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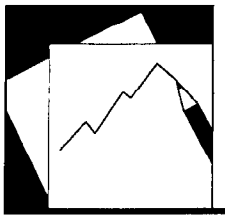

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Growth-Financial Intermediation Nexus in China

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Growth-Financial Intermediation Nexus in China

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Abstract

This paper studies the relationship between economic growth and financial development in China during the post-1978 reform period. Recent studies, based on cross-country data, have found a positive association between these two variables. We find that while a positive correlation between growth and financial intermediation exists in China, the association is more apparent than real. The nonstate sector, which contributed most to China's remarkable growth during this period, did not use the domestic financial system in any substantial way for financing. The same appears to be true for the faster-growing provinces. Compared to foreign investment, domestic private credit played a relatively small, although statistically significant, role in financing the nonstate sector and fast-growing provinces.

JEL Classification Numbers: N1; O5

Keywords: Growth; financial intermediation; provincial differences

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I. INTRODUCTION

In recent years, the empirical growth literature has refocused on the linkages between economic growth and the level of financial system development. The observation that such a link exists dates back to Schumpeter (1911), who argued that the services provided by financial intermediaries—mobilizing savings, evaluating projects, managing risk, monitoring managers, and facilitating transactions—are essential for technological innovation and economic development. While this notion was examined empirically to a limited extent in the 1970s, more sophisticated analysis of the link did not take place until the 1990s. These studies—which use cross-country data—have found a positive association between higher growth and more developed financial systems. The aim of this paper is to examine this link more closely for China.[2]

While China's growth performance since the onset of economic reforms in 1978 has been remarkable, this masks substantial differences in the growth rate and level of per capita incomes across different provinces. Indeed, empirical work on income convergence among China's provinces suggests that convergence weakened in the 1990s, with the coastal provinces tending to grow much faster than the interior provinces, and making a commensurately greater contribution to China's overall growth.[3] At the same time, the coastal provinces are the ones with the highest relative degree of nonstate sector involvement in the economy. However, almost two-thirds of domestic bank credit continues to go to the state sector, raising the question of how the nonstate sector is financing its rapid growth. More generally, after adjusting for other factors causing inter-provincial growth variation, do differing degrees of financial development help explain differences in growth across provinces?

While data limitations prevent a rigorous examination of the growth/financial intermediation nexus for China as a whole, it is possible to analyze the issue by looking at data on China's provinces, autonomous regions, and municipalities.[4] Accordingly, this paper seeks to answer the following questions:

- What are the main characteristics of China's system of financial intermediation at the national level, and how does this compare with other similar countries?

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[2] As discussed further below, data limitations have largely prevented China from inclusion in cross-country studies. The empirical analysis in this paper is based on a provincial data set.

[3] For example, see Aziz and Duenwald (2001).

[4] Throughout this paper, references to China are to the Mainland and the term "provinces" refers to the set of 27 provinces, autonomous regions, and municipalities listed in Table 2.

- Do differing degrees of financial system development across China's provinces help explain differences in growth performance? In this context, how has China's growth been financed?
- What policy implications flow from the empirical results, especially as they pertain to China's financial sector reform program?

The main findings of this paper are as follows:

- While the level of financial intermediation in China is relatively high, it is generally viewed as inefficient at converting financial resources into productive investment. China's large pool of savings—currently 38 percent of GDP—has been almost wholly intermediated through the domestic banking system, and, in large part, has been allocated to the state enterprise sector. Indeed, the nonstate sector appears to have financed itself mainly out of retained earnings or principal-owner savings, as well as foreign direct investment (FDI), rather than from bank credit or the capital markets.

- However, financial system development, as measured by bank loan-to-GDP ratios, in fast-growing provinces has been much lower than in provinces that grew less quickly than the average. Not surprisingly, provinces with higher concentrations of state-owned enterprises (SOEs) had higher loan-to-GDP ratios.

- Further analysis shows that while total bank credit is not significant in explaining inter-provincial growth differences, nonstate sector credit is. Panel regressions suggest that—after conditioning on a number of variables including initial per capita GDP, population growth, investment, FDI, concentration of SOEs, and fiscal revenues to expenditures—the level of financial development is not a statistically significant explanatory variable for observed differences in inter-provincial per capita GDP growth rates. However, once bank lending is adjusted for lending to SOEs so as to construct nonstate credit (not available in the Chinese statistics), variations in this variable were found to affect per capita income growth to a statistically significant—albeit small—degree.

The remainder of the paper is organized as follows: the next section provides a review of the theory linking the level of financial development and economic growth, and briefly reviews the empirical literature. Section C outlines China's system of financial intermediation, while Section D provides empirical evidence on the growth/financial development nexus in China using an extensive provincial data set. The final section draws out some policy implications.

II. The Growth/Financial Development Nexus: What Do We Know?

Financial intermediation can affect growth through three channels: (i) it can increase the marginal productivity of capital by collecting information to evaluate alternative investment projects and by risk sharing; (ii) it can raise the proportion of savings channeled to investment via financial development—by reducing the resources absorbed by financial intermediaries

(borrowing/lending spreads, commissions, etc.) and thus increasing the efficiency of financial intermediation; and (iii) it can raise the private saving rate.[5]

The positive correlation between growth and indicators of financial development was first documented by Goldsmith (1969), McKinnon (1973), and Shaw (1973). Since then, a flourishing body of empirical work has emerged.[6] These studies—which are typically based on regression analysis for large cross-sections of countries (both advanced and developing)—generally find that cross-country differences in financial development explain a significant portion of the cross-country differences in average growth rates.

In testing for the link between growth and financial development, studies generally regress countries' growth rates on an indicator of financial development and a set of control variables (the latter typically include initial income per capita, education, political stability, population growth, etc.). Following King and Levine (1993) and Levine (1997), the following indicators of financial development have typically been chosen: (i) liquid liabilities of the financial system-to-GDP (measuring the size of financial intermediaries); (ii) the ratio of bank credit to the sum of bank credit and central bank domestic assets; (iii) the ratio of private credit to domestic credit; and (iv) the ratio of private credit to GDP.

The main outstanding issues in the literature relate to: (i) the appropriate measurement of financial development, as the empirical results are sensitive to the measure of financial depth used; (ii) the direction of causality between financial development and growth (i.e., it could be that financial systems develop in tandem with or ahead of growth);[7] and (iii) whether a bank-based or a securities market-based financial system is superior in terms of finance's contribution to growth. With regard to the latter issue—which will not be explored any further in this paper—Levine (1999) and others have argued that the debate is probably misplaced: both sources of finance are important to growth, and financial development is best fostered through the establishment of a strong legal and regulatory system.

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[5] Note, however, that the impact of financial development on private savings is ambiguous theoretically. Efficient risk sharing could lower the savings rate, reducing growth. For example, see the discussion in Pagano (1993).

[6] What follows is a partial review of the macroeconomic literature. There have also been numerous studies investigating the growth/financial development link at the industry and at the firm level. Levine (1997) and Khan and Senhadji (2000) provide more comprehensive surveys.

[7] Econometrically, this is a problem of simultaneity bias, and has been tackled by using instrumental variables or related econometric techniques.

III. China's System of Financial Intermediation

China's system of financial intermediation is generally judged to be relatively underdeveloped and inefficient at converting financial resources into productive investment.[8] This view is based on a number of elements that characterize China's financial system:

- *The bank deposit base is very large.* China's high national saving rate—averaging about 40 percent of GDP during the past five years, one of the highest in the world—combined with a lack of alternative financial assets has created a large deposit base, and thus a deep source of funds for bank lending.
- *Financial intermediation in China is largely bank-based and dominated by four state commercial banks (SCBs)*, with securities markets (bond and equity) still relatively small (Table 1).[9] The SCBs together account for two-thirds of financial system assets. While a financial system dominated by state-owned financial institutions is not necessarily less efficient than one dominated by private firms, state involvement in China's financial system has been on a very large scale, with government budgetary grants having been replaced since the late 1970s by state bank credit as the main source of funds for SOEs.[10] Indeed, a large proportion of savings continues to be channeled to SOEs, with state bank claims on SOEs still amounting to two-thirds of GDP at end-2000.

China: State Bank Credit Allocation, 1993-2000
(In percent of GDP)

	1993	1994	1995	1996	1997	1998	1999	2000
Claims on nongovernment sector	97.5	89.5	88.3	94.0	102.9	112.2	121.8	124.6
of which:								
Claims on non-SOE sector	35.7	32.6	31.8	35.4	37.4	41.2	48.8	57.0
Claims on SOE sector	61.8	56.9	56.5	58.6	65.5	71.0	73.0	67.6

Sources: IFS; PBC; and staff estimates.

[8] For example, see Lardy (2000).

[9] Note that the average stock market capitalization for China shown in the table masks the fact that it has risen sharply in recent years—to a large extent reflecting higher prices—reaching 55 percent of GDP in mid-2001. However, two-thirds of market capitalization is nontradable, and equity issuance is dominated by state enterprises.

[10] Cull and Xu (2000) find that the shift of SOE financing from government transfers to bank credit increased the SOEs' productivity (at least in the 1980s).

Table 1. Indicators of Financial Development: Selected Countries and Country Groups
(In percent, averages over 1993-2000)

	China	India	Korea	Japan	United States	High-Income Countries	Middle-Income Countries	Low-Income Countries
Private sector credit/GDP	40.0	24.1	112.5	65.1	76.7	121.8	41.1	59.6
Deposit money bank domestic assets/total domestic assets	80.0	77.3	93.5	87.9	90.2	...	...	...
M2/GDP	121.7	47.5	113.3	48.0	59.1	...	39.3	73.5
Stock market capitalization/GDP	14.1	32.4	32.7	67.8	112.6	81.4	35.4	20.5
Memorandum items:								
Growth in real GDP per capita	8.9	4.8	3.5	0.8	2.5	1.7	1.0	5.2
FDI/GDP	4.8	0.5	0.6	0.1	1.4	1.1	1.8	3.1

Sources: Country data: WEO and IFS databases (average over 1993-2000), except market capitalization data, from World Bank "World Development Indicators (WDI)" (average over 1993-98). Country group data: World Bank, WDI (1993-98).

- *There is evidence that the resources intermediated through bank lending have been misallocated.* This is reflected in the excess capacity built up in the 1990s in the real estate and manufacturing sectors, contributing to over two years of deflation. It is also reflected in the weak performance of the banks themselves: burdened by portfolios dominated by directed credit, the profitability of the state banks has been weak; substantial NPLs remain in the banking system;[11] and capital adequacy needs considerable strengthening to meet international standards.

- *Despite its lack of access to domestic bank credit, China's nonstate sector has been the most dynamic part of the economy.* Thus, the International Finance Corporation (IFC; 2000) estimates that between 1990 and 1997, the new jobs created in the private sector accounted for 56 percent of new formal employment in urban areas. This rapid growth has occurred with relatively few resources from the financial sector: in the period 1991–97, the share of private investment in the national total was in the range of 15–27 percent, with little recourse to formal bank loans (less than 1 percent of working capital loans went to the private sector).[12] In addition, private firms' access to equity markets has been limited by the quota system (abolished in early 2001) and size requirements. The IFC (2000) reports that, of the 976 companies listed on the Shanghai and Shenzhen stock exchanges, only 11 are nonstate firms, while in 1998 and 1999 only four nonstate IPOs took place. Based on evidence from a sample survey, the IFC finds that private firms in China tend to rely primarily on internal sources of financing—including retained earnings and principal-owner financing—both for start-up capital and subsequent investments.

[11] Despite the transfer of a substantial portion (Y 1.4 trillion) in NPLs to the asset management companies (AMCs), the average NPL ratio is estimated at 25 percent. Market estimates are substantially higher.

[12] The figures are quoted from IFC (2000).

IV. Evidence from Provincial Data

In contrast to most other empirical analyses of this genre—which were carried out in a cross-country setting—this study uses provincial-level data. The main reasons for this are:

- Differences in the level of economic and financial development among the provinces contain information that can be exploited.
- Given China's large population and limited labor and capital mobility between provinces, the study is analogous to a cross-country study of medium-sized countries.
- Compared to cross-country studies, use of provincial data increases the likelihood of homogenous data compilation methodologies.
- The use of provincial-level data expands the sample size considerably.

While data on provincial-level national accounts is available for a relatively long period, information on financial variables is more limited. As a result, much of the analysis is conducted for the period 1988-97, for which consistent data covering 27 provinces—listed in Table 2—are available.[13] Apart from the short time span of the available data, there are other

Table 2. China: Summary National and Provincial Data (Averages Over 1988-97)
(In percent)

	Per Capita GDP Growth	Bank Loans/GDP	Banking Sector/GDP	SOE Contribution to Industrial Output	FDI/GDP	Operating Surplus/ GDP 1/
China	8.2	70.5	6.0	43.4	3.3	22.6
Fujian	14.0	53.5	5.8	32.0	9.5	21.4
Guangdong	13.4	72.1	7.3	29.6	10.6	20.0
Zhejiang	12.6	45.3	4.4	21.2	1.8	27.8
Jiangsu	12.3	50.7	4.9	26.7	4.2	27.0
Shandong	11.7	51.0	5.8	34.2	2.6	25.4
Hebei	10.9	61.9	6.3	40.1	1.1	27.4
Shanghai	10.2	99.8	9.5	50.3	6.9	34.4
Guangxi	10.1	60.7	4.6	55.4	2.5	17.0
Jiangxi	10.0	77.2	6.6	55.1	1.2	20.1
Anhui	9.7	59.2	4.2	42.8	1.0	17.7
Henan	9.4	61.7	4.8	43.9	0.8	15.2
Hubei	9.2	77.8	4.2	50.9	1.3	22.4
Beijing	9.0	108.2	10.3	56.0	5.2	30.6
Tianjin	8.8	113.0	8.4	40.8	7.1	33.2
Yunnan	8.5	61.8	5.5	70.4	0.4	19.2
Sichuan	8.4	58.3	5.3	51.4	1.7	19.5
Jilin	8.2	111.1	6.2	65.8	1.4	17.9
Hunan	8.2	57.5	4.4	50.6	1.2	15.7
Inner Mongolia	7.8	83.9	5.5	66.6	0.4	21.8
Gansu	7.7	89.3	5.4	71.7	0.5	21.2
Xinjiang	7.7	86.8	5.4	77.9	0.3	23.0
Shanxi	7.6	83.9	7.8	51.0	0.5	22.8
Shaanxi	7.5	91.2	7.6	63.0	1.7	16.0
Liaoning	7.5	82.0	6.4	50.4	2.9	30.1
Heilongjiang	7.1	84.1	5.6	72.6	1.1	22.8
Ningxia	6.9	107.6	8.9	73.0	0.3	22.3
Guizhou	6.2	72.6	4.5	71.0	0.5	13.8
Qinghai	5.2	115.9	7.0	82.1	0.1	17.1

Sources: National Bureau of Statistics: *The Gross Domestic Product of China, 1952-1995* ; *China Statistical Yearbook* , various issues.
1/ Value-added less depreciation, wages, and taxes.

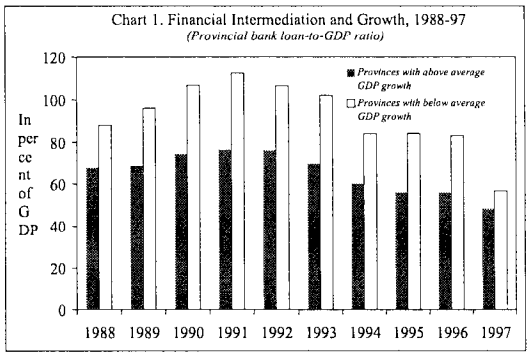
[13] The provincial level dataset used in this paper was first compiled by Zhao (1998) and later updated by Dayal-Gulati and Husain (2000) and Aziz and Duenwald (2001).

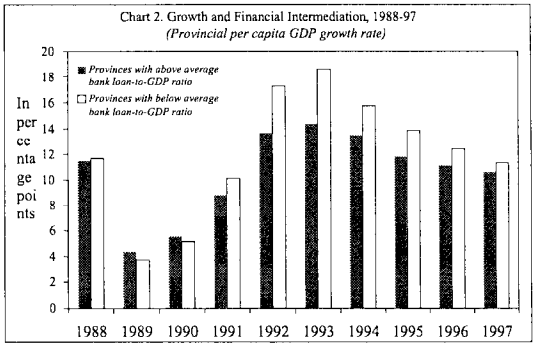
shortcomings in the available information, which are discussed below.

Overall, the results suggest that the level of financial development has not played a key role in contributing to growth within China. Rather, bank loans appear to have been channeled to provinces with heavy concentrations of SOEs. These provinces have, at the same time, also been the ones that have tended to grow relatively slowly, suggesting that the productivity of lending was relatively low. This picture appears to corroborate an oft-told story about China's transition from plan to market: while this is changing with ongoing SOE and banking reforms, the banking system has been used to keep inefficient state enterprises afloat so as not to produce excessive layoffs and raise the cost of transition to levels where social stability might be threatened. Nonstate enterprises, which generate much of the growth, had to rely mostly on internal saving and FDI.

A. Indicative Results

To get a sense of the role played by financial development in China's growth, provinces were grouped (using dummy variables) according to certain economic characteristics. Three groupings were made: into those with above average and below average growth, those with above and below average levels of financial intermediation (as measured by the bank loan-to-GDP ratio), and those with above average and below average levels of SOE concentration. For the first grouping, the level of financial intermediation in the high growth group was compared with that in the low growth group, while similar exercises were conducted for the other groupings. This exercise produces the following results:





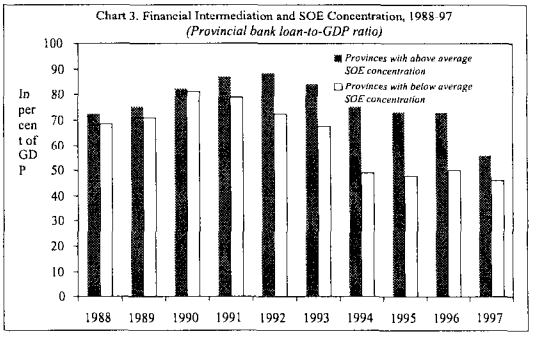
- Those provinces with above average GDP growth had bank loan-to-GDP ratios that were significantly lower—by up to 36 percent of GDP—than above average growth provinces.[14]

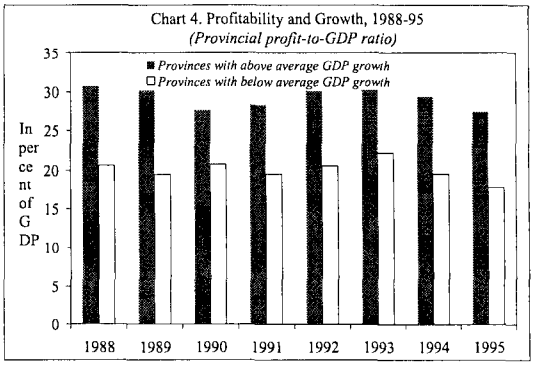
- Correspondingly, provinces with above average levels of financial intermediation experienced lower growth (by up to 4¼ percentage points) than provinces with below average levels of financial intermediation.

[14] Whether the large drop in the difference in 1997 is an anomaly is difficult to ascertain absent an extension of the data base beyond 1997.

- Provinces with above average concentrations of SOEs had higher loan-to-GDP ratios than those provinces with below average concentrations of SOEs.

- Firms in provinces with above average growth rates had relatively larger profit-to-GDP ratios, suggesting that they financed themselves out of retained earnings rather than bank loans (assuming profits are a good proxy for corporate savings). Moreover, as discussed in the next section, firms in fast growing provinces were also able to avail themselves of foreign savings via FDI.





B. Data Issues

More formal investigation of the growth/financial development link is complicated by the paucity of data on financial variables. In particular, private credit—an indicator of financial development used extensively in the literature—is not available. At the provincial level, only data on aggregate bank lending is available on a consistent basis. However, a significant portion of bank lending in China has gone to SOEs, such that using total bank lending as a proxy for nonstate sector credit is not appropriate. To circumvent this difficulty, a proxy for nonstate sector credit was used in the empirical analyses in this paper.

Panel Regression for Total Bank Loans, 1988-97
(with fixed effects)

	Coefficient	t-statistic
SOE-to-GDP ratio	0.39	7.07
Autocorrelation	0.76	14.36
Adjusted R Square	0.83	
Observations	280	

The proxy for credit to the nonstate sector is constructed using the share of credit to SOEs predicted by a province's share of SOE value added in GDP. Formally, a fixed-effects panel regression of the total bank lending-to-GDP ratio on the share of SOEs in industrial output is estimated, with the error term following a first-order autoregressive process to correct for serial correlation. Loans to the nonstate sector is then proxied by discounting from total bank lending the proportion explained by the share of SOE in industrial output ratio in the estimated equation.

C. Main Results

The methodology adopted in this section closely follows the procedure established in previous studies. A series of fixed-effects panel regressions are estimated, with various combinations of control variables, to draw inferences about the role played by bank intermediation in growth, resource mobilization, and productivity. The general form of the panel regression equations estimated is the following:

$$y_{it} = \alpha_i + \beta X_{it} + \gamma F_{it} + \delta K_{it} + \varepsilon_t$$

where y is the dependent variable (growth, investment, or productivity); X is the set of standard neoclassical growth factors (lagged per capita real GDP, population growth, and investment); F is the financial intermediation variable of interest (total bank loans, bank loans to SOEs, bank loans to the nonstate sector); and K is a set of other control variables (such as fiscal surplus, share of SOEs in industrial output, dummy for coastal region, FDI); i indicates a province, while t refers to the time period. The specification follows the practice elsewhere in the literature of specifying a standard growth regression supplemented with variables measuring the level of financial development. The prior is that the coefficient on the financial development variable is positive and statistically significant.

The results that emerge from this exercise are:

- *The expansion of bank credit during 1988-97 did not exert a statistically significant influence on growth.* This can be seen from equation (5) in Table 3, where, although total bank loans-to-GDP has a marginally positive sign, it is not significant. The result formally confirms the preliminary analysis (Chart 1), which indicated that bank credit in the faster growing provinces was lower than that in the slower growing provinces. In that discussion, it was also pointed out that the likely reason behind this phenomenon was the large proportion of bank credit provided to the SOE sector, which was relatively less productive than the nonstate sector. This hypothesis is also confirmed.
- *Nonstate sector bank credit, however, exerts a positive and statistically significant influence on growth.* This result is borne out by equation (6), where the elasticity of bank loans to the nonstate sector—although low, possibly due to the fact that it is a constructed variable—is significant at the 1 percent level. The low elasticity, however, could also reflect the limited importance of this source of financing for China's fast growing nonstate sector enterprises.[15]

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[15] Since the nonstate credit variable was constructed by regressing total bank loans on the share of SOEs in industrial output, the latter variable is dropped from this regression to avoid multicollinearity issues.

- *Apart from the financial sector results, the exercise also shows that FDI has played a significant role in China's growth process.* Equations 4-6 display a remarkable consistency in the growth elasticity of FDI; regardless of the type of control variable used, a 1 percentage point increase in FDI-to-GDP ratio raises the per capita growth rate by about ½ percentage point. This again corroborates the widely held view that FDI was a critical source of financing China's growth. [16]

Table 3. China: Financial Intermediation and Growth, 1988-97

Dependent Variable: Growth Rate of Real Per Capita GDP

	Equation					
Independent Variable	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Lagged per capita income	1.29	1.57	-3.73 **	-5.27 **	-5.48 **	-5.31 **
Population growth	-1.46 **	-1.45 **	-1.44 **	-1.42 **	-1.41 **	-1.42 **
Total investment-to-GDP	0.28 **	0.25 **	0.25 **			
Domestic investment-to-GDP				0.21 **	0.21 **	0.21 **
Foreign direct investment-to-GDP				0.56 **	0.57 **	0.56 **
Government revenue-to-expenditure			0.02 **	0.03 *	0.02 *	0.03 *
Share of SOEs in industrial output			-0.19 **	-0.18 **	-0.2 **	
Coastal dummy		-1.56				
Total bank loan-to-GDP					0.03	
Bank loans to nonstate sector-to-GDP						0.002 **
Adjusted R^2	0.43	0.41	0.49	0.50	0.50	0.51
Hausman test (P-value) H0: Random vs. Fixed Effects	0.00	0.00	0.00	0.00	0.05	0.01
Observations	280	277	277	277	277	277

Sources: *Chinese Year Book* various issues; and staff estimates from fixed-effects panel regressions.
Notes: * implies statistical significance at the 5 percent level; ** implies statistical significance at the 1 percent level.

Several previous studies have also pointed out that financial intermediation helps growth in two ways—first, by facilitating resource mobilization, and second, by helping to improve resource allocation, thereby enhancing total factor productivity (mostly of capital). To test this hypothesis, these studies measure the impact of financial intermediation separately on growth, investment, and productivity. In the case of China's provinces, measures of productivity are not readily available. Following the literature, total factor productivity growth is proxied as actual growth less α of capital growth (net investment), under the assumption that about one-third of national income accrues to capital.

[16] The results from the exercise also confirm earlier findings that per capita incomes of China's provinces are converging not in the absolute sense but only in the conditional sense. For details, see Dayal-Gulati and Husain (2000), who studied convergence in China's provinces using average cross-provincial regressions, and Aziz and Duenwald (2001) who used nonparametric estimators.

The level of financial development did not have a statistically significant impact on domestic investment (Table 4). In many developing countries, the deepening of financial development generally raises the rate of investment by lowering the cost of matching savings of households with the investment needs of the corporate sector. This does not appear to have occurred in China. Neither total bank credit nor nonstate bank credit exerted a significant influence on the rate of domestic investment. On the other hand, nonstate bank credit appears

Table 4. China: Financial Intermediation and Investment, 1988-97

Dependent Variable: Domestic investment-to-GDP ratio

	Equation				
Independent Variable	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*
Lagged growth	0.26 **	0.27 **	0.31 **	0.24 **	0.25 **
Bank loans to nonstate sector-to-GDP	0.001	0.001	0.001	0.001	0.02
Government revenue-to-expenditure		-0.01	-0.02	-0.01	-0.01
FDI-to-GDP			-0.39 **	-0.3 **	-0.27 *
Lagged domestic investment-to-GDP ratio				0.35 **	0.34 **
Share of SOEs in industrial output					1.95
Adjusted R^2	0.79	0.79	0.82	0.83	0.83
Hausman test (P-value) H0: Random vs. Fixed Effects	0.05	0.23	0.27	0.00	0.00
Observations	252	249	249	249	249

Sources: *Chinese Year Book* various issues; and staff estimates from fixed-effects panel regressions.
Notes: * implies statistical significance at the 5 percent level; ** implies statistical significance at the 1 percent level.

to have exerted a positive and significant influence on productivity (Table 5). Thus, the deepening of financial intermediation in China seems to have aided growth by allocating savings more efficiently rather than simply making more savings available for investment purposes.

V. Concluding Remarks

Contrary to the findings of most previous studies for large cross sections of countries, the results of this paper suggest that financial development—as proxied by total bank lending—has not significantly boosted growth among China's provinces, probably reflecting the large proportion of lending channeled to the SOE sector. Nonstate credit, on the other hand, has had a statistically significant, though small, effect on growth.

This study also finds that nonbank sources of finance have played a significant role in financing China's growth. In particular, FDI was shown to have a large impact on provinces' per capita income, with the coefficient displaying remarkable robustness in the face of changing model specifications.

Anecdotal and survey evidence suggests that enterprise internal savings have played an important role in financing growth in China. However, this conclusion could not be corroborated empirically, reflecting the lack of consistent data on corporate savings in China's provinces.

Table 5. China: Financial Intermediation and Productivity, 1988-97

Dependent Variable: Total Factor Productivity

	Equation				
	(1)	*(2)*	*(3)*	*(4)*	*(5)*
Independent Variable					
Lagged per capita income	1.71	-3.73 **	-5.28 **	-5.49 **	-5.32 **
Population growth	-1.45 **	-1.43 **	-1.42 **	-1.42 **	-1.42 **
Total investment-to-GDP	-0.05	-0.05			
Domestic investment-to-GDP			-0.09 *	-0.09 *	-0.09 *
FDI-to-GDP			0.26 **	0.27 **	0.26 **
Government revenue-to-expenditure		0.02 *	0.03 *	0.02 *	0.03 *
Share of SOEs in industrial output		-0.19 **	-0.18 **	-0.2 **	
Total bank loan-to-GDP				0.03	
Bank loans to nonstate sector-to-GDP					0.002 **
Adjusted R^2	0.5	0.55	0.56	0.56	0.55
Hausman test (P-value) H0: Random vs. Fixed Effects	0.00	0.00	0.01	0.01	0.01
Observations	280	277	277	277	277

Sources: Chinese Year Book various issues; and staff estimates from fixed-effects panel regressions.
Notes: * implies statistical significance at the 5 percent level; ** implies statistical significance at the 1 percent level.

The main implication for China's financial sector reform agenda is the importance of channeling a higher proportion of savings to the nonstate sector. This will allow China's financial sector to play the role of efficient intermediary between savers and borrowers, and thus strengthen the positive link between financial development and growth. A number of related conclusions can also be drawn:

- *It will be crucial to raise the efficiency of bank lending through the adoption of market-based lending principles*. The commercialization of banking, in turn, will require the establishment of an appropriate legal framework to protect creditor rights, as well the gradual liberalization of interest rates.
- *The nonstate sector's access to equity and debt financing should be enhanced.* Again, strengthening the legal framework (bankruptcy and company laws, protection of shareholder rights) as well as the application of internationally accepted accounting rules and governance codes will be important in providing firms with the incentives to finance themselves through the securities markets and investors to become willing participants in this process. Such enhancements to the investment environment would also ensure a continued strong inflow of FDI.

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