CHAPTER 13

What are the Sources of Financing for Chinese Firms?

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Abstract
In this chapter we study internal and external, formal and informal, financing sources of Chinese firms during the period 1997–2006, by analyzing balance sheet data from the *Chinese Industrial Surveys of Medium-sized and Large Firms* for 2000–2006 and survey data from the *Large-Scale Survey of Private Enterprises in China* conducted in 1997, 2000, 2002, 2004, and 2006.
The following stylized facts emerge from our analysis: (1) State-owned firms continue to enjoy more generous external finances than other types of Chinese firms. (2) Chinese private firms have resorted to various ways of overcoming financial constraints, including reliance on the increasingly more mature informal financial markets, cost savings through lower inventory and other working capital requirements, and greater reliance on retained earnings. (3) Substantial variations exist in financial access among private firms, with small private firms facing more financial constraints whereas more established firms having financial access more equal to their SOE counterparts. (4) Although not as accessible as for SOEs, the Chinese formal financial sector does provide Chinese private firms with substantial financial resources, especially for their short-term needs during daily operations. (5) The most pressing financial constraint facing Chinese private firms is their limited ability to secure long-term funds to invest for growth, and resolving this issue should be one of the top goals of financial reforms in China.

Keywords: Formal and informal financing, financial constraints, China, firm ownership

JEL classifications: O16, O17

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1. Introduction

One big puzzle in China's rapid economic growth over the past three decades relates to the financial sector. On the one hand, the Chinese economy has continuously achieved one of the fastest growth rates in the world since the late 1970s, with a large part of the growth driven by the rapid development of the private sector, which outpaced the growth rate of the state sector. On the other hand, a vast majority of researchers believe that the formal financial sector in China lacks efficiency, especially when it comes to financing private firms. In this section, we review the relevant literature, appraise China's financial reforms, and discuss potential theories and corresponding evidence that help reconcile the apparent paradox.

The importance of finances for economic development has long been advocated and empirically tested in the economic literature. As early as 1911, Schumpeter linked the importance of financial services to firms' capacity to engage in technological innovation and thus a country's economic development. Based on a country-level analysis, King and Levine (1993) provide evidence that multiple indicators of financial development are not only positively correlated with the present levels of multiple economic indicators but also with their future values. Using industry-level data for a large number of countries, Rajan and Zingales (1998) show that industries with higher external finance requirements tend to grow faster in countries with more developed capital markets. In the Chinese context, Cull and Xu (2005) provide evidence that firms with better access to bank loans are more likely to reinvest.

Lardy (2004) provides an overview of the historical background of Chinese economic reforms and argues that reforms in the product and labor markets have been much faster than those in the financial market. While the Chinese economy is very close to completing the transition from planned to market-oriented product and labor markets, interest rates are still subject to government intervention to a large degree. The work by Cull and Xu provides further evidence that there have been reversals in the reforms of the banking sector (by far the most important component of the Chinese financial sector) in the 1990s. In particular, Cull and Xu (2000, 2003) show that in the late 1980s banks proved to be more efficient in allocating funds to more productive and more profitable firms than bureaucrats in charge of direct government transfers; but by the mid-1990s, the correlation between loans and productivity (or profitability) had disappeared or weakened as banks increasingly assumed bailout responsibility. In contrast, however, Demetriades *et al.* (2008) provide evidence that bank loans are positively correlated with firm productivity in China using data from a later time period.

Other studies provide evidence that private firms, which are the most productive and profitable firms in China, have been discriminated against

in the financial market. Using matched bank-firm data from two coastal provinces in China, Brandt and Li (2003) provide direct evidence that in 1994 and 1997 private firms were discriminated against by township branches of the Agricultural Bank of China (one of the "Big Four" in China[1]) and the local Rural Credit Cooperatives, compared to township enterprises, in two main ways: Private firms were less likely to obtain a loan, and were required more loan collateral. In addition, Ferri and Liu (2009) use a representative sample of Chinese firms to show that the cost of financing is significantly lower for SOEs than for nonstate firms.

Using survey data that cover all regions in China between 2002 and 2004, Dollar and Wei (2007) show that on average Chinese domestic private firms have significantly higher returns to capital than SOEs, implying excess funds going to the SOEs, that is, an inefficient allocation of financial resources. Using the generalized method of moments (GMM) to estimate the investment Euler equation models (based on a balanced panel of medium to large firms for 2000–2004), Liu and Siu (2006) similarly show that the implied cost of capital derived from their estimated structural parameters is substantially higher for private and foreign-invested firms than for SOEs in China. Boyreau-Debray and Wei (2005) take a different perspective and show that in the 1990s the Chinese financial system was associated with low efficiency of allocating funds across regions (low capital mobility across regions) and low efficiency in providing consumption risk sharing for households. More generally, Hsieh and Klenow (2009) estimate that the Chinese manufacturing sector could improve its total factor productivity by 30–50% through more efficient capital allocation.

The existence of these problems and the continued failure to resolve them are discussed in Dobson and Kashyap (2006), where the authors make the astute observation that China's gradualist approach to reforms largely accounts for its continued struggle in reforming the financial sector. A related way of viewing the continued difficulty in reforming the financial sector in China is that it has shouldered much of the reform costs in China since the beginning of the reform era. In doing so, many of the obstacles encountered in reforming the fiscal system, the exporting sector, and the SOEs have been overcome by shifting the costs away from the targeted sectors to the banking sector.

Thus, it may only be natural that during the first two decades of China's reforms the financial sector was the least reformed in the economic realm.

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[1] The largest four banks in China, often referred to as the "Big Four," are the Industrial and Commerce Bank of China (ICBC), the Bank of China (BOC), the Construction Bank of China (CBC), and the Agricultural Bank of China (ABC). Increasingly, the Bank of Communications (BoCom) has been included in the group known as the "Big Five." The shares of these banks are all largely owned by the state, with small percentages of shares owned by foreign shareholders.

For example, when SOEs were required to become independent accounting units subject to hard budget constraints in the 1980s, they first had to be weaned away from direct government budgetary funds. The banks, which had just begun to transition from their old role of government accountants/cashiers to their new status as modern financial institutions, were ordered to offer loans at government-set rates to replace the direct government transfer, often without regard to efficiency standards. Other examples include preferential bank loans offered to SOEs in the 1990s to help discharge former employees when they went through "restructuring" (which often was a thinly veiled privatization) and other mandates in later years to make preferential loans to firms and organizations that help solve various social issues (such as employment opportunities for people with disabilities, etc.).

Since the mid-1990s, the government has gone through multiple rounds of reforms to help transform the old financial institutions into authentic commercial banks. By the end of 2006, in preparation for China's commitment to open its domestic financial market under the World Trade Organization (WTO) rules, most of China's "Big Five" had obtained foreign partners as shareholders and were listed on foreign stock exchanges, although the government still maintained controlling stakes in these banks.[2] These reforms, however, have not truly improved the efficiency of the major state banks (Dobson and Kashyap, 2006).

A puzzle related to this discussion then is the following: In spite of the numerous inefficiencies in the financial sector and the apparent discrimination against private firms, the Chinese economy has maintained one of the fastest growth rates throughout human history. In particular, private firms have proven to be the most energetic and productive sector in the economy, with their share in total national industrial output quickly rising from less than 1% in 1978 to 23% in 2006.[3]

To explain the apparent paradox, Allen *et al.* (2005, 2008) argue that the informal financial sector must have somehow compensated for the inefficiency of the formal financial market in China such that the private sector has been able to develop rapidly. Following this argument, one big task for researchers would be to investigate what informal mechanisms exist and how they work to alleviate the financial obstacles faced by Chinese private firms.

Studies of various authors on the development of informal mechanisms to overcome financial constraints or facilitate firm finances in China can be categorized into this line of research, and several mechanisms have been suggested in these investigations. First of all, internal finances are an important source for firm finances in China, whether they are private firms

[2] The only exception is the Agricultural Bank of China (ABC).
[3] Authors' calculation using the *Statistical Yearbook of China* for various years.

or SOEs (Lardy, 1998, 2004; Allen *et al*., 2005). Lardy (2004) points out that in 2002, close to 50% of investment was funded by firms' own retained earnings in China. In addition, Allen *et al*. (2005) discuss the important role of funds from family, relatives, and friends in both the start-up stage and the continued growth period of private firms.

Other potential channels for funding private firms are foreign direct investment (FDI) into Chinese private firms and trade credit, especially from the state-owned sector to the private sector (Ge and Qiu, 2007; Cull *et al*., 2009). Based on case studies, Huang (2004) argues that private firms have faced the highest degree of financial constraints in China throughout the reform era, which explains to a large degree the rapid inflow of FDI into China, as FDI serves to ease the financial constraints faced by Chinese private firms. Hèricourt and Poncet (2008) use data from a World Bank survey of Chinese firms to provide supporting evidence of Huang's argument. Poncet *et al*. (2008) further confirm this finding using the annual industrial survey data. Regarding the channel of trade credit, we will discuss it in more detail in Section 4.2, where we provide evidence refuting its importance.

Finally, rather than studying the supply of funds, at least one paper addresses the issue of private firm finances from the demand side. Using firm-level data from China's two recent censuses (Industry Census 1995 and Economic Census 2004) and a new measure of industry proximity based on the Hausmann–Klinger product proximity matrix (Hausmann and Klinger, 2006), Long and Zhang (2010) show that Chinese firms have become more interconnected during this period, which helps ease firms' credit constraints through two mechanisms: (1) Finer division of labor among interconnected firms lowers the capital barriers to entry and thus reduces the fixed investment required and (2) closer proximity makes the provision of trade credit among firms easier. The authors thus argue that institutional innovations such as those in production organizations could help alleviate firms' financial constraints. In line with these authors' emphasis on the demand side of finances, we will discuss two additional mechanisms that Chinese private firms rely on to help overcome financial constraints.

Following the literature, we pursue two main tasks in the chapter. First, we investigate whether in 2006, the last full year before the outbreak of the liquidity crisis and the global recession, private firms still had more restricted access to formal external finance than SOEs, despite all the reforms. Second, once we establish that private firms still find it hard to access formal external finance, we study sources that private firms rely on to substitute for external finance, including ones studied in the literature (informal lending, trade credit, and internal funds), as well as additional mechanisms that we have newly uncovered.

The rest of the chapter is organized as follows. Section 2 describes our data. Section 3 compares different firms in their access to finance, while Section 4 explores how Chinese private firms obtain finances. Section 5 concludes.

2. Data

Our data come from two main sources. First, we use balance sheet and ownership information from the *Chinese Industrial Surveys of Medium-sized and Large Firms for 2000–2006*, which includes all state-owned firms and firms of other ownership types that are in excess of a certain scale. This dataset is commonly referred to as the National Bureau of Statistics (NBS) industrial census, and it is an unbalanced panel with a total of 496,738 firms for 2000–2006.[4] For short, we will refer to this dataset as the "census" data. We use two versions of these data – the cross-section of firms in the last year of our sample (297,665 firms) and a balanced panel that includes only firms that were in our data in each of the years from 2000 to 2006 (48,382 firms, 338,674 observations).

Second, we use survey data from the *Large-Scale Survey of Private Enterprises in China* jointly conducted by the All China Federation of Industrial and Commerce (ACFIC) and the United Front of the Chinese Communist Party in 1997, 2000, 2002, 2004, and 2006, often with help from the Bureau of Industry and Commerce (the government agency in charge of firm registration). This survey is a repeated cross-section in which firms are not matched across years. A total of 18,527 firms are surveyed over these years, and only private firms are included. For short, we will refer to this dataset as the "survey" data.

The census data cover firms of all ownership types, including those with foreign shares. We classify firms by ownership types in two ways – by their registration type, and by the type of investor holding the majority share of the paid-up capital. While the first measure may be outdated, because the firm's registration information may not change as soon as its capital structure changes, it may be the registered ownership type, rather than the *de facto* ownership structure that determines the access to finance. We will refer to the two classifications as the *de jure* ownership (by registration) and the *de facto* ownership (by actual shares).

Table 1 shows, using the 2006 cross-section, that in most cases there is a good match between the two classifications. Note that one exception is the set of firms with the majority share held by a "legal person," which is mostly registered as private firm but could also be in other *de jure* ownership categories. In what follows, we will analyze results using both classifications, but for brevity we will only report results based on *de facto* classification.

While the census data mainly include medium-sized and large firms, there are many small firms in the data set as well, both because all SOE firms are included in these data sets and due to time lags in excluding firms

[4] While the raw data include 622,424 firms, after we drop observations with missing values for year, location, industry code, and observations with key variables missing or erroneously reported, we are left with 496,738 firms in the unbalanced panel data set.

Table 1. Firm distribution by* de facto *and* de jure *ownership type in 2006 census cross-section

De facto ownership	*De jure* ownership						Total
	State	Private	Collective	FRN	HMT	Other	
State	**12,309**	37	46	325	262	2,807	15,786
Private	104	**111,610**	862	2,054	1,600	27,843	144,073
Collective	100	378	**10,556**	354	344	4,324	16,056
FRN	2	112	3	**21,976**	251	173	22,517
HMT	3	102	9	380	**21,220**	155	21,869
Legal person	2,754	35,962	2,736	5,898	5,081	**23,590**	76,021
Other[a]	55	136	48	304	237	563	1,343
Total	15,327	148,337	14,260	31,291	28,995	59,455	297,665

Note: The numbers represent number of firms for each pair of *de jure* and *de facto* ownership types. Boldface numbers indicate number of firms that are categorized in the same way by either approach.
FRN, ownership by firms outside greater China area; HMT, ownership by firms from Hong Kong, Macao, and Taiwan.
[a]No group holds more than 50% shares.

that have fallen below the size threshold. For the purposes of our analysis, we classify all firms into four groups: small firms with assets less than 40 million renminbi (RMB), medium firms with assets between 40 million and 400 million RMB, large firms with assets between 400 million and 4 billion RMB, and giant firms with assets exceeding 4 billion RMB. The top panel of Table 2 gives the distribution of firms in 2006 from the NBS census data by these size categories and their *de facto* ownership types, for both our 2006 cross-section and for those firms that were in the data set continuously since 2000. The panel shows that small firms are predominantly private, while giant and large firms are mostly state owned, and that the balanced panel data set includes disproportionately fewer small and private firms. Panel B of Table 2 shows the size distribution of firms in the private firm survey data for both the pooled sample of 2000–2006 and for the 2006 survey. We can see that the private firm surveys almost exclusively cover small firms and as a result include many small private firms that are excluded from the census data. This distinction between the census data and the survey data is crucial, as it points to the importance of the latter in studying private firms, which are predominantly small firms.

3. Do state-owned firms have easier access to external financing?

As discussed previously, an important indicator of how efficiently the financial system operates in China is whether banks treat firms of different

Table 2. Size distribution (by assets) of firms by ownership type and sample (number of firms in each cell)

Panel A: NBS census data					
2006 full cross-section					
De facto ownership	Size distribution by assets				Total
	Small	Medium	Large	Giant	
State	8,383	5,681	1,467	255	15,786
Private	121,638	21,045	1,347	34	144,064
Collective	12,463	3,333	250	10	16,056
FRN	12,188	8,716	1,523	90	22,517
HMT	14,100	7,052	691	24	21,867
Legal person	55,124	17,877	2,706	310	76,017
Other	597	487	223	36	1,343
Total	224,493	64,191	8,207	759	297,650
Balanced panel sample as of 2006					
De facto ownership	Size as				Total
	Small	Medium	Large	Giant	
State	3,396	2,708	690	127	6,921
Private	7,076	3,920	386	15	11,397
Collective	2,353	1,082	81	5	3,521
FRN	1,307	1,985	519	33	3,844
HMT	1,879	1,665	214	11	3,769
Legal person	4,363	3,678	793	116	8,950
Other	114	175	105	21	415
Total	20,488	15,213	2,788	328	38,817
Panel B: Size distribution of firms from private firm survey data					
Pooled private firm sample for 2000, 2002, 2004, and 2006					
	Small	Medium	Large	Giant	Total
Survey data	8,977	733	38	1	9,749
Private firm sample for 2006					
	Small	Medium	Large	Giant	Total
Survey data	2,253	242	10	0	2,505

Note: We adopt the same size categories as used by the national statistical Bureau of China since 2003, where small firms are those with assets less than 40 million RMBs, medium firms are those with assets between 40 million and 400 million RMB, large firms are those with assets between 400 million and 4 billion RMB, and giant firms are those with assets exceeding 4 billion RMB.
FRN, ownership by firms outside greater China area; HMT, ownership by firms from Hong Kong, Macao, and Taiwan.

ownership types the same when extending loans. Thus, we first study whether and how SOEs differ in their access to formal loans as compared to private firms.

Using the sample of all firms in the last year of our census data, 2006, we first show that state-owned firms still have easier access to external financing: They tend to have higher leverage (debt/total assets) and a higher share of financial expense in total expense,[5] while they pay half as much interest per unit (or RMB) of their external financing as private firms (see Table 3).[6] Repeating the same analysis for the balanced panel of the firms, we see that leverage was more or less unchanged during our sample period for SOEs, holding the sample constant. Moreover, for older and larger private firms that were in our sample since 2000, leverage is a bit higher than for SOEs and has declined. If we include new firms, however, in our 2006 sample, the average leverage of the private firms is substantially lower than in the balanced sample, suggesting that new entrants have more restricted access to financing than older private firms and SOEs. The leverage of smaller private firms, the ones included in our survey data, is less than half of that for private firms in the census, indicating that access to finance is particularly limited for young small private firms.

One possibility is, therefore, that differences in access to finance are not due to ownership *per se*, but rather reflect the fact that private firms are on average younger and smaller and therefore lack credit history and reputation. We address this difficulty in interpretation in two ways: by estimating the effects of ownership controlling for size, liquidity, and profitability in a regression analysis that follows next, and by focusing on the survey data that covers mostly small firms in the next section. The focus on the survey data is important because the NBS census data focus more on large and medium-sized firms and the balanced firm panel especially includes large firms disproportionately.

Looking at the share of financial expense in total expense, we find that even in the balanced panel the share is substantially lower for private firms than for the SOEs. The share is even lower when we include all firms in our 2006 cross-section, implying less access to external finances by private firms. At the same time, interest expense as a ratio to total debt is almost twice as high for private firms as it is for SOEs, in both the cross-section

[5] In Table 3, financial costs include interest payments, money exchange losses, and other financial charges (e.g., fees for bank drafts, wire transfers, etc.).

[6] Note that the per unit cost for external financing computed here is different from average interest rate for two reasons: (1) A firm's total debt may include liabilities that do not bear interest such as various accounts payable and (2) even if the firm's total debt comprises only interest-bearing bank loans, the year-end total debt may not correspond to the amount of bank loans that incurred the interest payment in that year. However, this ratio still gives a proxy for the average cost of obtaining finances faced by firms of different types.

Table 3. Mean leverage, financial, and interest expense ratios

Mean leverage (total debt/total assets):

Year	Ownership						
	State	Private	Collective	FRN	HMT	Legal person	Other
Census full 2006 cross-section							
2006	0.560	0.554	0.539	0.470	0.476	0.529	0.527
Balanced panel (census)							
2000	0.567	0.622	0.597	0.473	0.496	0.572	0.571
2001	0.561	0.614	0.587	0.454	0.481	0.567	0.554
2002	0.561	0.610	0.581	0.450	0.476	0.567	0.545
2003	0.559	0.610	0.577	0.451	0.475	0.564	0.550
2004	0.566	0.609	0.568	0.468	0.465	0.574	0.530
2005	0.568	0.597	0.562	0.453	0.470	0.562	0.528
2006	0.565	0.590	0.560	0.446	0.470	0.556	0.540

Survey data (private firms only)

Year	Leverage (total debt/total assets)
2000	0.171
2002	0.177
2004	0.184
2006	0.217

Mean financial expense/total expense

Year	Ownership						
	State	Private	Collective	FRN	HMT	Legal person	Other
Census full 2006 cross-section							
2006	0.046	0.015	0.018	0.015	0.012	0.020	0.026
Balanced panel (census)							
2000	0.063	0.028	0.032	0.030	0.019	0.040	0.045
2001	0.062	0.027	0.030	0.028	0.017	0.038	0.041
2002	0.059	0.024	0.029	0.024	0.014	0.037	0.041
2003	0.057	0.023	0.026	0.022	0.014	0.032	0.034
2004	0.055	0.023	0.022	0.018	0.013	0.032	0.034
2005	0.050	0.022	0.023	0.016	0.013	0.030	0.029
2006	0.050	0.022	0.020	0.016	0.015	0.027	0.030

Mean interest expense/total debt

Year	Ownership						
	State	Private	Collective	FRN	HMT	Legal person	Other
Census full 2006 cross-section							
2006	0.016	0.031	0.025	0.015	0.012	0.029	0.027

Table 3. (*Continued*)

Year	Mean interest expense/total debt						
	Ownership						
	State	Private	Collective	FRN	HMT	Legal person	Other
Balanced panel (census)							
2000	0.022	0.033	0.036	0.023	0.017	0.032	0.032
2001	0.021	0.032	0.033	0.020	0.016	0.030	0.032
2002	0.020	0.030	0.032	0.017	0.015	0.031	0.027
2003	0.019	0.029	0.030	0.015	0.014	0.029	0.025
2004	0.017	0.029	0.026	0.014	0.013	0.027	0.023
2005	0.017	0.030	0.027	0.015	0.014	0.027	0.023
2006	0.016	0.031	0.025	0.016	0.013	0.026	0.026

Note: Financial expenses include interest payments, money exchange losses, and other financial charges.
FRN, ownership by firms outside greater China area; HMT, ownership by firms from Hong Kong, Macao, and Taiwan.

and the balanced panel. This indicates that when private firms do have access to external finance, they pay more for it than SOEs. In addition, we see that total financial expenses and interest expenses have declined on average for SOEs during our sample period, but they remained unchanged for private firms, suggesting more differential treatment between SOEs and private firms in more recent years.

Rather than prejudice against private firms in the formal financial sector, one potential reason for state-owned firms' easier access to finances could be their better creditworthiness. To study this possibility, we test whether the apparent SOE advantage in accessing external credit shown in Table 3 persists when we control for size and measures of creditworthiness, namely profitability and liquidity. Table 4 reports the results of the regression analysis based on the 2006 cross-section. We do see that all three measures of firm size matters, as well as ownership type. In the case of leverage, once we control for log of assets, the coefficient on the SOE indicator falls by about half, indicating that half of the difference in leverage between private firms and SOEs in the 2006 census cross-section is due to the fact that state-owned firms tend to be larger. The reduction in the SOE effect on financial cost ratio is not only small but also non-negligible. Nevertheless, we still find that state-owned firms have significantly higher leverage, a larger ratio of financial to total expenses, and a lower share of interest payment in financial expenses, even after controlling for size, profitability, and liquidity measures. These findings confirm that even as recently as 2006, state-owned firms had easier access to formal external financing than other firms.

Table 4. OLS regressions in the 2006 NBS census cross-section

	Dependent variable is leverage				
I(State owned)	0.027***	0.015***	0.027***	0.024***	0.015***
	(0.0023)	(0.0023)	(0.0023)	(0.0023)	(0.0023)
Log(assets)		0.013***			0.011***
		(0.00034)			(0.00034)
Pretax ROE			−0.000017		−0.000020
			(0.000040)		(0.000039)
Liquidity				−0.0000040***	−0.0000041***
				(0.00000062)	(0.00000062)
Constant	0.53***	0.40***	0.53***	0.54***	0.44***
	(0.00050)	(0.0034)	(0.00050)	(0.00049)	(0.0034)
Observations	286,993	286,993	286,894	279,662	279,628
Adjusted R^2	0.00047	0.0058	0.00049	0.00054	0.0040
	Dependent variable is financial expenses/total expenses				
I(State owned)	0.029***	0.024***	0.029***	0.029***	0.024***
	(0.00042)	(0.00042)	(0.00042)	(0.00043)	(0.00042)
Log(assets)		0.0062***			0.0062***
		(0.000062)			(0.000063)
Pretax ROE			0.0000032		0.0000015
			(0.0000072)		(0.0000071)

Liquidity				−0.000000079	−0.00000015
				(0.00000014)	(0.00000013)
Constant	0.017***	−0.043***	0.017***	0.017***	−0.044***
	(0.000091)	(0.00061)	(0.000091)	(0.000093)	(0.00062)
Observations	265,672	265,670	265,630	258,509	258,472
Adjusted R^2	0.018	0.052	0.018	0.018	0.053
	Dependent variable is interest expense/total debt				
I(State owned)	−0.11***	−0.11***	−0.11***	−0.12***	−0.11***
	(0.0024)	(0.0024)	(0.0024)	(0.0024)	(0.0024)
Log(assets)		−0.0099***			−0.012***
		(0.00038)			(0.00038)
Pretax ROE			0.000015		0.000017
			(0.000045)		(0.000044)
Liquidity				−0.0000020***	−0.0000018***
				(0.00000070)	(0.00000070)
Constant	0.29***	0.39***	0.29***	0.30***	0.41***
	(0.00055)	(0.0037)	(0.00055)	(0.00056)	(0.0038)
Observations	293,435	293,435	293,391	287,813	287,774
Adjusted R^2	0.0077	0.0100	0.0077	0.0082	0.011

Note: Pretax ROE is the ratio of pretax net profit to equity. Liquidity is the ratio of liquid assets to total assets. Standard errors are in parentheses. ***Significance at 1% level; **Significance at 5% level; *Significance at 10% level.

Table 5. Equity composition of private firms in the survey data (percent of total capital)

Survey year	State	Private	Collective	Foreign
1995	0.608	94.226	0.656	1.985
1997	1.414	97.811	1.533	1.886
2000	0.792	97.877	2.121	4.671
2002	0.670	99.199	1.578	1.271
2004	0.442	97.078	0.412	0.679
2006	0.436	97.120	0.356	0.615
Overall	0.568	96.644	0.722	1.268

4. How do private firms finance themselves?

Our findings suggest that as late as 2006, SOEs still enjoyed better access to external finances. The natural question then is: How do Chinese private firms finance their fast growth? As discussed above, the NBS data set has very little information on small private firms. Thus, we will need to rely on the private entrepreneur survey data to explore this issue. We first look at survey responses by private-firm owners on how they overcome financial constraints, and then use both the NBS census data and the private firm survey data to evaluate the various mechanisms for private firm financing.

4.1. Survey responses

4.1.1. Initial finances

Firms included in the survey data are exclusively private firms, as shown in Table 5, which presents the average composition of equity for firms included in the survey. The predominant majority of firm shares (96.6% on average) are owned by the private owner of the firm, other private individuals, or other private firms, whereas foreign capital and investment from collective firms and SOEs play insignificant roles in financing private firms. Table 6 shows that such ownership structure has remained largely unchanged since the founding of these firms and since the late 1970s when the economic reforms began in China.

How did private owners fund the firms' initial investment? Information provided in Table 7 suggests that the vast majority of firm owners relied on their own savings from previous work (80% of the respondents), a large percentage (42%) received financial help from other individuals (including relatives and friends), 30% obtained loans from banks and other formal

Table 6. Equity composition of private firms by founding year (percent of total capital)

Founding year	State	Private	Collective	Foreign	Number of firms
1975	0.000	100.000	0.000	0.000	3
1976	0.000	100.000	0.000	0.000	4
1977	0.000	100.000	0.000	0.000	2
1978	0.000	85.600	7.500	0.000	25
1979	0.000	98.892	0.568	0.506	37
1980	0.094	90.698	1.765	0.000	53
1981	0.638	96.739	1.170	0.000	47
1982	0.494	98.875	0.063	0.000	81
1983	0.889	93.948	0.809	0.667	135
1984	0.617	92.985	1.317	2.316	201
1985	0.687	94.668	1.541	1.235	252
1986	0.369	95.099	1.447	2.039	244
1987	0.657	96.224	1.069	0.424	216
1988	0.534	93.508	1.680	1.727	357
1989	0.583	94.628	1.621	1.146	350
1990	0.639	96.965	0.791	0.891	349
1991	1.690	95.356	1.191	1.754	343
1992	0.564	95.648	0.550	2.125	557
1993	1.014	95.969	0.284	1.923	808
1994	0.374	96.339	0.808	0.851	710
1995	0.225	97.564	0.740	1.122	490
1996	0.817	97.860	1.220	1.325	534
1997	1.061	97.407	1.238	0.908	490
1998	0.596	97.155	0.825	0.945	668
1999	0.591	97.696	0.631	1.025	552
2000	1.012	97.380	0.798	0.388	670
2001	0.536	96.786	1.164	0.634	615
2002	0.546	97.435	0.460	0.486	548
2003	0.498	97.877	0.601	0.050	498
2004	0.472	97.757	0.558	1.000	265
2005	0.094	97.956	0.338	0.807	160
Overall	0.670	96.481	0.895	1.069	10,277

financial institutions, and a very small number (less than 5%) used inheritance in starting the firm.[7]

4.1.2. Ongoing finances

The percentage of firms that received initial help from banks and other formal financial institutions is surprisingly high (30%, from Table 7). A similarly surprising finding comes from Table 8, which summarizes the sources of ongoing finances for private firms: A large percentage of private

[7] Numbers add up to more than 100% because each respondent could indicate multiple funding sources.

Table 7. Sources of initial financing of private firms by founding year (share of responses)

Founding year	Own saving	Individuals	Banks	Inheritance
1975	0.333	1.000	0.333	0.333
1976	0.875	0.500	0.625	0.125
1977	1.000	0.500	0.500	0.000
1978	0.839	0.677	0.355	0.129
1979	0.804	0.588	0.490	0.255
1980	0.830	0.625	0.318	0.102
1981	0.770	0.608	0.446	0.054
1982	0.858	0.575	0.381	0.071
1983	0.775	0.647	0.353	0.098
1984	0.762	0.635	0.414	0.101
1985	0.758	0.570	0.427	0.089
1986	0.825	0.565	0.370	0.096
1987	0.748	0.576	0.415	0.089
1988	0.732	0.569	0.379	0.108
1989	0.759	0.561	0.337	0.096
1990	0.797	0.534	0.309	0.044
1991	0.790	0.575	0.327	0.081
1992	0.801	0.495	0.293	0.074
1993	0.792	0.533	0.316	0.053
1994	0.822	0.484	0.316	0.040
1995	0.834	0.318	0.244	0.019
1996	0.781	0.330	0.249	0.008
1997	0.802	0.327	0.260	0.021
1998	0.779	0.335	0.304	0.018
1999	0.806	0.291	0.238	0.018
2000	0.805	0.305	0.258	0.021
2001	0.785	0.312	0.268	0.024
2002	0.842	0.308	0.239	0.006
2003	0.828	0.265	0.250	0.015
2004	0.866	0.303	0.222	0.006
2005	0.868	0.231	0.278	0.019
Overall	0.798	0.425	0.301	0.046

Note: Shares may add up to more than 1 because respondents could name more than one source.

firms continue to secure loans from banks and other formal financial institutions during their ongoing operations (41%). In comparison, only 25% of firms in our sample have obtained loans from informal channels. In terms of loan amounts, slightly more than half of an average private firm's total debt is in the form of loans from banks or other formal financial institutions, with the rest almost equally accounted for by informal finances and trade credit (measured as a ratio of accounts payable to total debt). In particular, the ratio between the average amount of bank loans and that of informal finances (excluding trade credit) is

Table 8. Sources of ongoing financing

Survey year	Share of firms using bank loans	Share of firms using informal loans	Bank loans as a share of assets	Informal loans as a share of assets	Accounts payable as a share of debt	Share of firms reporting financing difficulty
1995						0.703
2000	0.381	0.275	0.657	0.343		0.730
2002	0.432	0.278	0.675	0.325	0.256	
2004	0.390	0.233	0.682	0.318	0.242	
2006	0.435	0.230	0.733	0.267	0.207	
Overall	0.411	0.253	0.688	0.312	0.235	

Note: Assets do not include accounts receivable.

slightly above two, implying that bank loans play a much more important role in firm finances than informal finances. Furthermore, the percentage of firms using informal loans has shown steady decrease (from 27% in 2000 to 23% in 2006), probably implying a smaller need for informal finances over time.

4.1.3. Financing costs of private firms

An additional angle to study the financial access of Chinese private firms is through their financing costs. For two of the survey years, we have detailed information on the interest rates paid by private firms to obtain various kinds of loans, as well as the maturity of these loans. Of the private firms in our sample, 43% were able to obtain bank loans at the government-stipulated interest rate (of 5.84%) in 2000, 9% obtained bank loans at higher interest rates (8.85%), while 29% got informal loans at rates similar to those of bank loans with adjusted rates (8.17%). On average, the loans obtained are short-term loans, with the average maturity of bank loans at 9½ months, whereas the term of informal loans is slightly longer at a little over 11 months.

One somewhat surprising finding is how similar interest rates charged by banks are to those charged for informal loans. This suggests that the formal financial sector and the informal financial sector in China may be better integrated than we thought. The usual concern with firms' reliance on the informal financial sector is its lack of efficiency in allocating funds, yet our evidence suggests that this concern may be exaggerated.

4.1.4. Are private firms financially constrained?

Despite the surprisingly high proportion of private firms with access to formal finances, the concern with private firms' financial constraints remains. Compared to firms of other ownership types (and even private

firms of larger size), private firms in the survey data have substantially lower leverage (see Table 3).[8] This suggests that Chinese private firms, especially younger and smaller ones, have much less access to external finance than firms of other ownership types, especially SOEs, and therefore are more likely to face financial constraints.

In fact, informal finances and trade credit are crucial to private firms, and their importance can be demonstrated by comparing total debt and the total amount of funds needed. In the private firm surveys, firms report two types of funds needed: daily working capital and funds for expansion. The survey data suggest that the daily working capital requirement is easily fulfiled by bank loans (as the ratio of bank loan amount to working capital amount is substantially greater than 1), although neither informal loans nor trade credit alone can fully cover it, amounting to 76% and 93% of daily working capital, respectively. But when expansion funds are included, even the sum of bank loans and informal loans is not sufficient to meet firms' financial needs – without informal loans, bank credit amounts to only 74% of the expansion funds, and bank credit together with informal loans amounts to 89%. In fact, only with the addition of accounts payable can the total debt cover the total funds needed.

Therefore, both informal loans and trade credit are essential for the healthy growth of private firms, although they are relatively small in magnitude. In other words, private firms would be financially constrained without the informal financial mechanisms such as informal loans and trade credit. This pattern is confirmed by the responses from firms to questions on whether they face difficulty in obtaining finances, which were asked in 1995 and 2000. In both years, over 70% of firms gave affirmative answers to the above questions (see the last column of Table 8).

One caveat of the above discussion is that it ignores the compatibility in the maturity of debt and capital required. Because both formal and informal loans are mostly short term, as are accounts payable, it may not be feasible after all to provide expansion funds with the formal and informal credit discussed earlier. In addition, note that the calculation does not include the actual investment made in the current year. Instead, the main source for such longer-term investment is most likely firms' own retained earnings, which we will discuss later.

To summarize, the responses from private firm owners demonstrate that the initial funds for Chinese private firms come mainly from informal channels (personal savings and support from family and friends), while ongoing finances have relied more on formal finances such as bank loans, albeit limited to short-term ones. Private firms do face financial constraints, especially for financing growth, but they have become more

[8] Trade credit is included as part of total liability.

able to overcome the constraints over time. We now turn to the analysis of the specific mechanisms for private firm financing in China.

4.2. Financing Mechanisms for Chinese Private Firms

4.2.1. Informal finances

As we have seen from the earlier discussion, informal finances, especially informal loans, play an important role in private firms' everyday operations, amounting to over a quarter of their daily financial needs. A brief overview of the informal financial market in China seems helpful here.

By one account, the total amount of informal funds flowing around in the Chinese economy was between 0.7 and 0.8 trillion RMB in 2003, which is about one-fifth the total amount of the stimulus package China put together to combat the current financial crisis (PBOC and JICA, 2005). Circulation of funds of this magnitude may involve more than just small circles of family, relatives, and friends. In fact, several forms of informal financial institutions have emerged in some Chinese regions since the early 1980s, a phenomenon that at one time alarmed the Chinese government. In the city of Wenzhou, for example, groups of individuals formed organizations such as Qianzhuang, Yinbei, and Juhui, which pool funds together and lend to members to fund potentially profitable investment projects. Because they lack the formal recognition of the government and thus cannot rely on any legal protection from the courts or the government, these groups start by drawing their members largely from relatives, friends, and local acquaintances. Although this may have constrained the size of the groups and the scale of total funds, the reputation effects seem to have functioned well in enforcing the implicit financial contracts among members. The largely successful operations of these organizations have gradually eased the concern of the Chinese government, which has now established Wenzhou as one of the sites for monitoring rates for informal loans. But caution is called for when interpreting the above patterns, as Wenzhou is arguably a special region of China, which is long known for its extraordinary entrepreneurship; thus, it may not be representative of the whole country.

In response to the spontaneous emergence of various informal financing arrangements and their popularity among business owners, the Chinese government legitimized informal loans in 1991, allowing interest rates to be as high as four times the bank loan rates. It also explicitly recognized the validity of loan contracts signed between two willing parties, even when neither party is a formal financial institution. The change in the government's attitude toward informal loans may have resulted from the important finding that the interest rates of informal loans are not as high as believed by many. In addition, these rates have been declining over time and have been largely moving together with interest rates charged by formal institutions (Que 2009).

Table 9. Tax rates and profitability

Survey data					
Survey year	Tax/profit	Tax+fees/profit	Profit/sales	Profit/assets	Profit/equity
1993	0.071	0.086			
1995	0.074	0.107	0.150		0.223
1997	0.064	0.092	0.122		0.343
2000	0.059	0.086	0.096	0.193	0.245
2002	0.059	0.081	0.080	0.156	0.212
2004	0.066	0.102	0.047	0.194	0.257
2006	0.063	0.094	0.077	0.146	0.241
Overall	0.064	0.091	0.087	0.170	0.247

Census data: 2006 cross-section			
Ownership	Tax/sales	Net profit/assets	Net profit/equity
State	0.077	0.001	0.044
Private	0.050	0.093	0.064
Collective	0.065	0.097	0.048
FRN	0.033	0.064	0.000
HMT	0.034	0.047	0.037
Legal person	0.052	0.090	0.109
Others	0.053	0.060	0.109

Note: Total tax is computed as the sum of corporate income tax, value-added tax, and operation tax.
FRN, ownership by firms outside greater China area; HMT, ownership by firms from Hong Kong, Macao, and Taiwan.

4.2.2. Internal finances

We next study the role of internal finances in funding private firms' daily operations and expansion needs. As Lardy (2004) points out, in 2002 close to 50% of firm investment was funded by firms' own retained earnings in China. Profit is the ultimate source for internal finances for all firms; thus we start by looking at profit data in Table 9, which also provides information on tax rates to partially explain profit rates. The average ratio of after-tax profit to sales for private firms in our survey sample is 9%, while the tax rate (tax amount as a percentage of sales) is slightly over 6%, or 9% when levies are included in the calculation. These tax rates correspond to those computed using the census data, which also include firms of other ownership types.[9] We can see that among firms of various ownership types, the tax rate of SOEs is the highest, followed by that of

[9] Total tax rate is computed by dividing the sum of income tax, value-added tax, and business tax by sales.

Table 10. Uses of after-tax profit (share of total)

Survey year	Investment	Dividend	Special assessment	Donation	Public relations	Other
1995	0.416	0.093	0.094	0.127	0.190	0.155
1997	0.587	0.192	0.069	0.066	0.142	0.106
2000	0.743	0.187	0.060	0.083	0.167	0.087
2002	0.308	0.145	0.091	0.109	0.208	0.031
2004	0.404	0.239	0.098	0.099	0.203	0.083
2006	0.465	0.173	0.065	0.075	0.155	0.032
Overall	0.536	0.166	0.080	0.095	0.179	0.093

corporations, then by that of collective firms, and then private firms. Foreign-invested firms enjoy the lowest tax rates.

Even though profit rates and returns are substantially lower in the census data than in the survey data,[10] we find that state-owned firms have much lower profit and return measures. Given lower tax rates and higher profit rates, private firms have access to more retained earnings, which can potentially be used as financial sources for investment and further expansion. Indeed, as we can see from Table 10, firms in our survey sample allocate the majority (54%) of their retained earnings to investment, 17% to dividend payments, and the rest to special assessments, donations, public relations, and others.

4.2.3. Trade credit

Using a small sample of private firms and SOEs for 1994–1999, Ge and Qiu (2007) provide evidence that private firms use trade credit as a net source of credit (i.e., incur higher accounts payable than accounts receivable), while SOEs on average are a net supplier of trade credit. Using a large panel data set of Chinese industrial firms (1999–2003), Cull *et al.* (2009) similarly find that SOEs tend to carry more accounts receivable than private firms. However, they argue that these findings are more likely explained by the fact that SOEs extended credit to their failing partners that were in arrears. Furthermore, the magnitudes of their estimates suggest that redistribution of bank loans through trade credit cannot be an important explanation for how private firms obtain funds.

In this section, we evaluate the role of trade credit in financing firms of different ownership types using our census data. Specifically, we focus on accounts payable and accounts receivable as one type of informal external financing. Table 11 provides the related information using the full sample cross-section in 2006. The first two columns give the total amount of accounts payable and that of accounts receivable for firms by ownership

[10] This is most likely due to the different coverage of private firms in the two samples, with large ones in the census and small ones in the survey.

Table 11. Accounts payable (AP) and accounts receivable (AR)

De facto ownership	Sum AP (mil. RMB)	Sum AR (mil. RMB)	Mean					
			AP/ assets	AR/ assets	AP/ sales	AR/ sales	AP/ debt	AR/ debt
NBS 2006 cross-section								
State	501.5	328.9	0.107	0.106	0.146	0.161	0.176	0.166
Private	584.2	684.5	0.145	0.191	0.100	0.131	0.262	0.296
Collective	105.9	135.8	0.150	0.206	0.120	0.165	0.265	0.290
FRN	794.0	741.0	0.196	0.193	0.159	0.166	0.413	0.335
HMT	398.5	356.0	0.210	0.203	0.170	0.173	0.432	0.329
Legal person	1036.6	833.2	0.145	0.168	0.114	0.134	0.272	0.274
Other	66.6	65.2	0.131	0.165	0.131	0.172	0.250	0.283
Survey (2006)			0.071	0.207	0.075	0.158	0.203	0.824

FRN, ownership by firms outside greater China area; HMT, ownership by firms from Hong Kong, Macao, and Taiwan.

type, which shows that private firms collectively are a net creditor, while all other firms (with the only exception of collective firms) are net debtors.[11] The most probable explanation for this is that private firms tend to operate in more competitive sectors.

As accounts payable and accounts receivable are routine by-products of a firm's daily sales, the most common way of measuring their levels and usage is to compute their ratios to sales. Based on these measures, private firms tend to be offered a lower level of accounts payable, again consistent with their being in more competitive sectors. The lower accounts receivable to sales ratio, on the other hand, is a response of private firms to manage funds more efficiently due to constraints in accessing external financial resources.

In contrast, ratios of accounts payable to debt and accounts receivable to assets are higher in private firms than in SOEs. This is due to the much easier access to finances enjoyed by SOEs and their consequent high levels of assets and liabilities. In other words, the higher share of accounts payable in total debt suggests that private firms have to rely more on trade credit to finance their operating expenses because other forms of credit are not available. The lower share of accounts receivable in total assets for the state-owned firms suggests that they tend to engage less in informal financing. The pattern is the same in our balanced sample and has not

[11] One thing to note is that firms of the legal-person type also include private firms, so the specific numbers in Table 11 column 1 need to be adjusted. Yet the same patterns remain after the adjustment, with only private firms and collective firms carrying more accounts receivable than accounts payable as a group. Similar results are also obtained when the *de jure* ownership classifications are used.

changed much since 2003, when these variables were first reported in the census data.[12]

Put together, the empirical evidence provided in Table 11 falls more in line with the findings in Cull *et al.* (2009) in challenging the importance of trade credit as a funding source for private firms. As shown in Table 11, when the amount of trade credit is compared to their asset or debt level, it is clear that accounts payable and accounts receivable are much less important for SOEs than for private firms. Yet when compared to private firms, SOEs have higher accounts receivable and accounts payable as percentages of sales, implying that they have greater access to trade credit. In other words, the SOEs have greater access to all kinds of credit including trade credit. Furthermore, the implication of the SOEs' greater access to trade credit for private firms is negative, in contrast to what is argued in Ge and Qiu (2007). As shown in Table 11, the SOE sector as a whole carries more accounts payable than accounts receivable, while the opposite holds for the private sector. As a result, trade credit is unlikely to be a main channel through which SOEs provide informal financing to other types of firms, in particular to private firms.

4.2.4. Inventory

All the mechanisms discussed above focus on the supply side of the story, i.e., how private firms increase financial access to solve their financial needs. The demand side, however, may also be important in resolving private firms' financial constraints. As Long and Zhang (2010) point out, certain organizational arrangements such as clustering may lead to a lower level of financial need for private firms, thus alleviating their financial hardship.

Here we point to another potential mechanism that works along the demand dimension. Table 12 shows that private firms have much lower inventory to sales ratios than their SOE counterparts: 14% as opposed to 31%. As these firms are all industrial firms exceeding a certain size, such large differences in inventory to sales ratios most likely indicate much more efficient inventory management and thus less need for working capital in private firms compared to SOEs. In fact, the inventory to sales ratio in private firms is even lower than that in foreign-invested firms. If we assume that foreign-invested firms are both unconstrained financially and efficient at managing their inventory, this implies that private firms may in fact be reducing their inventory below the optimal level. Yet, a comparison with firms in Japan and Korea suggests that the inventory level in Chinese private firms is still within the norm.

The same logic may also explain the lower ratios of accounts payable and accounts receivable to sales in private firms than in SOEs discussed

[12] We do not present the balanced panel results in the interest of space.

Table 12. Average inventory/sales ratios by ownership in 2006 census cross-section

Ownership	Inventory/sales
State	0.306
Private	0.138
Collective	0.171
FRN	0.195
HMT	0.222
Legal person	0.172
Others	0.221

FRN, ownership by firms outside greater China area; HMT, ownership by firms from Hong Kong, Macao, and Taiwan.

earlier. Much like with inventory management, easy access to cheap external finance by SOEs reduces their incentives to manage their accounts payable and accounts receivable efficiently. Private firms that face borrowing constraints, on the other hand, are more likely to actively manage their trade credit to maintain their cash flow.

5. Conclusion

The findings we have presented suggest the following patterns. First, in 2006, before the onset of the global recession, SOEs still had better access to external finances as compared to private firms in China. This is shown in higher leverage rates, higher financial costs, and lower interest payments. Moreover, evidence based on the census data (Table 3) suggests that there may have been more differential treatment between SOEs and private firms in more recent years. Second, to counter their limited access to external finances, Chinese private firms have resorted to a variety of mechanisms. Using both the NBS census data and the private entrepreneur survey data, we show that these mechanisms include a greater reliance on retained earnings (facilitated by lower tax rates and higher profit rates), the flexible yet reasonably efficient use of informal finances, and very efficient management of working capital (by reducing the required levels of inventory and accounts receivable). In contrast, we present evidence that trade credit from state-owned firms to the private sector cannot be a plausible mechanism to resolve financial constraints for Chinese private firms, since the funds appear to be flowing in reverse. Third, there is a great amount of variation in private firms' access to external finances: While small private firms have difficulty obtaining external finances, larger private firms are able to achieve high leverage rates by paying higher financial costs. We estimate that about half of the observed differential access to finances between SOEs and private firms can be explained by the

size of the firm, which is often a good indicator of reputation and creditworthiness.

One finding is somewhat surprising to us: Although not as accessible as for SOEs, the formal financial sector in China does provide Chinese private firms with substantial financial resources, especially for their short-term needs during daily operations. In addition, there is some evidence that the access of small private firms to formal bank loans has improved moderately in the past decade. Based on the survey data, Table 3 shows that the leverage (debt/asset ratio) has increased from 0.17 to 0.22 from 2000 to 2006, while Table 9 shows that during the same period the percentage of firms with access to bank loans has increased from 38% to 43%, and simultaneously the proportion of firms using informal loans has dropped from 27% to 23%.

As discussed previously, private firms included in the NBS balanced panel tend to be well-established large private firms, and thus they are not representative of all private firms. So it is possible that the patterns summarized above are completely consistent with one another, and there indeed has been improvement in the financial access of small private firms, the most constrained sector, in the past few years. Such a development would definitely be a welcome one. A more robust conclusion, however, will await further investigation.

Finally, as we have shown, both the ingenuity and resilience of Chinese private firms and the gradual improvements in the financial sector, formal or informal, have helped provide funds for private firms' daily operations. Yet the main source for long-term investment remains firms' own internal funds. As a result, the most pressing financial constraint facing Chinese private firms in our minds is their limited ability to secure long-term funds to invest for growth, and resolving this issue should be one of the top goals of financial reforms in China.

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