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Financial Reforms, Growth and Regional Disparity in

Post-reform China

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Abstract: In this paper, by employing the Generalized Method of Moment (GMM) techniques and Chinese provincial level data from 1991 to 2003, we empirically investigate the relationship between finance and growth in post-reform China. We find that financial development significantly promotes economic growth in coastal regions but not in inland regions; the weak finance-growth nexus in inland provinces has exacerbated China's regional disparity.

JEL Classification: D63 ; G20 ; R11

Keywords: Financial Development; Income Disparity; Chinese Economy

1. Introduction

Since 1978, China's Open Door policy and economic reforms have led to rapid economic development. However, while preferential government policy and the concentration of trade and foreign investment in the coastal areas have significantly promoted economic growth in coastal zone, the poor inland regions have been largely left behind. Rising regional disparity have posed serious challenges to China's future development.

In the literature, various factors have been forwarded to explain China's regional disparity. Tsui (1991) examines the effect of China's fiscal decentralization on regional disparity, and he finds a positive relationship between decentralization and worsening regional inequality before 1985. Lee (1994) investigates the relationship between foreign direct investment and regional development gaps. He concludes that the differences in the amount of FDI inflows contribute to China's regional disparity. Moreover, many studies also suggest that geographical factors and regional preferential policies are two important factors that contribute to economic boom in the coastal regions (e.g., Fleisher and Chen, 1997; Démurger et al., 2001). In addition, there is also evidence that local protectionism may also play an important role in explaining China's regional disparity during the reform era (Young, 2000).

However, only a few works have been made to address the role of financial markets in influencing China's regional disparity. Using Chinese provincial data, this paper attempts to examine the finance-growth relationship across Chinese regions.

The rest of this paper is organized as follows. The next section provides a brief literature review on the relationship between finance and growth. Section 3 highlights recent trend of financial reforms and regional disparity in China. Econometric model and method for estimation are described in section 4. Empirical analyses are presented in Section 5. Finally, this paper concludes with Section 6.

2. Financial Development and Economic Growth: a Brief Literature Review

The important role of financial sector in the process of economic development has long been recognized in the literature (e.g., McKinnon, 1973; Shaw, 1973; Greenwood and Jovanovic, 1990; Bencivenga and Smith, 1991; King and Levine, 1993a, 1993b; Merton and Bodie, 1995; Levine, 1997). A well-functioning financial system will stimulate economic growth by providing a number of important functions such as clearing and settling of payments, pooling of saving, facilitating the allocation of resources across space and time, pooling risk, and reducing information costs (Merton and Bodie, 1995).

The significant contribution of financial intermediaries in promoting economic growth has been highlighted in recent endogenous growth literature. Through financial intermediations, financial development can lead to increase in the long run growth rate.

Meanwhile, a number of new insights can be drawn from recent advance in theoretical works. For instance, Greenwood and Jovanovic (1990) develop an endogenous model, in which finance and growth are jointly determined. They

highlight two essential functions of financial intermediaries in promoting growth, i.e. collecting and analyzing information of alternatives investment projects, and increasing investment efficiency through allocating the funds to the projects with higher expected returns. Alternatively, in the endogenous model of Bencivenga and Smith (1991), they argue that by enhancing liquidity and mitigating idiosyncratic risk through risk diversification and pooling, the development of financial intermediaries results in reduction of households' unproductive reserve of liquid assets, as such funds can be channeled toward illiquid but more productive activities, and therefore financial intermediary development highly contributes to economic growth. Moreover, the importance of portfolio diversification and risking sharing via stock markets in inducing sustained growth is also explored in a number of studies (e.g., Levine, 1991; Saint-Paul, 1992). All these works provide strong evidence to suggest that financial development can affect long run growth through different channels and various aspects of innovation or productive activities.

Public policies can also affect financial development in many ways. Roubini and Sala-i-Martin (1992, 1995) are among the few works that incorporate government behaviors and financial development into endogenous growth model. In their recent paper (Roubini and Sala-i-Martin 1995), an AK-type endogenous growth model is set up to examine the effects of financial repression policies on long-term growth. They argue that government might want to repress the financial sector because this sector is an "easy" source for financing the public budget. In order to increase the revenue from money creation, governments subject to large income-tax evasion may choose to

increase seigniorage by repressing the financial sector and increasing inflation rates. Financial repression will therefore be associated with high tax evasion, low growth, and high inflation.

The positive relationship between finance and growth predicted by the endogenous growth literature has received considerable support from a number of empirical studies. Using data on 80 countries over the period 1960-1989, King and Levine (1993a) empirically investigate the finance-growth linkage. They find that higher levels of financial development are positively associated with faster current and future rates of economic growth, physical capital accumulation, and economic efficiency improvement. Based on more recent data for 63 countries over the period 1960-1995, Beck et al. (2000) find that higher levels of financial intermediary development produce faster rates of economic growth and total factor productivity growth. Similar results can also be found in Levine et al. (2000). Therefore, these empirical studies suggest a positive, first-order relationship between financial development and economic growth.

However, this conventional view has also been challenged by some recent empirical studies. Demetriades and Hussein (1996) highlight the dangers of statistical inference in cross-section studies on finance-growth nexus, in which countries with very different experiences in both economic growth and financial development that reflect different institutional characteristics and different policies, are implicitly treated as homogeneous entities. Meanwhile, based on a broad dataset covering 95 countries, Ram (1999) finds that the predominant pattern indicates a negligible or

weakly negative association between financial development and economic growth. In addition, when the data sample is split into three subgroups according to growth experience (i.e., low-growth, medium-growth, and high-growth countries), a huge parametric heterogeneity is observed for the finance-growth relationship. Moreover, Andersen and Tarp (2003) also investigate the finance-growth nexus by using the identical data of Levine et al. (2000), and estimate with both the full sample and the regional sub-samples. They find that while a positive and significant relationship is found in the full sample cross-section studies, the correlation is negative in the poorest countries; in individual-country studies, different causal patterns between finance and growth are reported; meanwhile, conclusions are very sensitive to the type of estimator used, and slight changes in nuisance parameters often change the results.

Therefore, empirical findings of existing studies on the finance-growth nexus are mixed. In this paper, with the help of Chinese provincial data, we attempt to investigate the impacts of variation in financial development on the patterns of regional economic growth in China.

3. Recent Trend of Financial Reforms and Regional Disparity in China

Since the initiative of China's market-oriented reforms in 1978, substantial changes have occurred in China's financial sector. The abandon of the mono-banking system[1] in the late 1970s marked the beginning of China's financial reforms,[2] and

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[1]: During the pre-reform period, consistent with the centrally planned economy, a mono-banking system was established in China, where the People's Bank of China (PBC) acted as an all-inclusive financial institution to the Chinese economy.

[2]: Four state-owned specialized banks, authorized with specialized functions concerning different scopes of economic activities, were separated from the People's Bank of China (PBC), and the PBC itself was then reorganized as the central bank of China in the mid-1980s. These four state-owned specialized banks are: the

China's financial system has been gradually transformed from a mono-banking system into a diversified financial institutional system. Meanwhile, the past ten years have also witnessed rapid development in China's emerging capital markets. However, China's stock markets, although having experiencing fast growth in the last decade, remain relatively small in size and scale when compared to that of the whole banking sector. Therefore, China's financial system is still highly bank-based.

The promulgation of the Central Bank Law and the Commercial Bank Law in 1995 further deepened China's financial reforms. The Central Bank Law legally confirms the independent status of the PBC; similarly, the Commercial Bank Law ensures and protects the independent operations of commercial banks. Therefore, both the Commercial Bank Law and the Central Bank Law lay the basis for building a modern banking system in China.

However, China's banking sector was greatly dominated by the state-owned banks, resulting in a highly state-monopolized bank-based financial structure. Consequently, China's banking system has become an important instrument for the Chinese government to finance its policy-lending targets. Therefore, heavy burdens of "policy lending", poor banking operation and management, soft budget constraints, and the lack of efficient regulation and surveillance system, have resulted in large scales of non-performing loans in China's banking sector, which seriously impede the further development of financial intermediations.

Agricultural Bank of China (ABC), the China Construction Bank (CCB), the Bank of China (BOC), and the Industrial and Commercial Bank of China (ICBC). In addition, two other institutions, i.e. the People's Insurance Corporation of China (CPIC) and the China International Trust and Investment Corporation (CITIC), were successively established.

In order to solve the problems of non-performing loans, the Central government injected a total of 270 billion yuan (32.6 billion US dollars) into the four major state-owned banks in 1998. In addition, four Asset Management Corporations (AMCs) were established in 1999 to relieve the four major state-owned banks of heavy burden by taking over 1.4 trillion yuan (169 billion US dollars) of non-performing loans and bad debts from them.

With China's accession into the WTO, further penetration of the foreign banks and increasingly intensive competition are expected. Under China's commitment to the WTO, China's banking sector will be fully open to foreign competition by 2006. In order to speed up China's financial reform process and to accelerate banking restructuring, a series of new policy measures have recently been adopted and implemented to strengthen banks' corporate governance, to reduce non-performing loans, to improve banking performance, and to enhance their competitiveness.

While successive financial reforms and institutional changes in the financial sector have strongly influenced the pattern of regional development, regional variation in financial sector development may also play important role in influencing the inland-coastal income disparity. In fact, there exist significant differences in capital market development across Chinese regions. With profit rates and returns to capital differing widely across regions, China's capital markets are actually quite fragmented (Boyreau-Debray, 2003; Boyreau-Debray and Wei, 2004). Fragmentation of China's capital market may arise mainly from direct and indirect government control over interest rates and resource allocation (World Bank, 2003). Because of this

fragmentation, the development level of local financial intermediaries has been an important factor in determining local economic performance (Boyreau-Debray, 2003).

In the following discussion, we attempt to assess the extent to which financial development may affect regional disparity in China. Using Chinese provincial data over the period from 1991 to 2003, we empirically investigate the finance-growth relationship for China and its regions.

4. Model and Methodology of Estimation

4.1 Econometric Model

In our empirical estimations on the relationship between finance and growth, the growth rate of real per capita income ($\dot{GDPPC}$) will be employed as the dependent variable. To measure the development level of financial sector, we construct here a financial indicator $FDEV$, defined as the natural logarithm of real per worker output in financial sector. The other explanatory variables include: (1) the growth rate of real per capita fixed asset investment (*INV*); (2) openness (*OPEN*), defined as the ratio of total exports to GDP; (3) education (*EDU*), measured by the proportion of population with junior secondary school and a higher level; (4) non-state sector development (NSOE), measured by the ratio of fixed investment in non-state sector to total fixed investment.

In general, for econometric test, the regression model can be described as follows:

$$
\begin{aligned}
\dot{GDPPC}_{i,t} = \alpha\ &+ \beta_1 INITGDPPC_{i,t-1} + \beta_2 FDEV_{i,t} + \beta_3 INV_{i,t} \\
&+ \beta_4 OPEN_{i,t} + \beta_5 EDU_{i,t} + \beta_6 NSOE_{i,t} + \mu_i + \varepsilon_{i,t}
\end{aligned}
\tag{1}
$$

where subscripts i and t index provinces and time respectively; *INITGDPPC* denotes the natural logarithm of initial value of real per capita income. Table 1 presents the definition of variables. Descriptive statistics for all these variables can be found in Table 2. In addition, the Generalized Method of Moments (GMM) methodology will be applied to control for possible endogeneity in our econometric model.

[Table 1 here]

[Table 2 here]

4.2 Data

The data to be used cover 29 Chinese provinces over the period of 1991-2003. The primary sources of our data are from *China Statistical Yearbook* (NBS, various years), *China Population Statistics Yearbook* (NBS, various years), *Accounting Data and Materials on Gross Domestic Product in China: 1952-1995*, and *Comprehensive Statistical Data and Materials on 50 Years of China* (NBS, 1999).

5. Empirical Results

We first estimate our regression model using data from all provinces, and then re-examine the model using data from the coastal regions and inland regions respectively. Empirical results are presented in Table 3. For each regression, we test the specification of equation with the Hansen test of over-identifying restrictions, and then with the Arellano-Bond test for the second order serial correlation. The test results show that all the regressions satisfy the specification tests.

[Table 3 here]

Consider first the results for all Chinese provinces (see Column 1 of Table 3). We find that financial development significantly contributes to China's economic growth. The coefficient of *FDEV* is positive and highly significant at the 5% level, indicating that regions with higher level of financial development tend to enjoy faster economic growth.

For the case of coastal regions, we find that the indicators of financial development (FDEV) enter positively and significantly into the growth model (see Column 2 of Table 3). Empirical results show that financial development significantly promotes economic growth in the coastal regions.

However, for the case of inland regions, we find a rather weak correlation between finance and growth (see Column 3 of Table 3). More importantly, the coefficient of FDEV is statistically insignificant.

Therefore, our empirical results suggest that financial development significantly promotes economic growth in coastal regions but not in inland regions; the weak finance-growth nexus in the less-developed regions may widen the coastal-inland income gap in China.

6. Conclusion

Using Chinese provincial level data from 1991 to 2003, this paper examines the relationship between financial sector development and regional economic growth in China. Our empirical results show that financial development significantly promotes economic growth in coastal regions but not in inland regions; the weak

finance-growth nexus in inland provinces may aggravate China's regional disparities. These results have important implications for China's future development: effective policy measures have to be forwarded to further strengthen the financial sector in inland regions, so as to improve the capital allocation efficiency and accelerate economic growth in the less-developed areas, and to reduce income disparity among Chinese regions.

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Table 1 Definition of Variables

Variables	Definition
$\overset{\bullet}{GDPPC}$	Growth rate of real per capita income
FDEV	The Indicator of financial development, defined as the natural logarithm of real per worker output in financial sector
INV	Growth rate of real per capita fixed asset investment
OPEN	Trade openness, calculated by the ratio of total exports to GDP
EDU	The indicator of education development, measured by the share of population with educational attainment of junior secondary school and higher level
NSOE	The indicator of non-state sector development, calculated by the ratio of fixed investment in non-state sector to the total fixed investment

Table 2 Descriptive Statistics of Variables

	Mean	Std. Dev.	Minimum	Maximum	Observation
$\dot{GDPPC}$	0.0988	0.0373	-0.033	0.381	377
FDEV	10.4517	0.6041	8.6900	12.3819	377
INV	0.1404	0.1465	-0.2201	0.7647	377
OPEN	0.1407	0.1629	0.0224	1.0165	377
EDU	0.4638	0.1250	0.1914	0.8091	377
NSOE	0.4150	0.1465	0.0877	0.7086	377

$\dot{GDPPC}$: Growth rate of real per capita income; FDEV, the indicator of financial development; INV: growth rate of real per capita fixed asset investment; OPEN: trade openness; EDU: the level of education development; NSOE: the level of non-state sector development.

Table 3: Financial Development and Economic Growth in China

(Dependent variable = $\overset{\bullet}{GDPPC}_{i,t}$: the growth rate of real per capita income)

	All Chinese Provinces	Coastal Provinces	Inland Provinces
$INITGDPPC_{i,t-1}$	-0.0376***	-0.0605***	-0.0396
	(0.001)	(0.006)	(0.001)
$FDEV_{i,t}$	0.0131**	0.0304***	-0.0001
	(0.017)	(0.006)	(0.985)
$INV_{i,t}$	0.1445***	0.1638***	0.0695***
	(0.000)	(0.000)	(0.000)
$OPEN_{i,t}$	0.0791***	0.0739***	-0.0585
	(0.003)	(0.006)	(0.278)
$EDU_{i,t}$	0.1022***	0.0976	0.1340***
	(0.003)	(0.117)	(0.001)
$NSOE_{i,t}$	0.0686**	0.0444	0.0550***
	(0.024)	(0.321)	(0.008)
Constant	0.1412**	0.1609	0.2936***
	(0.042)	(0.308)	(0.000)
Hansen Test of over identifying Restrictions	Chi2=27.45 Prob.>Chi2=0.195	Chi2=9.98 Prob.>Chi2=0.987	Chi2=14.88 Prob.>Chi2=0.629
Arellano-Bond test for the second order serial correlation	Z=1.09 Prob.>Z=0.274	Z=0.64 Prob.>Z=0.522	Z=-0.48 Prob.>Z=0.629
Observations	377	143	234
Provinces	29	11	18

Note:

1. $\overset{\bullet}{GDPPC}$: Growth rate of real per capita income; $INITGDPPC$: the natural logarithm of initial value of real per capita income; FDEV, the indicator of financial development; INV: growth rate of real per capita fixed asset investment; OPEN: trade openness; EDU: the level of education development; NSOE: the level of non-state sector development.

2. ***: significant at the 1% level; **: significant at the 5% level; *: significant at 10% level.

3. For all regressions, p-values are presented in parentheses.