Development of Financial Intermediation 

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Abstract

This paper focuses on the impacts of financial intermediation development on the urban-rural income disparity (URID) in China. Using a 20-year province level panel data set from 1978-1998, we find that the change of URID may be explained by fiscal policy during the early reform period (1978-1989) and financial intermediaries during the later reform period (1990-1998). In addition, we show that the direction the Kuznets effect, an inverted-U-shaped relationship between per capita GDP and URID, is sensitive to changes in government development policies. This study adds to the spatial economic inequality literature by clarifying the effects of urban-biased financial intermediation policy on the underlying dynamics of convergent and divergent effects on urban-rural inequality.

Keywords: financial intermediation, urban-rural inequality, Kuznets effect, development policy, China

JEL classification: N25, P25, P34, R51

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1 Introduction

The study of the relationship between economic growth and income inequality has a long history, pioneered by Kuznets’ seminal paper (1955) on the subject. However, relatively few studies focus on the spatial relationship between financial intermediation development, loans from financial intermediaries, and income distribution. The study by Greenwood and Jovanovic (1990) is the first to explore the association among economic growth, financial intermediation development, and income distribution, where income distribution is treated as exogenous. Galor and Zeira (1993) and Banerjee and Newman (1993) maintain that the initial income gap will not be reduced unless financial markets (especially the credit market) are well developed. The latest study by Clarke, Xu, and Zou (2003), using a cross-country data set, explores the way financial intermediation development influences income distribution. They find that financial development robustly reduces the level of income inequality. However, the effect of both economic growth and financial intermediation on inequality may be affected by the choices of development policy intervention (Dow and Rodriguez-Fuentes, 1997; Kanbur, 2000: 84).

In addition, the spatial concentration and the focus on the development policies may also affect the spatial dimension of inequality. In particular, spatially centralized financial administration systems and state banking systems may induce spatially concentrated financial intermediation and may have the effect of spatial inefficiency of funding allocation, uneven wealth accumulation, and regional inequality (Martin, 1999; Martin and Minns, 1995; Myrdal, 1957). This spatial inequality could be very substantial because the biased funding-circulation cycle may have a multiplying effect on inequality (Moore, Karaska, and Hill, 1985).
In China, financial intermediation, as a development policy instrument to finance the state’s projects, is greatly dominated by the central government’s own banking system (IFC, 2000). Since both the banking system and the state-owned economy (SOE) firms are highly concentrated in urban areas, the high concentration of financial intermediation in the urban sector may induce urban-rural income disparity (URID).

In this paper, we use panel data on China’s 28 provinces for the period 1978-1998 to analyze the effect that the development of financial intermediation had on URID. Using two-way fixed effects (TWFE) estimation and system generalized method of moments (SYS-GMM), we found that the financial intermediation development index (measured as the ratio of total loans to GDP, as extended by financial intermediates) has contributed significantly to the increase of URID since the late 1980s.7 The major force driving URID is the government’s growing reliance on the financial system, beginning in the late 1980s, to regulate the economy, whereas fiscal policy was previously the government’s principal policy instrument. In addition, we show that the positive correlation of provincial financial intermediation with URID is robust to variations in industrial structure in the provinces.

We also show that the government’s choice of development policies increase or decrease inequality between urban and rural sectors which might affect the Kuznets effect (an inverted-U-shaped relationship between per capita GDP and URID). These developmental policies include the household responsibility system (HRS), financial intermediation, the open door policy, and industrial structure. We show a negative relation between per capita GDP and URID reduced URID during the 1978-1988, a period of rural reform (convergent Kuznets effect). However, a positive relation between per capita GDP and URID may have occurred during 1989-1998 (divergent Kuznets effect). The latter was a period of urban reform and urban-biased policies such as financial intermediation and other
government development policies that increased urban growth, allowing the agricultural sector to stagnate and caused the increase of URID.

The paper is organized as follows: We begin with a brief discussion of the development of URID and its relationships to economic growth and governmental development policies in China during the reform period. Next, we look at the policies on such matters as economic growth, financial intermediation, and government development policies might have affected changes in URID in China. We continue with specifics on our model and data, and with the estimation strategy and results. Then, we offer a brief conclusion.

2 The development of URID and its relationships to economic growth and governmental development policies in China (1978-1998)

In this section we include a brief review of the evolution of URID from 1978 to 1998 in China. We also discuss several hypotheses with regard to the causes of URID.

2.1 The development of URID and its relationships to economic growth

China’s economic growth rate has been remarkable, averaging nearly 10% annually since the early 1980s. However, income disparity, especially urban-rural income disparity, is a pressing issue that has become even more so in recent years. As an important policy concern, URID may affect the livelihoods of most peasants as well as the stability of the society, as China is still arguably a developing country with a large agricultural sector. In Figure 1, we present the evolution of URID (measured as the ratio of
disposable income of urban residents to net income of rural residents) across 28 provinces for 1978-1998. It is clear that URID declined in the early 1980s, but increased again in the late 1980s. In many provinces in the late 1990s, URID exceeded even that of the late 1970s, when market reform was initiated. For instance, Beijing’s URID rose from 1.63 in 1978 to 2.11 in 1998. In the central province of Anhui, the gap rose from 1.72 to 2.56 for the same period, while in the northeast province of Jilin, it rose from 0.97 to 1.76.8

Indeed, one of the classic debates on the driving force of inequality is its effect on economic growth. The study of the relationship between economic growth and income inequality has a long history, pioneered by Kuznets’ seminal paper (1955) on the subject.9 The inverted-U-shaped effect of economic growth on inequality, the Kuznets curve, may warrant our attention because China has been growing very rapidly. However the underlying relationship between growth and inequality may be very complicated.10 Kuznets (1955: 14-16) argues that economic convergence is a result of -rural-urban migration, but Anand and Kanbur (1993) point out that the interaction between population shifts and income inequality may be far more complex than Kuznets’ assumption and may obscure the convergence effect of economic growth on inequality. Also, government policies may affect the magnitude and direction of inequality in a country (Kanbur, 2000: 84). We may, therefore, expect change in the direction and magnitude of the Kuznets curve over the course of the reform because of diverse government development policy choices. In the following discussion, we show how the choices and spatial concentrations of government development policies may affect URID.

2.2 Choices and spatial concentrations of government development policy since 1978: Rural vs. urban

Many development policies with different focuses have been introduced in various periods since the reform period began. Government development policies focused on the rural sector at the beginning of
the reform period and then, since the mid-1980s, gradually moved to focus on the urban sector.

Introduced in 1978, the rural reform began with the household responsibility system (HRS), which was followed by the development of township and village enterprises (TVEs) in the early 1980s. By granting individual households the right to dispose of their agricultural output and by developing rural industrialization, the HRS was favorable to the rural economy and may have attenuated the growth of the urban-biased development policies that began in the mid-1980s.

The urban reform, started in 1985 with massive privatization of SOEs, the rise of the private economy, and the open door policy, caused substantial change in industrial structure during the 1990s. The central planning style of using fiscal policy to regulate the economy through tax and government debt was not efficient. To retain control over the economy, the central government then increased its utilization of a more market-oriented financial system. Since this change, the financial system has been dominated by a state-owned and -monopolized bank-based financial structure (see Table 1), and those banks are highly concentrated in urban areas. In addition, open door policies, such as trade and foreign direct investment (FDI), were adopted in the mid-1980s and grew thereafter. These policies are highly urban focused and usually lack consideration for the rural side; therefore, they are usually called urban-biased development policies.

This section suggests that financial intermediation policies and other development policies, such as those having to do with fiscal matters, industrial structure, and open door policies, may have a substantial positive impact on URID. We are concerned with the following questions: First, since many different urban-biased development policies pursued by the Chinese government have been profoundly changed over the last two decades, how well does the “simple” urban-bias argument fit with the dynamic changes in the effects of the development of financial intermediation on URID? Second, what
are the government development policies that might impact URID? In the following, we first review critically the urban-biased development policies that have been in effect since the urban reform. We then highlight some possible hypotheses regarding the relationship of these policies with URID, which we test in this paper.

2.2.1 Financial intermediation development

Despite the market-oriented economic reform, which has lasted for nearly three decades, state-owned banks (SOBs) still dominate China’s financial system (IFC, 2000) and are under the strict control of the ruling party. Rather than managing banking sectors by following market rules, political elites rely on bank credit to finance national priority projects, including major construction projects and other policy loans, and to reward their local political supporters by allowing them to draw on cheap money to spur local investment projects and, in turn, economic growth. These cheap loans go to large local SOEs and other local official projects, which are mainly concentrated in urban areas (Park and Sehrt, 2001; Shih, 2007; Zhang, 2000). In consequence, the SOBs tend to produce a massive urban bias in financial intermediation (see also Wei, 1997). In other words, China’s financial intermediaries, most of them state-owned agencies, are in effect the government’s policy tools, and to a large extent, the credit expansions they have created in the past reflected their policy preferences rather than the market demand for credit.

From the purely economic perspective, however, the current bank-based financial sector also has a natural tendency to discriminate against rural financial demands. Empirical studies have found that, due to the information asymmetry between the lender and the borrower as well as the high monitoring cost incurred by large financial agencies, smaller financial institutions enjoy an informational advantage over large banks when it comes to lending to the small and medium enterprises (SMEs), often located in rural areas (Berger and Udell, 1995; Levonian and Soller, 1995; Peek and Rosengren, 1996; Strahan
and Weston, 1998). Since agricultural activity is difficult for financial agencies to supervise, large banks are unwilling to provide loans to farmers or TVEs, which normally are medium or small in size and lack reliable credit histories. Thus, large state banks, which dominate the market, are inherently disinclined to channel funds to rural areas, further exacerbating the urban-rural inequality in the availability of funds.

Another way to meet rural demand for credit is to foster special rural financial institutions to serve farmers and rural firms. In this regard, of the large SOBs, only the Agricultural Bank of China (ABC) has a mandate to provide loans to the agricultural sector, but in practice, most farm loans are financed through rural credit cooperatives (RCCs). Even RCCs, however, direct loans mainly toward businesses rather than individual farmers. Thus, this dynamic creates an urban bias even among the RCCs (Sheng, 2001). Furthermore, with the sweeping closure of SOB county-level branches in the late 1990s, the RCCs encountered great difficulty in meeting the financial needs of rural China because many hold large portfolios of bad loans accumulated over the last two decades.\footnote{11} Due to these various factors, the share of financial resources available to rural areas has been declining. The average growth rate of total agricultural loans was less than 2\% per year, much slower than the double-digit growth rates of all loans; agricultural loans accounted for less than 10\% of new loans added during the 1990s (Song, 2000). Table 2 shows the credit distribution of the SOB system from 2001 through 2004. The total amount of credit was increased from 11,842.42 billion \textit{yuan} in 2002 to 19,354.28 billion \textit{yuan} in 2004, a 63.43\% increment during that period. However, the proportion of total loans that went to the agricultural sector in that period declined from 1.07\% to only 0.67\%. In fact, not only did basic financial services for rural residents falter, but funds available to rural enterprises also declined (Chen, 2002). The loan percentage to TVEs dropped further, from 1.92\% in 2002 to 0.92\% in 2004, according to Table 2.
2.2.2 Fiscal policies, industrial structure, and open door policies

In addition to the financial intermediation development just discussed, fiscal policies, industrial structure, and open door policies initiated in the 1980s certainly may have played an important role in China’s URID.

In our study, we also tested the effect of fiscal policy and industrial structure on URID because fiscal policies and industrial structural change may have also affected URID. Fiscal policies, in combination with the financial system, constitute important ways for government to intervene in economic affairs. Especially at the beginning of the reform in the 1980s, when financial intermediaries were not as strong as they are now, government frequently used fiscal means to intervene in the economy; for example, the government increased fiscal subsidies to urban residents and SOEs and raised the procurement prices of agricultural products. Thus, fiscal policies can directly influence the well-being of both urban and rural residents. In the early 1980s, for example, the government granted urban residents living allowances, even though procurement prices for many agricultural products had been considerably eased. A close examination of the data reveals the inclination toward urban bias in the decision making. For example, from our calculation, the proportion of fiscal funds in total fiscal expenditures supporting agricultural development is very small (3% on average). Thus, even in the early 1980s, fiscal policy contributed significantly to the growing URID. Since the late 1980s, the government increased its support of agricultural development only slightly (9% on average), and at the same time it changed its principal policy instrument from fiscal policy to financial policy. We will explore this temporal shift of the fiscal effects on URID in different periods in Section 5.

Consistent with the privatization of SOEs and marketization of the economy, the role of the industrial structure has been changing continuously over the reform period and may have an effect to regional
inequality. Kanbur and Zhang (2003) used a provincial-level panel to analyze regional inequality in China from 1952 to 2000. They argued that heavy industrialization increased urban-rural inequality during the prereform period but not after. Yang and Wei (1995) also showed that the average annual growth rates of GNP and industrial gross output values in inland regions have been lower than those in coastal regions since 1980. Using regional GDP as well as the GDP of three industrial sectors, Huang et al. (2003) showed that underdevelopment of secondary industry may have contributed to the increasing regional inequality.

Since the open door policy launched in the mid-1980s, China has been a center attracting foreign trade and FDI. Kanbur and Zhang (2003) argued that trade increased the urban-rural inequality after reform. Using provincial data from 1986 through 1998, Zhang and Zhang (2003) also showed that globalization (in terms of FDI and trade) has been the force driving regional inequality. Wei and Wu’s research (2001), however, pointed to a contrary conclusion, that a greater degree of openness helped reduce rather than increase URID. In this regard, our interest is in testing the way rural reform, openness, FDI, and trade have affected URID since the 1980s reform.

To summarize this review, we hypothesize that urban-biased development policies, such as financial intermediation development, fiscal policies, industrial structure, and open door policies (trade and FDI), may have increased URID. Conversely, rural development policies such as the HRS and financing for TVEs may promote rural economic development and thus reduce URID. The inverted-U-shaped relationship between of economic growth on inequality, the Kuznets curve, may then depend on the dominant development policy at a given time. These development policies may have jointly shaped the magnitude and direction of URID over the period we studied.
3 Model specification and variable measures

In this section, we specify the model that takes into account the different effects on URID of economic growth and government development policies such as the expansion of financial intermediation and fiscal policies, rural reform, and the open door policy. However, the explanatory power of each of these policies will depend on the period when the policy was emphasized. In Section 4, we will then show the estimation strategy.

3.1 Model specification

Our basic econometric model is as follows:

\[
\ln(URID) = C + \alpha_1 \cdot \ln(PERGDP) + \alpha_2 \cdot (\ln(PERGDP))^2 + \alpha_3 \cdot FINDEV + \alpha_4 \cdot AGRFINDEV + \sum_j \beta_j \cdot D + \varepsilon
\]

where subscripts \(i\) and \(t\) denote the \(i\)th province and the \(t\)th year, respectively, and \(\varepsilon\) is the usual error term. Following the specification of Levine et al. (2000) and Beck et al. (2000), we define the dependent variable \(URID\) as the ratio of urban per capita disposable income to rural per capita net income. We use it to gauge the \(URID\) gap.

3.2 Variable measures

The description of variables in the basic model is as follows:

\(PERGDP\) is real per capita GDP (in 1978 prices). Its square is also included to see whether there is a Kuznets effect, namely, an inverted-U-shaped relationship between per capita GDP and URID, as specified in Clarke et al. (2003). The coefficient of the real per capita GDP, \(\alpha_1\), resembles the slope of
the Kuznets curve, while the coefficient of the square of the real per capita GDP, $\alpha_2$, represents the curvature. The negative coefficient of $\alpha_2$ indicates a convergent effect, while its positive slope indicates a divergent effect.

$FINDEV$ is the ratio of loans extended by financial intermediaries to GDP, which tests the effect of financial intermediation on $URID$. We use this variable to measure the development of financial intermediation. We expect $FINDEV$ to increase $URID$ over the period in general, but particularly during the second period, 1990-1998, when China relied principally on financial intermediation through the monopolized banking system to control the economy.

$AGRFINDEV$ is the value of the share of total formal institutional loans provided to the agriculture sector. This variable is to test the way formal institutional loans to organizations in the agricultural sector, such as TVEs, may reduce the $URID$. We argue that the sign and significance of its coefficient cannot be determined a priori since the data on $AGRFINDEV$ probably do not reflect the actual value of loans to the agricultural sector.

$D$ is a vector of control variables for government development policies (or the conditioning information set), which include:

$EXPORT/GDP$ is the ratio of the total value of exports to GDP, and $FDI/GDP$ is the ratio of the volume of FDI to GDP. $EXPORT/GDP$ and $FDI/GDP$ represent the international integration level, which may help reduce the URID gap (Wei and Wu, 2001); on the other hand, $FDI/GDP$ ratios may also reflect the urban bias of the provincial authority and therefore add to a greater URID gap (Huang, 2005, 2008).
REFORM, the proportion of farm households adopting the HRS in a province, is used to measure the progress of the rural household responsibility reform. In 1987, almost all rural households had adopted the HRS; therefore, REFORM has been 1 since then. Since rural reform was widely believed to have improved the productivity of agricultural production and paved the way for rural industry, we expect a higher REFORM to correspond to a lower URID level.

In addition, FISCAL_AGR is the log value of the share of fiscal funds supporting agricultural production in total fiscal expenditures. FISCAL/GDP is the log value of the ratio of fiscal expenditures to GDP. We add this variable to the model to compare the effect of FINDEV with the effects of the government’s fiscal policy in different periods.  

The basic model outlined thus far enables us only to identify an overall and direct effect of FINDEV on URID. We are also concerned with the interaction between financial intermediation and economic structure. For example, in a province with a higher share of agriculture output in GDP, will the URID gap be larger or smaller when the banks lend more (Clarke et al., 2003)? To examine these effects, we modify our basic model specification of Equation (1) by adding the interaction between FINDEV and the variables considered to reflect the structural features of the economy.

The data used in our estimation covers 28 Chinese provinces for the period 1978-1998. All data were collected from M. Liu (2002) and The Compilation of Statistical Data of New China for 1978-1999 (National Bureau of Statistic China, 2000). The details of variable description and data resources are listed in the Appendix.
4 Estimation strategy

To estimate Equation (1), we first present results using the ordinary least squares (OLS) method with two-way fixed effects (TWFE), which control for the province dummy and time dummy simultaneously as benchmark estimations. However, the results of the traditional TWFE method are efficient and consistent only when explanatory variables are exogenous. In Equation (1), some explanatory variables, among them especially \textit{FINDEV}, are assumed to be endogenous. To address this problem, we then present results from the system generalized method of moments (SYS-GMM) estimation. We compare the results of TWFE and SYS-GMM in Tables 4 and 5. In the extended estimation in Table 6, we use SYS-GMM for consistency.

The advantage of SYS-GMM over a standard first-differenced GMM is the following: The first-differenced GMM estimator takes the first difference of the proposed equation in order to remove the unobserved fixed individual province effects from the estimation. And under the assumption that there is no serial correlation in the error term, the lagged levels of the explanatory variables can be used as instruments of the first-differenced variables. This method has the advantages of avoiding the biases related to omitted specific individual provincial effects and of controlling for endogeneity arising from bidirectional causality between explanatory variables and the explained variable. However, in the case of highly persistent data, lagged variables in levels are likely to be weak instruments for contemporaneous differences, making first-differenced GMM estimators biased (Blundell and Bond, 1998). Bond, Hoeffler and Temple (2001) therefore recommend the use of the SYS-GMM estimator (Arellano and Bover, 1995), which uses lagged levels as instruments for contemporaneous differences and lagged differences as instruments for contemporaneous levels. According to results from the Monte Carlo experiment, the SYS-GMM estimator performs substantially better than the standard first-
The other concern is the measurement error of the dependent variable in our empirical analysis. Our paper’s dependent variable, *URID*, is the ratio of per capita disposable income of urban households to per capita net income of rural households, in which rural/urban households are defined by the *hukou* system, the household registration system. The measure on rural income may include some nonagricultural sectors (e.g., income from village enterprise or urban wages, when the rural household has one or more persons working in urban areas). However, other independent variables such as *AGRFINDEV* and *FISCAL_AGR*, are defined by the shares to the regional agricultural sectors.

It is likely to be the case that some “rural *hukou*” migrants have been living in the urban sector and earning higher incomes than those who stayed in the rural area. In this regard, our estimation may include measurement error. Our measure may cause an underestimation of the *URID* since we also consider these rural- migrants (those who usually have higher incomes than normal peasants) as rural residents. Fortunately, the measurement error is on the dependent variable. If the measurement error is consistent across time, it will affect only the size of the error term and not the other parameter estimates. Also, if the measurement error is consistent among provinces and/or across time, the TWFE model should be able to absorb the measurement error, thus making our analysis consistent.
5 Estimation results and discussion

5.1 Basic estimation results

Table 4 reports several results based on the TWFE estimation and the SYS-GMM estimation, respectively. Some statistical test values relating to model specification show that the statistical property of the econometric model is very good. For example, adjusted $R^2$ values in TWFE are high, and Hansen test values in SYS-GMM also fail to reject the null hypothesis that lagged values are appropriate instruments.

The focus of our analysis is on the effect of FINDEV, the proxy for the development of financial intermediation. The coefficient is consistently significant at the 1% level in all TWFE estimates (columns 1 and 3). After controlling set $D$ is included in the SYS-GMM regression, the coefficient of FINDEV becomes significant at the 10% level. In addition, the value of the estimated coefficient of FINDEV increases around 40% compared to OLS results after endogenous effects have been accounted for. In general, these results are consistent with our expectation that financial development on the whole contributes to the expansion of URID.

To investigate the Kuznets effect, we look at both TWFE and SYS-GMM. We find that the signs of the estimated coefficients of PERGDP and its square term are positive and negative, respectively, and that both coefficients are significant at the 1% or 5% level, suggesting that there is an inverted-U-shaped curve relationship between the per capita income and URID.

We now turn to the variables for rural development policies. The estimated coefficient ($\alpha_4$) for the
proportion of agricultural loans is not significantly different from zero, indicating that agricultural loans did not significantly affect URID. These results again confirm our argument that China’s formal financial intermediation is inefficient in providing financial services to the agricultural sectors. As expected, the coefficient of REFORM is significantly negative in the TWFE estimation results (column 3), indicating that agricultural deregulation did facilitate the fall in URID.

We test the open door policy effect using the FDI data; FDI/GDP has a significant positive coefficient in the TWFE result. This result is consistent with the geographic distribution of FDI, which tends to benefit urban more than rural areas. On the other hand, after controlling for endogenous effects in GMM, both the HRS and FDI lose their significance.

Government fiscal policy can also be an important factor. What intrigues us is the coefficient of FISCAL/GDP, in both TWFE and SYS-GMM, which has the expected positive sign and is very significant. Moreover, the magnitude of the coefficients of FISCAL/GDP is greater than those of FINDEV, which indicates that the impact of fiscal means is greater than that of financial intermediation. So far, we have explored the overall effect of the development of financial intermediation on URID for the period 1978-1998. However, we want to see whether there is a difference in this effect before and after the late 1980s.

5.2 The effects of FINDEV in the different periods

In this section, we rerun the model by splitting the sample duration into two parts: the decades from 1978 to 1989 and from 1990 to 1998. We use 1989 as the dividing line for our analyses for several reasons. First, the Chinese government did not use banks as its principal policy instrument to regulate the economy until the late 1980s (Shih, 2007). Second, 1989 seems to be a natural breaking point
because in that year, a major reshuffling of the leadership may have introduced heterogeneity in the execution of financial policies. Third, other research empirically shows the great changes in the inequality index since 1990. For example, Chang (2002), using the coefficient of variation, also shows that regional disparity began to increase in 1990, which is consistent with the result of Démurger et al. (2001). In fact, the data support this claim: Figure 2 shows the gradual change of slope between $URID$ and $Loan/GDP$ from a negative to a positive relationship.

Table 5 present TWFE and SYS-GMM estimation results for the two subperiods, 1978-1989 and 1990-1998, respectively. It must be noted that because the value of $REFORM$ will be time invariant after 1987, this variable will not be included in the regression for the 1989-1998 decade due to the collinearity problem.

The results of the estimated coefficient of $FINDEV$ in Table 4 are significant only in the 1990-1998 period. We think that this is true because around 1989, rural reform stalled and the policy priority was targeted toward urban sector reform. Regulations for the rural economy and rural financial system were tightened again; thus, the $URID$ gap can be predicted to have been increasing since then.21

The sign of the coefficients of ln ($PERGDP$) and its square term are significantly positive and negative, respectively, in the first period (the first two columns of Table 5), but the sign is reversed in the second period (the last two columns of Table 5). This implies that the inverted-U-curve relationship between $URID$ and the level of economic development changed to a U curve (diverging) relationship in the second period. The cause of this fundamental change may be due to the shift of economic growth from rural regions (agricultural) to urban areas (financial) during the transition from the first period to the second.
In addition, while the effect of \( EXPORT/GDP \) is significantly negative only during the first subperiod, \( FDI/GDP \) has a significantly positive coefficient in both subperiods. This suggests that exploitation of the comparative advantage in terms of foreign trade probably reduced \( URID \) significantly only in the 1980s.\(^{22}\)

Moreover, we argue that over the two periods, the government shifted from fiscal policy to a financial system in the implementation of its policy goals. If our argument is true, we would expect that in the first period, the estimated effects of fiscal policy on \( URID \) would be significant \emph{and} that they would be greater than those induced by the development of financial intermediation, while in the second period, these effects would be smaller and likely to be insignificant.

In the full sample regressions, the results in Table 4 show that the overall effect of fiscal policy on \( URID \) for the total sample period is highly significant and is larger than that of the development of financial intermediation. However, if the period is divided into two subperiods, as in Table 5, a different picture emerges. For the 1978-1989 period, the estimated coefficient of \( FISCAL/GDP \) is significant and larger than that of \( FINDEV \) (columns 1 and 2, Table 5). But for the 1990-1998 period, the estimated coefficient of \( FINDEV \) is significant and larger than that of \( FISCAL/GDP \), and the latter loses its significance (columns 3 and 4, Table 5).

We conclude that the development of both financial intermediation and fiscal policy contributed to the growing \( URID \), but that the former played a leading role in the 1990s, whereas the latter was the most prominent factor in the 1980s. These results are consistent with our theoretical argument.
5.3 Extended model specification: Industrial structure of the economy

The approach outlined thus far enables us to identify only an overall and direct effect of FINDEV on URID. However, such analysis does not allow us to simultaneously identify the effects of both financial intermediation and the structural characteristics of the economy. For example, in a province whose GDP has a higher share of agricultural output, will the URID gap be larger or smaller when the banks lend more (Clarke et al., 2003)? To examine these effects, we modify our basic model specification of Equation (1) by adding the interaction between FINDEV and the variables considered to reflect the structural features of the economy.

The first extended model specification is as follows:

\[
\ln(URID)_{it} = C + \alpha_1 \cdot \ln(PERGDP)_{it} + \alpha_2 \cdot (\ln(PERGDP))_{it}^2 + \alpha_3 \cdot FINDEV_{it} + \alpha_4 \cdot AGRFINDEV_{it} \\
+ \alpha_5 \cdot (FINDEV \cdot AGR/GDP) + \alpha_6 \cdot AGR/GDP + \sum_j \beta_j \cdot D + \epsilon_{it}
\]  
(2)

where AGR/GDP is the primary industry’s share of total GDP. Kuznets (1955) argued that income inequality increases as people move from the low-income, but more egalitarian agricultural sector to the high-income, but less egalitarian industrial sector. In other words, income inequality depends on the sectoral structure of an economy. To control for this effect, we add AGR/GDP to Equation (1).

We also add an interaction term to Equation (1). As Clarke et al. (2003) argue, industrial structure will affect the impact of financial depth on inequality. In their paper, they assert that if entry into a modern sector (industry and service) is made easier when access to finance is easier, then inequality would be greater in economies with larger modern sectors. Consequently, inequality would be higher in countries with large modern sectors and greater financial depth than in countries with only one (or neither) of these characteristics. Regarding the relationship among URID, financial development, and industrial structure, if Clarke et al.’s augmented Kuznets hypothesis is right, the estimated coefficient
of financial development and industrial structure should be negative and statistically significant; on the
other hand, we believe this interaction term can also be used as a vehicle to test whether the urban-bias
hypothesis pertains to the relationship between URID and financial development. If urban bias does
exist, the coefficient on the interaction term of financial development and industrial structure,
\((FINDEV*AGR/GDP)\), should be insignificant (financial intermediation will be insensitive to variations
in industrial structure). The estimation results of Equation (2) are reported in Table 6.

The estimated coefficients of \(AGR/GDP\) in the full sample regressions and the subperiod 1990-1998
regression in Table 6 are significantly negative, which is consistent with the finding of Clarke et al.
(2003). This supports the Kuznets hypothesis that \(URID\) increases during the transition from agriculture
to modern industry. Moreover, our analysis focuses on the signs and significance level of the
coefficient of \(FINDEV\) and on the coefficient of \((FINDEV*AGR/GDP)\). While the coefficient of
\(FINDEV\) is still significant during the 1990-1998 subperiod (column 3), the coefficient of
\((FINDEV*AGR/GDP)\) is insignificant in all regressions. These results seem to support the urban-bias
hypothesis, as opposed to the Kuznets hypothesis, since the effects of \(FINDEV\) do not depend on
changes in industrial structure. In addition, results in Table 6 support the affirmation that the impacts of
financial intermediation on \(URID\) are mainly observed in the 1990s.25

6 Conclusion

Using panel data for 28 provinces for the 1978-1998 period to empirically test the relationship between
the expansion of financial intermediation and urban-rural inequality disparity (URID) in China, this
paper illustrates that the urban-biased development of financial intermediation contributes significantly
to the increase of URID. The results are robust to the controls for reverse- causality issues.
We also analyze the data set by dividing it into two subperiods, 1978-1989 and 1990-1998. While central government used fiscal measures to regulate the economy in the first period, the focus shifted to an increased use of its banking system during the second period. We show that a convergent of URID at the Kuznets curve, a negative relationship between the squared GDP and URID, may have occurred during 1978-1988, a decade of rapid agricultural growth and the development of township and village enterprises (TVEs). However, a divergent of URID occurred during 1989-1998, a decade of high urban growth and urban-rural inequality. Urban-biased financial intermediation together with limited liquidity in rural areas may have changed the fundamentals of URID. Moreover, we find the interaction term of the provincial financial intermediation loan ratio with the size of the agricultural sector in our regressions to be insignificant in explaining URID.

Our study echoes some early works on the financial institution and spatial inequality, for example, the effect of state banking system monopolization and spatially centralized financial administration on spatially uneven wealth accumulation and regional inequality (Leyshon and Thrift 1997; Martin, 1999; Martin and Minns, 1995; Myrdal, 1957) This study adds to the literature on economic inequality by clarifying the effects of urban-biased financial intermediation policy on the underlying dynamics of urban-rural inequality.
References


Appendix: Definition of the variables and data sources

Variables

**Dependent variable**

\(URID\) The ratio of urban per capita disposable income to rural per capita net income

**Explanation variables**

\(PERGDP\) The real per capita GDP at the provincial level

\(FINDEV\) The ratio of loans extended by financial intermediation in one province to its GDP

\(AGRFINDEV\) The share of loans to agriculture sectors in total loans

\(REFORM\) The proportion of farm households in a province that adopt the household responsibility system

\(EXPORT/GDP\) The ratio of total value of exports to GDP at the province level

\(FDI/GDP\) The ratio of FDI to GDP at the province level

\(FISCAL\_AGR\) The share of total fiscal funds used for supporting agricultural production

\(FISCAL/GDP\) The ratio of fiscal expenditures to GDP

\(AGR/GDP\) The share of total GDP attributed to a province’s primary industry

\(PD\) Provincial dummy = 1 if provinces are Beijing, Shanghai and Tianjin; otherwise = 0

Data sources

Figures and tables

Figure 1

Note: URID is measured as the ratio of urban disposable income per capita to the rural per capita net income.
Figure 2

Note: The linear prediction lines between URID and Loan/GDP show the gradual change of slope from a negative to a positive relationship after 1989.
<table>
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<tbody>
<tr>
<td><strong>Proportion of asset value in total asset value of banks in China</strong></td>
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<td>1994</td>
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<td>13.69</td>
<td>19.04</td>
<td>26.33</td>
<td>93.19</td>
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<tr>
<td><strong>Proportion of profit value in total profit value of banks in China</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1994</td>
<td>19.4</td>
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<td>25.36</td>
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<tr>
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<td>21.25</td>
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<td>41.92</td>
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<td><strong>Proportion of deposit in total deposit of banks in China</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>27.37</td>
<td>13.11</td>
<td>18.02</td>
<td>15.39</td>
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<td>13.47</td>
<td>16.7</td>
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<td><strong>Proportion of loans in total loans of banks in China</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>28.03</td>
<td>13.34</td>
<td>16.54</td>
<td>14.22</td>
<td>72.13</td>
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<td>1997</td>
<td>26.63</td>
<td>13.09</td>
<td>15.05</td>
<td>14.8</td>
<td>69.57</td>
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Source: Lin and Li (2000) Table 3.
<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
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<td>Total credit utilized (billion yuan)</td>
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<td>13,717.35</td>
<td>16,452.39</td>
<td>19,354.28</td>
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<tr>
<td>Credit categories (%)</td>
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<td></td>
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<td>Industrial</td>
<td>13.31</td>
<td>12.21</td>
<td>10.72</td>
<td>8.99</td>
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<td>Business</td>
<td>13.90</td>
<td>11.49</td>
<td>9.22</td>
<td>7.27</td>
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<tr>
<td>Construction</td>
<td>1.42</td>
<td>1.58</td>
<td>1.18</td>
<td>0.63</td>
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<td>Agriculture</td>
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<td>0.77</td>
<td>0.67</td>
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<td>1.02</td>
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<td>Joint ventures</td>
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<td>1.02</td>
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<tr>
<td>Private businesses</td>
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<td>0.33</td>
<td>0.38</td>
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<td>Other short-term loans</td>
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<td>4.51</td>
<td>4.90</td>
<td>4.29</td>
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<tr>
<td>Medium- to long-term loans</td>
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<td>30.85</td>
<td>32.30</td>
<td>32.18</td>
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<tr>
<td>Other loans</td>
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<td>2.02</td>
<td>3.06</td>
<td>3.93</td>
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<td>Security and investment</td>
<td>14.28</td>
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<td>13.29</td>
<td>11.62</td>
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<td>Interbank current account</td>
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<td>0.77</td>
<td>0.44</td>
<td>0.78</td>
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<td>Gold and silver reserve</td>
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<td>0.25</td>
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<td>Foreign currency</td>
<td>14.94</td>
<td>16.78</td>
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<td>27.11</td>
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<td>Government budget loans</td>
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<td>0.00</td>
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<td>International financial institutional capital</td>
<td>0.64</td>
<td>0.58</td>
<td>0.53</td>
<td>0.35</td>
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Note: The figures include loans from the People’s Bank of China, state-owned banks, and post office credit unions. The credit categories are based on the record in the statistical yearbook without modification.

Table 3
Descriptive statistics (average values, 1978-1998)

<table>
<thead>
<tr>
<th></th>
<th>URID</th>
<th>PERGDP</th>
<th>FINDEV</th>
<th>AGRFINDEV</th>
<th>FISCAL_AGR</th>
<th>REFORM</th>
<th>EXPORT/GDP</th>
</tr>
</thead>
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<tr>
<td>Mean</td>
<td>2.21</td>
<td>1,193.6</td>
<td>0.74</td>
<td>0.09</td>
<td>0.02</td>
<td>0.80</td>
<td>0.11</td>
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<tr>
<td>Max</td>
<td>3.04</td>
<td>5,652.5</td>
<td>1.08</td>
<td>1.04</td>
<td>0.05</td>
<td>0.86</td>
<td>0.45</td>
</tr>
<tr>
<td>Min</td>
<td>1.45</td>
<td>400.3</td>
<td>0.45</td>
<td>0.01</td>
<td>0.002</td>
<td>0.69</td>
<td>0.03</td>
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<tr>
<td>SD</td>
<td>0.44</td>
<td>1,055.8</td>
<td>0.16</td>
<td>0.19</td>
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<td>0.03</td>
<td>0.10</td>
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Table 4
Financial intermediation and ln (URID)
Baseline model (1978-1998, full sample)

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<th></th>
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<tbody>
<tr>
<td>ln (PERGDP)</td>
<td>0.74***</td>
<td>0.73**</td>
<td>1.02***</td>
<td>0.99**</td>
</tr>
<tr>
<td></td>
<td>(4.38)</td>
<td>(2.15)</td>
<td>(4.45)</td>
<td>(2.46)</td>
</tr>
<tr>
<td>(ln(PERGDP))^2</td>
<td>-0.05***</td>
<td>-0.05**</td>
<td>-0.07***</td>
<td>-0.07**</td>
</tr>
<tr>
<td></td>
<td>(4.34)</td>
<td>(2.17)</td>
<td>(4.64)</td>
<td>(2.73)</td>
</tr>
<tr>
<td>FINDEV</td>
<td>0.14***</td>
<td>0.14</td>
<td>0.24***</td>
<td>0.22*</td>
</tr>
<tr>
<td></td>
<td>(2.27)</td>
<td>(1.44)</td>
<td>(3.59)</td>
<td>(1.96)</td>
</tr>
<tr>
<td>AGRFINDEV</td>
<td>0.27</td>
<td>0.25</td>
<td>0.24</td>
<td>0.16</td>
</tr>
<tr>
<td></td>
<td>(1.12)</td>
<td>(0.60)</td>
<td>(1.01)</td>
<td>(0.37)</td>
</tr>
<tr>
<td>REFORM</td>
<td>-0.10*</td>
<td>-0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.80)</td>
<td>(1.59)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXPORT/GDP</td>
<td>0.07</td>
<td>0.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.09)</td>
<td>(0.75)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FDI/GDP</td>
<td>0.76*</td>
<td>0.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.90)</td>
<td>(1.42)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FISCAL_AGR</td>
<td>-0.23</td>
<td>-0.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.94)</td>
<td>(0.67)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FISCAL/GDP</td>
<td>0.82***</td>
<td>0.86**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.29)</td>
<td>(2.28)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Observation 506 506 490 490
Adjusted $R^2$ 0.89 0.90
Hansen test significant level 1.00 1.00
AR(2) test significant level 0.38 0.16

Notes: TWFE (with two-way fixed effects) is the ordinary least squares method which controls for the province dummy and time dummy simultaneously as benchmark estimations.
SYS-GMM (system generalized method of moments) estimation which avoids the biases related to omitted specific individual provincial effects and controls for endogeneity arising from bidirectional causality between explanatory variables and the explained variable in estimations.
Numbers below estimated coefficients are robust standard errors.
*, **, *** indicate significance at the 10%, 5%, and 1% level, respectively.
URID is the ratio of urban per capita disposable income to rural per capita net income.
PERGDP is the real per capita GDP at the provincial level.
(ln(PERGDP))^2 is the square term of ln (PERGDP).
FINDEV is the ratio of loans extended by financial intermediation in one province to its GDP.
AGRFINDEV is the share of loans to agriculture sectors in total loans.
REFORM is the proportion of farm households that adopt the household responsibility system in a province.
EXPORT/GDP is the ratio of total value of exports to GDP at the provincial level.
FDI/GDP is the ratio of foreign direct investment to GDP at the provincial level.
FISCAL_AGR is the share of fiscal funds for supporting agricultural production in total fiscal expenditures.
FISCAL/GDP is the ratio of fiscal expenditures to GDP.
## Table 5
Financial intermediation and ln (URID)

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td>TWFE</td>
<td>SYS-GMM</td>
</tr>
<tr>
<td>ln (PERGDP)</td>
<td>1.80***</td>
<td>1.88***</td>
</tr>
<tr>
<td></td>
<td>(5.44)</td>
<td>(3.91)</td>
</tr>
<tr>
<td>(ln(PERGDP))^2</td>
<td>-0.14***</td>
<td>-0.15***</td>
</tr>
<tr>
<td></td>
<td>(6.10)</td>
<td>(4.59)</td>
</tr>
<tr>
<td>FINDEV</td>
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<td>0.01</td>
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<td></td>
<td>(0.32)</td>
<td>(0.07)</td>
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<tr>
<td>AGRFINDEV</td>
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<td>0.22</td>
</tr>
<tr>
<td></td>
<td>(1.04)</td>
<td>(0.72)</td>
</tr>
<tr>
<td>REFORM</td>
<td>-0.08*</td>
<td>-0.07*</td>
</tr>
<tr>
<td></td>
<td>(1.75)</td>
<td>(1.69)</td>
</tr>
<tr>
<td>EXPORT/GDP</td>
<td>-0.43*</td>
<td>-0.55**</td>
</tr>
<tr>
<td></td>
<td>(1.66)</td>
<td>(2.15)</td>
</tr>
<tr>
<td>FDI/GDP</td>
<td>2.65**</td>
<td>3.02**</td>
</tr>
<tr>
<td></td>
<td>(2.26)</td>
<td>(2.50)</td>
</tr>
<tr>
<td>FISCAL_AGR</td>
<td>-0.35**</td>
<td>-0.35*</td>
</tr>
<tr>
<td></td>
<td>(2.03)</td>
<td>(1.85)</td>
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<tr>
<td>FISCAL/GDP</td>
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<td>0.83**</td>
</tr>
<tr>
<td></td>
<td>(3.05)</td>
<td>(2.23)</td>
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<td>Observation</td>
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<td>254</td>
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<tr>
<td>Adjusted R^2</td>
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<td>0.95</td>
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<tr>
<td>Hansen test</td>
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<tr>
<td>AR(2) test</td>
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<td>0.88</td>
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</table>

Notes: TWFE (with two-way fixed effects) is the ordinary least squares method which controls for the province dummy and time dummy simultaneously as benchmark estimations.

SYS-GMM (system generalized method of moments) estimation which avoids the biases related to omitted specific individual provincial effects and controls for endogeneity arising from bidirectional causality between explanatory variables and the explained variable in estimations.

Numbers below estimated coefficients are robust standard errors.

*, **, *** indicate significance at the 10%, 5%, and 1% level, respectively.

URID is the ratio of urban per capita disposable income to rural per capita net income;

PERGDP is the real per capita GDP at the provincial level;

(ln(PERGDP))^2 is the square term of ln (PERGDP);

FINDEV is the ratio of loans extended by financial intermediation in one province to its GDP;

AGRFINDEV is the share of loans to agriculture sectors in total loans;

REFORM is the proportion of farm households that adopt the household responsibility system in a province;

EXPORT/GDP is the ratio of total value of exports to GDP at the provincial level;

FDI/GDP is the ratio of foreign direct investment to GDP at the provincial level;

FISCAL_AGR is the share of fiscal funds for supporting agricultural production in total fiscal expenditures;

FISCAL/GDP is the ratio of fiscal expenditures to GDP.
<table>
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<tbody>
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<td></td>
<td>SYS-GMM</td>
<td>SYS-GMM</td>
<td>SYS-GMM</td>
</tr>
<tr>
<td>ln((PERGDP))</td>
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<td>1.66**</td>
<td>-1.50***</td>
</tr>
<tr>
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<td>(2.61)</td>
<td>(6.58)</td>
</tr>
<tr>
<td>(ln((PERGDP)))^2</td>
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<td>-0.15***</td>
<td>0.09***</td>
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<td>(3.05)</td>
<td>(5.90)</td>
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<td></td>
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<td>(1.48)</td>
<td>(3.63)</td>
</tr>
<tr>
<td>AGR/GDP</td>
<td>-2.07***</td>
<td>-0.85</td>
<td>-2.0***</td>
</tr>
<tr>
<td></td>
<td>(5.21)</td>
<td>(1.38)</td>
<td>(4.02)</td>
</tr>
<tr>
<td>FINDEV*AGR/GDP</td>
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<tr>
<td></td>
<td>(1.16)</td>
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<td>(0.29)</td>
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<td>(0.49)</td>
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<tr>
<td>REFORM</td>
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<td>—</td>
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<tr>
<td></td>
<td>(0.29)</td>
<td>(0.15)</td>
<td>—</td>
</tr>
<tr>
<td>EXPORT/GDP</td>
<td>0.04</td>
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<td>-0.08</td>
</tr>
<tr>
<td></td>
<td>(0.40)</td>
<td>(3.88)</td>
<td>(0.87)</td>
</tr>
<tr>
<td>FDI/GDP</td>
<td>1.13**</td>
<td>3.91***</td>
<td>1.27</td>
</tr>
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<td></td>
<td>(2.14)</td>
<td>(3.29)</td>
<td>(3.15)</td>
</tr>
<tr>
<td>FISCAL_AGR</td>
<td>-0.04</td>
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<td>-6.87*</td>
</tr>
<tr>
<td></td>
<td>(0.17)</td>
<td>(1.94)</td>
<td>(1.73)</td>
</tr>
<tr>
<td>FISCAL/GDP</td>
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<td>-0.14</td>
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<tr>
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<td>1</td>
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</tbody>
</table>

Notes: TWFE (with two-way fixed effects) is the ordinary least squares method which controls for the province dummy and time dummy simultaneously as benchmark estimations.
SYS-GMM (system generalized method of moments) estimation which avoids the biases related to omitted specific individual provincial effects and controls for endogeneity arising from bidirectional causality between explanatory variables and the explained variable in estimations.

Numbers below estimated coefficients are robust standard errors; *, **, *** indicate significance at the 10%, 5%, and 1% level, respectively:
URID is the ratio of urban per capita disposable income to rural per capita net income;
PERGDP is the real per capita GDP at the provincial level;
(ln(\(PERGDP\)))^2 is the square term of ln(\(PERGDP\));
FINDEV is the ratio of loans extended by financial intermediation in one province to its GDP;
AGRFINDEV is the share of loans to agriculture sectors in total loans;
increase rural income significantly, as Sicular et al. (2004, p. 11) described, the show an approximately 5-8% increase in unadjusted rural income. Although this additional income may not in general
However, migrants' remittance may help to alleviate this low rural income. Sicular, Yue, Gustafsson, and Li (2004, Table 3)
different from the definition because of migration and restrictive city definition. As a result, the urban GDP and the rural GDP may be
collected at the field. In this regard, the real income in rural areas is less than the stated income (Bernstein and Lü, 2003).
standardized, with very little variation in income tax, the collection of taxes and fees in rural areas could be very informal,
of income taxed in the rural areas is higher than is stated in the statistical year book. Unlike the urban tax, which is

1The inverse-U-shaped Kuznets curve describes the convergence of inequality between two sectors (urban and rural) during a period of economic growth. The urban-rural income disparity (URID) may first diverge due to high economic development levels of urban economy and urban inequality relative to the rural sector. The convergence of inequality will then be the result of industrialization and urbanization at a later stage (Kuznets, 1955: 17-18).
2In this paper, we follow the classical definition of financial intermediation, the loan contracts issued by financial intermediaries such as banks (Diamond, 1984).
3See Dow and Rodriguez-Fuentes (1997) for a thorough survey of the effect of regional finance on regional development.
4Martin (1999) comments that “Financial systems are inherently spatial … [there are] four interrelated geographies of the financial system – the locational, the institutional, the regulatory, and the public – [that] shape the flows of money across space” (pp. 6-10).
5Martin and Minns (1995) show that there is a high concentration of pension funds clustered in the southeastern part of England due to the country’s spatially centralized financial administration. They argue that this centralized system may cause spatial biases and inefficiency of funding allocation.
6See also Corbridge, Martin, and Thrift (1994), an edited volume on the effect of geopolitics on the international financial markets and the spatial distribution of money across the globe.
7This formation of the financial intermediation development index has been widely used by many researchers such as Levine, Loayza, and Beck (2000) and Beck, Demirgüç-Kunt, Levine, and Maksimovic (2000).
8These findings are supported by other researchers in the field (Hu, Wang, and Kang, 1995; Wei, 1997; Zhang, 2000).
10One of the key assumptions of Kuznets’ hypothesis on the convergence of inequality between sectors is the difference in the inequality levels of the urban and rural settings. Postulating that urban settings have higher inequality than rural areas, Kuznets then analyzed the impact of overall inequality during periods of economic growth.
11S. Liu’s (2002) survey on county finance found that rural financial agencies were concerned about these huge bad loans and tremendous losses. Liu concluded that the tightening of credit policies that occurred after SOBs were commercialized had constrained county-level economic activities financially.
12The industrial structure effect to regional development may have an effect even in the pre-reform period; Lu and Wang (2002) attributed the uneven regional development to differences in regional production factors and the legacy of colonial history in the coastal area, particularly the presence of industrial infrastructure.
13They employ an alternative inequality index, a member of the decomposable generalized entropy class of inequality measure, pioneered by Sharrock (1980, 1984).
14They also argue that the recent policy of decentralization and openness has increased coastal vs. inland income disparity. Though this finding is rather interesting, we do not take up this topic in detail here because our interest is to explore the urban-rural income disparity within a province rather than the income disparity between provinces.
15For convenience, we will drop all i and t subscripts in the following discussion of variables.
16Our calculation of URID has been deflated by the 1978 price index. However, there are two data issues that cannot be addressed in this dependent variable construction, that is, urban population and taxation over time. First, our calculation of URID at the provincial level is based on the urban and rural resident income defined by the household registration system (hukou). As Chan (2007) pointed out, the problem of defining urban and “urban resident” may be very complex and may affect the population size and GDP calculation within a region. The de facto city population may be larger than the hukou definition because of migration and restrictive city definition. As a result, the urban GDP and the rural GDP may be different from the hukou definition. Since a more systematic new urban definition was adopted only recently since the 2000 population census, we cannot address this issue in this paper. Second, our definition does not take into account taxation, which may cause an underestimation of URID due to the overstated rural income. This is so because the proportion of income taxed in the rural areas is higher than is stated in the statistical year book. Unlike the urban tax, which is standardized, with very little variation in income tax, the collection of taxes and fees in rural areas could be very informal, for example, the informal “tax” could be in form of the use of labor power for rural government projects and informal fees collected at the field. In this regard, the real income in rural areas is less than the stated income (Bernstein and Lü, 2003). However, migrants’ remittance may help to alleviate this low rural income. Sicular, Yue, Gustafsson, and Li (2004, Table 3) show an approximately 5-8% increase in unadjusted rural income. Although this additional income may not in general increase rural income significantly, as Sicular et al. (2004, p. 11) described, the URID may be overstated in this regard.
While acknowledging that there may be a problem of overestimation, our construction of the dependent variable provides a consistent estimate of URID over this long period of development in China.

17Due to potential problems of simultaneity, the estimation does not include an urbanization index for the provinces. If, however, urbanization is measured as the ratio of the proportion of urban population to the total population of a province, inclusion of this variable does not change the estimation results much.

15Due to data limitations, two provinces, Hainan and Tibet, are not included.

18Due to data limitations, two provinces, Hainan and Tibet, are not included.

19We carry out our estimation up to the year 1998 for two reasons: first, the data from SCB (2000) are not comparable to the data from other sources due to changing definitions of data; second, this is the only data set that covers financial information at the provincial level since the 1978 reform and that can therefore cover the longest financial history periods. For the sake of data consistency, our estimation covers the period 1978-1998.

20With regard to the results in SYS-GMM when set \( D \) is not controlled, the estimated coefficient of \( \text{FINDEV} \) is not significant in column 2 despite its positive sign. However, this may well be a case of a missing variable.

21Because of space limitations, we do not describe this point at length here. However, in this footnote, we give a brief description in Chinese literature about the reorientation of governmental policies after the late 1980s. The major features of this policy reorientation include placement of more emphasis on urban reforms, giving super-large SOEs preferential treatment over the enterprises with other ownership types, and relying on the financial system, in general, and state banks, in particular, to implement government policies (Zhang, Liu, and Chen 2007). In his recent book, Huang (2008) also notes such policy reorientation, in which the government has given developmental priority to urban rather than rural areas since the 1990s.

22A possible explanation is that since the late 1980s, migration of labor from rural to urban areas has gained popularity as people search for jobs. A great number of rural workers are concentrated in the relatively developed coastal provinces such as Guangdong, Jiangsu, Beijing, and Shanghai, where international trade volume is relatively high.

23Yang and Wei (1995) also showed that the average annual GNP growth rates and industrial gross output value in the inland regions have been lower than in the coastal regions since 1980.

24List and Gallet (1999), using a panel of 71 countries from 1961 to 1992, also show that inequality increases in the most advanced countries when the industrial structure shifts from a manufacturing to a service base.

25We have also tested the potential influence of China’s metropolis on URID because these metropolitans may absorb exceptionally high financial intermediaries and create a structure different from that found in the rest of the county. In our testing, we used \( PD \) as a provincial dummy variable that takes the value of 1 if one province belongs to Beijing, Tianjin, and Shanghai, and takes the value of 0 otherwise. If a structural difference exists in the effects of financial intermediation due to geographic location, these results are highly consistent with those given in Tables 4-6. The estimated coefficients of \( \text{FINDEV} \) are still positive and statistically significant, and this statistical significance level is due mainly to its significant effects in the 1990s. Correspondingly, the estimated coefficients of the fiscal expenditure ratio to GDP (\( \frac{\text{FISCAL}}{\text{GDP}} \)) become significant only in the 1980s. The regression results can be obtained from the author upon request.