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Impact of liberalization of financial resources in China's economic growth: evidence from provinces

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Abstract

By using the sources of investment and based on provincial data, this paper examines the efficiency performance of the four sources of total investment in fixed assets in China for the period 1985–1998: state budget appropriation, national bank loans, self-raised funds, and foreign investment. The result of the panel data study shows that the growth of provincial output is positively related to the growth of national bank loans and self-raised funds. State appropriation is still a significant source of investment in the interior provinces, though this suggests a lack of alternative of nonstate sources. The paper concludes that nonstate sources of funding are generally more efficient in promoting output growth.

JEL classification: C22; O16; O47; P30

Keywords: Financial liberalization, China economic growth, Production function

1. Introduction

The economic growth of China since the early 1980s is remarkable. Real GDP per capita grew by 8% and 9.5% annual growth in the 1978–1995 and 1989–1998 periods, respectively. Whereas the major economic reforms in the 1980s concentrated on the introduction of market mechanisms, key reforms since 1993 focused on attainment of economic efficiency

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and sustainable growth (Li, 2001). Scholars believe that the four key features of privatization, pragmatization, marketization, and liberalization characterized China's economic reform (Perkins, 1988, 1994; Bettelheim, 1988; Cheng, 1997). The World Bank (1997) suggested that the four factors influencing economic growth were a high savings rate, a reduction in the agriculture workforce, pragmatic reforms, and receptive economic conditions.

This paper examines the performance of financial resources in the process of economic liberalization. There are four sources of investments in fixed assets. State budget appropriation (SA) officially refers to the appropriation in the budget of the central and local governments earmarked for capital construction and innovation projects and the transfer funds to banks as loan issues for capital construction project. National bank domestic loans (DL) are funds borrowed by enterprises and institutions from domestic bank and nonbank financial institutions and include various types of loans issues by banks. Utilized foreign investment (FI) refers to foreign funds in fixed assets, foreign funds borrowed and managed by government and by individual units and foreign funds in joint ventures. Self-raised funds and others (SRF) are grouped under one category. SRF are funds received by construction enterprises from institutions and local governments, funds raised by the various types of enterprises through such nonstate channels as bonds and stocks, including venture capital and retained profits. Although there is a lack of hard evidence, it has been argued that in practice much of SRF come from both central and local governments, but they work through nonstate channels.

Before 1978, the entire Chinese economy was centrally planned and production was conducted by state-owned enterprises, whereas investment funding came solely from the Ministry of Finance via various fiscal items or through the various state banks that acted as "accounting agents" in all monetary transactions (Pohl, 1995). The foreign sector was insignificant, trade was minimal and FI was absent. Capital markets did not exist in the prereform years. A general feature of a state-planning economy is its large and inefficient state sector. Economic liberalization and decentralization permits the emergence of a market economy and nonstate ownership. State-funded investment gradually declined, while investment from nonstate-owned sources, typically FI and SRF, increased. An empirical hypothesis is the improved efficiency of nonstate investment. Due to the huge geographical divergence between coastal and interior regions, there is a lack of investment alternatives in the interior regions and that state funding will still form the most important source of investment. One empirical dichotomy is that state-funded investments are still significant in the interior provinces, whereas nonstate sources are more significant in the coastal provinces.

Section 2 discusses the experience of financial liberalization and the performance of the four sources of fixed asset investment at both the national and provincial levels. Section 3 outlines the hypothesis and regression methodology. Section 4 reports the results and discusses the implications, and the last section concludes the paper.

2. Liberalization of financial resources

Keynesian economics argues two relationships in the process of investment. A low interest rate encourages a higher level of investment. And a higher level of investment in turn produces a higher level of output. The financial liberalization approach advocates that the

second relationship may not work when government supplies the financial investment either freely or below the market price. A breakdown in the second relationship results in such undesirable economic outcomes as a high rate of inflation and an overheated economy. Because there is opportunity cost attached to financial capital, it must be allocated to investment with the highest return in order to guarantee a high level of output. State-controlled direct investment and fiscal subsidies to enterprises and households are common forms of financial intervention. Poor financial performance can be seen as an overemphasis on the quantity of financial sources, and an underemphasis on the quality aspect. The financial liberalization approach emphasized the efficiency of financial sources. A financially repressed economy usually entails artificially low deposit and loan rates that give rise to excess demand for loans and to nonprice credit rationing (McKinnon, 1973, Chap. 7; Shaw, 1973, Chap. 4). A low interest rate gives a low opportunity cost of financial resources that may not "screen out" unproductive investment projects (Li, 1992, 1994, 1997). Output remains low despite the availability of financial resources.

A statistical review of the four sources of financial funding suggests a pattern of financial liberalization in China since the early 1980s. Typically, the role of SA has declined substantially in proportions, but its actual amount has maintained steady, especially in the interior provinces. A considerable amount of SA had been emerged in the form of DL. Though SA needs not be repaid, DL are not entirely free, although loan defaults increased bank debts. The emergence of the two stock markets in Shanghai and Shenzhen and bond issues by regional or large enterprises facilitated the nonstate source of funding. These channels become increasingly important, both in proportions and in the amount of funds acquired. The establishment of Special Economic Zones along coastal regions attracted FI, which is small at the beginning but their percentage shares have expanded drastically.

SA in the form of budgetary allocation has been the dominant source of funding in the prereformed years. In a planned economy, the central authority controlled the economy through the operation of state-owned enterprises. State investment became a planning instrument, and state-owned enterprises had to fulfill the various production plans, although their productivity has been considered to be low and continued SA would further distort economic resources. Changes in SA depended on fiscal reform, which began with profit tax substitution for profit remittance in 1980. The "soft budget" problem reflected the weakness in budgetary control as budgetary deficit coexisted with "extrabudgetary" surplus in some years (Qian and Roland, 1996). Furthermore, the fiscal revenue to GNP ratio fell from 31% in 1978 to 17.8% in 1987, and various tax reform measures were complicated and subjected to abuse, resulting in a decrease in tax rate (Wu, 1989; Donnithorne, 1986; Blejer and Szapary, 1990). Despite the prolonged nature of the fiscal deficit, it amounts only to a small percentage of national income (1.18% of GNP in 1998). Fiscal revenue has experienced a steady increase as the authorities are keeping a close eye on both enterprises and households in their tax submission. Thus, although China's budget has yet to be hardened, state investment has shrunk considerably so as to avoid the "crowding out" of nonstate investment.

Beginning from 1979, the Chinese authority began to substitute DL for SA. Part of the decrease in SA was offset not only by the increase in DL, but was also supported by the emergence of new types of ownership in production. In 1984, the nature of centrally planned

financial resources allocation was revised. Local governments and departments may decide their own resource allocation via DL and SRF. A process of revitalization in banking institutions took place in the 1980s (Li, 1994; Yi, 1994; Dipchand et al., 1994). In the case of monetary policy, a "stop-go" strategy has been used (Tang & Li, 1997), but interest rates have been adjusted in various occasions since the 1993 Austerity Plan (Qian, 1994). Based on the 1995 Central Bank law, a three-tier banking structure (policy banks, state-owned commercial banks, and commercial banks) was established and turned the People's Bank of China into an independent authority to implement monetary policy free from regional intervention. In view of China's accession to the World Trade Organization and the subsequent liberalization of the financial sector, the establishment of four additional private banks had been considered. National banks are the largest banking institutions, but their nonperforming loans and bad debts have been regarded as the major obstacle in their efficient performance (EAAU, 1999). Asset management companies have been established by the Ministry of Finance to buy the nonperforming loans from state banks so as to improve their balance sheets. Unlike budgetary allocation, bank loans helps to promote productivity, as principals have to be repaid. Efficiency in banking operations has been promoted, and banks are encouraged to reduce debts.

Privatization and marketization in the process of economic reform have promoted the growth of SRF. Since reform, enterprise ownership has grown in the nonstate sector. In 1980, the percentage share of production units classified under state-owned units, collective-owned units, and individuals units were 81.9%, 5%, and 13.1%, respectively. By 1990, the percentage shares become 65.6%, 11.9%, and 22.5%, respectively. New classifications have been introduced. In 1994, e.g., the percentage shares were 56.9 (state-owned units), 16.7 (collective units), 16.1 (individual units, joint ownership, and share-holding units), and 10.4% (foreign funds units and overseas Chinese-funded units). Even though a considerably amount of SRF originated from state sources (either central or local government supports), they are managed by nonstate-owned enterprises and resources would be used more efficiently in the liberalization process.

State-owned enterprises reform had passed through various stages (Cheng 1997, 2000). In the first stage (1978–1980), a system of entrepreneur and profit retaining was implemented. It started with six state-owned enterprises in Sichuan. By June 1980, 6600 enterprises, accounting for 60% of total national output, engaged in the profit retaining system. In the second stage (1981–1982), a "profit-loss" contract system was put into practice. Under this system, the enterprise can negotiate with the central government or upper level government to decide on the proportion of the profit to be retained by the enterprise. By early 1982, over 80% of state-owned enterprises were under the "profit-loss" contract system. The different types of the contract system became the major management style for state-owned enterprises, thus allowing entrepreneurs greater power in financial resource allocation. The 15th Party Congress meeting in October 1997 introduced different levels of reform in state-owned enterprises. One was the formation of joint stock or share-holding companies (*gufenhua*), the second was the "protect the large and release the small" (*zhuada fangxiao*) strategy. Large "elite" state-owned enterprises will be turned into "flagship" conglomerates and multinationals (*jituangongsi*), whereas smaller state-owned enterprises were asked to "find their own solution." The government will release 53,000 smaller state-owned enterprises. Financing of

the state-owned enterprises reform would be split into three ways (write-off, redefinition, and stock issues). One consequence is that the growing number of private enterprises that led to a dramatic increase in SRF.

The Shanghai and Shenzhen stock exchanges were established in December 1990 and July 1991, respectively. Two types of shares have been traded. The A-shares are ordinary shares denominated and traded in Renminbi by domestic legal entities, enterprises and individuals. The B-shares are traded in foreign currencies by foreign investors. Chinese enterprises can issue H-shares in the Hong Kong Stock Exchange and N-shares in the New York Stock Exchanges. With these additional financial markets, SRF doubled its value between 1992 and 1993 from Rmb 5049.95 (100 million) to Rmb 8562.36 (100 million). The two stock and bond markets in Shanghai and Shenzhen are the major capital markets through which enterprises raise their funds. In 1998, market capitalization of the Shanghai and Shenzhen stock markets amounted to Rmb 2952 (100 million) and Rmb 888 (100 million), respectively. The number of listed stocks in 1998 was 438 and 413, respectively, in the Shanghai and Shenzhen stock markets. By December 1997, 19 state enterprises were listed abroad, and 15 were issued B-shares for foreign investors in Shenzhen and Shanghai. Nonstate enterprises and SRF will become the dominant form of funding.

China's open-door policy permitted both trade expansion in the product market and inflow of FI in the capital market. Utilized foreign direct investment has increased drastically, comprising 3.3% of China's GNP in 1998. Special Economic Zones and various open cities along the coastal provinces were established to attract foreign direct investment (Nyaw, 1997; Kueh, 1992; Lardy, 1992, 1994). Because inflow of FI is the result of a competitive process of fund allocation, it will be used efficiently and productively. There is, however, considerable difference in the use of foreign direct investment. It has been argued that a considerable amount of investment from Hong Kong was actually mainland capital. Others believe that Hong Kong and Taiwanese investment in mainland China differ from foreign direct investment from overseas countries. Furthermore, even though most foreign direct investment concentrated along the coastal regions, their nature may differ between southern and northeastern coastal regions. For example, the former may concentrate in light manufactured goods only. Overseas Chinese funds have contributed to FI as well. In the early 1980s, foreign direct investment engaged in such services as hotel and entertainment industries. In manufacturing, the low production cost in labor and land initiated the "pull" effect, while the rising cost in Hong Kong and neighboring economies "pushed" investment into China (Chen and Li, 1997; Pomfret, 1991). Since the second half of the 1990s, five economic belts in the western provinces were opened. The idea was to open up the more remote interior regions where infrastructure investment is badly needed. High-technology industries are given higher priority. An estimate of US $600 billion would be needed for the development in the backward interior regions, and FI is expected to be the major source of funding. With China's accession to the World Trade Organization, liberalization in such areas as telecommunication, finance and insurance would further invite FI (Dees, 1998).

The flow of FI funds gave rise to the foreign-exchange market. One of the reforms in 1979 was the "foreign exchange retain system." Under this system, the enterprises could retain some foreign exchanges. In October 1980, an initial form of foreign-exchange market was established. Between 1981 and 1984, the People's Bank of China provided foreign-exchange

Table 1
Total investment in fixed assets (*TIFA*) by national aggregates

Year	GDP (1) (Rmb 100 million)	*TIFA*		State appropriation as % of		Domestic loans as % of		Self-raised funds and others as % of		Foreign investment as % of	
		(2) (Rmb 100 million)	as % of (1)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
1981	4901.4	961.0	19.6	5.5	28.1	2.5	12.7	10.9	55.5	0.7	3.8
1982	5489.2	1230.4	22.4	5.1	22.7	3.2	14.3	13.0	58.1	1.1	4.9
1983	6076.3	1430.1	23.5	5.6	23.8	2.9	12.3	14.0	59.3	1.1	4.7
1984	7164.4	1832.9	25.6	5.9	23.0	3.6	14.1	15.1	59.1	1.0	3.9
1985	8792.1	2543.2	28.9	4.6	16.0	5.8	20.1	17.4	60.3	1.0	3.6
1986	10132.8	3120.6	30.8	4.5	14.6	6.5	21.1	18.4	59.9	1.4	4.4
1987	11784.0	3791.7	32.2	4.2	13.1	7.4	23.0	19.0	59.1	1.5	4.8
1988	14704.0	4653.8	31.6	2.9	9.3	6.7	21.0	20.2	63.8	1.9	5.9
1989	16466.0	4410.4	26.8	2.2	8.3	4.6	17.3	18.2	67.8	1.8	6.6
1990	18319.5	4517.5	24.7	2.1	8.7	4.8	19.6	16.1	65.4	1.6	6.3
1991	21280.4	5594.5	26.3	1.8	6.8	6.2	23.5	16.8	64.0	1.5	5.7
1992	25863.6	8080.1	31.2	1.3	4.3	8.6	27.4	19.5	62.5	1.8	6.0
1993	34500.6	13072.3	37.9	1.4	3.7	8.9	23.5	24.8	65.5	2.8	7.3
1994	46690.7	17827.1	38.2	1.1	3.0	8.6	22.4	24.7	64.7	3.8	9.9
1995	58510.5	20542.9	35.1	1.1	3.0	7.2	20.5	22.9	65.3	3.9	11.2
1996	68330.4	23358.6	34.2	0.9	2.7	6.7	19.6	22.6	66.0	4.0	11.8
1997	74894.3	25259.7	33.7	0.9	2.8	6.4	18.9	22.8	67.7	3.6	10.6
1998	79853.3	28716.9	36.0	1.5	4.2	0.9	19.3	24.2	67.4	3.3	9.1

Source: Statistical Yearbook of China 1999. All data are in nominal terms.

services in 12 cities. The Shanghai Foreign Exchange Transaction Center was created in 1988 and the Foreign Exchange Trade Spot was formed in 1994. The formation of these foreign-exchange markets facilitated both the international trade and FI. International organizations, such as the World Bank, have supported China's economic reform and development. There are three dimensions in the World Bank's program in China: formal economic sector works that have comprehensive coverage, well-prepared investment projects, and lending programs with well-defined objectives (Jun & Katada, 1997).

The levels and the shares of the four sources of finance at the national level are shown in Table 1. In aggregate nominal terms, total investment in fixed assets by source has increased drastically, with an average annual nominal growth rate of 23.1% between 1981 and 1998, while the period that experienced the highest average nominal annual growth rate was 1991–1995 with 36.3%. Total investment in fixed assets, as a percentage of GDP, almost doubled between 1981 and 1994. Despite the nominal increases, the four sources performed differently in the percentage shares of total investment in fixed assets. State appropriation (SA) has declined drastically from 28.1% in 1981 to only 4.2% in 1998, with an average percentage share of 11.0% in total investment in fixed assets (TIFA). The percentage share of SA in GDP dropped to less than 1% in 1997. Part of the drop in SA has been captured by DL that experienced a mild increase from 12.7% in 1981 to 19.3% in 1998, with an average share of 19.5% in TIFA. As a percentage of GDP, DL has increased from 2.5% in 1981 to

a peak of 8.9% in 1993. SRF showed the largest increase, and its percentage shares reached 24.2% and 67.4% in GDP and TIFA, respectively, in 1998. Its average share in TIFA is 62.9% between 1981 and 1998. FI experienced the higher average growth rate of 31.9% in the 1981–1998 period, but its absolute value is still low and has the smallest average percentage shares of 3.3% and 9.1% in GDP and TIFA, respectively, in 1998. The picture at the national level is that SA have declined in importance, and SRF are becoming the dominant source of resources while DL in part have replaced the size of SA. FI has caught up fast, as its percentage share has exceeded that of SA since the 1990s.

The late Deng Xiaoping's motto of "letting some to get rich first" has meant that economic development concentrated in the coastal regions led to differences in income and wealth between the coastal and interior regions. Typically, the coastal regions have gained a larger share in both foreign direct investment and trade. Various aspects of economic reforms in the 1990s, e.g., the banking reform and state-owned enterprises reform, have a greater impact on the coastal than the interior provinces. We thus believe there is discrepancy among different regions in China, although the central government since the mid-1990s has emphasized the importance of developing the interior regions. At one extreme, SA remains as a significant source of investment fund in the interior regions because they are unattractive to FI and there are many large state-owned enterprises. At the other extreme, because much of FI has concentrated on the coastal regions, FI should have influenced the income and output of the coastal regions far more than interior regions. In the case of DL, it can perhaps be argued that because economic development has been more rapid in the coastal than the interior regions, DL would have produced a greater impact on the former than the latter.

Table 2 shows the total investment in fixed assets and the breakdown of the four sources of fixed asset investment for 11 coastal provinces, and Table 3 shows those for 19 interior provinces. Total investment in fixed assets has increased drastically in coastal provinces, and their percentage share in GDP has mostly increased. In the percentage share performance of the four sources for the coastal provinces as shown in Table 2, the average percentage share of SA has declined in all coastal provinces, while FI showed an opposite trend. The percentage share of *DL* has remained steady. Most coastal provinces experienced an increasing percentage share in SRF.

The results in Table 3 show a similar trend of the four sources of fixed asset investment in the interior provinces. Firstly, their GDP and TIFA are lower than the corresponding figures in the coastal provinces, though they also experienced a rising trend. The average percentage shares of SA have declined in all interior provinces, and FI has increased its average percentage share with the exception of Heilongjiang.

Table 4 shows the averages of the data in Tables 2 and 3 over all provinces, coastal provinces, and interior provinces. Both average numbers of GDP and TIFA in coastal provinces are larger than those in the interior provinces. The gaps of these averages between coastal and interior provinces have become wider in recent years. For 1995 and 1998, both averages of GDP and TIFA in coastal provinces are at least twice larger than those in interior provinces. Although the percentage shares of TIFA to GDP in coastal provinces are close to the percentages shares in interior provinces, the percentage shares

Table 2
Total investment in fixed assets (*TIFA*) by coastal provinces

Year	GDP (1) (Rmb 100 million)	*TIFA*		State appropriation as % of		Domestic loans as % of		Self-raised funds and others as % of		Foreign investment as % of	
		(2) (Rmb 100 million)	as % of (1)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Beijing											
1985	257.1	77.8	30.3	11.8	39.1	4.5	14.8	12.0	39.6	2.0	6.6
1990	500.8	136.2	27.2	7.1	26.3	4.6	16.7	12.5	45.8	3.0	11.2
1998	2011.3	669.4	33.3	4.7	14.0	5.4	16.2	21.2	57.2	2.0	6.2
Tianjin											
1985	175.7	58.5	33.3	6.8	20.3	8.3	25.0	16.7	50.1	1.5	4.6
1991	342.8	111.0	32.4	1.5	4.7	11.7	36.2	13.1	40.4	6.1	18.7
1998	1336.4	455.1	34.1	1.1	3.4	7.9	23.1	19.1	55.9	6.0	17.7
Liaoning											
1985	518.6	142.2	27.4	4.0	14.7	5.3	19.1	17.8	64.8	0.2	0.8
1990	1061.9	262.9	24.8	1.6	6.6	5.1	20.7	16.0	64.5	2.0	8.2
1998	3881.7	1052.6	27.1	0.9	3.5	4.9	18.1	18.8	69.5	2.4	9.0
Jiangsu											
1985	651.8	191.9	29.4	2.6	9.0	5.6	19.2	20.5	70.0	0.6	2.1
1990	1416.5	356.3	25.2	1.1	6.7	3.2	12.8	19.8	78.6	1.1	4.5
1998	7180.0	2535.5	35.2	0.7	2.0	4.6	13.1	24.2	68.6	5.7	16.3
Zhejiang											
1985	427.5	102.2	23.9	1.5	6.2	4.6	19.1	17.8	74.5	0.1	0.3
1990	898.0	187.0	20.8	0.6	2.8	3.0	14.5	16.8	80.5	0.5	2.3
1998	4987.5	1847.9	37.1	0.7	1.8	6.8	18.3	27.2	73.5	2.4	6.4
Shandong											
1985	680.5	100.4	14.8	2.3	15.7	2.7	18.4	8.2	55.8	1.5	10.0
1990	1151.2	185.4	12.3	1.1	8.6	2.6	21.1	7.4	60.3	1.2	10.1
1998	7162.2	1192.5	16.7	0.5	3.0	3.6	21.5	11.0	65.9	1.6	9.6
Hainan											
1985	43.3	15.3	35.4	5.8	16.3	7.8	22.1	19.7	56.2	1.9	5.5
1990	102.5	35.6	34.7	3.2	9.3	6.1	17.5	21.3	61.3	4.1	11.9
1998	438.9	181.9	41.4	2.6	6.4	6.2	15.0	25.2	60.8	7.4	17.8
Hebei*											
1985	396.8	110.7	27.9	4.0	14.3	4.7	16.8	19.0	68.2	0.2	0.7
1990	896.3	177.2	19.8	1.5	7.6	3.9	19.7	13.5	68.2	0.9	4.4
1995	4271.8	1651.2	38.7	0.9	2.3	6.0	15.6	29.9	77.5	1.8	4.6
Guangdong*											
1990	1559.0	381.5	24.5	0.9	3.6	4.3	17.7	15.7	64.1	3.6	14.6
1998	7919.1	2668.1	33.7	0.6	1.6	4.9	14.7	23.5	69.7	4.7	13.9
Shanghai*											
1995	2462.6	1577.2	64.1	1.2	1.8	11.3	17.6	44.7	10.8	6.9	69.8
1998	3688.2	1920.2	52.1	1.1	2.1	11.4	21.8	31.5	15.5	8.1	60.6
Fujian*											
1996	2628.5	507.6	19.3	0.4	2.0	4.7	24.5	11.2	5.8	3.0	15.7

* Incomplete data between 1985 and 1998. Sources: Statistical Yearbook of China 1999; China Regional Economy: A Profile of 17 Years of Reform and Opening Up; China Statistical Yearbook on Investment in Fixed Assets 1997; and Comprehensive Statistical Data and Materials on 50 Years of New China, China Statistical Press, October 1999.

Table 3
Total investment in fixed assets (*TIFA*) by interior provinces

Year	GDP (1) (Rmb 100 million)	*TIFA*		State appropriation as % of		Domestic loans as % of		Self-raised funds and others as % of		Foreign investment as % of	
		(2) (Rmb 100 million)	as % of (1)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Hunan											
1985	346.0	83.5	23.9	3.1	13.0	3.5	14.5	17.2	72.0	0.1	0.5
1990	744.4	124.2	16.7	1.0	6.0	3.5	21.0	11.1	66.3	1.1	6.7
1998	3211.4	838.9	26.1	0.9	3.5	4.2	15.9	20.1	76.7	1.0	3.9
Jiangxi											
1985	207.9	25.1	12.1	3.2	31.4	3.8	31.4	4.9	40.6	0.2	1.5
1991	428.6	43.5	10.2	1.7	36.8	3.7	36.8	4.6	45.4	0.1	1.4
1998	1852.0	454.8	24.4	1.2	5.0	4.9	19.7	17.5	71.0	1.3	5.3
Anhui											
1985	331.2	80.7	24.4	3.3	13.5	4.1	17.0	16.9	70.6	0.1	0.2
1990	658.0	123.0	18.7	1.4	7.4	3.7	19.6	13.4	71.8	0.2	1.1
1998	2805.5	722.0	25.7	0.9	3.6	5.0	19.6	18.6	72.5	1.1	4.4
Jilin											
1985	200.4	62.2	31.0	4.9	16.0	4.8	15.4	21.3	68.6	0.0	0.0
1990	425.3	93.5	22.0	2.1	9.6	4.4	19.9	14.0	63.9	1.4	6.5
1998	1571.2	420.8	26.8	1.2	4.4	5.8	21.7	18.2	68.0	1.6	5.9
Heilongjiang											
1985	355.0	111.8	31.5	4.9	15.7	2.8	9.0	20.5	65.1	3.2	10.2
1990	715.2	162.9	22.8	2.1	9.4	3.5	15.3	15.4	67.8	1.6	7.5
1998	2832.8	801.6	28.3	0.8	2.8	4.2	14.9	22.5	79.6	0.8	2.7
Shanxi											
1985	219.0	91.7	41.9	9.7	23.2	12.8	30.6	19.3	46.0	0.1	0.2
1990	429.3	123.4	28.7	3.2	11.3	8.8	30.6	16.0	55.8	0.7	2.4
1998	1601.1	534.7	33.4	1.1	3.3	9.7	29.0	20.3	66.7	2.3	7.0
Henan											
1985	451.7	127.0	28.1	3.5	12.6	2.6	9.4	20.8	74.1	1.1	4.0
1990	934.7	206.1	22.1	1.5	6.6	2.9	13.1	17.2	78.2	0.5	2.2
1998	4356.6	1288.2	29.6	1.6	5.3	5.2	17.7	21.1	71.4	1.7	5.6
Hubei											
1985	396.3	92.9	23.4	2.8	11.8	3.8	16.0	16.9	71.9	0.1	0.2
1990	824.4	144.4	17.5	1.4	7.9	2.7	15.4	12.9	73.4	0.6	3.3
1995	3704.2	1231.1	33.2	2.4	7.1	6.3	18.8	23.7	71.2	0.9	2.8
Guizhou											
1985	123.9	33.1	26.7	4.5	17.0	5.5	20.5	16.7	62.4	0.0	0.1
1990	260.1	51.5	19.8	2.4	11.9	4.4	22.3	12.2	61.7	0.8	4.0
1998	841.9	289.3	34.4	1.9	5.5	8.9	26.0	22.3	67.5	1.2	3.4
Yunnan											
1985	165.0	46.3	28.1	4.5	16.1	6.3	22.5	16.8	59.8	0.4	1.6
1990	451.7	75.7	16.8	2.2	13.2	3.5	20.8	10.8	64.2	0.3	1.8
1998	1793.9	664.4	37.0	2.3	6.3	8.0	21.7	26.1	70.4	0.6	1.5
Gansu											
1985	123.4	33.9	27.5	7.2	26.2	5.4	19.7	14.7	53.6	0.1	0.5
1991	242.8	59.3	24.4	3.4	14.0	6.2	25.4	14.2	58.3	0.6	2.3
1998	869.8	331.0	38.1	3.3	8.5	8.5	22.5	25.5	66.9	0.8	2.1

(continued on next page)

Table 3
(continued)

Year	GDP (1) (Rmb 100 million)	*TIFA*		State appropriation as % of		Domestic loans as % of		Self-raised funds and others as % of		Foreign investment as % of	
		(2) (Rmb 100 million)	as % of (1)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Xinjiang											
1985	112.2	44.5	39.6	10.5	26.4	6.4	16.2	22.0	55.6	0.7	1.7
1990	274.0	88.8	32.4	3.8	11.9	10.8	33.2	16.3	50.3	1.5	4.6
1998	1116.7	514.7	46.1	3.4	7.5	10.0	21.7	31.5	68.2	1.2	2.6
Shaanxi											
1985	180.9	58.0	32.1	7.6	23.6	5.5	18.5	18.9	58.8	0.1	0.4
1990	374.1	103.7	27.7	4.1	14.7	7.4	26.6	15.7	56.6	0.6	2.2
1998	1381.5	462.2	33.5	3.0	9.0	9.8	29.4	19.1	57.1	1.5	4.5
Ningxa											
1985	30.3	13.6	45.1	13.1	29.0	9.3	20.1	21.4	47.5	1.3	2.9
1990	64.8	22.0	33.9	6.3	18.7	8.1	24.0	18.7	55.3	0.7	2.1
1998	227.5	106.9	47.0	2.7	5.7	11.9	25.2	31.2	66.5	1.2	2.6
Qinghai*											
1987	43.4	21.5	49.6	7.7	15.5	22.4	45.3	18.6	37.5	0.9	1.8
1990	69.9	22.3	31.8	8.6	26.9	6.3	19.7	14.7	46.3	2.3	7.1
1998	220.2	116.4	52.9	2.5	4.7	15.9	30.1	32.9	62.2	1.6	3.0
Mongolia*											
1985	163.8	52.4	32.0	8.2	25.6	3.5	10.8	19.7	61.5	0.7	2.1
1990	319.3	70.8	22.2	4.0	18.1	4.1	18.7	12.2	55.2	1.8	8.1
1996	984.8	185.6	18.8	0.9	4.8	6.4	33.7	11.2	59.3	0.4	2.2
Sichuan*											
1985	421.2	144.88	34.4	4.6	13.4	8.2	23.9	21.5	62.4	0.1	0.3
1990	891.0	227.2	25.5	2.1	8.2	4.9	19.0	16.9	66.3	1.7	6.5
1996	2985.2	776.7	26.0	1.0	3.7	7.6	29.0	15.2	58.6	2.3	8.7
Guangxi*											
1995	1497.6	241.7	16.1	0.5	3.3	5.7	35.3	8.4	52.3	1.5	9.1
1997	1817.3	243.9	13.4	0.5	3.6	2.9	21.6	9.0	66.8	1.1	8.0
Tibet*											
1995	56.0	36.6	65.4	46.0	70.3	2.3	3.5	16.4	25.0	0.7	1.1
1997	77.0	34.5	44.8	10.3	23.0	7.7	17.2	26.3	58.7	0.5	1.1

* Incomplete data between 1985 and 1998. Sources: see Table 1.

of components of TIFA to TIFA are different between coastal and interior provinces. For 1990, 1995, and 1998, the percentage shares of SA to TIFA and DL to TIFA in coastal provinces are consistently lower than national averages, whereas the shares in interior provinces are consistently above the national averages. Another significant difference between costal and inner provinces is in the percentage shares of FI to TIFA. The percentage shares in costal provinces are larger than those in interior provinces. For the percentage shares of SRF to TIFA, the average differences between coastal provinces and interior provinces are very minor for 1985, 1990, and 1998.

Table 4
Averages of GDP and total investment in fixed assets (*TIFA*) by source

Year	GDP (1) (Rmb 100 million)	*TIFA*		State appropriation as % of		Domestic loans as % of		Self-raised funds and others as % of		Foreign investment as % of	
		(2) (Rmb 100 million)	as % of (1)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
All provinces ($n = 30$)											
1985	282.0	82.4	31.4	5.6	18.5	5.5	18.7	17.2	60.2	0.7	2.4
1990	604.2	139.5	24.3	2.7	11.2	4.9	21.0	14.4	61.8	1.4	5.9
1995	1894.9	642.8	35.6	2.8	6.4	7.1	22.4	20.1	61.7	3.3	9.6
1998	2714.5	898.9	35.6	1.7	4.9	7.2	20.4	23.2	67.1	2.4	7.0
Coastal provinces ($n = 11$)											
1985	381.5	109.8	29.6	4.8	16.9	5.4	19.3	16.5	59.9	1.0	3.8
1990	832.6	200.6	25.2	2.1	8.7	4.2	18.2	15.0	63.8	2.3	9.3
1995	2823.0	1055.7	40.2	1.1	3.2	6.3	19.7	24.6	64.5	5.3	13.7
1998	4015.5	1371.9	36.3	1.4	4.0	6.2	17.7	23.2	66.6	4.2	11.7
Interior provinces ($n = 19$)											
1985	215.7	65.1	32.6	6.0	19.3	5.5	18.4	17.6	60.4	0.5	16.6
1990	452.0	98.7	23.7	3.0	12.5	5.2	22.4	14.1	60.6	1.0	4.1
1995	1276.1	367.6	32.5	4.0	8.5	7.3	24.1	18.3	59.8	2.1	7.0
1998	1847.2	583.5	35.2	1.9	5.5	7.9	22.2	23.2	67.4	1.3	3.8

Notes: n represents the number of provinces used for computing the average. The actual number of provinces used for computing the average is less than or equal to n because of missing values. There are some discrepancies between all provinces data in this table and the national aggregates in Table 1 because of different data sources.

3. Methodology and econometric models

Financial liberalization in China has proceeded along with growth in national income. The pattern of the four sources of investment funds has changed considerably in the liberalization process. We aim to test two hypotheses. Among the four sources, we believe that investment funding from state and nonstate sources will make different contributions to the growth of national income. Typically, state sources of investment funding will not produce a significant empirical result, while nonstate sources of investment funding will contribute to significant growth of national income. Secondly, results will vary by region. While nonstate sources of investment funds are significant to growth of national income, state funding will have a greater impact within the interior regions, due to the lack of, or a lower level of nonstate sources of investment funds.

We employ a Cobb–Douglas production function to examine the relationship between output and resource inputs:

$$Q_t = AL_t^{\alpha} K_t^{\beta}. \tag{1}$$

Q is output, L and K denote labor and capital inputs, respectively, and A is the technology level. α and β are the scale economies, while t indicates time period. Taking logarithm-difference to the above equation, the output growth is a function of the growth of labor and

capital. To examine the impacts of investment on output growth, we can rewrite capital stock in terms of capital flow. Investment ($I_t = K_t - K_{t-1}$) is the capital flow that adds to the permanent capital stock. While investment is gross, one might assume that investment contributes mostly to capital stock, and as a first approximation, we have:

$$\dot{K}_t = \frac{I_t}{K_{t-1}} = \frac{I_t}{Q_{t-1}} \frac{Q_{t-1}}{K_{t-1}}. \tag{2}$$

Thus, the growth of capital is the product of the investment-output ratio and the output-capital ratio. By using the Cobb–Douglas production function and assuming $\alpha + \beta = 1$, the output-capital ratio can be rewritten as:

$$\frac{Q_t}{K_t} = A^{1/\beta} \left(\frac{L_t}{Q_t} \right)^{a/\beta}. \tag{3}$$

Substituting the one-period lag of the above equation to Eq. (2), it gives:

$$\dot{K}_t = \frac{I_t}{Q_{t-1}} \frac{Q_{t-1}}{K_{t-1}} = \frac{I_t}{Q_{t-1}} A^{1/\beta} \left(\frac{L_{t-1}}{Q_{t-1}} \right)^{a/\beta}. \tag{4}$$

Taking logarithm,

$$\ln \dot{K}_t = \ln \frac{I_t}{Q_{t-1}} + \frac{1}{\beta} \ln A + \frac{\alpha}{\beta} \ln \left(\frac{L_{t-1}}{Q_{t-1}} \right). \tag{5}$$

Thus, the production function for estimation is:

$$\dot{Q}_t = a_0 + a_1 \dot{L}_t + a_2 \ln \frac{I_t}{Q_{t-1}} + a_3 \ln \frac{L_{t-1}}{Q_{t-1}}. \tag{6}$$

For an empirical application of Eq. (6) to China's output growth, we base our estimation on panel data from different provinces between 1985 and 1998. The data for output is provincial GDP in nominal terms; the data for labor is provincial industrial labor; the investment is TIFA. The advantage of using panel data are that we can incorporate both *fixed effects* and *random effects* in the regression analysis. The two fixed effects are provincial fixed effect, c_i, and time-specific fixed effect, d_t. The regression models with fixed effects for Eq. (6) can be written as:

$$\dot{Q}_{it} = a_0 + c_i + a_1 \dot{Labor}_{it} + a_2 \ln \frac{TIFA_{it}}{Q_{it-1}} + a_3 \ln \frac{L_{it-1}}{Q_{it-1}} + \epsilon_{it}. \tag{7}$$

$$\dot{Q}_{it} = a_0 + d_t + a_1 \dot{Labor}_{it} + a_2 \ln \frac{TIFA_{it}}{Q_{it-1}} + a_3 \ln \frac{L_{it-1}}{Q_{it-1}} + \epsilon_{it}. \tag{8}$$

$$\dot{Q}_{it} = a_0 + c_i + d_1 + a_1 \dot{Labor}_{it} + a_2 \ln \frac{TIFA_{it}}{Q_{it-1}} + a_3 \ln \frac{L_{it-1}}{Q_{it-1}} + \epsilon_{it}. \tag{9}$$

The additional coefficients c_i and d_t are unknown parameters to be estimated. The estimates of c_i represent the mean differences across different provinces; the estimates of d_t represent the mean differences in different time periods. Therefore, provincial fixed effects are considered in Eq. (7), time-specific fixed effects are considered in Eq. (8), and both provincial and time-specific fixed effects are considered in Eq. (9). The concept of using fixed effects is similar to the inclusion of dummy variables.

In contrast to fixed effects, a model with random effects for panel data is:

$$\dot{Q}_{it} = a_0 + a_1 \dot{Labor}_{it} + a_2 \ln \frac{TIFA_{it}}{Q_{it-1}} + a_3 \ln \frac{L_{it-1}}{Q_{it-1}} + u_i + v_t + \epsilon_{it}. \tag{10}$$

The random error u_i is the randomness related to province i but not related to time and the random error v_t is the randomness related to time but not related to provinces. Three kinds of randomness, u_i, v_t, and ϵ_{it} are integrated in the regression and the variances of these random errors are estimated. This produces an error components model. In addition to Eq. (10), we can also consider individual random effects models such that either the random effects u_i or v_t is individually included in the regression. We expect the random effects are less important since there are limited numbers of provinces and time periods. We simplify the analysis by dropping the regressions with individual random effects.

The models from Eqs. (7–10) concentrate on using TIFA as investment (I). An alternative approach is to disaggregate TIFA into four financial sources: SA, DL, SRF, and FI. The regressions with four sources of TIFA are useful to identify the importance of each financial source to economic growth. For the empirical estimation with these components, we consider the regression models from Eqs. (7–10) with $\frac{TIFA_{it}}{Q_{it-1}}$ replaced by four variables: $\ln \frac{SA_{it}}{Q_{it-1}}$, $\ln \frac{DL_{it}}{Q_{it-1}}$, $\ln \frac{SRF_{it}}{Q_{it-1}}$, and $\ln \frac{FI_{it}}{Q_{it-1}}$.

We apply fixed effects and random effects models to provincial data. Although national data are available since 1981 (Table 1), at the provincial level, the classification of total investment in fixed assets into four different components is only available from 1985 (Tables 2 and 3). Among the 30 provinces in China, 2 coastal provinces (Shanghai and Fujian), and 3 interior provinces (Guangxi, Sichuan, and Tibet) are excluded from the regression analysis because the time series data of their investment are insufficient for estimation. Hence, the panel study uses 286 data values from the annual data of the 25 provinces between 1985 and 1998 for all provinces estimation. To compare the results from coastal and interior provinces, we duplicate these estimations for data from 9 coastal provinces and from 16 interior provinces separately.

4. Empirical results

Tables 5 and 6 show the regression results under different assumptions of fixed and random effects. The dependent variable in these regressions is the annual output growth for each province in different years. The independent variables are the growth of labor ($\dot{Labor}$)

Table 5
Output growth and total investment in fixed assets (*TIFA*): all provinces

	Independent variables				R^2	*F*-test
	Constant	$\dot{Labor}$	$TIFA/Q_{-1}$	$\dot{Labor}_{-1}/Q_{-1}$		
Fixed effects Provinces	0.320* (16.29)	−0.005 (−0.08)	0.214* (13.41)	0.030* (5.52)	0.409	4.65* (0.00)
Fixed effects Time	0.092* (6.96)	−0.055 (−1.12)	0.018* (1.83)	−0.001 (−0.35)	0.700	43.54* (0.00)
Fixed effects Provinces and time	0.189 (9.32)	−0.000 (−0.00)	0.083* (5.22)	0.110* (4.96)	0.770	20.10* (0.00)
Random effects	0.214* (10.91)	−0.051 (−1.09)	0.052* (3.96)	0.010 (1.43)	0.051	—

Notes: All independent variables, except $\dot{Labor}$, are in logarithm. *F*-test is the joint hypothesis test for fixed effects. The numbers in the parentheses under the estimated coefficients are *t* statistics. The numbers in the parentheses under the *F*-statistics are *p*-values of the test. The asterisk * represents the significance at 5% level.

and the logarithm of lagged ratio of labor to output $\left(\ln \frac{L_{-1}}{Q_{-1}}\right)$ in all regressions, and the logarithm of the ratio of TIFA to lagged output $\left(\ln \frac{TIFA}{Q_{-1}}\right)$ in Table 5 and the logarithms of individual component of TIFA to lagged output in Table 6. Given the different types of fixed and random effects used in the regressions, Table 5 shows a consistent result. The *t* statistics for the growth of labor indicate that the growth of labor has no significant impact on output growth. This implies that the output growth is not restricted by the growth of labor. This result is reasonable for China since the economy is overpopulated. The *t* statistics for the ratio of TIFA to lagged output (in logarithm) show that this ratio has a positive and significant impact on the output growth. This significant result implies that the size of total investment in fixed assets relative to previous output is important to explain output growth. The lagged ratio of labor to output is a proxy for output per unit of capital as shown in Eq. (3). The estimated coefficient for this ratio (in logarithm) is positive and significant in the third row. It indicates the previous productivity of capital has a positive and significant impact on output growth.

The mean differences in the output growth across provinces or different time periods are estimated under fixed effects models. To simplify the presentation, however, we omitted from the tables the estimated coefficients of the mean differences of the provincial or time-specific fixed effects. The last column, the *F*-test, shows the joint hypothesis test for different fixed effects. The joint hypothesis test in the first three rows of Table 5 is significant. The R^2 is much higher in the third row where both provinces and time fixed effects are considered together. The last row shows the regression results with provincial and time-specific random effects. The results are close to the regression with fixed effects, but with a much lower R^2. The R^2 values of these four models suggest that the regression with both provincial and time-specific fixed effects gives the best fit for our panel data. The regression results for Eqs. (7–10) with the 9 coastal provinces and the 16 interior provinces are similar to the all provinces estimates shown in Table 5, and show that the ratio of TIFA

Table 6
Output growth and four sources of total investment in fixed assets

	Independent variables							R^2	F-test
	Constant	*Labor*	SA/Q_{-1}	DL/Q_{-1}	SRF/Q_{-1}	FI/Q_{-1}	L_{-1}/Q_{-1}		
All provinces									
Fixed effects	0.397*	0.026	−0.039*	0.112*	0.046*	0.016*	0.066*	0.497	6.34*
Provinces	(9.42)	(0.40)	(−4.32)	(9.97)	(3.39)	(3.79)	(7.28)		(0.00)
Fixed effects	0.074*	−0.045	−0.013*	0.008	0.019*	0.001	−0.003	0.712	41.59*
Time	(3.45)	(−0.92)	(−3.12)	(1.09)	(2.36)	(0.26)	(−0.72)		(0.00)
Fixed effects	0.305*	−0.004	0.017*	0.038*	0.030*	−0.001	0.092*	0.779	18.95*
Provinces and Time	(8.28)	(−0.09)	(2.15)	(3.54)	(2.82)	(−0.32)	(3.83)		(0.00)
Random	0.332*	−0.036	0.009	0.042*	0.024*	0.000	0.034*	0.132	—
Effects	(7.48)	(−0.82)	(1.29)	(4.24)	(2.38)	(0.07)	(2.21)		
Coastal provinces									
Fixed effects	0.306*	0.153	−0.063*	0.104*	0.082*	0.021*	0.088*	0.636	7.61*
Provinces	(3.73)	(0.63)	(−3.61)	(4.87)	(3.29)	(1.71)	(4.75)		(0.00)
Fixed effects	0.110*	0.329	−0.015*	0.028	0.036*	−0.013*	−0.012	0.773	12.50*
Time	(2.39)	(1.64)	(−1.90)	(1.28)	(1.65)	(−1.75)	(−1.07)		(0.00)
Fixed effects	0.391*	0.241	0.016	0.050*	0.053*	−0.001	0.191*	0.841	11.67*
Provinces and Time	(5.29)	(1.27)	(0.84)	(2.32)	(2.40)	(−0.05)	(3.69)		(0.00)
Random	0.415*	0.182	0.017	0.049*	0.046*	−0.007	0.085*	0.240	—
Effects	(4.65)	(1.01)	(1.01)	(2.43)	(2.24)	(−0.72)	(2.52)		
Interior provinces									
Fixed effects	0.388*	0.004	−0.029*	0.111*	0.016	0.016*	0.058*	0.407	3.34*
Provinces	(7.82)	(0.07)	(−2.77)	(7.98)	(0.89)	(3.54)	(5.33)		(0.00)
Fixed effects	0.068*	−0.072	−0.001	−0.006	0.007	0.002	0.003	0.743	30.01*
Time	(2.86)	(−1.59)	(−0.19)	(−0.74)	(0.81)	(0.72)	(0.39)		(0.00)
Fixed effects	0.213*	−0.041	0.015*	0.021*	−0.000	0.001	0.056*	0.786	15.91*
Provices and time	(5.14)	(−0.90)	(1.84)	(1.71)	(−0.01)	(0.38)	(1.74)		(0.00)
Random	0.222*	−0.065	0.004	0.017	0.001	0.002	0.014	0.040	—
Effects	(5.42)	(−1.51)	(0.66)	(1.61)	(0.09)	(0.81)	(0.96)		

Notes: See Table 5. The self-raised funds data used in the regressions do not include "others" as in Tables 1 to 4 since there are some missing data for "others."

to lagged output is important for output growth (we therefore exclude these results in the text).

When the four different financial sources of TIFA are used in the regression, we compare different regression models with three data sets. The first set contains all 25 provinces; the second set contains 9 costal provinces; the third one contains 16 interior provinces. The three panels in Table 6 present the results from these three data sets. In contract to Table 5, the first panel with all provinces in Table 6 shows different importance of the components of TIFA. Based on the significance of the *t*-statistics, both DL and SRF are important to economic growth. The ratios of SRF to lagged output (in logarithm) have positive and significant coefficients in all four models, whereas the ratios with DL have positive and significant coefficients in three of the four models. Self-raised funds are definitely the best performer in promoting growth in the reform period, but the higher coefficients of domestic loans suggest

that there is room for national banks to improve their efficiency. The proposition that SRF and DL are the key sources of domestic funds is supported by the estimations shown in the third row, where the fixed effects included both the provinces and time. This regression shows a highest R^2 value and a significant F-statistic. We can conclude that at the national level the uses of DL and SRF are more important than the uses of SA and FI as a source of funds.

In the case of SA, its estimated coefficient is negative and significant for individual provincial and time-specific fixed effects, but positive and significant for both provincial and time-specific fixed effects. Because the use of SA is less efficient, it is reasonable to conclude that the ratio of SA to lagged output is less influential on economic growth, as indicated by the small, though significant, estimate in the third row.

The estimated coefficient of FI is positive and significant for the model with provincial fixed effects. This suggests that FI probably has a significant impact when the difference of growth among provinces is considered. Among the four sources of TIFA, FI has the smallest share in TIFA, thus for FI may not be a significant part of TIFA, and its impact on output growth tends to be unobservable. Secondly, the output figures used in the regression are from 25 provinces, but the coastal provinces are more attractive to FI than interior provinces.

When the four sources of TIFA are used in the regression for coastal provinces, the second panel in Table 6 shows different results from the first panel. The results for SRF and DL are similar: the estimated coefficients are positive and significant for three models. However, the values of estimated coefficients are larger than those in all provinces. A major difference for coastal provinces is in SA. SA is no longer a significant variable when both the provincial and time-specific fixed effects (third row) are imposed. This suggests that SA plays an insignificant role among coastal provinces. As for FI, the estimated coefficient remained insignificant.

A different result emerges when the four sources of TIFA are considered in the 16 interior provinces in the third panel of Table 6. The result in the third row shows that SA becomes more significant as a source of investment, while SRF become insignificant. This confirms the hypothesis that state support in the funding of investment is still important in the interior provinces. This is largely due to the lack of nonstate sources in the interior provinces. The economic development of the interior provinces requires the promotion of nonstate sources of investment funds.

5. Conclusion

Economic growth in China has increased dramatically. One important impact of the economic reform is financial resources reallocation. This reallocation is reflected in different financial sources of total investment in fixed assets. By using provincial data between 1985 and 1998, this paper found a significant relationship between the output growth and financial sources of total investment in fixed assets. At the national level, DL and SRF have a larger impact on the output growth than SA. DL and SRF are important to the output growth of coastal provinces, whereas SA and DL are important to the output growth of interior provinces. The empirical result shows that the high economic growth experienced by costal

provinces is related to the efficient use of different financial sources of total investment and the use of SA is less efficient than DL and SRF. As for the use of FI, we did not find a significant impact on the output growth for all provinces, coastal provinces, or interior provinces. This result may be caused by the small ratio of FI to the previous output.

The empirical evidence of financial resources allocation suggests that economic liberalization has proceeded a long way, whereas the state sector has shrunk considerably in the last two decades. Positive resource allocation in favor of the nonstate sector can accelerate economic growth. Rapid economic growth in the nonstate sector reduces proportionately the financial burden of state-owned enterprises. In turn, state-owned enterprises would gain funding from nonstate sources in the process of corporatization. There are wider economic implications. A larger nonstate sector would enable the central authority to earn more tax revenues from profitable enterprises. The economic successes in the coastal provinces encourage the interior provinces to speed up their liberalization process, and improve their efficiency in resource allocation. "Letting some get rich first" will soon trickle down to the remote regions.

A more recent debate in China is the focus on the rapid development of the interior provinces. Based on the empirical results shown in this paper, the policy implications are that while the state sector in percentage shares is declining, state support should concentrate on building infrastructure that could generate both economies of scales and scope for nonstate-sector investments. The "soft" nature of the budget should be eliminated and that fiscal policy would not suffer further losses in revenues as the income of households and enterprises expand. Although efforts are made to attract more FI, especially to the inner regions, national banks could play a more positive and efficient role in their loan provisions. Financial resources should be channeled to the promotion of productive, output-expanding projects. A major role of the interest rate is to differentiate between profitable and nonprofitable projects. Thus, though the state finances infrastructure development, noninfrastructure development projects would be funded by other nonstate-owned sources of finance.

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