

***Joint Liability Lending and the Rise and Fall  
of China's Township and Village Enterprises***

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ABSTRACT

Using data from a recent survey of bank and enterprise managers and government officials in southern China, we present a new explanation for the rise and fall of collectively-owned township and village enterprises (TVEs) based on the willingness of banks to finance collective enterprise development. Until recently bank loans to TVEs exhibited the key features of joint liability lending, supported by the unique sanctioning ability of local leaders. Beginning in the mid 1990s, liquidation costs fell, firm performance deteriorated, real interest rates rose, and financial competition increased. These changes led to a dramatic change in the lending preferences of banks in favor of private firms. Empirical estimates of the determinants of bank lending preferences, the involvement of township leaders in lending, and the ability of firms to obtain loans support our explanation.

JEL Codes: G2, O1, P3

Keywords: joint liability, banking, China, privatization, collective

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## **Joint Liability Lending and the Rise and Fall of China's Township and Village Enterprises**

### **1. Introduction**

The success of China's township and village enterprises (TVEs) is one of the most unique institutional features of China's economic transition. Nationally, output of TVEs, defined as all rural collectively-owned enterprises, grew more than six-fold in real terms between 1985 and 1997, leading China's rapid industrial and overall growth (Table 1). An equally remarkable recent trend has been the rapid privatization of these same enterprises since the mid-1990s. According to surveys conducted by the authors in the areas of greatest TVE success, Zhejiang and Jiangsu Provinces on China's southeast coast, in 1998, the percentage of township-level enterprises that were collectively owned fell from 78 percent at year-end 1994 to 43 percent at the end of 1997, with a similar fall in the share of output value.

In this paper, we present an explanation for the rise and fall of TVEs based on the willingness of banks to finance collective enterprise development.<sup>1</sup> Our main insight is that until recently bank loans to TVEs exhibited the key features of joint liability lending, which facilitated the provision of formal credit to finance the rapid expansion of TVEs. Under joint liability, members of a group are held mutually responsible for repaying individual loans made to group members. As a prominent feature of successful microfinance institutions worldwide, joint liability lending is normally associated with poor rural households in developing countries (e.g., Grameen Bank), and is credited with enabling the poor to access credit despite the lack of collateral associated with low wealth. In China, the inability to collateralize loans was due to an undeveloped legal system and political obstacles to seizing publicly-owned assets.

Surprisingly, however, this lack of collateral did not stop banks from lending to rural enterprises. The share of total rural lending by state financial institutions to TVEs expanded steadily from 17 percent in 1985 to 32 percent in 1994 (Table 1). By contrast, in many developing countries, small and medium-scale enterprises (SMEs) similar to China's TVEs have been neglected by formal financial institutions. In Taiwan, for example, where like

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<sup>1</sup> Most explanations for TVE success focus on the importance of local leaders to firm success when markets are imperfect and contracts are not easily enforced. Government leaders provide scarce management skills, access to state-allocated inputs such as energy or intermediate inputs, facilitate output sales to the state sector, and protect firms from political risks (Che and Qian, 1998; Chen and Rozelle, 1999; Li, 1996).

China rural enterprises led industrial expansion, SMEs relied primarily on the informal curb market (Biggs, 1991; Wade, 1990).<sup>2</sup>

Joint liability lending relies on the local information and the monitoring and sanctioning ability of borrowers to overcome problems of adverse selection, moral hazard, and strategic default that frequently plague bank lending when collateral is absent. Social sanctions can be effective punishments even in a one-shot game. Dynamic incentives, i.e., the threat to cut off future lending, can help make sanctions credible and provide positive incentives for loan repayment. Joint liability lending is not commonly observed among firm groups because the ability of firms to sanction each other is limited in commercial systems. Firms often prefer individual loans secured through other means (e.g., collateral) to joint liability contracts in which they bear greater monitoring and enforcement costs. Unlike poor households, firms are more likely to have assets that can be collateralized.

However, in China community enterprise ownership uniquely facilitated sanctioning in a way that would not have been possible had firms been privately owned. Managers of collective firms are appointed by local government leaders, who as insiders monitor closely firm decision-making. Because most township enterprise managers are native local residents, they often have well-developed personal relationships with local government officials and depend on officials' support for career promotions. Local government officials thus have the information and sanctioning ability to make joint liability lending contracts credible. They often explicitly or implicitly guaranteed loans in lieu of collateral, so that enterprises owned by the same local government (or community) became jointly liable for loans to individual enterprises. There are numerous accounts of collective enterprises pooling funds to repay loans (*tongshou huandai*), assuming the debts of other enterprises that underperformed or went bankrupt, or accumulating triangular debts among firms through accounts payable (Oi, 1999; Whiting, 2000). Banks became willing partners in such lending arrangements.

The success of joint liability lending also requires other favorable conditions. First, greater firm profitability reduces the probability of coordinated strategic default and can enhance the value of joint liability in reducing moral hazard. These arguments are developed in greater detail below. In China, TVEs were highly profitable during the early reform

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<sup>2</sup> Informal financing is also important in China (Tsai, 1999; Whiting, 2000), but the Chinese government has actively suppressed informal institutions that reach a large scale. For example, Rural Cooperative Foundations, rapidly growing alternative credit organizations in many parts of China, were shut down in 1999.

period, filling market demand niches not met by the state-owned sector and taking advantage of rising demand associated with rapid income growth. Low real interest rates also made repayment easier, supporting joint liability lending. In addition, bank competition can undermine dynamic incentives by raising the possibility that defaulters can find new lenders, especially if information systems that share credit histories are not well-developed. During the early reform period, local lending to TVEs was dominated by Rural Credit Cooperatives and Agricultural Bank local branches, which often coordinated decisions and so could exploit market power (Whiting, 2000).

Beginning in the mid 1990s, a number of changes harmed the environment for joint liability lending. First, liquidation costs fell, making lawsuits more common and collateral a more efficient way to secure loans, especially for private firms. Second, firm performance deteriorated as the overall economy slowed, product market competition intensified, and the advantages of local leader involvement in TVE management declined while the incentive problems of public ownership became more apparent. Third, real interest rates shot up as inflation came down but nominal rates adjusted slowly. Fourth, financial competition increased. In 1996 Rural Credit Cooperatives were separated from the Agricultural Bank of China and began competing directly. The government also encouraged state specialized banks to compete across sectors, which in many areas sharply increased competition for TVE borrowers. Together, these changes led to a dramatic change in the lending preferences of banks in favor of private firms. Whereas in 1994, nearly all bank managers favored lending to collective firms *ceteris paribus*, by 1997 only 14 percent favored collective firms while 58 percent favored private firms. We conjecture that the changing attitude of banks was a key factor in the rapid privatization of TVEs that occurred during the mid-1990s.

Our interpretation of the role of optimal loan contracting contrasts with the conventional view of the role of local leaders in facilitating credit access for TVEs, which emphasizes the ability of local leaders to exert political influence on bank managers and mobilize more collateral than private firms (since many assets such as land and equipment are publicly owned).<sup>3</sup> While recognizing the important influence of local political factors in lending decisions, we argue that bankers cared about loan repayment, and rather than being

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<sup>3</sup> This point is made by Che and Qian (1998). This paper builds upon their important insight that collective ownership redefines the boundaries of the firm, and their emphasis on the role played by local leaders. However, we take a different view on the role of collateral.

arm-twisted into making loans to TVEs, themselves preferred lending to collective enterprises with joint liability. In addition, collective ownership made it more not less difficult to collateralize loans, because seizing community assets was extremely difficult and costly in practice.

We develop our argument both theoretically and empirically. In section 2, we introduce the survey data collected from financial institutions, enterprise managers, and township leaders in Zhejiang and Jiangsu Provinces in southern China. In section 3, we describe joint liability lending to TVEs in rural China, and introduce the institutional context for such lending. In section 4, we extend theoretical models from the microfinance literature to derive propositions for how the institutional and economic environment affects the relative profitability of joint liability versus individual lending. In section 5, we use the survey data and other sources to provide empirical support for our interpretation of the rise and fall of joint liability lending in rural China. In section 6, in order to test the propositions, we estimate empirical specifications of the determinants of bank lending preferences, the role of township leaders in organizing loan application meetings, and the effect of other firms' profitability on the ability of collective firms to obtain loans. A final section concludes, contrasting our explanation with conventional interpretations.

## **2. Data**

We utilize data from a survey conducted in the summer of 1998 by the authors in Jiangsu and Zhejiang Provinces, two affluent provinces on China's southern coast. The survey included questionnaires for all three actors involved in TVE lending--bank managers, local government (township) leaders, and firm managers in 60 townships.

We conducted surveys in 15 counties--8 in Jiangsu and 7 in Zhejiang. The two provinces were chosen because of their highly developed rural industry, which together accounted for 24.1 percent of China's total TVE income in 1997, and because TVEs in these areas experienced rapid privatization during the mid-1990s. The provinces contain both well-developed and under-developed regions, providing substantial spatial variation in levels of economic and institutional development. All the counties were randomly sampled based on stratification by region and industrial development (measured by industrial output per

capita).<sup>4</sup> Four sample townships in each county were randomly selected stratifying again by industrial output per capita in 1997. Government officials and managers from 59 townships, 57 ABC local branches and 58 RCCs were interviewed. We also randomly selected three firms in each township from a census of all firms that existed in 1994 provided by local government officials. We focused on township-run enterprises and private enterprises in township seats, rather than village enterprises.<sup>5</sup> The census data provide useful summary data on ownership change, profits, and production output of each enterprise, facilitating construction of township indices of firm performance. A total of 177 firms were surveyed, 137 of which were customers of ABC local branches or RCCs, or both.

### **3. Joint Liability Lending to China's Township and Village Enterprises**

Unlike many developing countries where small- and medium-scale firms have difficulty obtaining formal bank loans, in China state banks have played a major role in financing collective enterprise development. As described earlier, bank lending to TVEs and the share of TVE lending in total rural lending grew substantially from 1985 to 1994 (Table 1).<sup>6</sup> Almost all rural enterprise lending went to TVEs, with relatively faster growth in lending to private firms occurring beginning in the early 1990s. During the early reform period, private firms complained about lack of credit access and bankers admitted enforcing stricter standards for collateral and guarantors and being less willing to lend to private firms (Oi, 1999; Whiting, 2000). In 1985, bank lending to private enterprises was only 2.8 billion yuan while lending to township enterprises was 20.1 billion yuan and to village enterprises 5.9 billion yuan. From 1985 to 1990, growth in lending was similar for private and collective enterprises, but from 1990 to 1995, private loans increased by more than 40 percent compared to less than 30 percent for collective enterprises (Oi, 1999). Despite this improvement in the willingness to lend to private enterprises, financial institutions continued

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<sup>4</sup> According to the economic regions, we grouped all counties in Jiangsu province into three categories: most advanced area, medium advanced area, and less advanced area but in Zhejiang province counties were only divided into two categories: most advanced area and less advanced area. We then divided each area into sub-groups by industrial output per capita in 1997. Finally, from each sub-group, we randomly selected one sample county. 8 counties in Jiangsu and 7 counties in Zhejiang were finally surveyed.

<sup>5</sup> We believe that village enterprises are organized and functioning more like private enterprises. In contrast to township officials, village leaders are less influential on bank decisions. It is another potential topic to examine how township enterprises and village enterprises respond differently toward the decentralization, but to do so is out of the scope of the current research.

<sup>6</sup> These growth rates were uneven over time, with periods of rapid growth occurring during 1984-87 and 1990-93 and slow to no growth occurring during 1988-89 and since 1994.

to lend primarily to TVEs. In 1997, loans to rural collective enterprises accounted for 84.7 percent of total rural enterprise loans (XZQYNJ, 1998).

Lending financed a large share of TVE investments in fixed assets, especially in the early reform period. National statistics report that bank financing of TVE fixed capital formation was 37.4 percent in 1989, 40.5 percent in 1991, and 28.2 percent in 1994 (XZQYNJ, 1995).<sup>7</sup> Many TVE loans also provided working capital, and increasingly so over time.<sup>8</sup> In our sample of firms in 1997, the majority of both working capital debts and long-term debts were from bank loans.

Collective ownership means that all land and assets are owned by all of the citizens of a township or village, but in practice the resources are controlled by local government officials. Institutionally, local government leaders can play many roles in furthering the development of collective enterprises. At one extreme, leaders manage the enterprises directly, with all profits accruing to the local government. Multiple enterprises may be managed as a multi-division corporation (Che and Qian, 1998; Oi, 1992). At the other extreme, governments sign fixed-rent contracts with managers who become full residual claimants and retain nearly all control rights. Over time, there has been a steady shift to more decentralized management structures (Chen and Rozelle, 1999; Chen, 2000). Regardless of the specific arrangement, firms in the community share common ownership, and most firm managers come from the local community. Many managers are current or former government officials, and nearly all have close ties to local government leaders. Local government officials maintain appointment power over firm managers and can influence their promotion to other leadership positions. Even when control is decentralized, this gives government leaders sufficient leverage to enforce compliance with joint liability payments.

There are numerous accounts of joint liability in TVE credit contracts. Oi (1999) writes that “Township and village officials redistributed income and debt among sectors and enterprises within their corporate community” and “the collective—that is, the township or village as a collective entity—bore the risks” (p.70). She adds, “Interviewees from a number of localities stated that when a collective enterprise failed and defaulted on its loans, the debt

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<sup>7</sup> Other TVE studies find similar results. Zhou, Qiu, and Hu (1987) report 48 percent for 200 TVEs in 10 provinces during 1984-86 (and 45.5 percent of initial investments), Ody (1992) reports 32-38 percent during 1986-88, Chen (2000) reports average rates above 50 percent for 64 firms in 4 provinces in 1994.

<sup>8</sup> Working capital loans for small and medium sized firms are viewed by banks as being risky. In the U.S., nearly all small business loans, including for working capital, are secured by capital (Berger and Udell, 1998).

was paid off by the remaining solvent collective enterprises” “These firms paid, however, grudgingly, because their own future depended on the goodwill of the local authorities who controlled credit and investment opportunities.” (p.71). Byrd (1990) describes the community government’s ability to “spread risk across its enterprises to increase the flexibility and ability to absorb losses of any one firm.” Similar accounts are offered by Wu (1993), Whiting (2000), and interviewed bank managers in the study areas in Jiangsu and Zhejiang. In many cases local government agencies such as township economic commissions or public finance bureaus acted as official loan guarantors (Oi, 1999; Whiting, 2000). Our survey finds that in 1994 two thirds of local governments acted as guarantors for at least some TVE loans, and 42 percent of loans on average. For new loans granted in 1997 and secured by guarantors, 41.7 percent of ABC loans and 53.1 percent of RCC loans were secured by local governments, the rest by other township-owned enterprises. Our firm survey reveals that for nearly 100 percent of borrowing firms whose loans are secured by guarantors in 1994 and 1997, the guarantor was either the township government or a township-run enterprise (Table 2). Private firms generally were not qualified guarantors. Firms also commonly accumulated “triangular” debts through accounts payable.

The survey also finds that township leaders played an active role in loan applications and in ensuring repayment of loans, but that this involvement declined significantly from 1994 to 1997. In 1994, about 70 percent of township leaders organized loan application meetings to bring lenders and borrowers together. On average, each township government organized 2.6 such meetings during the year (Table 2). In 1997, only 50 percent organized meetings, and the average number of such meetings dropped to 1.6. Similarly, over the same period the average number of repayment meetings organized by township leaders declined from 1.3 to 0.6. Visits between bank managers and local leaders were frequent, averaging 37.4 visits in 1994, but falling to 19.3 in 1997. In 1997, the majority of bank managers reported that they would seek assistance from township leaders for loan repayment if loans were overdue. Also, 57 percent of bank managers reported that in 1990 government assistance in repaying loans after a collective firm shut down was likely or possible; the percentage fell to 41 percent in 1994 and only 24 percent in 1997.

#### **4. Theory**

Joint liability lending arises when conventional methods for securing loans fail, in particular when borrowers are unable to provide collateral. Programs based on this principle

have been widely touted for facilitating credit access for poor households in both developed and developing countries. Unlike individual loans, joint liability gives group members an incentive to select credit-worthy members, monitor the project selection and effort level of members, and sanction members that default without cause. Thus, the effectiveness of such arrangements depends on the quality of information borrowers have about fellow group members and their ability to punish members with social sanctions.

Joint liability helps address the main problems faced by formal credit institutions—adverse selection, moral hazard, and enforcement (Ghatak and Guinnane, 1999; Morduch, 1999). Models of adverse selection in microfinance programs show that borrowers will sort into groups that include members with projects of similar riskiness. Safe borrowers value other safe borrowers more than risky borrowers because of the greater likelihood of being in a position to repay on behalf of others. Banks can exploit this by offering different lending terms to different groups, and thus increase profits. Joint liability reduces moral hazard if borrowers can decide on projects cooperatively and internalize the positive externality their own effort level has on the effort incentives of others. The externality is introduced by joint liability because greater effort reduces the likelihood that other members will have to repay one's loan, increasing the return to effort of other borrowers. In an application of this idea to China's TVEs, Zou and Sun (2000) show that risk pooling can increase the frequency of efficient liquidation of firms. Finally, joint liability reduces defaults by firms with poor projects, when better-performing firms are willing and able to pay on their behalf. This is true especially if social sanctions prevent solvent firms from strategically defaulting when other group members are unable to repay loans.

Although we use the term *joint liability* to describe TVE loans, the loan contracts are typically individual loans that do not explicitly define the full set of obligations of other firms, a set of contingencies which would be very costly to write. Joint liability is not contracted legally except to the extent that township governments and other collective firms act as loan guarantors on individual loan contracts. However, unlike individual loans to farmers in a village, when lending to collective enterprises, banks can identify all group members and so can enforce implicit joint liability. Bank managers consider loans to individual collective firms to be loans to the collective as a whole.<sup>9</sup>

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<sup>9</sup> Rai and Sjostrom (2000) show that as long as members can enforce side contracts, agreed upon transfers in a system of individual loans will maximize joint surplus and be identical to those that occur when joint liability is

Below, we present a set of propositions for how different characteristics of the local lending environment are expected to affect the relative profitability of joint-liability lending to collective firms compared to individual lending to private firms. In the propositions, we refer to this comparison as simply *the relative profitability of joint liability lending*. We assume that it is more difficult to seize collateral from collective firms. Because we believe that joint liability is implicit in collective ownership, we exclude the possibility of individual loans to collective firms. The theoretical microfinance literature has identified multiple mechanisms for how joint liability might improve loan performance for banks and increase the welfare of borrowers. Adapting results from this literature to reflect the Chinese institutional environment, we offer six propositions that form the basis of the later discussion and empirical tests. To fix some of these ideas formally, we extend Ghatak and Guinnane's moral hazard model and Besley and Coate's strategic default model and derive proofs of many of the propositions, which are presented in the appendices.

*Proposition 1. Greater ability to seize private versus collective collateral reduces the relative profitability of joint liability lending.*

Greater ability to seize collateral privileges lending to private firms over collective firms *ceteris paribus*. Collateral helps solve adverse selection, moral hazard, and enforcement problems, and so reduces the need for joint liability lending. For proof using a strategic default model, please see Appendix 2.

*Proposition 2. Greater sanctioning ability increases the relative profitability of joint liability lending.*

Nearly all models of joint liability implicitly assume that groups can enforce agreements internally through the threat of social sanctions. This is true for adverse selection models that predict positive assortative matching of borrower types (Ghatak, 1998; Van Tassel, 1998) as well as moral hazard models (Stiglitz, 1990; Varian, 1990; Conning, 1996; Ghatak and Guinnane, 1998). In their enforcement model, Besley and Coate (1995) prove that the repayment rate under joint liability lending exceeds that under individual lending for sufficiently large social sanctions (Proposition 3, p.12). Thus, through all of

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legally contracted. If one treats loans as individual loans, banks will favor firms that have enforceable side contracts that recreate the transfers made under joint liability lending.

these mechanisms, greater sanctioning ability improves the performance of joint liability loans while having no benefit for individual lending.

*Proposition 3. Lower firm profitability reduces the relative profitability of joint liability lending.*

This proposition holds for both the moral hazard model and, under reasonable assumptions, the strategic default model of joint liability. With moral hazard, optimal borrower effort can be increased with joint liability lending if group members are able to decide on projects cooperatively (Ghatak and Guinnane, 1998). This enables group members to internalize the effects of their own effort on the expected payoffs to other borrowers in the group. Effort is proportional to expected profit if the firm's project is successful, so lower firm profitability reduces effort regardless of whether the loan includes joint liability. This reduces the effort difference, or advantage, associated with joint liability lending. See Appendix 1 for a formal proof.

In the strategic default model, lower expected profitability of firms reduces the relative profitability of joint liability lending as long as the distribution of firm types is such that a decline in average profitability leads to a decreased probability of high type firms relative to medium type firms. Following Besley and Coate (1995), high types are defined as those firms capable of repaying both their own loan and the other firm's defaulted loan, medium types are those capable of repaying their own loan but not other loans, and low types are those that cannot repay even their own loan. In two-person groups, joint liability reduces defaults when high types are paired with low types, since both loans are repaid, but increases defaults when medium types are paired with low types, because medium types strategically default. Thus, more high types relative to medium types increases the desirability of joint liability lending. Put more intuitively, a decline in overall performance makes joint liability less desirable if it becomes relatively more difficult to find highly profitable firms that can effectively secure loans in the case of default by other group members. One distribution that meets this criteria is the uniform distribution. See Appendix 2 for a formal proof of this result for the strategic default model.

*Proposition 4. A higher interest rate reduces the relative profitability of joint liability lending.*

The interest rate defines the threshold profitability level of firms that is necessary for successful loan repayment. An increase in the interest rate thus has similar consequences for expected repayment rates as an across-the-board reduction in firm profitability. Not

surprisingly, in both the moral hazard and strategic default models, the comparative static result for the interest rate is the opposite of that for expected firm profitability (see Appendices 1 and 2).

*Proposition 5. Greater bank competition reduces the relative profitability of joint liability lending.*

If dynamic incentives are important, they should be more important for lending to collective firms than to private firms since loans to private firms can be partly collateralized by assumption. Competition undermines dynamic incentives by increasing the likelihood that borrowers can switch to other banks in the event of default, rendering ineffective the threat of withholding future lending. This should have a relatively stronger impact on lending to collective firms. See Appendix 2 for proof.

*Proposition 6. Larger group size increases the relative profitability of joint liability lending.*

Armendariz de Aghion (1999) shows that for a given interest rate, larger groups increase payoffs to banks by providing greater insurance against individual default.<sup>10</sup> However, larger group also could undermine peer monitoring if it size is inversely related to the quality of information, increases monitoring costs, or undermines social sanctioning ability. Despite the ambiguous direction of effects, for China's TVEs, we expect the portfolio diversification effect of group size to dominate the effects on information and social sanctioning ability. The number of collective firms in a township is usually not very large, and the sanctioning ability of township leaders relies on their institutional authority, and which is not diminished when there are more collective firms.

## **5. Joint Liability Lending and the Rise and Fall of TVEs**

Our theory predicts that group lending is more desirable when collateral is unavailable, the ability to impose social sanctions is high, firm profitability is high, the interest rate is low, bank competition is limited, and groups are large. Empirically, these factors will vary both over time and in cross-section. In this section, we provide descriptive evidence to support our argument that joint liability lending can explain the major trends in TVE borrowing and performance over time. We describe how during the mid-1990s collateral, firm profitability, interest rates, and competition all changed in ways our theory

tells us should undermine the relative profitability of joint liability lending versus individual, collateral-based lending. We argue that these changes help explain the observed decline in the willingness of banks to lend to collectively-owned enterprises.

*Collateral*

At the outset of economic reform, collateral was difficult to liquidate and was rarely used. Following three decades of collectivization, local governments controlled nearly all assets. Land, for example, was and continues to be collectively owned. Individuals or private firms lacked suitable assets for collateral. Che and Qian (1998) argue that the larger value of collective assets facilitated greater collateralization of loans for TVEs, leading directly to greater credit financing by banks. However, use of collective assets for collateral is problematic. First, most collective assets are buildings or other fixed capital (Whiting, 1996)<sup>11</sup> located in remote townships or villages; often the true market value of these assets is negligible. Second and more importantly, it was costly for financial institutions to litigate against community governments, and with little likelihood of success. According to our survey, 76.2 percent of bank managers report that it is easier to liquidate private assets than collective assets. Only 8.3 percent say that it is easier to liquidate collective assets. This may help explain why in 1997, even though private firms performed better on average than collective firms, the frequency of lawsuits against the former was twice that of the latter (Table 3). Whiting (2000) also describes the “unwillingness or ability of courts to enforce rulings against the interests of local state officials.”

Because of its ineffectiveness, until recently few bank managers emphasized the importance of collateral in making lending decisions. The word collateral did not even appear in ABC documents until 1985. At that time, branches were required to reduce the amount of unsecured loans, but without clear guidelines on which loans should be collateralized, how collateral should be valued, or which types of collateral and guarantees were acceptable. Even when collateral requirements became more common in the late 1980s and the early 1990s, the true value of collateral was often unclear. Collateral value was frequently overestimated, for example by using purchase rather than market values (Whiting, 1996). Ownership of collateral assets was often poorly defined, and the ability to seize assets

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<sup>10</sup> This result assumes that the magnitude of social sanctions that can be imposed does not decline with group size.

<sup>11</sup> Our survey finds that even in 1997, more than 50 percent of collateral was buildings.

remained uncertain. Eighty-five percent of surveyed county bank branch managers reported that collateral was not used in lending prior to 1993.

Although these problems remain pervasive, recently the ability and willingness of banks to secure loans with collateral has increased. Our firm survey shows that TVE loans secured by collateral increased from 30.1 percent in 1994 to 45.8 percent in 1997 while private firm loans guaranteed by collateral surged from 6.3 percent in 1994 (when very few townships even had private enterprises) to 52.7 percent in 1997 (Table 3). From 1994 to 1997, the frequency of lawsuits against collective firms tripled and those against private firms increased by five times (Table 3). Nationally, court litigation over economic disputes (of which lending contracts account for over one third) increased 2.5 times from 1990 to 1997 (*Law Yearbook of China*, 1991 and 1997). The Law of Guarantees (*danbaofa*) enacted in 1995 defined acceptable types of collateral and outlined procedures for evaluating the value of and liquidating collateral. Nonetheless, by 1998 seventy percent of bank managers still felt that high liquidation costs remain a significant problem.<sup>12</sup>

#### *Firm Profitability*

After 1993, the profitability of township and village enterprises in China fell gradually. Table 1 shows that the ratio of total profits over total revenue of TVEs declined steadily from 9.4 percent in 1985 to 1.9 percent in 1997. Also, reflecting the increasing competition, the profitability of private firms followed the same pattern, but overall private firms had much higher ratios of profits to revenue. Oi (1999) reports that deficits of township enterprises increased from 0.5 billion yuan in 1985 to 3.8 billion yuan in 1990 to 12.6 billion yuan in 1995. The survey data also reveal a decline in rural enterprise profitability for all ownership types. The percentage of firms in the sample townships which were profitable fell from 75.9 percent in 1994 to 67.5 percent in 1996, rising slightly to 70.9 percent in 1997; mean profits as a share of income fell from 2.5 percent to -1.7 percent over the same period. The fall was much sharper for collective enterprises, whether we look at firms that started as collective in 1994 or look at current ownership status (Table 4). Private enterprises, on the other hand, are more profitable than collective firms in all years, whether or not one includes newly privatized firms. Changing relative profitability of collective and

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<sup>12</sup> The survey finds that in 1997, it took about five months to conclude a case with costs equal to 4.3 percent of the loan amount. The likelihood of winning lawsuits was 94 percent, and winning lawsuits returned 45 percent of the disputed loan amount on average. Allowing for interest costs of 5 percent of the loan (for five months), this suggests an expected loan recovery rate of 33 percent of the loan value. However, it reflects positive selection bias since banks will not sue if expected returns are too low.

private firms itself cannot explain the shift in lending preferences of bank managers *ceteris paribus*, because the question controls for profitability differences.

A number of factors help explain the declining profitability of collective firms, both overall and in comparison to private firms. First, increased competition may have eroded profitability. Second, market development may have eroded efficiency advantages of collective ownership since private firms can get everything they need from the market but do not have incentive problems associated with public ownership (Chen and Rozelle, 1999). Third, as argued earlier, reductions in joint liability lending may have increased adverse selection and moral hazard problems, reducing firm efficiency. Fourth, the tight credit retrenchment policies after perceived excessive lending following Deng's southern tour in 1992 may have cut off credit access to the non-state sector, adversely affecting enterprises. Finally, falling profitability may be due simply to lack of demand during a period of slow growth.

#### *Interest Rates*

The interest rate level has a direct effect on the ability and incentive to repay loans and so can have a large effect on bank lending preferences. In 1997, the average interest rate for six-month loans was 8.58 percent for ABC local branches and 10.23 for RCCs, with standard deviations of 0.46 and 0.42. Real interest rates have varied significantly over time, mainly because nominal rates do not respond much to inflation. From 1994 to 1997, the real interest rate increased substantially, from -13.1 percent to 5.8 percent.

#### *Bank Competition*

China began decentralizing its monobank system in 1984 when it established an independent central bank (the Peoples Bank of China) and four specialized banks (Agricultural Bank, Industrial and Commercial Bank, Construction Bank, and the Bank of China). The specialized banks were granted greater autonomy and encouraged to become commercial lenders, but they maintained monopoly power in their sectors of operation and were still responsible for policy lending. The Agricultural Bank of China (ABC) was responsible for lending to support agriculture and rural development. Although Rural Credit Cooperatives (RCCs) were officially recognized as collectively-run financial institutions, they in fact were closely supervised by ABC local branches, so that the two essentially acted as a

single unit (Xu, 1996).<sup>13</sup> With a few exceptions, this relationship remained unchanged throughout the 1980s and the early 1990s.

In the mid-1990s, several important changes furthered financial decentralization in the rural financial sector. First, in order to allow the ABC to become a true commercial bank, all of its policy lending responsibilities were shifted to the newly established Agricultural Development Bank of China in 1994. Second, starting in 1994, RCCs became administratively independent from ABC local branches, and instead received financial supervision directly from the People's Bank of China.<sup>14</sup> In addition, lending across sectors by all commercial banks was encouraged to promote competition. Thus, the original mono-bank system was replaced by an emerging competitive banking system (see also, Watson, 1999; Oi, 1999).<sup>15</sup>

The survey finds that in 1997, the lending market share of RCCs was 45.9 percent, followed by 32.4 percent for ABC local branches, and 21.7 percent for other financial institutions. RCCs held 42.5 percent of deposits in 1997 and ABC local branches 34.7 percent. The percentage of firms banking exclusively with one rural financial institution was 41 percent for collective firms and 62.3 percent for private firms.

## **6. Empirical Tests**

The previous section makes the argument that between 1994 and 1997, both rural financial and industrial sectors were experiencing transitions from a joint liability lending regime to a more decentralized one featuring individual lending. However, there also was significant spatial variation in the speed of this transition. In this section, we use cross-sectional data to empirically test whether: 1) the determinants of the change in bank managers' preferences to lend to collective versus private firms are consistent with our theoretical predictions; 2) township leaders are more involved in bank lending decisions in townships where joint liability lending is more advantageous to banks; and 3) when local banks prefer collective lending, collective firms are more likely to get loans if other collective

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<sup>13</sup> ABC local branches and RCCs were separable in terms of the employees and businesses, but the managers of RCCs were often the same as the managers of ABC local branches. It was up to the managers of ABC local branches to decide whether ABC local branches or RCCs conducted certain business. In some provinces, RCCs and ABC local branches were even merged into one institution.

<sup>14</sup> In a few experimental sites, RCCs were separated from ABC local branches as early as the late 1980s.

<sup>15</sup> The survey finds that one quarter of townships have at least one state bank branch in addition to the ABC. Most of these banks are located in developed areas where more business opportunities exist. Even when no other state bank branches are found, competition can come from branches located in nearby townships.

firms in the township perform well. In the absence of joint liability lending, only the firms own characteristics should affect its ability to obtain loans.

The estimation results provide striking confirmation of the propositions presented in section 4. Each of the main estimation results proves to be highly robust despite the small sample sizes. Nonetheless, because of the small sample sizes and the cross-sectional nature of the data, which makes omitted variable bias a concern, the results should be interpreted cautiously.

#### *Lending Preferences*

The changing lending preferences of bank managers from 1994 and 1997 is striking. In 1994, virtually all bank managers favored lending to collective firms. Only 9 percent preferred private firms. However, by 1997, 58 percent preferred private firms. Thus with a few exceptions, lending preferences in 1997 reflect the change in preferences from joint liability lending.<sup>16</sup> The lending preference variable can take three discrete values: 1 if the bank manager prefers to lend to collective firms, 2 if the manager has no clear preference, and 3 if the manager prefers private firms.

To test the six propositions, we require measures of collateral (c), social sanctions (s), firm profitability (z), the interest rate (r), bank competition (m), and group size (n). Our specification includes variables that measure each of these factors.

A key assumption is that private firms can collateralize loans while collective firms cannot. We thus need a measure of the relative ability of private firms to collateralize loans in comparison to collective firms rather than a measure of the overall ability of all firms to provide collateral for loans. We use the response to the question “all things equal, for which type of firms is legal actions to recover loans more effective?” The possible responses are 1 if collective, 2 if neutral, and 3 if private.

We use the share of collective firm managers born in the township as a measure of the ability to impose social sanctions. Managers from the township are less mobile because they have close ties to the community, and are more likely to have career goals which depend on the support of local government leaders. Our measure is calculated from the surveys of three firms in each township. The surveys found that in 1994, 92 percent of township enterprise managers were born in the township and 37 percent were or had been local

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<sup>16</sup> Because the 1994 data is incomplete, we cannot construct a change variable for lending preferences. In order to treat the 1997 preference as the change in preference, we drop the few observations in which bank managers prefer to lend to private firms in 1994. Only three observations with complete data are dropped.

government officials themselves (12 percent were current officials). None of these characteristics had changed much by 1997.<sup>17</sup> We also tried other variables such as government leader characteristics, the turnover rate for government leaders, and whether firm managers are or have been government officials. Township government surveys found that only 17.2 percent of government officials were born in the township. There was substantial turnover in the leadership of local governments, reflecting the system of cadre rotation typical of most counties. On average from 1992 to 1998, townships had 2.6 party secretaries and 2.7 mayors. Thus it appears that township officials exhibited greater mobility than firm managers in practice.

The distribution of township enterprise profitability is captured by the share of firms in the township that earn positive profits. We use this rather than the average profitability of firms because theory suggests that joint liability lending should be affected more by the distribution than the mean of firm performance. If firm ownership is endogenous to bank lending preferences, then our profitability measure should include all firms that *could* participate in joint liability lending contracts as collective firms. However, originally private firms are never observed to be collectivized, except when they adopt a collective label, or “wear red hats” (*dai hong maozi*) but act as fully independent firms. In our data, we categorize red hat firms as private. In 1994, in most townships privatization had not begun, so that most private firms were likely to be originally private firms not “eligible” to be collective. Thus, our preferred profitability measure is the share of collective firms in 1994 that are profitable. We also estimate a specification using data for all firms (rather than just collective firms) in 1994 in case many private firms were privatized rather than originally private, but this does not substantially alter our results (not reported).

The interest rate is the annualized rate for six-month working capital loans. Although interest rates are still highly regulated in China, financial institutions can determine loan interest rates within a range set by the PBC. We are concerned about possible endogeneity of the interest rate, because it complicates our interpretation of the relationship between interest rates and lending preferences. In 1997, ABC branches could adjust interest rates within a 20 percent range and RCCs within a 40 percent range. However, upper branches of the financial institutions, especially at the county level, circumscribe these bands.

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<sup>17</sup> Chen (2000) finds that among 64 township enterprise managers in four provinces surveyed in 1995, including Jiangsu and Zhejiang, found that 86 percent were local residents and 75 percent were party members, 81

Our survey of township bank branches finds almost no variation in loan or deposit interest rates within counties. We thus assert that branch managers treat the interest rate as exogenous. Of course, it is still possible that interest rates are endogenous at the county level, reflecting county level factors that also affect the relative profitability of joint liability lending. However, to the extent that rural banks at the county level compete with other specialized banks (e.g., Industrial and Commercial Bank, Construction Bank, Communications Bank, Bank of China), the interest rate reflects the overall market conditions in multiple sectors, which arguably are relatively exogenous to firm performance and lending preferences of rural banks. Nonetheless, as a robustness check, we specify a linear regression for lending preference and township leader loan involvement in which the real interest rate is instrumented using county deposits per capita (a measure of the supply of funds). This turns out not to alter the results in any important way.

Our measure of financial competition is the share of outstanding loans from financial institutions other than the ABC and RCC. We use the average of the two estimates of managers of ABC local branches and RCCs. We focus on competition from institutions other than the ABC and RCC because we expect information sharing with such institutions to be particularly poor, and so to significantly undermine dynamic incentives.

Group size is simply the number of enterprises in the township that can participate in joint liability lending, measured by the number of collective firms. Because group size can change with privatization and so may be endogenous to lending preferences, our preferred specification uses the number of collective firms in 1994, before widespread privatization began.

We specify the lending preference equation as an ordered probit model, with the 1997 lending preference, equivalent to the change in preference, as the dependent variable. We define an unobserved latent preference variable  $y^*$  to be a function of the six independent variables of interest and dummy variables for province and type of financial institution:

$$y^* = \mathbf{b}_0 + \mathbf{b}_1c + \mathbf{b}_2s + \mathbf{b}_3z + \mathbf{b}_4r + \mathbf{b}_5m + \mathbf{b}_6n + \mathbf{b}_7PROV + \mathbf{b}_8TYPE + \mathbf{e} \quad (1)$$

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percent were appointed by local governments, 19 percent were previously Party cadres, and 36 and 33 percent were previous managers or employees of collective enterprises.

We observe  $y=1$  if  $y^* \leq \mu_1$ ,  $y=2$  if  $\mu_1 < y^* \leq \mu_2$ , and  $y=3$  if  $y^* > \mu_2$ , where  $\mu_1$  and  $\mu_2$  are estimated cutoff values, assuming  $\varepsilon$  is normally distributed.

We estimate three versions of (1). A main concern is the potential endogeneity of  $z$  and  $n$  to lending preferences since access to loans is likely to influence firm performance and the decision to privatize. If joint liability lending increases profitability by reducing moral hazard, it will also induce a positive bias on the coefficient for firm profitability. In 1994, we assume that all townships were in a joint liability lending equilibrium, all potential group members were collectivized, and all bank managers preferred lending to collective firms. Subsequently, many bank managers either became indifferent between private and collective lending or switched preferences to private firms. Because firm performance and firm ownership is likely to be endogenous to lending preferences, for firm-related variables such as the share of firms that are profitability, managers from township, and group size, our preferred specification (column 1) uses “initial” 1994 variables. Use of lagged variables can also be justified if preferences take time to adjust, so that the change in preference is a function of initial conditions. Because the collateral variable has a large number of missing values, in the second specification, we drop the collateral variable, which increases our observations by one third. The third specification ignores endogeneity concerns and looks at the relationship between 1997 lending preferences and 1997 collective firm characteristics. All estimations for both lending preferences and township leader involvement in lending allow for clustering at the county level in calculating standard errors.

Coefficient estimates for the determinants of 1997 lending preferences are presented in Table 5. We also report marginal effects on the likelihood of preferring lending to private firms versus being indifferent or preferring collective firms (Table 7). All the signs are as the theory predicts, and in most cases the coefficients are statistically significant. Despite the relatively small sample size, the estimation results are quite robust across specifications.

The collateral coefficient has a positive sign in all three specifications, just as predicted in our model, although it is not statistically significant. The bank managers favor private firms more when they view liquidation costs of seizing collateral to be lower for private firms.

Our measure of sanctioning ability, the share of firm managers native to the township, has the expected negative sign in all specifications and is statistically significant in the preferred first specification. We recognize that omitted variables, such as community

characteristics that are favorable to future firm performance, could both attract outside managers and increase the likelihood of joint liability lending. Other variables we tried, including whether managers were government leaders in the past or present, and characteristics of township leaders (e.g., share native to the township, turnover rate), were statistically insignificant and often of the wrong sign. This suggests first, that mobility of firm managers is the most important factor for sustaining sanctioning ability. Direct ties to the government are less important, perhaps because as long as the managers intend to stay in the township, their relationship with leaders is important. Second, it is the position of township leaders rather than the characteristics of township leaders that facilitates sanctioning. Township leaders can punish managers using their administrative authority and can pass on reputational knowledge to successors.

The share of profitable firms in the local economy has the right sign and is statistically significant in the first two specifications. For the preferred first specification, a one percent increase in profitable enterprises decreases the probability of preferring private firms by 0.44 percent. This supports the hypothesis that the fall of profitability of TVEs was a driving force for changing lending preferences and TVE privatization. The coefficient has the wrong sign in specification 3, likely because of the endogeneity problems described earlier.

The interest rate variable has a positive sign and is statistically significant in all specifications. Higher interest rates increase the firms' debt burden and make group default more likely.

Bank competition increases the likelihood of preferring lending to private enterprises. The coefficient for share of non-ABC/RCC loans is positive and statistically significant in all specifications. For an increase of one percent of the township's loan market share of financial institutions other than ABC local branches and RCCs, the probability that bank managers favor private borrowers increases by 0.94 percent. When we alter the competition variable to include lending by ABCs for RCCs and lending by RCC's for ABCs, the coefficient estimates are smaller and statistically insignificant, suggesting that the two institutions share information, either actively or through local informants.

The coefficient on group size is negative as expected, statistically significant in the third specification and nearly so in the preferred first specification. The larger the group size, the greater the ability to pool risk and the greater the likelihood of repayment.

Finally, the effects of institutional and provincial dummies are worth noting. The signs are consistent in all specifications and statistically significant in almost all cases. ABCs are more likely to prefer lending to private firms than RCCs. As larger, more centralized financial institutions, they may have less information on the true profitability of collective firms and greater ability to pursue legal actions against delinquent borrowers. In addition although Zhejiang is better known for private enterprise success, holding all other factors equal, banks in Jiangsu are more likely to prefer lending to private firms, perhaps because of lower expectations about the future performance of collective enterprises.

*Township Leader Involvement in Lending Activity*

We estimate probit and ordered probit models of variables that measure the involvement of township leaders in lending activity. The dependent variables are whether township leaders organized loan application meetings in 1997 and 1994,<sup>18</sup> and the extent to which bank managers expect assistance from township leaders in loan repayment when loans are overdue in 1997. Possible responses to the latter question are 1=never, 2=occasionally, 3=sometimes, 4=frequently, and 5=definitely. Consistent with the decline of joint liability lending, the frequency of loan application meetings organized by township leaders declined significantly. In 1994, 70 percent of township leaders organized loan application meetings. By 1997, the percentage fell to 51 percent.

For all three dependent variables, we consider the latent variable  $g^*$  to be a measure of the involvement of township leaders in lending to collective firms, or the importance of joint liability:

$$g^* = \mathbf{a}_0 + \mathbf{a}_1s + \mathbf{a}_2z + \mathbf{a}_3r + \mathbf{a}_4m + \mathbf{a}_5n + \mathbf{a}_6PROV + \mathbf{a}_7TYPE + \mathbf{e} \quad (2)$$

Other than collateral, the same independent variables used in the lending preference equation are included, as well as control dummies for financial institution and province. The collateral variable measures differences between collective and private firms, but our goal is to compare the involvement of township leaders in collective lending given that lending to collective enterprises occurs.

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<sup>18</sup> As described in Table 2, we also have data on the number of meetings organized by township governments to discuss loan repayment, but unlike the measure of expected assistance conditional on loans being overdue, the number of repayment meetings is endogenous to repayment performance.

For each year, to the extent possible we include independent variables from the current year. There is no endogeneity problem as for lending preferences because township leader involvement reflects joint liability lending among collective firms and so should depend on current characteristics of collective firms. In the first specification, all variables are for 1997. Unfortunately, we do not have data on competition and interest rates in 1994, when we expect joint liability lending to be at its strongest, so our estimate for 1994 loan meetings, the second specification, drops the competition and interest rate variables. Finally, our third specification is an ordered probit for the likelihood that township leaders will assist in efforts to recover loans when loans are overdue. Because the willingness to spend the time to find local leaders to help with repayment may depend on the size and quality of the private sector, and the expected frequency of repayment problems, in this specification we add additional controls—the number of private firms, the percent of private firms that are profitable, and the percent of borrowers with no difficulty meeting repayment.

The empirical results for the determinants of government leader participation in lending are presented in Table 6, and marginals for the first specification are reported in Table 7. Sanctioning ability has the expected positive and statistically significant effect on the strength of joint liability as measured by whether the township holds loan application meetings. Results for all firm-related variables support our theory. For all three specifications, townships with a larger share of profitable firms are more likely to exhibit a group-lending equilibrium as reflected in township leaders arranging loan application meetings and government leader assistance in repaying overdue loans. This positive association between township leader participation in lending and firm profitability is the opposite of what would be expected if township leaders used political influence to support inefficient enterprises. The interest rate has inconsistent signs and is not statistically significant. The share of loans from financial institutions other than the RCC and ABC has a negative and statistically significant effect on the probability of loan application meetings and seeking assistance from government leaders in loan repayment. Finally, group size has a significantly positive impact on government participation in lending.

We also tried other indicators of joint liability lending described in Table 2. When using the variable for whether leaders held loan repayment meetings (or the number of such meetings), we find that the likelihood is negatively rather than positively related to firm performance and that other factors are all insignificant. We believe this reflects that unlike for meetings to arrange new loans, meetings to discuss repayment are strongly endogenous

to repayment problems related to firm performance. In fact, one could interpret this result as consistent with our argument that township leaders facilitate repayment. Other general measures of township leader participation in lending (such as number of visits between leaders and bank officials) suffer from the same endogeneity problems, since many of these visits may be to monitor or enforce repayment. We also tried a specification using the number of loan application meetings, but almost all estimates were insignificant, suggesting that the number of meetings is affected by factors not adequately captured, or that the number of meetings matters much less than whether there are any meetings at all in reflecting the strength of joint liability lending.

*Who Gets Loans?*

If lending contracts to collective enterprises are characterized by joint liability lending, the ability of a collective firm to obtain a loan should depend not only the firm's own ability to repay, but also on the repayment ability of other collective firms in the township. For private firms, or for collective firms in townships in which banks do not practice joint liability lending, the profitability of other collective firms should not matter, and if anything should reduce the chances of borrowing if local banks have limited funds and profitable firms crowds out lending to other firms. Thus, testing whether the profitability of other collective firms in townships practicing group lending positively affects the ability of collective firms to borrow is a robust test for the existence of joint liability lending.<sup>19</sup>

To implement this test empirically, we specify probit and ordered probit models for the likelihood of getting new loans from local banks, using data from the firm survey. The sample includes both collective and private firms and uses cross-sectional data for 1997 only. We use two variables to measure the likelihood of receiving a loan: an indicator variable for whether the firm actually obtained a new loan in 1997 from either the ABC or RCC, and a subjective assessment by the firm manager of whether the firm could obtain a loan from the ABC or RCC if the firm applied. Here, the possible responses are 1=impossible, 2=possible, and 3=definitely.

The independent variables include controls for the characteristics of the firm and the township that might affect the ability of firms to get loans in a commercial system without joint liability lending, including the firm's ownership type and profitability, the profitability

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<sup>19</sup> We thank Loren Brandt for suggesting this empirical test.

and number of other private and collective firms in the township, which is important if funds are rationed, the year of firm establishment, whether the firm was privatized, total assets, whether the firm is a subsidiary, industrial sector dummies, and provincial dummies. We test our hypothesis by adding an interaction term of three variables: the profitability of other collective firms in the township, a dummy variable for being a collective firm, and a dummy variable for whether the bank manager prefers collective firms versus private firms (bank preference). The profitability of other collective firms should only matter if the firm is collective and the bank prefers lending to collective firms with joint liability. We also add a similar interaction term for the firm's own profitability, although the prediction for this variable is less clear. The firm's profitability may be less important in joint lending arrangements since the profitability of other firms matters more, but profitability may be more important if private firms secure loans through other means, such as collateral. What is nice about the chosen specification is that by including private as well as collective firms, the coefficient on the key interaction term is not subject to bias from unobserved township characteristics that are correlated with average firm profitability.

Estimation results are presented in Table 8. The main result is that the coefficient on the interaction term for the profitability of other collective firms, collective firm ownership, and bank preference for lending to collective firms is positive and statistically significant in both specifications, consistent with the existence of joint liability lending. A one percent increase in the percentage of other collective firms that are profitable increases the probability of obtaining a loan by 0.67 or 0.83 percent (depending on the measure used) if the firm is a collective and the local bank does not prefer lending to private firms. We are unable to think of plausible alternative explanations that could explain such a result. Other firm characteristics that are important to loan access include the year of establishment, firm assets, and the firm's sector (not reported).

## **7. Conclusion**

We have offered a new interpretation of the rise and fall of China's township and village enterprises that focuses on the lending preferences of state banks in an environment of changing legal institutions, firm performance, interest rates, and financial competition. While having omitted discussion of many other factors that influenced institutional change, we believe that joint liability lending and the changing views of commercially-oriented bank

managers is an important element of the story that has not received adequate attention in the existing literature on China's township and village enterprises and China's financial reforms.

A number of necessary conditions existed during much of the reform period that made joint liability lending profitable for banks. These included an inability to collateralize loans, the unique ability of groups of collective enterprises to impose sanctions on defaulting group members through the authority of local government officials, successful firm performance in a high growth transition environment, low real interest rates, and the lack of financial competition. The willingness of banks to lend to collective firms through joint liability contracts under these conditions was an important factor sustaining collective ownership and local leader involvement in lending. However, during the mid-1990s, the ability to seize collateral, firm profitability, interest rates, and competition all changed in ways that theory suggests should undermine the relative profitability of joint liability lending compared to individual, collateral-based lending.

A different interpretation of the rise and fall of TVEs, which we refer to as the *conventional view*, is that local leaders could secure bank loans for TVEs by exerting political influence on local bank managers, even when projects were of low quality. When bad loans accumulated to reach unmanageable levels in the mid-1990s, financial reforms finally were instituted in a serious way under the leadership of Zhu Rongji. Only then did bank managers insist on timely loan repayment and begin refusing to lend to inefficient collective enterprises, thus encouraging privatization. While this conventional view does not contradict our story of joint liability lending, it differs in emphasis. We recognize its validity, and yet we argue that it cannot explain many aspects of TVE lending that have a more natural interpretation in our story.

First, the conventional view cannot explain the rise of strategic default, when firms that can repay don't repay. Only seven percent of county managers perceived a low willingness to repay in 1990 but over one third did so in 1997 (Table 9). This change has a natural interpretation if joint liability arrangements were breaking down. Second, it cannot explain a number of the empirical results, for example that the involvement of township leaders in loan decisions is positively, not negatively, related to firm profitability. One would expect the opposite sign if agency problems were important and township leaders were asking bank managers to make bad loans. Nor can the conventional view explain why the profitability of other collective firms increases the ability of collective firms to borrow funds. The conventional view also does not explain why collateral, sanctioning ability, low firm

profitability, high interest rates, competition, and the number of firms should affect the relative desirability of lending to private versus collective firms since these are environmental changes that affect all firms.

Although bank managers certainly were influenced by political pressure from local governments, they always placed importance on loan repayment which made the returns to joint liability lending an important concern. When asked to rank the relative importance of profitability and government policy in lending decisions in different years, as early as 1991, the majority of respondents felt profitability was more important or solely important (Table 9). In both 1994 and 1997 the importance of profitability increased, so that by 1997, not one respondent reports policy as being more important. Other arguments also cast doubt on a simple agency story. Lending to rural enterprises was never a policy goal of upper levels of government, so that pressure from above cannot explain excessive lending to TVEs. Most bank branch managers (two thirds in our sample) are *not* from the local township, so should be less influenced by local leaders. Even though local leaders participate in evaluations, it is the county bank branch that has the most say in appointments and promotion. County bank officials report to provincial superiors and have little interest in supporting bad projects at the local level. Many authors affirm that budget constraints for TVEs through the financial system have been much harder than for SOEs (Qian and Weingast, 1997), and in fact this is cited as a main reason for their success compared to SOEs. Especially in times of credit tightening, many TVEs were denied credit, leading to substantial bankruptcies, a pattern which is not observed for SOEs (Brandt and Zhu, 2000). If anything, during these periods bank managers diverted funds designated for unprofitable policy loans (for poverty alleviation, grain procurement) to lend profitably to rural enterprises (Oi, 1999). In depth interviews reveal that when pressured by township officials to support local TVEs, bank managers paid close attention to firm ratings in deciding which enterprises would receive scarce capital in the early 1990s (Oi, 1999; Whiting, 2000). Recent research has found that even state bank lending to SOEs was much more responsive to performance indicators than funds invested directly by governments, and this was even more true in the 1980s than in the 1990s (Cull and Xu, 2000a and 2000b). From an incentive standpoint, ABC and RCC bank managers since the late 1980s have signed annual contracts that linked bonuses to profits and repayment performance.<sup>20</sup> In 1994, bonuses were 27 percent of total income and in

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<sup>20</sup> ABCs established a responsibility system for credit management as early as 1985.

1997 they increased to 42 percent. Even when such incentives were not made explicit contractually, managers benefited from high revenues because such funds could be spent on various non-wage benefits (e.g., higher quality housing, offices, and perks for employees).

Changing bank preferences for private firms likely created strong pressure for firm privatization. In our survey, 84 percent of bank managers supported privatization in 1998, while only 9 percent opposed. Most bank managers (84 percent) in our sample also agree that privatization improves firm performance. A full analysis of the reasons for the privatization of collective enterprises is beyond the scope of this paper. We do not consider, for instance, the revenue concerns of village collectives and township governments, incentives for asset stripping and insider payoffs, and the full range of efficiency arguments.

While this paper has focused on rural enterprises, it is interesting to consider whether the rapid increase in industrial groups (or *jituan*) among SOEs (and TVEs) in China is related to strategies for accessing capital in an environment of increasing bank commercialization. The rise and fall of joint liability lending is an excellent example of the institutional flexibility and responsiveness to changing institutional realities that has characterized China's economic reforms.

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## Appendix 1

### Moral Hazard

Following Ghatak and Guinnane (1998), we assume that output can take two values:  $Y$  with probability  $p$  and  $0$  otherwise. The borrower's action, or effort, is also defined by  $p$ , which incurs disutility  $0.5\gamma p^2$  where  $\gamma > 0$ . Borrowers are risk neutral and their actions are unobservable to the bank. Taking the interest rate as given,<sup>21</sup> an individual borrower's optimal effort is defined by the following profit maximization problem:

$$\hat{p}(r) = \arg \max \left\{ p(Y - r) - 0.5\gamma p^2 \right\} = \frac{Y - r}{\gamma}. \quad (\text{A1})$$

Under joint liability with a two-firm group, we assume that each borrower is liable for an amount  $c$  in the event that the other firm's project fails. Assuming that borrowers choose projects cooperatively, optimal effort is defined by a new maximization problem:

$$\hat{p}(r, c) = \arg \max \left\{ pY - rp - cp(1 - p) - 0.5\gamma p^2 \right\} = \frac{Y - r - c}{\gamma - 2c}. \quad (\text{A2})$$

We define the advantage of joint liability lending in reducing moral hazard as the difference between the borrower's effort under joint liability and the borrower's effort with an individual loan:

$$\Delta \hat{p} = \hat{p}(r, c) - \hat{p}(r) = \frac{Y - r - c}{\gamma - 2c} - \frac{Y - r}{\gamma}. \quad (\text{A3})$$

From this expression, it is straightforward to derive comparative statics for firm profitability,  $Y$ , and the interest rate,  $r$  in order to prove Propositions 3 and 4:

$$\frac{\partial \Delta \hat{p}}{\partial Y} > 0 \quad \text{and} \quad \frac{\partial \Delta \hat{p}}{\partial r} < 0. \quad (\text{A4})$$

The benefits of reducing moral hazard through joint liability lending are increasing in firm profitability and decreasing in the interest rate. The interest rate acts like a tax on effort and so reduces the effort difference under joint liability versus individual lending.

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<sup>21</sup> Ghatak and Guinnane (1998) assume that the bank adjusts the interest rate endogenously. In China, interest rates are strictly regulated. Local branches have some discretion to adjust rates but are not permitted to offer multiple interest rates.

## Appendix 2

### Strategic Default

We adapt a standard model of joint liability lending and strategic default developed by Besley and Coate (1995) to reflect the key institutional features of lending by China's rural financial institutions to township and village enterprises. The factors we consider include the ability to seize collateral, the distribution of local firm performance, the interest rate, and financial competition.

First, consider the expected repayment and profits when financial institutions lend to individual firms. Firm output (here, identical to profit),  $y$ , from a project financed by a one-unit loan is drawn from a distribution  $F(y)$  and after output is realized the firm's only decision is whether to repay the loan ( $r$  is the sum of the principal and interest) or strategically default, incurring a penalty  $p$  imposed by the bank. The firm defaults whenever the repayment exceeds the penalty ( $r > p$ ).

The penalty  $p$  includes two components—collateral ( $c$ ) and the discounted value to the firm of maintaining access to future loans from the bank (hereafter, the *dynamic incentive*, or  $d$ ). Because of the political difficulty of seizing collective assets, collateral penalties ( $c$ ) are greater for private firms, and also higher if legal institutions are well-developed. We assume that the collateral penalty is proportional to output, since banks can make claims on output if loans are in default. We make the simplifying assumption that collateral cannot be seized from collective enterprises ( $c=0$ ). The dynamic incentive ( $d$ ) is directly proportional to firm output  $y$ , capturing the notion that future access to loans is more valuable to profitable firms; and inversely proportional to  $m$ , a measure of market competition (increasing with greater competition). Assuming that banks cannot perfectly and credibly share information about borrowers with other financial institutions, competition increases the possibility that firms can obtain future loans elsewhere after defaulting on loans, undermining dynamic incentives. Thus, after realizing output  $y$ , individual and collective firms will repay loans if the following conditions hold:

$$\text{Collective firms} \quad r < p = d(y, m) = \frac{y}{m} \quad (\text{A5})$$

$$\text{Private firms} \quad r < p = d(y, m) + c(y) = \frac{y}{m} + cy \quad (\text{A6})$$

With strategic default by borrowers, the bank's expected profits from individual lending to collective (subscript CI) and private (subscript PI) enterprises are the following:<sup>22</sup>

$$\pi_{CI} = r(1 - F(mr)) \quad (A7)$$

$$\pi_{PI} = r(1 - F(\frac{mr}{1+mc})) + \int_0^{\frac{mr}{1+mc}} cy f(y)dy \quad (A8)$$

We exclude individual lending to collective firms as a feasible option, but use it conceptually to make the derivations more intuitive.

The difference between expected profits from individual lending to collective versus private firms is:

$$\pi_{CI} - \pi_{PI} = r[F(\frac{mr}{1+mc}) - F(mr)] - \int_0^{\frac{mr}{1+mc}} cy f(y)dy \quad (A9)$$

This expression is negative by inspection. Banks strictly prefer lending to individual private firms over individual collective firms because the ability to seize collateral increases expected repayment rates and reduces the loss when default occurs.

Next, we model the joint liability lending contract for two collective firms in the same township. Following Besley and Coate (1995), each firm is granted a loan of one unit, and the firms use the funds to invest in projects whose returns are independent. After output is realized, the total loan repayment due is  $2r$ . The group decides to make the full repayment or default and pay nothing. Unlike for individual lending, each firm can decide to repay the entire loan itself if managers believe that the other firm will pay nothing, or pay nothing if they believe the other firm will repay on their behalf. A two-stage game is played as follows. In stage 1, each firm decides simultaneously whether to contribute its share ( $r$ ) of the total loan repayment. If the firms make the same decision, the agreed upon outcome obtains. If they disagree, in a second stage, the firm deciding to repay decides whether it is willing to repay the entire  $2r$ .

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<sup>22</sup> We assume that there is a positive expected return to at least some lending and ignore the one unit sunk cost of the loan. We also assume that the interest rate is exogenous (discussed later) so that banks cannot renegotiate  $r$  after observing output. Allowing for such renegotiation should not alter the main insights as expected repayment depends on firm output and penalty parameters.

Ruling out coordination failure to assume the desirable positive repayment outcome is achieved, the expected profit from joint liability lending to collective firms is:

$$\pi_{CJ} = r\{[1 - F(2mr)] + [F(2mr) - F(mr)]^2\} \quad (A10)$$

Expected profit is the interest times the probability of repayment. Repayment occurs if at least one firm has a high return (first term in probability) or if both firms have medium returns (second term). The difference in profits from joint liability versus individual collective lending can be expressed as follows:

$$\pi_{CJ} - \pi_{CI} = r\{F(mr)[1 - F(2mr)] - [F(2mr) - F(mr)]F(mr)\} \quad (A11)$$

If we divide output into three categories (high-H, medium-M, and low-L), there are 9 possible joint outcomes for two firms: HH, HM, HL, MH, MM, ML, LH, LM, and LL. When a firm's output is low but the other firm's output is high (HL and LH), joint liability lending achieves repayment when individual lending leads to default (first part of the second term of (7)). However, when one firm's output is medium and the other's is low (ML, LM), joint liability lending leads to default when individual lending achieves repayment (second part). Thus, joint liability lending improves repayment when the former is more likely than the latter, which occurs when the probability of high returns exceeds the probability of medium returns.

To generate comparative statics, we assume a uniform distribution for  $y$  on the range  $[a, b]$ . Our goal is to see how the relative profitability of different lending contracts responds to changes in the model parameters. Profitability differences can be defined as follows:

$$\begin{aligned} \Delta\pi_{CJCI} &= \pi_{CJ} - \pi_{CI} \\ \Delta\pi_{CJPI} &= \pi_{CJ} - \pi_{PI}, \text{ and} \\ \Delta\pi_{CJPI} &= \pi_{CJ} - \pi_{PI} = \Delta\pi_{CJCI} + \Delta\pi_{CJPI}. \end{aligned} \quad (A12)$$

Define the output level at which collective individual and private individual firms are indifferent between repaying loans and defaulting to be  $y_C = mr$  and  $y_P = \frac{mr}{1+mc}$ . With a uniform distribution, profitability differences can be expressed as follows:

$$\Delta\pi_{CICI} = \frac{r(y_C - a)(b - 3y_C)}{(b - a)^2} \quad (A13)$$

$$\Delta\pi_{CIFI} = \frac{r(y_P - y_C) - c(y_P - a)}{b - a} \quad (A14)$$

The derivative of  $\Delta\pi_{CICI}$  with respect to  $y_C$  is:

$$\frac{\partial\Delta\pi_{CICI}}{\partial y_C} = \frac{r(b + 3a - 6y_C)}{(b - a)^2} \quad (A15)$$

It is easy to show that the relative profitability of joint liability lending increases with  $y_C$  until  $y_C = \frac{b+3a}{6} < \frac{b}{3}$ , after which it declines with  $y_C$ , becoming negative when  $y_C$  exceeds  $\frac{b}{3}$ .<sup>23</sup>

Thus, in the range in which change occurs, a higher threshold output level  $y_C$  is associated with a switch from group to individual lending ( $\frac{\partial\Delta\pi_{CICI}}{\partial y_C} < 0$ ). The intuition for this result

is that with a uniform distribution, a higher  $y_C$  must lead to fewer high types (those with types above  $2y_C$ ) and more medium types. For a fixed number of possible defaults (low types), this makes joint liability lending, which depends on high types, less attractive. However, a higher  $y_C$  increases the number of low types (those below  $y_C$ ), so that for very low  $y_C$ , the increased incidence of possible default increases the relative profitability of joint liability lending even though the gain per default decreases, accounting for the reversed sign of the partial at low levels of  $y_C$ .

It is obvious from (A14) that:

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<sup>23</sup> For the problem to be well-defined, we assume that  $b > 2mr$  and  $b > 3a$ .

$$\frac{\partial \Delta \pi_{CIFI}}{\partial y_C} = -\frac{r}{b-a} < 0 \quad (\text{A16})$$

$$\frac{\partial \Delta \pi_{CIFI}}{\partial y_P} = \frac{r-c}{b-a} > 0 \quad (\text{A17})$$

With these results, it is relatively straightforward to generate comparative statics by seeing how different parameters affect  $y_C$  and  $y_P$ .

Assume a uniform distribution for output and the penalty functions in (1), we can prove the following propositions:

**Proposition 1.** Greater collateral penalties do not affect the profitability of collective group versus collective individual lending and reduce the profitability of collective individual lending versus private lending ( $\frac{\partial \Delta \pi_{CICI}}{\partial c} = 0$ ,  $\frac{\partial \Delta \pi_{CIFI}}{\partial c} < 0$ ).

Proof:  $\frac{\partial \Delta \pi_{CICI}}{\partial c} = \frac{\partial \Delta \pi_{CICI}}{\partial y_C} \frac{\partial y_C}{\partial c} = 0$

$$\frac{\partial \Delta \pi_{CIFI}}{\partial c} = \frac{\partial \Delta \pi_{CIFI}}{\partial y_C} \frac{\partial y_C}{\partial c} + \frac{\partial \Delta \pi_{CIFI}}{\partial y_P} \frac{\partial y_P}{\partial c} < \frac{\partial \Delta \pi_{CIFI}}{\partial y_C} \left( \frac{\partial y_C}{\partial c} - \frac{\partial y_P}{\partial c} \right) < 0$$

Note that  $\frac{\partial \Delta \pi_{CIFI}}{\partial y_P} < -\frac{\partial \Delta \pi_{CIFI}}{\partial y_C}$  from (A14).

**Proposition 2.** Poor firm performance, defined as a uniform decrease in the output of all firms, reduces the relative profitability of collective group versus collective individual lending and does not affect the profitability of collective individual lending versus private lending ( $\frac{\partial \Delta \pi_{CICI}}{\partial z} > 0$ ,  $\frac{\partial \Delta \pi_{CIFI}}{\partial z} = 0$ , where  $z$  is mean output).

Proof: Define  $z$  to be mean firm profitability, and  $x$  to be one half of the range  $b-a$ . Then  $a=z-x$  and  $b=z+x$ . Substituting  $x$  and  $z$  for  $a$  and  $b$  in the expressions for relative profitability yields the following:

$$\Delta \pi_{CICI} = \frac{r(y_C - z + x)(z + x - 3y_C)}{4x^2}$$

$$\Delta\pi_{CPI} = \frac{r(y_P - y_C) - c(y_P - z + x)}{2x}$$

The partial of  $\Delta\pi_{CICI}$  with respect to  $z$  is:

$$\frac{\partial\Delta\pi_{CICI}}{\partial z} = \frac{r(4y_C - 2z)}{4x^2} > 0 \quad \text{if } z < 2y_C$$

$$< 0 \quad \text{if } z > 2y_C$$

The relative profitability of collective group versus collective individual lending decreases with higher mean profitability only when the average firm type is a high return firm (willing to pay twice the repayment amount as an individual firm). If this is the case, then the probability of high types must exceed 0.5 and thus be greater than the probability of middle types, meaning that group lending is preferred. Thus, in the range in which individual lending may overtake group lending,  $\frac{\partial\Delta\pi_{CICI}}{\partial z} > 0$ . Also, by inspection,  $\frac{\partial\Delta\pi_{CPI}}{\partial z} > 0$ .

**Proposition 3.** A higher interest rate reduces the profitability of collective group versus collective individual lending and reduces the profitability of collective individual lending versus private individual lending ( $\frac{\partial\Delta\pi_{CICI}}{\partial r} < 0$ ,  $\frac{\partial\Delta\pi_{CPI}}{\partial r} < 0$ ).

Proof: 
$$\frac{\partial\Delta\pi_{CICI}}{\partial r} = \frac{\partial\Delta\pi_{CICI}}{\partial y_C} \frac{\partial y_C}{\partial r} + \frac{(y_C - a)(b - 3y_C)}{(b - a)^2} < 0$$

$$\frac{\partial\Delta\pi_{CPI}}{\partial r} = \frac{\partial\Delta\pi_{CPI}}{\partial y_C} \frac{\partial y_C}{\partial r} + \frac{\partial\pi_{CPI}}{\partial y_P} \frac{\partial y_P}{\partial r} + \frac{y_P - y_C}{b - a} < 0$$

**Proposition 4.** Greater bank competition reduces the profitability of collective group versus collective individual lending and reduces the profitability of collective individual lending versus private lending ( $\frac{\partial\Delta\pi_{CICI}}{\partial m} < 0$ ,  $\frac{\partial\Delta\pi_{CPI}}{\partial m} < 0$ ).

Proof: 
$$\frac{\partial\Delta\pi_{CICI}}{\partial m} = \frac{\partial\Delta\pi_{CGCI}}{\partial y_C} \frac{\partial y_C}{\partial m} < 0$$

$$\frac{\partial\Delta\pi_{CPI}}{\partial m} = \frac{\partial\Delta\pi_{CPI}}{\partial y_C} \frac{\partial y_C}{\partial m} + \frac{\partial\Delta\pi_{CPI}}{\partial y_P} \frac{\partial y_P}{\partial m} < \frac{\partial\Delta\pi_{CPI}}{\partial y_C} \left( \frac{\partial y_C}{\partial m} - \frac{\partial y_P}{\partial m} \right) < 0$$

**Table 1**  
**Rural Collective Enterprises and Financial Intermediation in China**

	Number of Enterprises	Employment	Total Output Value	Collective Share of Total Rural Enterprise Output	Ratio of Collective to State-owned Enterprise Industrial Output Value	Total Profits/ Total Revenue	Loans Outstanding <sup>a</sup>	TVE Share of Total Rural Lending	Bank Loans/ Total Revenue
	million	million	billion 1997 yuan	%		%	billion 1997 yuan	%	%
1985	1.9	43.3	678.4	73.7	0.23	9.4	118.8	17.2	18.8
1986	1.7	45.4	n.a.	n.a.	0.26	6.8	169.7	21.3	24.1
1987	1.6	47.2	n.a.	n.a.	0.30	5.6	202.7	22.5	23.4
1988	1.6	48.9	n.a.	n.a.	0.34	4.5	204.0	23.4	19.4
1989	1.5	47.2	1174.9	66.4	0.35	3.1	196.5	22.7	19.4
1990	1.5	45.9	1317.6	67.4	0.37	2.7	231.6	22.0	21.7
1991	1.4	47.7	1526.5	66.6	0.32	2.5	278.2	22.2	21.5
1992	1.5	51.8	2185.4	66.7	0.40	2.6	348.3	23.8	18.5
1993	1.7	57.7	3304.0	64.3	0.46	3.0	424.3	31.9	15.1
1994	1.6	59.0	3997.9	67.6	0.68	2.1	419.2	33.2	12.8
1995	1.6	60.6	n.a.	n.a.	0.76	1.8	430.7	33.1	12.1
1996	1.5	59.5	n.a.	n.a.	0.97	1.7	444.8	28.3	11.8
1997	1.3	53.3	4384.4	48.8	n.a.	1.9	409.0	22.9	10.9

<sup>a</sup> Bank loans only include those from the Agricultural Bank of China (ABC) and Rural Credit Cooperatives.

**Source:** *China Statistical Yearbook (1986-1998)*; *Statistical Yearbook of Rural Financial and Banking of China (1986-1998)*; and *China Yearbook of Township and Village Enterprises (1990-1998)*, Beijing: Agricultural Press.

**Table 2**  
**Involvement of Local Leaders in Township-Run Enterprises**

		1990	1994	1997
<b>Number of Meetings Organized by Township Governments <sup>a</sup></b>				
For loan granting	Obs.		103	113
Percentage with loan application meetings	%		69.9	51.3
Average number of meetings			3.7	3.0
For loan repayment	Obs.		107	113
Percentage with loan application meetings	%		22.4	17.7
Average number of meetings			5.6	3.2
<b>Bank manager seeks assistance from govt. leaders once a firm has overdue loans <sup>b</sup> (N=110, %)</b>				
Impossible				33.6
Occasionally				3.6
Sometimes				10.0
Frequently				5.5
Always				47.3
<b>Government Assistance in Repaying Loans <sup>a</sup> Once A Collective Firm Shuts Down (N=44, %)</b>				
Likely		43.2	25.0	11.1
Possible		13.6	15.9	13.3
Unlikely		43.2	59.1	75.6
Number of Visits Between Township Leaders and Bank Officers <sup>a</sup>	Obs.		53	56
			37.4	29.3
<b>Loans Guaranteed by Governments <sup>c</sup></b>				
Number of collective borrowing firms	Obs.		130	86
Of which, guaranteed by guarantors	%		46.2	41.9
Of which, guaranteed by local governments	%		31.7	5.6
guaranteed by other collective firms	%		63.3	86.1

<sup>a</sup> Data are from the survey of township leaders.

<sup>b</sup> Data from bank manager survey.

<sup>c</sup> Data from firm manager survey.

**Table 3**  
**Collateralization and Liquidation Costs <sup>a</sup>**

		1994		1997	
		TVEs	PEs	TVEs	Pes
<b>Enterprise Loan Value</b>					
Secured by collateral (%)	Obs.	77 30.1	19 6.3	56 45.8	55 52.7
Secured by guarantors (%)	Obs.	77 58.6	17 67.4	56 50.1	55 41.8
<b>Frequency of Lawsuits against Borrowing Firms</b>					
Number of lawsuits/number of new loans (%)	Obs.	39 0.07	36 0.11	54 0.21	54 0.52
<b>Bank Manager Views on Liquidation Costs</b>					
		Collective Enterprises	Same	Private Enterprises	
1. For which type of firm is legal action to seize collateral more effective? (N=84)		8.3	15.5	76.2	
		Very Serious	Somewhat	No	
2. Is high liquidation cost a problem? (%) (N=74)		70.3	2.7	27.0	

<sup>a</sup> Data in this table are from the survey of local branch managers.

**Table 4**  
**Profitability of Rural Enterprises <sup>a</sup>**

	1994	1995	1996	1997
<b>1. All Enterprises</b>				
Number of firms	415	411	409	405
Of which are profitable (%)	75.9	75.2	67.5	70.9
Profits/production (%)	2.5	2.3	0.4	-1.7
<b>2. Township Enterprises</b>				
Total number of township enterprises	323	276	224	174
Of which are profitable (%)	75.2	73.2	64.3	66.7
Profits/production (%)	2.5	1.9	-0.3	-3.0
<b>For firms That Were Township Enterprises in 1994</b>				
Number of Firms	323	318	315	310
Of which are profitable (%)	75.2	71.1	62.2	66.8
Profits/production (%)	2.5	1.7	-0.5	-2.5
<b>3. Private Enterprises</b>				
Total number of private enterprises	92	135	185	231
Of which are profitable (%)	78.3	79.3	71.4	74.0
Profits/production (%)	2.3	2.9	1.2	-0.8
<b>For firms that were Private Enterprises in 1994</b>				
Number of firms	92	92	92	92
Of which are profitable (%)	78.3	89.1	84.8	83.7
Profits/production (%)	2.3	4.1	3.2	0.8
<b>Newly Privatized Firms During the Year</b>				
Number of firms	-	42	51	47
Of which are profitable (%)		57.1	66.7	51.1
Profits/production (%)		0.2	-0.7	-6.6

<sup>a</sup> Data in this table are computed based on the survey of township leaders.

**Table 5**  
**Determinants of Lending Preferences <sup>a</sup>**

Specification	Bank Managers' Lending Preferences in 1997 (1=collective enterprises; 2=neutral; 3=private enterprises)		
	1	2	3
<b>Collateral Effectiveness in 1997</b>			
Effectiveness of seizing collateral	0.58 (1.12)		0.71 (1.36)
<b>Sanctioning Ability</b> (firm managers born in township, %)			
All collective firms in 1994	-2.77 (-2.11)	-0.77 (-0.55)	
All collective firms in 1997			-1.72 (-0.98)
<b>Profitability</b> (share of profitable firms)			
All collective firms in 1994	-1.23 (-1.76)	-1.72 (-2.77)	
All collective firms in 1997			0.64 (1.38)
<b>Interest Rates in 1997</b>			
Six-month loans (%)	103.29 (2.91)	91.19 (2.20)	76.50 (2.19)
<b>Bank Competition in 1997</b>			
Share of loans of competing fin. Inst.	2.63 (2.54)	1.85 (2.03)	2.30 (2.37)
<b>Group Size</b> (number of firms)			
All collective firms in 1994	-0.08 (-1.69)	-0.03 (-0.78)	
All collective firms in 1997			-0.006 (-0.10)
Bank type (1=ABC; 0=RCC)	1.50 (1.64)	1.65 (2.11)	1.06 (1.23)
Province (1=Jiangsu; 0=Zhejiang)	1.19 (2.84)	1.06 (2.60)	0.79 (1.73)
Observations	45	60	47

<sup>a</sup> Estimated as an ordered probit. Numbers in parentheses are t-statistics.

**Table 6**  
**Determinants of Government Involvement in Lending <sup>a</sup>**

Specification	Did Township Leaders Organize Loan Application Meetings? <sup>b</sup>		Likelihood that Bank Managers Seek Gov't Assistance in Enforcing Loan Repayment if a Collective Firm has Overdue Loans <sup>c</sup>
	1	2	3
<b>Sanctioning Ability</b> (firm managers born in township, %)			
All collective firms in 1997	7.90 (3.26)		1.78 (1.27)
All collective firms in 1994		4.78 (2.25)	
	(-1.16)		(-2.62)
<b>Profitability</b> (share of profitable firms)			
All collective firms in 1997	1.00 (1.39)		1.13 (1.20)
All collective firms in 1994		1.97 (2.23)	
<b>Interest Rates in 1997</b>			
Six-month Loans (%)	-1.84 (-0.05)		42.61 (0.87)
<b>Bank Competition in 1997</b>			
Share of loans of competing fin. inst.	-1.03		-1.99
<b>Group Size</b> (number of firms)			
All collective firms in 1997	0.30 (2.50)		0.22 (3.33)
All collective firms in 1994		0.12 (2.17)	
Bank type (1=ABC; 0=RCC)			0.71 (0.78)
Province (1=Jiangsu; 0=Zhejiang)	0.21 (0.43)	0.25 (0.47)	-0.21 (-0.70)
Constant	-9.12 (-2.23)	-6.60 (-2.47)	
Observations	37	38	57

<sup>a</sup> Numbers in parentheses are the t-statistics.

<sup>b</sup> We define the dependent variable as 1 if there were loan application meetings presided by local government leaders and 0 if none. The dependent variable in specification 1 is for 1997 and in specifications 2 is for 1994. Estimated as a probit model.

<sup>c</sup> We asked local branch managers to estimate the possibility of seeking assistance from township government leaders once a collective firm has overdue loans. Five categories were defined: 1=never; 2=occasionally; 3=sometimes; 4=frequently; 5=definitely. Estimated as an ordered probit model. Additional controls include the share of private firms that are profitable, the number of private firms, and the share of firms with no repayment problems.

**Table 7**  
**Marginal Effects**

	Bank Manager's Lending Preferences <sup>a</sup>	Meetings Hosted by Gov't Leaders for Loan Applications <sup>b</sup>	Likelihood to Seek Gov't Assistance in Repaying Loans If A Collective Firm has Overdue Loans <sup>c</sup>
	1	2	3
<b>Collateral Effectiveness in 1997</b>			
Effectiveness of seizing collateral	0.21		
<b>Bank Competition in 1997</b>			
Share of loans of competing fin. Inst.	0.94	-0.41	-0.79
<b>Interest Rates in 1997</b>			
Six-month loans (%)	36.95	-0.73	16.94
<b>Profitability</b> (share of profitable firms)			
All collective firms in 1997	-0.44	0.40	0.44
<b>Sanctioning Ability</b> (firm managers born in township, %)			
All collective firms in 1997	-0.99	3.12	0.71
<b>Group Size</b> (number of firms)			
All collective firms in 1997	-0.03	0.12	0.09
Bank type (1=ABC; 0=RCC)	-0.29		0.016
Province (1=Jiangsu; 0=Zhejiang)	-0.19	0.08	-0.001

<sup>a</sup> The marginal effects of preferring lending to private enterprises (specification 1 in Table 6).

<sup>b</sup> The marginal effects of having loan application meetings (specification 1 in Table 7).

<sup>c</sup> The marginal effects of definitely seeking government assistance if a firm has overdue loans (specification 3 in Table 7).

**Table 8**  
**Who Gets New Loans? <sup>a</sup>**

Specification	New Loans Received in 1997 from Either ABC Local Branches or RCCs <sup>b</sup>		Likelihood of Approval if Applying for New Loans (1997) <sup>c</sup>	
	1		2	
	Coefficients	Marginal Effects <sup>e</sup>	Coefficients	Marginal Effects <sup>e</sup>
Profit. of other coll. firms* firm ownership * bank preference	2.04 (1.72)	0.672	2.18 (3.48)	0.834
Firm profitability * firm ownership * bank preference	0.80 (1.38)	0.263	-0.34 (-0.75)	0.017
Firm ownership (1=collective; 0=private)	-0.28 (-0.77)	-0.094	-0.29 (0.90)	0.011
Firm profitability	-0.26 (-1.29)	-0.082	0.39 (1.08)	0.021
Profitability of other private firms	-0.47 (-0.97)	-0.153	-0.22 (-0.41)	-0.085
Profitability of other collective Firms	0.62 (1.17)	0.203	-0.01 (-0.02)	-0.004
Number of other collective firms	-0.08 (-1.30)	-0.027	-0.03 (-0.67)	-0.013
Number of other private firms	0.05 (1.12)	0.018	-0.07 (-1.74)	-0.028
Privatized firm (1=yes; 0=no)	0.44 (0.96)	0.130	-0.09 (-0.20)	0.001
Years the firm has been established	0.03 (1.81)	0.010	-0.03 (-1.84)	-0.012
The firm's total assets	0.00013 (1.54)	0.00004	0.00036 (4.47)	0.00014
Whether the firm is a subsidiary (1=yes; 0=no)	0.46 (0.88)	0.131	-0.76 (-1.77)	0.110
Bank type (1=ABC; 0=RCC)			-0.47 (-2.92)	-0.024
Province (1=Jiangsu; 0=Zhejiang)	-0.59 (-1.34)	-0.194	0.33 (0.85)	-0.012
Observations	103		136	

<sup>a</sup> Numbers in parentheses are t-statistics. Industrial dummies (light industry, machinery and heavy industry, and fabric industry) are omitted.

<sup>b</sup> Reported by firm managers where 1=received new loans in 1997 and 0=no new loans. Estimated as a probit model

<sup>c</sup> We asked firm managers to estimate the likelihood of receiving new loans if they applied by the end of 1997. Three categories were defined: 1=impossible; 2=likely; 3=no problem. Estimated as an ordered probit.

<sup>e</sup> Marginal effects measure the impact of changing independent variables on the probability of definitely receiving/granting loans.

**Table 9**  
**Bank Lending Goals and Loan Repayment <sup>a</sup>**

	1990	1994	1997
	Percentage		
<b>Which is Important in Lending? Government Preference or Bank Profitability (N=29)</b>			
1. Government policy was solely important	6.9	3.5	0
2. Both were important, but government policy was more important	20.7	13.8	0
3. Both were equally important	13.8	17.2	3.4
4. Bank profitability was solely important	3.5	20.7	55.2
5. Both were important, but bank profitability was more important	51.7	37.9	35.5
6. Others	3.4	6.9	6.9
<b>Willingness to Repay If Able to Repay (Strategic Default) (N=29) <sup>c</sup></b>			
High	57.2	37.9	41.4
Medium	35.7	41.4	24.2
Low	7.1	20.7	34.4
<b>Rank by Year of Willing to Repay (N=25) <sup>d</sup></b>			
Highest	60.0	20.0	36.0
Medium	16.0	60.0	12.0
Lowest	24.0	20.0	52.0

<sup>a</sup> This table is estimated by managers from ABC county branches and RCC county associations. Local government leaders were asked the same questions and similar results were obtained.

<sup>b</sup> "Actual repayment rate" is defined as the ratio of loans repaid over total loans due in the year, excluding those bad loans accumulated before the year of question.

<sup>c</sup> "Willingness to repay if able to repay" is defined by whether the borrowing firms are willing to repay loans when they are financially capable of doing so. We try to eliminate the effect of declining profitability of borrowing firms on their repayment decisions.

<sup>d</sup> For comparison, the interviewees were asked to rank both willingness of repaying loans and the actual repayment rate among the years of 1990, 1994 and 1997.

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