Does the Chinese Banking System Promote the Growth of Firms?*

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Abstract

Using a large panel dataset of Chinese manufacturing enterprises during 1999-2005, which accounts for over 90% of China's industrial output, and robust econometric procedures we show that the Chinese banking system has helped to support the growth of both firm value added and TFP. We find that access to bank loans is positively correlated with future value added and TFP growth. We also find that firms with access to bank loans tend to grow faster in regions with greater banking sector development. While the effects of bank loans on firm growth are more pronounced in the case of purely private-owned and foreign firms, they are positive and statistically significant even in the case of state-owned and collectively-owned firms. We show that excluding loss-making firms from the sample does not change the qualitative nature of our results.

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1. Introduction

China offers a most interesting and possibly unique setting in which to examine the relationship between finance and growth, utilising firm-level data, for (at least) three compelling reasons, which are as follows:

(i) China is one of the most important and fastest-growing economies in the world. Almost 30 years of rapid economic growth – in itself an unprecedented phenomenon - has transformed China from an agricultural economy to the factory of the world; from a closed economy into the world's largest exporter of textiles, toys, laptop computers, cell phones, digital cameras, etc. and the 2nd largest FDI recipient country. As a result, China now has the largest volume of foreign reserves in the world, as well as one of the largest banks (the ICBC). Therefore, examining the role played by the finance-growth mechanism within China is interesting in its own right and could therefore make a useful contribution to the finance-growth literature.

(ii) The Chinese banking system has been dominated by state-owned banks and is widely regarded of very poor quality by international standards (e.g. Allen et al, 2005). The mainstream view in the literature is that government-owned banks are inefficient and motivated by political objectives.[1] China's banking sector has accumulated huge amounts of bad loans, not least because one of its major responsibilities has been the bailing out of financially distressed state owned enterprises. Furthermore, it has been argued that the Chinese banking sector is regionally segmented, that financial resources are not mobile and that they are allocated inefficiently (Young, 2001; Boyreau-Debray and Wei, 2005). Allen *et al* (2005) have, therefore, argued that because of its inefficient banking system, China represents an important counter example to the apparent consensus that a well-developed financial system is necessary for growth.[2] Based on this view, one might therefore expect that the finance-growth mechanism would be weak, if present at all, in the case of China. Allen *et al* (2005) in fact ascribe Chinese

[1] See, however, Andrianova et al (2008) for a critique of this view.

[2] For recent surveys of the finance and growth literature see Demetriades and Andrianova (2005) and Levine (2003).

economic growth to informal financial channels than the formal, state-dominated, financial system.[3]

(iii) Increased data availability over recent years means that finance-growth type questions can now be examined using very large micro data sets. In this paper we utilise a very large micro panel data set that spans the entire Chinese manufacturing industry which contains detailed information on firms' sources of financing. Our dataset includes 1.3 million observations that cover the period 1999-2005; by 2005 a quarter million firms are included. The firms in our sample account for nearly 90% of total industrial output in China.[4]

This paper, therefore, utilises a very large micro dataset of Chinese firms to examine the contribution of bank finance to the growth of firm value added and total factor productivity, controlling for firm characteristics and ownership structure. The results of our investigation are therefore likely to have important policy implications, not only for China but also for other developing and transition economies in which state-owned banks and enterprises are prominent.

Our main finding is that, contrary to what might be expected from a state-dominated, inefficient banking system, the finance-growth mechanism in China has been alive and kicking. Specifically, we find that access to bank loans is positively correlated with future value added and TFP growth. Moreover, we find that firms with access to bank loans tend to grow faster in regions with greater banking sector development. While the effects of bank loans on firm growth are more pronounced in the case of privately owned and foreign firms, they are positive and statistically significant even in the case of state-owned and collectively- owned firms. Our findings - which challenge the Allen *et al* (2005) view on the role of the Chinese banking system - are nevertheless broadly consistent with the

[3]There is, however, a parallel literature which explains how China's regional decentralization contributed to the success of Chinese economic reforms and thus to economic growth (e.g. Qian and Xu, 1993). Theoretical arguments and empirical evidence have been provided that regional decentralization created incentive conditions for regional competition which fosters regional economic growth (Maskin, Qian and Xu, 2000; Li and Zhou, 2006). Moreover, it is argued that Chinese regional decentralization creates conditions for experimenting reform policies. This contributes substantially to the success of reforms and growth (Qian, Roland and Xu, 2006).

[4] For comparison purposes it should be noted that Allen et al (2005) use a dataset of 1100 listed firms during the period 1992-2000.

findings of a recent macro-econometric study by Rousseau and Xiao (2007); these authors provide evidence using aggregate data and time-series econometric methods which suggests that banking sector development during 1995-2005 played a central role in China's economic growth during that period.

The paper is organised as follows. Section 2 describes the dataset and variable construction. Section 3 presents the econometric methodology and the empirical model. Section 4 presents the empirical results while section 5 summarises and concludes.

2. Data and variable construction

The main source of our data is the Annual Report of Industrial Enterprise Statistics compiled by the National Bureau of Statistics (NBS) of China (various issues), covering the population of Chinese state-owned manufacturing enterprises and non-state-owned enterprises with annual turnover of more than 5 million RMB Yuan (about $620,000). The sample accounts for nearly 90% of total industrial output.[5] The dataset, which we have collected for the period 1999-2005, contains detailed information on output, assets, sources of finance, exports, sales, value added, employment, wages, R&D expenditure, product innovation and employee training outlay, as well as ownership structure, industry affiliation, and geographical location.[6] Other data sources include China Statistical Yearbook, China Fixed Asset Statistical Yearbook and China Financial Statistics.

We provide detailed information on the dataset structure in Appendix 1 Tables A1-A3. Table A1 presents the frequency distribution of firms during the sample period, showing that the number of firms almost doubled during the sample period. Tables A2 and A3 show the industrial classification and geographical distribution of firms, respectively, confirming that the dataset exhibits reasonable sectoral and geographical balance.

2.1 Classification of firm ownership type

[5] This figure is calculated using China Statistics Yearbook (various issues).
[6] The data are deflated using industry-specific ex-factory price indices obtained from China Statistical Yearbook (2000-2003).

Officially, firm ownership type in China is classified according to the Regulation of the People's Republic of China on the Management of Registration of Corporate Enterprises. This classification has been questioned recently (e.g. Dollar and Shang-Jin Wei, 2007), given ownership changes among Chinese enterprises in various forms have happened during the reform years. We therefore create our own, data driven, ownership classification utilising the rich information provided in the dataset, which includes the share of equity capital contributed by the state, collective investors, domestic private and foreign investors. Specifically, we classify firms as state owned enterprises (SOE) if the share of state capital in total equity is 50% or higher; collectively owned enterprises (COE) if the share of collective capital in total equity is 50% or higher; foreign owned enterprises (FOR) if the share of foreign capital (incl. capital from Hong Kong, Macau, and Taiwan and foreign countries) is 50% or higher; domestic private enterprises (Private): all remaining enterprises. The latter group is further classified into three sub-types:

(i) Private with state capital (Private_state): if the share of state capital is greater than zero (but less than 50%);

(ii) Private with foreign capital (Private_for): if the share of foreign capital is greater than zero (but less than 50%);

(iii) Pure private (PPrivate): the rest of the firms (i.e. those without state or foreign capital).

The dataset structure in terms of firm's ownership is summarized in Appendix Table A4. Private firms represent 62% of the sample; of these, pure private firms constitute more than half the sample (54.2%). There are only a relatively small number of private firms with state capital (1.6%) and a somewhat larger number of private firms with foreign capital (6.5%). SOEs represent 11.7% of the sample during the entire period, but this average figure masks a declining trend reflecting privatisation of state owned firms.[7] The remaining two categories are COEs, which account for 12.40% of the sample, and foreign invested firms, which represent 16.0% of the sample; the majority of foreign invested firms are owned by Hong Kong, Macau and Taiwanese investors.

[7] The percentage of SOEs has dropped through time from 28% in 1999 to 6% in 2005.

2.2 Variable construction and summary statistics

Table 1 provides the summary statistics of the variables used in the estimations for the overall sample and also by ownership type. The total factor productivity (TFP) measure is estimated following the methodology of Levinsohn and Petrin (2003), which is outlined in Appendix 2. This approach has been widely applied in recent literature because of its advantage of being able to control for the simultaneity between firm's choice of input levels and unobserved productivity shocks by using firm's intermediate inputs (such as raw materials or electricity) as proxies. For all firms, the average TFP growth reaches 8.5% over the sample period, with a high standard deviation indicating large heterogeneity among firms[8]. There is an on average 12.4% of industrial value added growth over the period 1999-2005, again with the highest growth among pure private domestic firms, followed by foreign firms. The high standard deviations suggest a substantial variation among firms. The average firm age is approximately 10 years, with loss-makers being older on average, 14 years. The average firm size in the sample, measured as the logarithm of total employment, is 4.907 (equal to 297 employees). We measure firm's access to formal finance by the logarithm of the amount of bank loans obtained by the end of each period. The average level of bank loans is 1.004 (equal to RMB Yuan 2,481,300, or approximately US$300,000). The average level of equity finance is 3.596 (equal to RMB Yuan 16,027,000, or approximately US$1,931,000). There are several indicators at 3-digit SIC industry level used in our analysis. Exit rate at industry is the percentage of firm exit in each year. On average the exit rate among Chinese firms is 17.6% over the period of 1999-2005. PRIVY, measured by regional aggregate bank loans issued to private sector over regional GDP, is to capture the degree of regional financial development. It is proved to be a reasonable measure by previous finance-growth literature (see Levine 2005).

3. Econometric Methodology

In order to evaluate the extent to which the Chinese banking system promotes firm growth, we specify an empirical model in which access to formal finance can influence

[8] Note that we have adopted the improved capital stock measurement suggested by Jefferson et al (2000), at the price of losing one year observations. As such, the calculated TFP is the average growth rate of the TFP over 2000-2005.

firm performance over and above non-financial factors such as firm age, size, industry etc. Specifically, our model is as follows.

$$Y_{it} = \beta_1' X_{it} + \beta_2 BANK_{it-1} + \beta_3 (BANK_{it-1} * FD_{j0}) + \beta_4 EQUITY_{i,t-1} + \beta_5 D_{it} + \varepsilon_{it} \qquad (1)$$

The dependent variable Y_{it} represents either total factor productivity or value added growth for firm i at time t. $BANK_{it-1}$ denotes the stock of bank loan liabilities of firm i outstanding at time t-1; $EQUITY_{it-1}$ denotes the total amount of equity finance invested in firm i at time t-1. X_{it} is a vector of control covariates, D_{it} is a vector of dummies, including various fixed effects, and ε_{it} is a random error term.

Entering equity finance alongside bank loans in the empirical model helps to ensure robustness in that the estimated coefficient is more likely to capture the effect of bank loans, as opposed to the effect of another omitted formal finance channel, with which bank finance may be correlated.[9] Moreover, it allows a comparison of the differential impact of bank and equity finance, which can provide additional insights into the finance-growth nexus within China.

Both finance variables are lagged by one period to control for potential endogeneity. Bank loans or equity finance may be correlated with unobserved shocks to firm performance, hence using contemporaneous values may result in biased estimates. By making the finance variables predetermined, one potential source of bias is therefore removed. However, even if the estimated coefficients turn out to be positive, it does not follow that the correlation between bank loans and firm performance can be interpreted causally i.e. getting a bank loan isn't necessarily the reason why a firm grows faster. Indeed, economic analysis suggests that even if banks are able to pick winners – i.e. firms with profitable opportunities – through effective screening of loans applicants, it does not mean that the bank loans they provide cause them to grow faster. Bank loans simply enable firms to exploit profitable opportunities. Whether causal or not, a positive correlation between (lagged) bank loans and firm performance would suggest that Chinese banks are carrying out their screening function effectively. Hence, if such a positive correlation is found, we could legitimately conclude that Chinese banks are at the very least supporting or facilitating the growth of firms.

[9] The qualitative nature of the results is unaltered even if we exclude equity finance.

We shed more light on the finance growth nexus in China, by interacting BANK with an indicator of initial financial development in the region in which a firm is based ($FDj_{0,}$ where j represents the region). This allows us to examine whether regional financial development mediates the growth enhancing effects of access to bank finance. The finance and growth literature suggests that the impact of banks on firm performance is likely to be larger in more financially developed countries (and consequently regions). This is because banks are more likely to have greater expertise in monitoring and screening loan applicants in more financially developed countries (or regions), hence they would channel loans into the more productive firms. Consequently, if this term is found to be positive and significant, it would suggest that the standard finance and growth mechanism is operational within China. We use the initial level of financial development to address possible reverse causality between regional financial development and firm performance. It is not impossible that some regions may become more financially developed because they have a large number of fast growing firms. By using the initial level of the financial development indicator, which is interacted with lagged bank loans, we are avoiding any contemporaneous correlation between this composite variable and unobserved shocks to firm performance.

Besides equity finance, the empirical model includes a vector of other control covariates, X_{it}, hypothesised to impact on firm growth. These controls include linear and squared terms of (initial) firm size and age. They also include the initial level of TFP or value added which is included to capture convergence; a negative coefficient would indicate that a part of firm growth in value added represents catch-up from a low initial value. Hence, we expect this term to be negative. The vector D_{it} consists of a full set of firm ownership, industry and regional dummies, since it is important to control for the possibility that these fixed characteristics affect firm performance. In addition it also includes time dummies, to remove the effects of temporal shocks that affect all firms, as well as time dummies interacted with region dummies to remove the possible influence of any regional fixed effects that vary with time, such as changing regional economic policies.

Since the growth variable is only observed for firms that have survived, it is important to correct for selection bias due to firms' survival. A popular method for correcting selectivity bias is to apply the technique due to Heckman (1976). However, this technique

is not appropriate in panel data models like ours – see Equation (2). Wooldridge (1995) shows that in such cases, Heckman's method leads to inconsistent estimates and proposes more appropriate methods for testing and correcting for sample selection bias in these models. We therefore utilise Wooldridge's techniques to test for and correct the selectivity bias that may arise due to firms' survival in our data set. The variables we include in the selection equations are quadratic terms of size and age, productivity, industry concentration and industry entry and exit rate. These are standard variables used in the firm survival literature (e.g. Dunne and Hughes, 1994 and Mata et al., 1995).

The Wooldridge estimator starts by estimating for each time period t=1, 2, …T the selection equation by standard probit. Next, it obtains the inverse Mills ratio for surviving firms, say $\hat{\lambda}_{it}$, and defines the matrix of inverse Mills ratios, say Λ_{it}, as $\Lambda_{it} = \begin{pmatrix} 0 & 0 & \hat{\lambda}_{it} & 0 & 0 \end{pmatrix}$. The selection bias corrected estimates can then be obtained by estimating the baseline model (Equation 1) augmented with the matrix of inverse Mils ratios (the correction terms). That is

$$Y_{it} = \beta_1' X_{it} + \beta_2 BANK_{it-1} + \beta_3 (BANK_{it-1} * FD_{j0}) + \beta_4 D_{it} + \gamma \Lambda_{it} + \varepsilon_{it}. \qquad (2)$$

A test for the joint significance of the correction terms provides a test for sample selectivity.

To summarise, our empirical strategy is robust to a wide range of possible econometric issues that may arise when using panel data sets of the type we are using in this paper. Specifically, we have taken steps to address (i) possible bias due to sample selection relating to firm survival, (ii) potential endogeneity of regressors through the use of lagged finance and by controlling for various fixed effects, including any time varying regional factors, (iii) potential endogeneity problems related to the measurement of TFP via the Levinsohn and Petrin (2003) method (see Section 2.2.).

4. Empirical Results

The main empirical results are presented in Tables 2-5. Tables 2 and 3 contain the estimates of the determinants of TFP growth while Tables 4 and 5 contain the estimates of the determinants of value added growth. Tables 3 and 5 include the interaction term

between regional financial development and bank loans in the list of regressors while tables 2 and 4 do not.

We first examine the results in Table 2. To start with, the selection test in all columns validates the use of the Wooldridge estimation method. Column (1), which contains the overall results, shows that ownership matters for TFP growth, with all ownership types having higher TFP growth than the benchmark group, which corresponds to state-owned firms. This is certainly a very plausible result, given that state owned firms are unlikely to be at the forefront of innovation. What is a little surprising is that the highest group in terms of TFP growth are not foreign firms but pure private (domestic) firms, followed by collectively owned enterprises and private (domestic) firms with some foreign capital. The initial level of TFP enters with a negative and significant coefficient, suggesting convergence is taking place, albeit at a fairly slow speed – its coefficient is -0.14. The other controls enter with plausible coefficients. Access to bank loans enters with a positive, albeit small, coefficient that is highly significant, while equity finance enters with a substantially higher positive coefficient that is also highly significant. Columns (2)-(7) in the same table contain the results for different ownership types. Both bank loans and equity finance have positive and highly significant coefficients for all ownership types. Both finance variables have the highest coefficients in the case of foreign owned firms, followed by pure private (domestic) firms. Bank loans have the smallest coefficients in the case of private firms with state capital followed by collectives and state owned firms. These results suggest that the finance-growth mechanism works better in the case of privately owned firms but it is not absent even in the case of state owned firms.

The results in Table 3 are similar to those in Table 2, except for the coefficient of bank loans which is now much lower and is no longer significant for all ownership types. However, the newly introduced interaction term is positive and highly significant throughout Table 3. Taken together, these results suggest that the Chinese banking system has a positive influence on TFP growth and that on the effects of bank loans are amplified by the state of regional financial development. Firms with identical characteristics, including the same access to bank loans, will grow faster if they are located in regions that are more financially developed. Given that this effect is over and above any (time-varying) regional effects, we can conclude that it is not simply capturing changes in regional economic

policies. Conversely, the positive and significant coefficient of this interaction term also suggests that regional financial development has a bigger positive impact on TFP growth in those firms that borrow more from banks.

Tables 4 and 5 repeat the same exercise as Tables 2 and 3 but with firm value added growth as the dependent variable instead of TFP growth. Controlling for initial industrial value added level, the conclusions that can be drawn by examining the estimated coefficients are broadly very similar to those that can be drawn from Tables 2 and 3. The interaction term now enters with substantially higher coefficients relative to the corresponding terms in Table 3, suggests that regional financial development has quantitatively larger effects on firm value-added growth than on TFP growth.

The results in Tables 2-5 provide very clear evidence that even in the overall sample, which includes state-owned enterprises, the finance-growth mechanism in China is both alive and kicking. Importantly, our evidence suggests that the growth-finance mechanism in China does not merely reflect the effects of financial development on capital accumulation – financial development seems to have a positive effect on TFP growth.

Loss making enterprises and the finance-growth mechanism

Tables 6 and 7 report the results of re-estimating our main model after removing loss-making firms from the sample. Loss making enterprises represent 14% of firms in our sample, and 27% of state-owned firms. It may be argued that bank lending to loss-making enterprises, particularly state-owned ones, is politically motivated, since state-owned banks, which dominate China's banking system, may be required by the government to keep alive firms that serve political objectives. If this were true, it would undermine banks' ability to finance productive enterprises and we would therefore expect to see higher coefficients on the bank loan variable and its interaction with regional financial development if loss-making enterprises were removed from the sample. On the other hand, if lending to loss making enterprises is dictated by economic criteria, particularly the future prospects of these firms, removing these firms from the sample should not alter the results very much. This is because loss-making firms that receive bank loans would be the ones whose future prospects are bright, as it would not make any commercial sense for

banks to make loans to loss-making firms who are unlikely to be able to repay the loans in the future.

Tables 6 and 7 show that in the overall sample, the coefficient on bank loans is somewhat higher than the corresponding one in Tables 3 and 5, respectively. This change is, however, non-negligible only in the industrial value added comparison where the coefficient on bank loans rises from 0.0026 to 0.0042, with the increase being slightly more than two standard errors. The coefficient of bank loans becomes significantly positive for pure private domestic firms in Table 7 in comparison to Table 5, suggesting profit-making firms benefit from bank loans; for SOE and private with state capital, the coefficients remain insignificant but are more positive; while profit-making foreign firms have higher significantly positive coefficients. The coefficients of the interaction term of bank loans and financial development show a minor. Thus, it appears that excluding loss-making firms from the sample increases the direct effect of bank loans on industrial value added growth but mitigates their effect through regional financial development. Interestingly, this overall result does not reflect changes in the coefficient of bank loans for state owned enterprises, but the coefficients on collectives and private firms. By removing loss making enterprises from the sample, this coefficient switches from insignificant to significant in the cases of collective enterprises and pure private (domestic) firms. Once again the coefficient of the interaction term declines but remains significant in the case of all ownership types.

We can, therefore, conclude that removing loss-making enterprises from the sample does not alter the qualitative nature of the results very much at all. These findings seem to tentatively suggest that politically motivated lending to loss making firms in China is not as widespread as it is perhaps believed to be. In order to explore this issue in more depth, we ran the TFP growth regressions on loss making firms alone.[10] In the overall sample, the effect of both bank loans and the interaction term remains positive and significant, suggesting that the banking system continues to have a positive impact even on loss making firms. However, the results by type of ownership show that this effect varies widely between private and state-owned enterprises. The relevant coefficients are positive

[10] These results are not reported in a separate table to save space.

and significant at the 1 per cent level for pure private firms and foreign owned firms; they are positive and significant at the 5 per cent level for collectives. When it comes to state-owned enterprises, the effect of bank loans is significant only at the 10 per cent level while the interaction term is not significant. Finally, when it comes to private firms with some state capital, both the relevant coefficients are insignificant. These results seem to suggest that banks may be able to turn around loss-making firms as long as they are not wholly or partially government owned. Thus, there appears to be some evidence to suggest that lending to loss-making enterprises in which the government has an ownership stake may indeed be politically driven. Aside from these firms, however, our findings on all other types of firms suggest that the finance and growth mechanism in China is operating reasonably well, notwithstanding the close ties between banks and political authorities.

5. Concluding Remarks

Our empirical results suggest that the view that China's banking system has been an idle or even disruptive participant in the process of Chinese economic growth is not supported by the empirical evidence. Our paper certainly adds to the growing body of evidence which suggests that in fact the Chinese banking system played a central role in supporting economic growth (see also Rousseau and Xiao, 2007). We believe this is not only an interesting finding but also a comforting one. It is clearly interesting to confirm that the finance-growth mechanism is present, even in a country with state dominated banks; this result casts further doubt on the critics of government ownership of banks (see also Andrianova *et al*, 2008). It is very comforting because the silent implication of the view that Chinese economic growth had nothing to do with China's banks suggests that Chinese economic growth could have been even higher had the banking system been more supportive. This is certainly an implication that is not only hard to swallow, given the very high growth rates already achieved, but also a disturbing one for the world economy: could it have coped with even higher growth rates in China?

Our empirical findings, robust as they may be, raise an important question that warrants further investigation: what is the mechanism that helps to ensure that a state-dominated banking system chooses to finance productive privately owned firms? We believe the

answer to this question may be found by examining the role of regional governments in Chinese economic growth and the links of these governments with regional banks. There is already an important literature which emphasises the contributing role played by China's regional decentralization to the success of Chinese economic reforms and thus to Chinese economic growth (e.g. Qian and Xu, 1993; Maskin, Qian and Xu, 2000; Li and Zhou, 2006; Qian, Roland and Xu, 2006). What remains to be explored in future research are the precise linkages between regional governments and regional banks and their implications for the lending behaviour of banks.

References

Allen, F., J. Qian, and M. Qian (2002) "Law, Finance and Economic Growth in China", *Journal of Financial Economics*, 77 (2005), 57-116.

Andrianova, S., P. Demetriades and A. Shortland (2008) "Government Ownership of Banks, Institutions and Financial Development, *Journal of Development Economics*, 85 (2008), 218-252.

Boyreau-Debray, G. and S-J Wei (2005) "Pitfalls of a State-Dominated Financial System: the Case of China", NBER Working Paper 11214.

Dollar, D. and S-J Wei (2007) "Das (Wasted) Kapital: Firm Ownership and Investment Efficiency in China" , *IMF Working Paper* WP/07/09.

Dunne, P. and A. Hughes (1994) "Age, Size, Growth and Survival: UK Companies in the 1980s", *The Journal of Industrial Economics* 42, 115–139

Heckman, J. (1976) "The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Simple Estimator for Such Models, *Annals of Economic and Social Measurement* 5 , 475–492.

Levinsohn, J. and A. Petrin (2003) "Estimating Production Functions Using Inputs to Control for Unobservable", *Review of Economic Studies*, 70 (2), 317-41.

Li, H. and L. Zhou (2005) "Political Turnover and Economic Performance: The Incentive Role of Personnel Control in China", *Journal of Public Economics*, 89, 1743-1762.

Lin, J. and Z. Liu (2000), "Fiscal Decentralization and Economic Growth in China", *Economic Development and Cultural Change*, 49(1), 1-22.

Maskin, E. Y. Qian and C. Xu (2000) "Incentives, Information, and Organizational Form", *Review of Economic Studies*, 67(2), 359-378.

Mata, J., P. Portugal and P. Guimaraes (1995) "The Survival of New Plants: Start-up Conditions and Post-entry Evolution", *International Journal of Industrial Organisation*, 13, 459–481.

Qian, Y., G. Roland and C. Xu (2006) "Coordination and Experimentation in M-Form and U-Form Organizations", *Journal of Political Economy*, 114 (2), 366-402.

Qian, Y. and C. Xu (1993) "Why China's Economic Reforms Differ: The M-form Hierarchy and Entry/Expansion of the Non-State Sector", *The Economics of Transition*, 1(2), 135-170.

Rousseau, P.L. and S. Xiao (2007) "Banks, Stock Markets, and China's Great Leap Forward", *Emerging Markets Review*, 8, 206-217.

Wooldridge, J.M. (1995), "Selection Corrections for Panel Data Models Under Conditional Mean Independence Assumptions", *Journal of Econometrics*, 68, 115-132.

Young, A. (2001), "The Razor's Edge: Distortion and Incremental Reform in the People's Republic of China", *Quarterly Journal of Economics*, 115 (4), 1091-1035.

Appendix 1: Dataset structure

Table A1: By year

year	Freq.	Percent
1999	116,902	10.01
2000	125,210	10.72
2001	140,985	12.07
2002	152,419	13.05
2003	169,447	14.51
2004	236,413	20.24
2005	226,400	19.39
Total	1,167,776	100

Table A2: By 2-digit SIC industrial classification

2-digit sic industry	Freq.	Percent
13-Food Processing	67,842	5.81
14-Food Production	28,768	2.46
15-Beverage Industry	20,079	1.72
16-Tabacco Industry	1,594	0.14
17-Textile Industry	101,583	8.7
18-Garments and Other Fibre Products	58,700	5.03
19-Leather, Furs, Down and Related Products	28,373	2.43
20-Timber Processing	22,860	1.96
21-Furniture Manufacturing	13,179	1.13
22-Papermaking and Paper Products	36,546	3.13
23-Printing and Record Medium Reproduction	26,656	2.28
24-Cultural, Educational and Sports Goods	15,263	1.31
25-Petroleum Refining and Coking	8,474	0.73
26-Raw Chemical Materials and Chemical Products	85,816	7.35
27-Medical products	24,727	2.12
28-Chemical Fibre	5,955	0.51
29-Rubber Products	13,967	1.2
30-Plastic Products	54,445	4.66
31-Nonmetal Mineral Products	104,809	8.98
32-Smelting and Pressing of Ferrous Metals	27,375	2.34
33-Smelting and Pressing of Nonferrous Metals	20,910	1.79
34-Metal Products	63,332	5.42
35-Ordinary Machinery	86,415	7.4
36-Special Purposes Equipment	48,087	4.12
37-Transport Equipment	53,764	4.6
39-Other Electronic Equipment	69,192	5.93
40-Electrical Equipment and Machinery	36,201	3.1
41-Electronic and communication appliances	16,382	1.4
42-Meters and office appliances	26,482	2.27
Total	1,167,776	100

Table A3: By province

Region	Freq.	Percent
11- Beijing	28,562	2.45
12- Tianjing	26,610	2.28
13- Hebei	45,695	3.91
14- Shanxi	14,772	1.26
15- Neimenggu	6,700	0.57
21- Liaonign	39,445	3.38
22- Jilin	9,594	0.82
23- Heilongjiang	13,478	1.15
31- Shanghai	71,099	6.09
32- Jiangshu	161,446	13.83
33- Zhejiang	165,630	14.18
34- Anhui	24,126	2.07
35- Fujian	46,308	3.97
36- Jiangxi	17,999	1.54
37- Shandong	103,964	8.90
41- Henan	55,475	4.75
42- Hubei	36,434	3.12
43- Hunan	31,366	2.69
44- Guangdong	155,574	13.32
45- Guangxi	15,517	1.33
46- Hainan	2,395	0.21
50- Chongqin	12,380	1.06
51- Sichuan	29,926	2.56
52- Guizhou	9,186	0.79
53- Yunnan	9,382	0.80
54- Xizang	1,023	0.09
61- Shaanxi	12,404	1.06
62- Ganshu	11,373	0.97
63- Qinghai	1,558	0.13
64- Ningxia	2,409	0.21
65- Xinjiang	5,946	0.51
Total	1,167,776	100.00

Table A4: By ownership defined according to capital structure

Ownership	Freq.	Percent
State-owned enterprises (SOE)	141,123	12.08
Collective enterprises (COE)	146,147	12.51
Private enterprises:	725,293	62.11
-Domestic private enterprises (Private_state)	*28,463*	*2.44*
-Pure Private (PPrviate)	*632,607*	*54.17*
-Private with foreign capital (Private_for)	*64,223*	*5.50*
Foreign invested enterprises (FOR)	155,213	13.29
Total	1,167,776	100.00

Appendix 2: TFP estimation method

The total factor productivity (TFP) measure is estimated following the methodology of Levinsohn and Petrin (2003). The advantage of this method lies in controlling for the simultaneity between firm's choice of input levels and unobserved productivity shocks by using firm's intermediate inputs (such as raw materials or electricity) as proxies.

Assuming a Cobb-Douglas production function for firm i at time t is:

$$\begin{aligned} y_{it} &= \beta_0 + \beta_l l_{it} + \beta_k k_{it} + \omega_{it} + \varepsilon_{it} \\ &\equiv \beta_l l_{it} + \phi_t(k_{it}, m_{it}) + \varepsilon_{it} \end{aligned}$$

where y is log of value added, which is sales net intermediate inputs (m), l is labour input and k is capital input, and $\phi_t \equiv \phi_t(k_{it}, \omega_{it}) = \beta_0 + \beta_k k_{it} + \omega_{it}(k_{it}, m_{it})$ is an unknown function of capital and intermediate inputs. ϕ_t is strictly increasing in the productivity shock ω_{it}, so that it can be inverted and one can write $\omega_{it} = \omega_t(m_{it}, k_{it})$ for some function ω_t. Levinshon and Petrin (2003) approximate $\phi_t(k_{it}, m_{it})$ by a third order polynomial in k and m, $\sum_{j=0}^{3}\sum_{s}^{3} \delta_{js} k_{it}^{j} m_{it}^{s}$ and obtain and estimate of β_l and ϕ_t (up to the intercept) via OLS. This constitutes the first stage of the estimation procedure. At the second stage the elasticity of capital β_k is defined as the solution to $\min_{\beta_k^*} \sum_i \sum_t \left(y_{it} - \hat{\beta}_l l_{it} - \beta_k^* k_{it} - \varpi_{it} \right)^2$, where ϖ_{it} is a nonparametric approximation $E[\omega_{it} \mid \omega_{it-1}]$. Since the estimators involve two stages the calculations of the covariance matrix of the parameters must allow for the variation due to all of the estimators in the two stages. Levinshon and Petrin (2003) note that the derivation of the analytical covariance matrix is quite involved, and suggest the bootstrapping procedure to estimate standard errors. In this study 200 bootstrap replications are performed. Once consistent estimates of the input elasticities are derived, the log of productivity can be obtained as $\hat{\omega}_{it} = y_{it} - \hat{\beta}_l l_{it} - \hat{\beta}_k k_{it}$.

The data of industrial value-added and intermediate input are deflated by ex-factory price indices published in the Chinese Statistical Yearbook (1999-2006). The fixed assets data are deflated by fixed asset price indices published in the China Fixed Asset Statistical

Yearbook and Chinese Statistical Yearbook (1999-2006). The estimation has been conducted by 2-digit SIC industry categories.

Table 1: Summary statistics

Variables	All enterprises		(1) SOE		(2) COE		Private						(6)Foreign	
							(3)Private with state capital		(4)Pure domestic private		(5)Private with foreign capital			
	mean	sd	mean	sd	mean	sd	mean	sd	mean	sd	mean	sd	mean	sd
TFP level	1.549	2.209	0.970	3.073	1.518	1.957	1.562	1.949	1.631	1.965	1.724	1.825	1.736	2.446
Growth of TFP (gTFP)	0.085	0.637	0.004	0.737	0.039	0.631	0.051	0.633	0.117	0.600	0.081	0.600	0.098	0.676
Industrial value-added level (log term)	3.871	1.393	3.463	2.020	3.743	1.192	4.631	1.664	3.791	1.202	4.351	1.344	4.345	1.355
Growth of industrial value-added (gIVA)	0.124	0.74	-0.001	0.828	0.057	0.691	0.068	0.685	0.165	0.725	0.116	0.687	0.139	0.777
BANK, log of bank loans	1.004	1.72	1.910	2.187	1.131	1.653	2.010	2.300	0.846	1.552	0.958	1.770	0.576	1.460
Equity, log of equity finance	3.596	1.596	3.603	1.916	3.155	1.338	4.902	1.784	3.243	1.394	4.260	1.397	4.646	1.447
Size (log of total employment)	4.907	1.124	5.043	1.492	4.775	1.022	5.490	1.273	4.618	1.004	5.101	1.074	5.126	1.113
Age	10.299	11.065	21.929	17.014	13.499	11.304	13.842	13.565	7.827	8.596	7.960	5.934	7.107	3.996
Exit rate at 3-digit SIC industry level	0.176	0.054	0.247	0.235	0.244	0.235	0.260	0.258	0.385	0.359	0.322	0.321	0.356	0.349
PRIVY, financial development indicator, regional aggregate bank loans to private sector over regional GDP in 1999.	0.008	0.006	0.006	0.004	0.006	0.005	0.007	0.005	0.008	0.007	0.009	0.007	0.008	0.005
Percentage of observations (%)	100	-	12.08		12.51		2.44		54.17		5.50		13.29	

Table 2: Access to bank loans and firm TFP growth

Dependent variable: TFP growth	(1) overall	(2) SOE	(3) COE	Private			(7)Foreign
				(4)Private with state capital	(5)Pure private	(6)Private with foreign capital	
Finance variable							
BANK loans$_{(t-1)}$	0.0108***	0.00944***	0.00852***	0.00654**	0.0100***	0.0139***	0.0143***
	(0.00048)	(0.0018)	(0.0014)	(0.0027)	(0.00092)	(0.0018)	(0.0022)
Equity finance$_{(t-1)}$	0.0391***	0.0367***	0.0174***	0.0483***	0.0407***	0.0311***	0.0561***
	(0.00080)	(0.0032)	(0.0027)	(0.0057)	(0.0012)	(0.0042)	(0.0028)
Control							
Initial size	-0.0226***	0.0445***	-0.0658***	-0.0113	-0.0227***	-0.0206	-0.0923***
	(0.0071)	(0.017)	(0.016)	(0.034)	(0.0085)	(0.027)	(0.013)
(Initial size)^2	0.0494	-0.349**	0.200	-0.122	0.0268	0.0576	0.678***
	(0.067)	(0.15)	(0.16)	(0.30)	(0.089)	(0.24)	(0.15)
Age	0.0959***	0.0634**	0.166***	0.0675	0.132***	-0.00277	-0.163***
	(0.012)	(0.032)	(0.020)	(0.050)	(0.012)	(0.036)	(0.054)
Age^2	-0.714***	-0.411	-1.538***	0.305	-1.255***	2.094***	4.469***
	(0.17)	(0.57)	(0.39)	(0.95)	(0.22)	(0.73)	(1.12)
Initial TFP level	-0.136***	-0.123***	-0.153***	-0.122***	-0.145***	-0.145***	-0.148***
	(0.0021)	(0.0039)	(0.0050)	(0.0091)	(0.0027)	(0.0058)	(0.0069)
Ownership dummy							
COE	0.0862***						
	(0.0044)						
Private with state capital	0.0694***						
	(0.0078)						
Pure domestic private	0.107***						
	(0.0042)						
Private with foreign capital	0.0872***						
	(0.0053)						
Foreign	0.0801***						
	(0.0052)						
Constant	0.0172	-0.203***	0.0230	-0.160	0.0329	-0.0825	0.666***
	(0.052)	(0.059)	(0.073)	(0.13)	(0.054)	(0.099)	(0.21)
Observations	436564	54240	60253	12671	217561	28848	62991
R^2	0.11	0.06	0.10	0.08	0.14	0.13	0.11
Selection bias correction	chi2(5) = 4743.37; Prob>chi2 =0.0000	chi2(5) = 1291.36; Prob>chi2 =0.0000	chi2(5) =1723.13; Prob>chi2 =0.0000	chi2(5) = 352.31; Prob>chi2 =0.0000	chi2(5) = 2861.16; Prob>chi2 =0.0000	chi2(5) = 1456.83; Prob>chi2 =0.0000	chi2(5) = 874.49; Prob>chi2 =0.0000

Note 1: The estimator adopted is the selection and endogeneity correction method by Wooldridge (1995). The procedure is to estimate a two-stage model, in which the first stage estimates a sample selection model of firm survival to obtain a yearly selection mechanism, and the second stage includes the estimated selection mechanism to correct for unobserved simultaneneity. The reported joint significance of yearly selection mechanism variables validates the adoption of the method.

Note 2: All estimations include a full set of regional, industrial and year dummy variables. Interaction of yearly dummies and regional dummies are also included to capture time-variant regional policy differences.

Note 3: Bootstrapped standard errors are reported in parentheses,*** p<0.01, ** p<0.05, * p<0.1.

Table 3: Access to bank loans, TFP growth and regional financial development

Dependent variable: TFP growth	(1) overall	(2) SOE	(3) COE	Private			(7)Foreign
				(4)Private with state capital	(5)Pure private	(6)Private with foreign capital	
Finance variable							
BANK loans$_{(t-1)}$	0.00410***	0.00541***	0.00118	0.00188	0.00331***	0.00674***	0.00735***
	(0.00063)	(0.0020)	(0.0018)	(0.0037)	(0.00088)	(0.0024)	(0.0021)
Ln(BANK)$_{(t-1)}$* PRIVY$_{1999}$	1.160***	0.649**	1.475***	0.682*	1.149***	1.153***	1.328***
	(0.049)	(0.29)	(0.24)	(0.38)	(0.072)	(0.17)	(0.22)
Equity finance$_{(t-1)}$	0.0389***	0.0359***	0.0179***	0.0489***	0.0399***	0.0301***	0.0556***
	(0.0010)	(0.0033)	(0.0025)	(0.0053)	(0.0013)	(0.0037)	(0.0025)
Control							
Initial size	-0.0305***	0.0361**	-0.0758***	-0.0213	-0.0259***	-0.0226	-0.0918***
	(0.0062)	(0.014)	(0.016)	(0.031)	(0.0078)	(0.024)	(0.017)
(Initial size)^2	0.110*	-0.292**	0.283*	-0.0447	0.0532	0.0714	0.670***
	(0.062)	(0.13)	(0.17)	(0.28)	(0.079)	(0.22)	(0.19)
Age	0.102***	0.0712***	0.170***	0.0772*	0.131***	-0.000977	-0.161***
	(0.011)	(0.027)	(0.019)	(0.045)	(0.013)	(0.034)	(0.044)
Age^2	-0.812***	-0.554	-1.574***	0.159	-1.222***	2.093***	4.449***
	(0.17)	(0.46)	(0.38)	(0.85)	(0.23)	(0.73)	(0.92)
Initial TFP level	-0.136***	-0.124***	-0.156***	-0.122***	-0.146***	-0.147***	-0.148***
	(0.0021)	(0.0046)	(0.0041)	(0.010)	(0.0028)	(0.0057)	(0.0055)
Ownership dummy							
COE	0.0843***						
	(0.0048)						
Private with state capital	0.0691***						
	(0.0073)						
Pure private	0.105***						
	(0.0040)						
Private with foreign capital	0.0877***						
	(0.0050)						
Foreign	0.0820***						
	(0.0051)						
Constant	-0.0699	-0.228***	-0.0461	-0.189	0.0424	-0.0772	0.660***
	(0.053)	(0.067)	(0.056)	(0.13)	(0.062)	(0.099)	(0.21)
Observations	436564	54240	60253	12671	217561	28848	62991
R^2	0.11	0.05	0.09	0.07	0.14	0.13	0.11
Selection bias correction	chi2(5) = 5248.72; Prob>chi2 =0.0000	chi2(5) = 1328.54; Prob>chi2 =0.0000	chi2(5) =1934.19; Prob>chi2 =0.0000	chi2(5) = 652.37; Prob>chi2 =0.0000	chi2(5) = 3001.90; Prob>chi2 =0.0000	chi2(5) = 1625.07; Prob>chi2 =0.0000	chi2(5) = 974.36; Prob>chi2 =0.0000

Note 1: The estimator adopted is the selection and endogeneity correction method by Wooldridge (1995). The procedure is to estimate a two-stage model, in which the first stage estimates a sample selection model of firm survival to obtain a yearly selection mechanism, and the second stage includes the estimated selection mechanism to correct for unobserved simultaneneity. The reported joint significance of yearly selection mechanism variables validates the adoption of the method.

Note 2: All estimations include a full set of regional, industrial and year dummy variables. Interaction of yearly dummies and regional dummies are also included to capture time-variant regional policy differences.

Note 3: Bootstrapped standard errors are reported in parentheses,*** p<0.01, ** p<0.05, * p<0.1.

Table 4: Access to bank loans and firm IVA growth

Dependent variable: IVA growth	(1) overall	(2) SOE	(3) COE	Private			(7)Foreign
				(4)Private with state capital	(5)Pure domestic private	(6)Private with foreign capital	
Finance variable							
BANK loans$_{(t-1)}$	0.0133***	0.00795***	0.0114***	0.00318	0.0134***	0.0171***	0.0175***
	(0.00047)	(0.0017)	(0.0014)	(0.0024)	(0.00079)	(0.0020)	(0.0018)
Equity finance$_{(t-1)}$	0.0662***	0.0471***	0.0257***	0.0638***	0.0736***	0.0642***	0.0822***
	(0.00085)	(0.0026)	(0.0024)	(0.0058)	(0.0014)	(0.0043)	(0.0027)
Control							
Initial size	-0.0287***	0.0522***	-0.130***	-0.0311	-0.0271***	-0.0442**	-0.0894***
	(0.0053)	(0.014)	(0.016)	(0.035)	(0.0085)	(0.021)	(0.013)
(Initial size)^2	0.605***	-0.236*	0.957***	0.144	0.815***	0.730***	1.141***
	(0.056)	(0.14)	(0.17)	(0.31)	(0.091)	(0.20)	(0.14)
Age	-0.0425***	-0.0335	0.108***	-0.0190	-0.0107	-0.205***	-0.677***
	(0.0087)	(0.029)	(0.021)	(0.043)	(0.012)	(0.040)	(0.049)
Age^2	1.806***	1.193**	-0.385	1.913**	1.570***	6.015***	16.11***
	(0.13)	(0.52)	(0.40)	(0.79)	(0.20)	(0.87)	(1.05)
Initial IVA level	-0.241***	-0.148***	-0.193***	-0.143***	-0.302***	-0.234***	-0.241***
	(0.0018)	(0.0038)	(0.0037)	(0.010)	(0.0028)	(0.0056)	(0.0049)
Ownership dummy							
COE	0.146***						
	(0.0044)						
Private with state capital	0.127***						
	(0.0052)						
Pure private	0.168***						
	(0.0039)						
Private with foreign capital	0.166***						
	(0.0054)						
Foreign	0.148***						
	(0.0041)						
Constant	-0.580***	-0.755***	-0.545***	-0.680***	-0.397***	-0.483***	0.498**
	(0.039)	(0.072)	(0.065)	(0.13)	(0.060)	(0.099)	(0.20)
Observations	640657	68159	79481	15920	350854	38635	87608
R^2	0.15	0.06	0.11	0.08	0.20	0.15	0.15
Selection bias correction	chi2(5) = 2523.29; Prob>chi2 =0.0000	chi2(5) = 929.88; Prob>chi2 =0.0000	chi2(5) = 398.58; Prob>chi2 =0.0000	chi2(5) = 1289.48; Prob>chi2 =0.0000	chi2(5) = 869.23; Prob>chi2 =0.0000	chi2(5) = 1373.27; Prob>chi2 =0.0000	chi2(5) = 1307.58; Prob>chi2 =0.0000

Note 1: The estimator adopted is the selection and endogeneity correction method by Wooldridge (1995). The procedure is to estimate a two-stage model, in which the first stage estimates a sample selection model of firm survival to obtain a yearly selection mechanism, and the second stage includes the estimated selection mechanism to correct for unobserved simultaneneity. The reported joint significance of yearly selection mechanism variables validates the adoption of the method.

Note 2: All estimations include a full set of regional, industrial and year dummy variables. Interaction of yearly dummies and regional dummies are also included to capture time-variant regional policy differences.

Note 3: Bootstrapped standard errors are reported in parentheses,*** p<0.01, ** p<0.05, * p<0.1.

Table 5: Access to bank loans, IVA growth and regional financial development

Dependent variable: IVA growth	(1) overall	(2) SOE	(3) COE	Private			(7)Foreign
				(4)Private with state capital	(5)Pure domestic private	(6)Private with foreign capital	
Finance variable							
BANK loans$_{(t-1)}$	0.00262***	0.00302	0.00339	-0.00226	0.00144	0.00586***	0.00559***
	(0.00062)	(0.0022)	(0.0022)	(0.0031)	(0.00099)	(0.0022)	(0.0019)
Ln(BANK)$_{(t-1)}$* PRIVY$_{1999}$	1.985***	0.998***	1.733***	1.004***	2.141***	1.813***	2.319***
	(0.049)	(0.23)	(0.27)	(0.31)	(0.081)	(0.17)	(0.27)
Equity finance$_{(t-1)}$	0.0650***	0.0469***	0.0250***	0.0635***	0.0721***	0.0626***	0.0812***
	(0.00079)	(0.0026)	(0.0019)	(0.0060)	(0.0012)	(0.0034)	(0.0027)
Control							
Initial size	-0.0316***	0.0496***	-0.132***	-0.0330	-0.0304***	-0.0461**	-0.0883***
	(0.0054)	(0.016)	(0.017)	(0.037)	(0.0088)	(0.021)	(0.013)
(Initial size)^2	0.628***	-0.220	0.968***	0.156	0.840***	0.740***	1.124***
	(0.059)	(0.14)	(0.17)	(0.31)	(0.099)	(0.20)	(0.17)
Age	-0.0407***	-0.0326	0.110***	-0.0180	-0.0103	-0.203***	-0.671***
	(0.0099)	(0.027)	(0.020)	(0.050)	(0.012)	(0.031)	(0.044)
Age^2	1.801***	1.186**	-0.414	1.911**	1.607***	6.044***	16.04***
	(0.14)	(0.49)	(0.37)	(0.91)	(0.21)	(0.67)	(0.84)
Initial IVA level	-0.242***	-0.148***	-0.193***	-0.144***	-0.303***	-0.236***	-0.242***
	(0.0021)	(0.0054)	(0.0039)	(0.0084)	(0.0023)	(0.0065)	(0.0048)
Ownership dummy							
COE	0.147***						
	(0.0037)						
Private with state capital	0.126***						
	(0.0057)						
Pure private	0.169***						
	(0.0034)						
Private with foreign capital	0.167***						
	(0.0038)						
Foreign	0.151***						
	(0.0043)						
Constant	-0.583***	-0.755***	-0.550***	-0.680***	-0.396***	-0.486***	0.479**
	(0.052)	(0.067)	(0.053)	(0.12)	(0.055)	(0.076)	(0.21)
Observations	640657	68159	79481	15920	350854	38635	87608
R^2	0.16	0.06	0.11	0.08	0.20	0.16	0.15
Selection bias correction	chi2(5) = 2809.11; Prob>chi2 =0.0000	chi2(5) = 1026.03; Prob>chi2 =0.0000	chi2(5) = 708.23; Prob>chi2 =0.0000	chi2(5) = 1387.58; Prob>chi2 =0.0000	chi2(5) = 1024.51; Prob>chi2 =0.0000	chi2(5) = 1409.21; Prob>chi2 =0.0000	chi2(5) = 1327.78; Prob>chi2 =0.0000

Note 1: The estimator adopted is the selection and endogeneity correction method by Wooldridge (1995). The procedure is to estimate a two-stage model, in which the first stage estimates a sample selection model of firm survival to obtain a yearly selection mechanism, and the second stage includes the estimated selection mechanism to correct for unobserved simultaneneity. The reported joint significance of yearly selection mechanism variables validates the adoption of the method.

Note 2: All estimations include a full set of regional, industrial and year dummy variables. Interaction of yearly dummies and regional dummies are also included to capture time-variant regional policy differences.

Note 3: Bootstrapped standard errors are reported in parentheses,*** p<0.01, ** p<0.05, * p<0.1.

Table 6: Access to bank loans, TFP growth and regional financial development among profit-making firms

Dependent variable: TFP growth	(1) overall	(2) SOE	(3) COE	Private			(7)Foreign
				(4)Private with state capital	(5)Pure domestic private	(6)Private with foreign capital	
Finance variable							
BANK loans$_{(t-1)}$	0.00449***	0.00427*	0.00211	0.00367	0.00373***	0.00802***	0.00926***
	(0.00071)	(0.0023)	(0.0027)	(0.0042)	(0.0010)	(0.0022)	(0.0017)
Ln(BANK)$_{(t-1)}$* PRIVY$_{1999}$	1.108***	0.601**	1.403***	0.578	1.103***	1.171***	1.054***
	(0.062)	(0.27)	(0.24)	(0.38)	(0.074)	(0.15)	(0.27)
Equity finance$_{(t-1)}$	0.0368***	0.0270***	0.0179***	0.0444***	0.0394***	0.0279***	0.0501***
	(0.0010)	(0.0035)	(0.0028)	(0.0068)	(0.0014)	(0.0031)	(0.0024)
Control							
Initial size	-0.0231***	0.0460**	-0.0837***	-0.00772	-0.0154	-0.00701	-0.0719***
	(0.0064)	(0.020)	(0.019)	(0.041)	(0.011)	(0.022)	(0.016)
(Initial size)^2	0.0663	-0.339*	0.385**	-0.123	-0.00116	-0.0598	0.487**
	(0.069)	(0.18)	(0.18)	(0.36)	(0.12)	(0.21)	(0.19)
Age	0.0796***	0.0850***	0.136***	0.0676	0.109***	-0.0163	-0.156***
	(0.011)	(0.031)	(0.026)	(0.048)	(0.014)	(0.040)	(0.058)
Age^2	-0.298*	-0.621	-0.683	0.452	-0.811***	2.570***	4.287***
	(0.18)	(0.56)	(0.52)	(0.92)	(0.24)	(0.82)	(1.56)
Initial TFP level	-0.129***	-0.112***	-0.157***	-0.118***	-0.140***	-0.140***	-0.125***
	(0.0021)	(0.0056)	(0.0045)	(0.0099)	(0.0029)	(0.0060)	(0.0069)
Ownership dummy							
COE	0.0772***						
	(0.0049)						
Private with state capital	0.0615***						
	(0.0077)						
Pure private	0.0980***						
	(0.0042)						
Private with foreign capital	0.0776***						
	(0.0047)						
Foreign	0.0657***						
	(0.0055)						
Constant	-0.0495	-0.318***	0.0186	-0.219	0.0693	-0.135	0.515**
	(0.053)	(0.064)	(0.071)	(0.16)	(0.074)	(0.094)	(0.22)
Observations	342657	30912	47618	9346	182016	23720	49045
R^2	0.13	0.06	0.11	0.09	0.16	0.15	0.13
Selection bias correction	chi2(5) = 4319.02; Prob>chi2 =0.0000	chi2(5) = 1244.06; Prob>chi2 =0.0000	chi2(5) =1703.28; Prob>chi2 =0.0000	chi2(5) = 873.09; Prob>chi2 =0.0000	chi2(5) = 2720.18; Prob>chi2 =0.0000	chi2(5) = 1332.17; Prob>chi2 =0.0000	chi2(5) = 764.31; Prob>chi2 =0.0000

Note 1: The estimator adopted is the selection and endogeneity correction method by Wooldridge (1995). The procedure is to estimate a two-stage model, in which the first stage estimates a sample selection model of firm survival to obtain a yearly selection mechanism, and the second stage includes the estimated selection mechanism to correct for unobserved simultaneneity. The reported joint significance of yearly selection mechanism variables validates the adoption of the method.

Note 2: All estimations include a full set of regional, industrial and year dummy variables. Interaction of yearly dummies and regional dummies are also included to capture time-variant regional policy differences.

Note 3: Bootstrapped standard errors are reported in parentheses,*** p<0.01, ** p<0.05, * p<0.1.

Table 7: Access to bank loans, IVA growth and regional financial development among profit-making firms

Dependent variable: IVA growth	(1) overall	(2) SOE	(3) COE	Private			(7)Foreign
				(4)Private with state capital	(5)Pure private	(6)Private with foreign capital	
Finance variable							
BANK loans$_{(t-1)}$	0.00420***	0.00363	0.00552**	0.00169	0.00334***	0.00669***	0.00781***
	(0.00065)	(0.0027)	(0.0023)	(0.0041)	(0.00098)	(0.0022)	(0.0023)
Ln(BANK)$_{(t-1)}$* PRIVY$_{1999}$	1.879***	0.806**	1.617***	0.852*	2.032***	1.785***	1.955***
	(0.064)	(0.32)	(0.21)	(0.44)	(0.083)	(0.16)	(0.26)
Equity finance$_{(t-1)}$	0.0639***	0.0466***	0.0245***	0.0565***	0.0709***	0.0574***	0.0726***
	(0.00084)	(0.0036)	(0.0028)	(0.0064)	(0.0013)	(0.0041)	(0.0025)
Control							
Initial size	-0.0256***	0.0795***	-0.122***	-0.0143	-0.0293***	-0.0247	-0.0664***
	(0.0059)	(0.021)	(0.018)	(0.042)	(0.0073)	(0.020)	(0.016)
(Initial size)^2	0.623***	-0.367*	0.911***	0.0291	0.891***	0.538***	0.874***
	(0.065)	(0.19)	(0.18)	(0.36)	(0.081)	(0.20)	(0.17)
Age	-0.0421***	0.0177	0.0834***	-0.00635	-0.0191*	-0.182***	-0.606***
	(0.0094)	(0.030)	(0.019)	(0.054)	(0.011)	(0.037)	(0.049)
Age^2	2.088***	0.414	0.388	1.919*	1.916***	5.866***	14.66***
	(0.15)	(0.53)	(0.38)	(0.98)	(0.21)	(0.78)	(1.10)
Initial IVA level	-0.241***	-0.152***	-0.192***	-0.138***	-0.297***	-0.218***	-0.212***
	(0.0015)	(0.0059)	(0.0050)	(0.011)	(0.0028)	(0.0070)	(0.0065)
Ownership dummy							
COE	0.127***						
	(0.0045)						
Private with state capital	0.112***						
	(0.0064)						
Pure domestic private	0.150***						
	(0.0042)						
Private with foreign capital	0.145***						
	(0.0052)						
Foreign	0.124***						
	(0.0048)						
Constant	-0.545***	-0.856***	-0.552***	-0.754***	-0.350***	-0.561***	0.355
	(0.047)	(0.084)	(0.063)	(0.15)	(0.058)	(0.089)	(0.23)
Observations	502321	38599	62636	11615	291850	31222	66399
R^2	0.16	0.07	0.12	0.10	0.21	0.15	0.15
Selection bias correction	chi2(5) = 2612.83; Prob>chi2 =0.0000	chi2(5) = 996.17; Prob>chi2 =0.0000	chi2(5) = 928.63; Prob>chi2 =0.0000	chi2(5) = 1239.27; Prob>chi2 =0.0000	chi2(5) = 954.17; Prob>chi2 =0.0000	chi2(5) = 1738.15; Prob>chi2 =0.0000	chi2(5) = 1184.28; Prob>chi2 =0.0000

Note 1: The estimator adopted is the selection and endogeneity correction method by Wooldridge (1995). The procedure is to estimate a two-stage model, in which the first stage estimates a sample selection model of firm survival to obtain a yearly selection mechanism, and the second stage includes the estimated selection mechanism to correct for unobserved simultaneneity. The reported joint significance of yearly selection mechanism variables validates the adoption of the method.

Note 2: All estimations include a full set of regional, industrial and year dummy variables. Interaction of yearly dummies and regional dummies are also included to capture time-variant regional policy differences.

Note 3: Bootstrapped standard errors are reported in parentheses,*** p<0.01, ** p<0.05, * p<0.1.