In general, the results are very consistent between the two methods of estimation, and suggest a similar interpretation. We organize our discussion around the groupings of variables above.

**Bank Attributes:** Incentives of the bank, as measured by the weight given to profit in managerial evaluation, has a positive and significant effect on privatization. The ratio of bonus to base income is also positive, but only significant in a few cases. These results suggest that in townships in which bank profitability and incentives are given more weight, firms are more likely to be privatized. The likely avenue through which this is working is bank decisions with respect to firm monitoring and lending. With more powerful incentives, the banks have

incentive to do more of both in the case of private firms as long as their budgets are harder. This will increase the value of a privatized firm relative to its collective counterpart. In columns 4 and 5 of Table 6, we observe that the sign on the interaction term between budget hardness and the weight on profitability in the bank branch is negative and significant. (The interaction term involving manager incentives is insignificant.) This is consistent with the model's prediction in that the effect of more powerful incentives on privatization is dampened in environments in which the budget constraints of the TEs are relatively hard.

Empirically, bank liquidity is also important for privatization. We find that increases in bank illiquidity, as captured by the ratio of non-performing loans to the bank's total loan portfolio, and lower deposit growth, both significantly increase the likelihood that the firm will be privatized. As in the case of bank incentives, these effects on the likelihood of privatization should be reduced when the budget constraints of the TEs are hardened. In fact, we find that the interaction term involving non-performing loans and budget hardness is negative and significant. There are several interpretations for this behavior. On the one hand, increases in bank illiquidity will lead to higher effort levels by bank managers. All else equal, this will contribute to an increase in firm value. The effect that this has on privatization, however, depends on the magnitude of this increase and the complementary increase in effort of the firm manager. The fact that privatization seems more likely as illiquidity increases suggests that the increase in bank effort is having a larger overall effect on private firm. The negative sign on the interaction effect implies that the effect of illiquidity on privatization is significantly reduced when the township firms are more like private firms, i.e. both face hard budgets. A complementary interpretation for the positive correlation between bank illiquidity and privatization relates to the

perks that leaders are able to extract from these firms. A leader's perks are tied to the size of  $K$ , or loan from the bank. All else equal, loans to TEs are larger the more liquid the financial institutions. This increases the relative valuation of the firm under township ownership and reduces the likelihood of privatization. A decline in bank liquidity (or an increase in illiquidity), on the other hand, increases the prospect of privatization.

Finally, we find that increases in the human capital of the bank manager, as reflected in their education and age (experience) both significantly increase the likelihood of privatization. This is consistent with the model when the hardness of budget constraints across ownership structures is significantly different. Increasing the human capital of the bank manager reduces the cost of bank effort and therefore induces more such effort. Examining the sign on the interaction effects of human capital and budget hardness, we find that increasing the hardness of the budgets of township firms dampens this effect, as predicted, but the results are not statistically significant.

Last, we find that privatization is less likely in townships in which the bank manager is from the same township. This may be picking up the relationship between the bank and local leaders, and the perks/benefits the bank manager obtains from this relationship as compared to the direct pecuniary incentives of the bank. The positive sign on the interaction term between this variable and budget hardness suggests that the returns to this relationship are reduced when budgets are hardened.

**Firm:** Theoretically, firm size, profitability (actually, profitability of the project), and hardness of the budget constraint all have ambiguous effects on the likelihood of privatization. We experimented with several measures of firm size including employment, fixed assets, and output, and only report the results

with employment. We find that larger and more profitable firms are much less likely to be privatized. In addition, firms are more likely to be privatized when budget constraints are harder.

Firm size and profitability are both probably correlated with the various private and public perks that the leader can take from the firm. The negative signs on these variables can be taken to support the potential role of perks in the decision-making process and the decision to retain larger and more profitable firms under township control.<sup>43</sup> This finding is in sharp contrast to much of the experience in Eastern Europe, where more profitable firms were the first to be privatized.

**Township Leader:** Privatization should be less likely in townships in which the township leader has better human capital. We find some support for this view with the likelihood of privatization negatively correlated with leader education. The effect of age is insignificant. We also find that privatization is more likely if the leader is from the local township. This is the opposite of what we found in the case of bank managers. One interpretation for this finding is that leaders who have been in the township longer may be able to benefit indirectly from the sale of the firm to someone they have a long-term relationship with.

#### Market Conditions:

We know if managers of township owned firms were lost to private firms between 1990-1994, the period predating much of the privatization. We find that firms in areas where managers have better opportunities are more likely to be privatized. Theoretically, these better opportunities for managers can be thought of as mapping into an increased cost to the leader of inducing managerial

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<sup>43</sup>The tendency for smaller firms to be privatized and larger ones to remain under collective ownership is very similar to the *zhua da fang xiao* (hold on to the big, and let go of the small firms) policy with respect to state-owned enterprises. Current policy with respect to the SOEs appears to be to retain and support only the largest firms.

effort, i.e. higher compensation for the manager. This would reduce the value of the firm to the government, and increase the likelihood of privatization.<sup>44</sup>

## 9.2 Privatization, Shutdown, and Remaining Township-owned

In Table 8, we report results from a multinomial logit. We keep the analysis simple and use only a subset of the variables included in our empirical analysis of the privatization decision. The variables include initial profitability, employment, the hardness of the budget constraint if the firm is collective, the incentives of bank managers, the percentage of the loans of the local financial institutions that are non-performing, and the outside opportunities of firm managers. Being shutdown is the comparison group, and so the reported coefficients reflect the effect of these variables on the likelihood of remaining collective or being privatized relative to ceasing operations.

Several key findings emerge. First, bank incentives are important to the prospect of being shutdown. Increased weight on profitability and more powerful incentives for bank managers both significantly reduce the likelihood of shutdown relative to either remaining collective or being privatized. Indirectly, this supports the important role that banks can play in influencing the value of the firm through their lending and monitoring decisions. Second, non-performing debt has a much larger impact on the likelihood that the firm is shutdown relative to remaining collective compared to the likelihood that the firm is shutdown relative to being privatized. This suggests that bank liquidity and continued lending is much more important to sustaining township firms than it is to privatized firms. And finally, larger firms, as measured by employment, are less

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<sup>44</sup>This finding is consistent with conversations we had with local cadres in Zhejiang dating back to 1995. Several township party secretary complained of the difficulty they were having in retaining firm managers, and the effect this was having on the values of township firms. Selling off these firms seemed the only alternative.



likely to be shutdown than be retained as collective firms, but firm size does not seem to matter in the choice between being privatized and being shutdown.

## 10 Concluding Remarks

Government ownership confers a variety of private and social benefits on governments and politicians. These benefits, however, are not determined in isolation, but rather depend 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 to privatize firms. Our analysis highlights how the incentives of governments to privatize are influenced by the environments in which these firms operate, including bank incentives and liquidity, budget hardness, monitoring costs, human capital, and outside opportunities of firm managers. These factors affect the value of the firm under alternative forms of ownership, and thus the returns to either privatizing the firm, or retaining it under government ownership. Solid empirical support for the model's predictions is found drawing on behavior for a representative cross-section of firms from the provinces of Jiangsu and Zhejiang. Since 1993, nearly sixty percent of the firms in these provinces have been privatized.

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, banks also influence firm performance through their willingness to lend and their monitoring role. Discrimination against private firms has been a prominent feature of China, and it remains to be seen how important this may be in shaping the benefits and returns to government divestiture.

## Appendix

Proof of Lemma 1:

Totally differentiating the first order condition (Equation (5)) with respect to  $a_F$  and each of the exogenous variables,  $\frac{da_F^i}{d\phi_i} = \frac{C_{a\phi}^i}{(S-R+\delta_i)P_{22}-C_{11}^i} > 0$ ,  $\frac{da_F^i}{dS} = \frac{KP_2}{C_{11}^i-(S-R+\delta_i)P_{22}} > 0$ ,  $\frac{da_F^i}{d\delta_i} = \frac{KP_2}{C_{11}^i-(S-R+\delta_i)P_{22}} > 0$ ,  $\frac{da_F^i}{dK} = \frac{(S-R+\delta_i)P_2}{C_{11}^i-(S-R+\delta_i)P_{22}} > 0$ , and  $\frac{da_F^i}{dR} = \frac{-KP_2}{C_{11}^i-(S-R+\delta_i)P_{22}} < 0$ , for  $i \in \{M, L\}$ . And  $\frac{da_F^L}{d\alpha_L} = 0$ .

Proof of Lemma 2:

Totally differentiating the first order condition (Equation (5)) with respect to  $a_F$  and  $a_B$ ,  $\frac{da_F^L}{da_B} = \frac{(S-R+\delta_L)P_{12}}{C_{11}^L-(S-R+\delta_L)P_{22}} > 0$ .

Proof of Lemma 3:

Rewriting the first order condition (Equation(5)),  $P_2(a_B, a_F) = \frac{C^i(a_F, \phi_i)}{(S-R+\delta_i)K}$ . Since, at any firm manager effort level  $a_F$ , it is cheaper for the manager to exert additional effort than for the leader to induce the manager to exert the same additional effort, i.e.,  $C_1^M(a_F, \phi_M) < C_1^L(a_F, \phi_L)$  and  $\delta_M > \delta_L$ ,  $a_F^M > a_F^L$  by the concavity of  $P$ .

Proof of Lemma 4:

Totally differentiate equation (7) with  $a_F$  fixed yields  $\frac{da_B}{da_F} = \frac{A_2P_{12}}{C_{11}^B-A_2P_{11}} > 0$ ,  $\frac{da_B}{d\pi_B} = \frac{-C_{12}^B}{C_{11}^B-A_2P_{11}} > 0$ ,  $\frac{da_B}{dI} = \frac{hP_1}{C_{11}^B-A_2P_{11}} > 0$ ,  $\frac{da_B}{d\beta} = \frac{(R-\delta_i)KP_1}{C_{11}^B-A_2P_{11}} > 0$ ,  $\frac{da_B}{dR} = \frac{\beta KP_1}{C_{11}^B-A_2P_{11}} > 0$ ,  $\frac{da_B}{dK} = \frac{\beta(R-\delta)P_1}{C_{11}^B-A_2P_{11}} > 0$ ,  $\frac{da_B}{d\delta_i} = \frac{-\beta KP_1}{C_{11}^B-A_2P_{11}} < 0$ , and  $\frac{da_B}{d\gamma_B} = \frac{da_B}{d\alpha_L} = 0$ , where  $A_2 = \beta(R - \delta_i)K + Ih$ .

Proof of Lemma 5:

From the two first order conditions

$$\begin{aligned} A_2 P_1 - C_1^B &= 0 \\ A_1 P_2 - C_1^i &= 0, \end{aligned}$$

the solutions  $a_B$  and  $a_F$  increase in each other. There must exist at least one solution to these two simultaneous equations. To show uniqueness: Starting from  $\frac{da_B}{da_F} = \frac{A_2 P_{12}}{C_{11}^B - A_2 P_{11}} > 0$ , and taking the second derivative with respect to  $a_F$  yields  $\frac{d^2 a_B}{da_F^2} = \frac{A_2 P_{122}(C_{11}^B - A_2 P_{11}) + A_2 P_{12} A_3 P_{112}}{(C_{11}^B - A_2 P_{11})^2} > 0$ , since  $P_{112} < 0$  and  $P_{122} < 0$ . Thus,  $a_B$  is increasing and strictly concave in  $a_F$ . Similarly,  $a_F$  is increasing and strictly concave in  $a_B$ . Given the conditions on  $P(\cdot)$  guarantee that  $a_i^*(a_{-i}) > 0$  for all  $a_{-i}$ , this strict concavity implies there exists a unique solution  $a_B^*$  and  $a_F^*$ .

Proof of Lemma 6:

Totally differentiating the above two first order conditions, define a matrix:

$$\Delta \equiv \begin{array}{cc} \mu & \begin{array}{cc} \Delta_{11} & \Delta_{12} \\ \Delta_{21} & \Delta_{22} \end{array} \end{array} \quad \begin{array}{c} \uparrow \\ \uparrow \end{array} \quad (12)$$

$$= \begin{array}{cc} \mu & \begin{array}{cc} A_2 P_{11} - C_{11}^B, & A_2 P_{12} \\ A_1 P_{12}, & A_1 P_{22} - C_{11}^i \end{array} \end{array} \quad \begin{array}{c} \uparrow \\ \uparrow \end{array} \quad (13)$$

Note that  $\Delta_{11} < 0$ ,  $\Delta_{22} < 0$ ,  $\Delta_{12} > 0$  and  $\Delta_{21} > 0$ . The determinant of  $\Delta$  is

$$|\Delta| = A_1 A_2 (P_{11} P_{22} - P_{12}^2) + C_{11}^B C_{11}^i - A_2 P_{11} C_{11}^i - A_1 P_{22} C_{11}^B. \quad (14)$$

Since  $P_{11} P_{22} - P_{12}^2 > 0$ ,  $|\Delta| > 0$ .

This yields the following comparative statics:  $\frac{da_B}{d\phi_B} = \frac{C_{12}^B \Delta_{22}}{|\Delta|} > 0$ ,  $\frac{da_B}{dt} = \frac{-h P_1 \Delta_{22}}{|\Delta|} > 0$ ,  $\frac{da_B}{d\beta} = \frac{-(R - \Delta_i) K P_1 \Delta_{22}}{|\Delta|} > 0$ ,  $\frac{da_B}{dS} = \frac{K P_2 \Delta_{12}}{|\Delta|} > 0$ ,  $\frac{da_B}{dK} = \frac{\beta(\delta_i - R) P_1 \Delta_{22} + (S_R + \delta_i) P_2 \Delta_{12}}{|\Delta|} > 0$ ,  $\frac{da_B}{d\phi_i} = \frac{-C_{12}^i \Delta_{12}}{|\Delta|} > 0$ , and  $\frac{da_B}{d\gamma_B} = 0$ . The following are ambiguous:  $\frac{da_B}{d\delta_i} = \frac{\beta K P_1 \Delta_{22} + K P_2 \Delta_{12}}{|\Delta|}$ , and  $\frac{da_B}{dR} = -\frac{da_B}{d\delta_i}$ .

Proof of Proposition 1 (Shutdown):

Totalling differentiating  $U_i^*$  with respect to the exogenous variables and using the first order conditions implies:  $\frac{dU_i^*}{d\alpha_L} = K > 0$ ,  $\frac{dU_i^*}{d\phi_B} = P_1 A_1 \frac{da_B^*}{d\phi_B} > 0$ ,  $\frac{dU_i^*}{d\beta} = P_1 A_1 \frac{da_B^*}{d\beta} > 0$ ,  $\frac{dU_i^*}{dI} = P_1 A_1 \frac{da_B^*}{dI} > 0$ ,  $\frac{dU_i^*}{d\phi_i} = P_1 A_1 \frac{da_B^*}{d\phi_i} - C_2^i > 0$ ,  $\frac{dU_i^*}{dS} = P_1 A_1 \frac{da_B^*}{dS} + PK > 0$ , and  $\frac{dU_i^*}{dK} = P_1 A_1 \frac{da_B^*}{dK} + P(S - R + \delta_i) > 0$ . There are two ambiguous terms:  $\frac{dU_i^*}{d\delta_i} = P_1 A_1 \frac{da_B^*}{d\delta_i} - (1 - P)K$ , and  $\frac{dU_i^*}{dR} = P_1 A_1 \frac{da_B^*}{dR} - PK$ .

Proof of Proposition 2 (Privatization):

Totalling differentiating  $G$  with respect to the exogenous variables and using the first order conditions implies:  $\frac{dG}{d\alpha_F} = -K < 0$ ,  $\frac{dG}{d\phi_L} = -\frac{dU_L^*}{d\phi_L} < 0$ , and  $\frac{dG}{d\phi_M} = \frac{dU_M^*}{d\phi_M} > 0$ . All the other comparative statics have ambiguous signs:  $\frac{dG}{d\delta_M} = -\frac{dU_M^*}{d\delta_M}$ ,  $\frac{dG}{d\beta} = A_1^M P_1^M \frac{da_B^M}{d\beta} - A_1^L P_1^L \frac{da_B^L}{d\beta}$ ,  $\frac{dG}{d\phi_B} = A_1^M P_1^M \frac{da_B^M}{d\phi_B} - A_1^L P_1^L \frac{da_B^L}{d\phi_B}$ ,  $\frac{dG}{dR} = A_1^M P_1^M \frac{da_B^M}{dR} - A_1^L P_1^L \frac{da_B^L}{dR} + (P^L - P^M)K$ ,  $\frac{dG}{dK} = A_1^M P_1^M \frac{da_B^M}{dK} - A_1^L P_1^L \frac{da_B^L}{dK} + P^M(S - R + \delta_M) - P^L(S - R + \delta_L) + \delta_L - \delta_M$ ,  $\frac{dG}{dS} = A_1^M P_1^M \frac{da_B^M}{dS} - A_1^L P_1^L \frac{da_B^L}{dS} + (P^M - P^L)K$ , and  $\frac{dG}{dI} = A_1^M P_1^M \frac{da_B^M}{dI} - A_1^L P_1^L \frac{da_B^L}{dI}$ .

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**Table 1**  
**Year Privatization Started and Completed (Number of Townships)**

	Year Privatization Completed									
Start	NA	1992	1993	1994	1995	1996	1997	1998	1999	Total
1992				1	1		1	1		4
1993	2		2			1		5	1	11
1994	1						1	4	1	7
1995	1					1	2	2		6
1996	1					4	1	9		15
1997	1						1	11	1	14
Totals	6		2	1	1	6	6	32	3	57

Notes: Based on township survey.

**Table 2**  
**Privatization of Township Enterprises**

Sample I: 1993-1997, 643 firms, 57 townships								
Year	Collective Firms	P1	P2	P3	P4	P5	Percentage Privatized	Number Bankrupt
1993	643	15	6	16			2.3	
1994	628	28	7	30		1	4.6	4
1995	595	46	3	8			7.7	28
1996	521	57	4	13			10.9	26
1997	438	64	13	13		9	16.7	41
1998	324							
Totals		210	33	80		10	34.2	99
Sample II: 1993-1999, 390 firms, 43 townships								
Year	Collective Firms	P1	P2	P3	P4	P5	Percentage Privatized	Number Bankrupt
1993	390	9	4	16			2.3	
1994	381	17	7	30		1	4.7	2
1995	361	13	2	8			3.6	6
1996	342	36	3	7			10.5	13
1997	293	31	12	12		9	13.7	29
1998	224	37	3	4	14	21	32.1	7
1999	145	14	0	3	2	4	13.8	11
2000	114							
Totals		157	31	80	16	35	53.3	68
<p>Notes: P1 represents the complete privatization of a collectively-owned township firm; P2 (P3) represents the conversion of a collectively-owned firm to a shareholding company in which the township has a majority (minority) share; P4 (P5) represents the privatization of the township's share in a shareholding company in which they were a majority (minority) owner.</p>								

**Table 3**  
**Privatization of Enterprises, by Province**

Sample II, 1993-1999: Jiangsu								
Year	Collective Firms	P1	P2	P3	P4	P5	Percentage Privatized	Number Bankrupt
1993	220	0	3	7				
1994	220	6	3	7		1		1
1995	212	1	0	0			0.5	4
1996	207	26	2	4			12.6	10
1997	171	15	11	5		9	8.8	20
1998	127	28	2	3	13	21	48.9	7
1999	58	7	0	2	0	4	19.0	10
2000	37							
Totals		83	21	28	13	35	59.5	52
Sample II, 1993-1999: Zhejiang								
Year	Collective Firms	P1	P2	P3	P4	P5	Percentage Privatized	Number Bankrupt
1993	170	9	1	9			5.3	
1994	161	11	4	23		1	7.5	1
1995	148	12	2	8			8.1	2
1996	134	10	1	3			7.7	3
1997	121	16	1	7		7	19.0	9
1998	89	9	1	1	1	6	18.0	0
1999	73	7	0	1	2	3	16.5	1
2000	60							
Totals		74	10	52	3	17	55.3	12
Notes: P1 represents the complete privatization of a collectively-owned township firm; P2 (P3) represents the conversion of a collectively-owned firm to a shareholding company in which the township has a majority (minority) share; P4 (P5) represents the privatization of the township's share in a shareholding company in which they were a majority (minority) owner.								



**Table 4**  
**Distribution of the Rate of Privatization at the Township Level**

	Sample I, 57 townships		Sample II, 43 townships	
Percentage Privatized	Number of Townships	Cumulative Percentage	Number of Townships	Cumulative Percentage
0-20	10	17.54	7	16.28
21-40	9	33.33	6	30.23
41-60	17	63.16	10	53.49
61-80	14	87.72	12	81.40
81-100	7	100.00	8	100.00
<b>Total</b>	<i>57</i>		43	

Notes: Based on township survey.

**Table 5**  
**Descriptive Statistics**

<b>Variable</b>	
<b>Firm</b>	
Employment	163.7 (400.1)
Profits (10,000 RMB)	48.6 (391.2)
<b>Bank Incentives</b>	
Weight on Profitability, 1994	3.71 (.84)
Manager's Bonus <sup>1</sup>	.67 (.25)
<b>Bank Liquidity</b>	
% Non-performing loans, 1994	21.1 (18.5)
Deposit Growth, 1994-97	26.9 (11.2)
<b>Township Government</b>	
Hardness of Firm Budget Constraint <sup>2</sup>	.56 (.50)

Note: 1. The manager's bonus is measured relative to total compensation if all targets are fulfilled. 2. A dummy variable coded equal to 1 if the township leader is not able to renegotiate the terms of the loan.

<b>Table 6</b>					
<b>Probit Regressions for Privatization</b>					
	(1)	(2)	(3)	(4)	(5)
<b>Firm</b>					
Employees	-0.002 (-2.50)	-0.001 (-1.30)	-0.002 (-2.05)	-0.001 (-1.75)	-0.001 (-1.78)
Profit	-0.005 (-2.37)	-0.005 (-2.18)	-0.006 (-2.00)	-0.005 (-2.35)	-0.006 (-2.37)
<b>TE manager's outside opportunity</b>	1.072 (2.44)	1.058 (2.33)	1.685 (3.31)	1.984 (2.89)	2.300 (4.29)
<b>Bank Incentives and Liquidity</b>					
Weight on profit (vs. liquidity)	0.397 (3.01)	0.373 (2.80)	0.493 (2.92)	2.305 (2.72)	1.553 (4.54)
Weight on profit*hardness				-2.034 (-2.33)	-1.243 (-3.86)
Bank manager's incentive payment	0.326 (0.77)	0.282 (0.68)	0.923 (1.77)	-0.135 (0.91)	0.945 (1.29)
Incentive payment*hardness				0.826 (0.56)	-0.117 (-0.10)
Percentage of non-performing loans	0.055 (3.02)	0.072 (3.41)	0.049 (3.14)	0.100 (2.88)	0.103 (4.58)
Non-performing*hardness				-0.090 (-2.29)	-0.085 (-2.80)
Deposit growth		-1.135 (-1.89)			
<b>Bank manager attributes</b>					
Education			0.391 (2.29)	0.623 (3.71)	0.424 (2.63)
Education*hardness				-0.320 (-0.85)	
Age			0.130 (2.87)	0.095 (2.96)	0.094 (2.38)
Age*hardness				-0.021 (-0.30)	
Years living in the township			-0.016 (-1.74)	-0.053 (-1.61)	-0.011 (-0.95)
Years living in the township*hardness				0.043 (1.20)	
<b>Township leader attributes</b>					
Education			-0.170 (-2.26)	-0.151 (-0.40)	-0.151 (-1.99)
Education*hardness				0.043 (0.11)	
Age			0.010 (0.22)	0.115 (0.93)	0.042 (0.80)
Age*hardness				-0.091 (-0.061)	
Years living in the township			0.678 (1.21)	0.929 (1.65)	0.569 (1.00)
Years living in the township*hardness				0.891 (0.57)	
<b>Hardness of bank budget to TE</b>	0.481 (2.44)	0.453 (1.53)	0.641 (2.61)	15.86 (0.93)	6.234 (3.95)
Observations	347	263	347	344	347
Pseudo R-squared	0.193	0.196	0.256	0.300	0.288
Note: T-statistics are reported in parenthesis based on robust, cluster-corrected standards errors.					

<b>Table 7</b>			
<b>Hazard Model of Privatization</b>			
	(1)	(2)	(3)
<b>Firm</b>			
Employees	0.997 (-2.55)	0.999 (-1.17)	0.998 (-2.31)
Profit	0.992 (-3.43)	0.992 (-2.80)	0.992 (-3.16)
<b>TE manager's outside opportunity</b>	4.670 (2.59)	5.010 (2.67)	6.172 (3.81)
<b>Bank Incentives and Liquidity</b>			
Weight on profit (vs. liquidity)	1.430 (2.36)	1.337 (1.76)	1.671 (2.60)
Bank manager's incentive payment	1.714 (0.93)	2.365 (1.25)	3.456 (1.73)
Percentage of non-performing loans	1.057 (2.06)	1.072 (2.62)	1.055 (2.57)
Deposit growth		0.905 (-0.10)	
<b>Bank manager attributes</b>			
Education			1.474 (1.74)
Age			1.150 (2.56)
Years living in the township			0.979 (-1.50)
<b>Township leader attributes</b>			
Education			0.831 (-2.00)
Age			1.150 (2.56)
Years living in the township			0.979 (-1.50)
<b>Hardness of bank lending to TE</b>	1.740 (1.83)	1.735 (1.31)	2.475 (3.01)
Observations	347	254	347
Log-likelihood	-641.3	-464.1	-628.4

**Table 8**  
**Multinomial Probit Results**

	<b>Bankrupt vs Collective</b>	<b>Bankrupt vs Private</b>
<b>Firm</b>		
Employees	-0.005 (-2.19)	-0.002 (-0.73)
Profits	0.004 (1.05)	0.012 (2.66)
<b>TE Manager's Outside Opportunity</b>	2.330 (1.42)	0.286 (0.18)
<b>Bank Incentives and Liquidity</b>		
Weight on Profitability	-1.051 (-2.46)	-1.659 (-3.21)
Manager's Incentives	-3.519 (-2.15)	-3.757 (-2.71)
% Non-performing Loans	0.091 (2.14)	-0.012 (-0.26)
<b>Hardness of bank lending to TE</b>	0.224 (0.34)	-0.573 (-0.92)
Observations	347	
Pseudo R <sup>2</sup>	0.1911	
Note: T-statistics are reported in parenthesis based on robust, cluster-corrected standards errors.		

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