

Urban-Rural Inequality, Flexible Labor Market, and
Growth in the Chinese Thirty-Year Economic Reform

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Abstract

The thirty-year economic reform has brought tremendous change to China. A significant change is the increase in flexibility of labor market. Meanwhile, the changes are also found in employment structure, investment, and international trade. The observable consequence is the fast growth both in GDP and urban-rural income inequality. Are these phenomena related? This paper investigates the relationship of urban-rural income inequality to these variables, using a panel data of 31 provinces from 1980 to 2007. The results indicate that urban-rural income inequality relates negatively to GDP growth and fixed asset investment. However, the relationships of urban-rural inequality to urban employment and international trade depend on their levels. At low level, increases in urban employment and international trade produce small or even negative impact on urban-rural inequality, while this relationship reverses when urban employment and international trade increase up to a certain point. These results suggest that income inequality can be moderated by careful policy arrangements.

I. INTRODUCTION

The successfulness of the Chinese reform in economic growth has never smoothed down the concern about the disparity of living standards since the reform started at the end of the 1970s. At the beginning, inequality was a major consideration on the acceptability of the reform. The worry was that the efficiency-oriented economic reform might result in the polarization of living standards. As it was, the reform advocates convinced the society with a promise of two-step reform strategy—to improve the living standards of part of the population in the first step and then the others in the second. This implies a certain extent of inequality is acceptable in the course of the reform and the eventual end would be less inequality. However, as 30 years passed, the inequality in China is still in the trend of increasing although the reform successfully relieves absolute poverty of millions. It can not be sure yet when the turning point of the first and the second steps will be arrived. Certainly, a research on the causes of inequality will help in policy-making to turn down the inequality.

Income inequality is closely related to economic convergence in literatures. Solow (1956) provides a basic model to analyze economic convergence. The model predicts a faster growth of low income regions. The Solow model is supported by the results of empirical researches. Barro and Sala-I-Martin (1991) found evidences that support the existence of convergence among States in USA. Their estimation of the convergence speed is about 2 percent. In China, Cai, Wang and Du (2002) found that per capita GDP in the initiative year is negatively related to growth rates in following years. However, empirical findings do not always agree with the Solow model. Fujita and Hu (2001)

studied the growth of GDP per capita across provinces in China. They reported that there was a trend of convergence among provinces but a disparity between coastal regions and inland regions over the period of 1958-1994. The inconsistent empirical results stirred up criticisms on the exogenous assumption of the Solow model. Using the endogenous innovation growth model, Wei et al. (2001) provided the evidence of convergence controlling for the R&D expenditure and openness across China provinces in the period of 1986-1995. The causes of convergence were investigated by Ravallion and Jalan (1996). They suggest that spatial externalities are the causes of the regional aggregate divergence. They also reported a convergence existing in county-level. They attributed the disparity to the effect of globalization and the economic liberalization. While the empirical evidences support both convergence and divergence, the evidences supporting inequality seem to dominate literatures.

The important investigation on income inequality was done by Kuznets (1955). His hypothesis that income inequality has an inverted-U shape curve serves as a basic model for later researches. The inequality increases as the labors transfer to urban areas and decrease as the share of population migrating to urban areas increases because the income in urban areas is more equal in distribution. According the Kuznets model, income inequality in China should be on the way up in the early period of economic reform. Khan and Riskin (1998) investigated the inequality in China, using household survey data. They found the inequality increased rapidly during 1988-1995 and urban-rural disparity is the major contributor to the overall inequality. The increase of income inequality is also reported in rural China by Benjamin, Brandt and Giles (2005). They studied the rural

income inequality with a survey data of 8000 households over the periods of 1986-1999. Their results indicate a long run increase in inequality and the bottom five percent of the rural population was worse-off. However, the research of Kanbur and Zhang (1999) reveals the urban-rural inequality was much higher but grew slower than the inland-coastal inequality. When some researchers focus on the trend of income inequality, other researches pay attention to the cause of income inequality.

Factors found to relate to income inequality include location, investment, employment, and economic growth in literatures. The urban-rural and spatial inequality is found to be the major factors for the inequality in China in Yao's (1999) research. Similarly, Sicular et al (2007) present that the resident location is the most important factors for urban-rural income disparity in China, using household survey data from 1995 to 2002. The export-oriented FDI was reported to increase income inequality by raising the wages in the unskilled-worker-relied industries in Owen and Yu's (2008) research. Kung and Lee (2001) found the off-farm employment increases both income and income inequality simultaneously in a survey dataset of four counties in Hunan and Sichuan Provinces in 1993. Lin, Wang, and Zhao (2004) show the response of labor migration to the regional income inequality is statistically significant in 1995-2000 but insignificant in 1985-1995. Chen and Guo (2005) suggest the relationship between inequality and economic growth can be zero, positive or negative. Lu (2002) found the Kuznets relationship of economic growth and inequality exists in the urban-rural consumption. On consequence of inequality, Ravallion and Chen (2007) demonstrate that provinces with higher inequality have lower progress in poverty reduction in China. They attribute the

slow perform in poverty reduction to the slow economic growth and the smaller elasticity of poverty reduction to economic growth.

The existing literatures have made a great contribution in understanding the income inequality in China. However, the majority of the researches are based on household survey data. The time span of the data does not cover the whole period of Chinese economic reform. This paper aims to investigate the relationship of urban-rural income inequality to economic growth, urban employment, fixed asset investment and international trade with a panel data spanned over all 31 provinces from 1980 to 2007. The results show that income inequality can be reduced by appropriate policies.

The rest of the paper will be expanded by providing a descriptive analysis of the Chinese economic reform, the labor mobility, and urban-rural inequality after the reform in next section. In section III, the model for estimation will be presented. Then, the data and estimated results will be discussed in section IV. The conclusion will be made in the last section.

II. THE ECONOMIC REFORM, LABOR MOBILITY, AND INEQUALITY IN CHINA

The economic reform in rural China is symbolized by the disbandment of the collective production system in the early 1980's although it was proposed at the end of the 1970s. The milestone event is the assignment of the collectively-owned farmland to individual households. In the collective production system, each rural laborer was a member of a production team, which was comprised of 10 to 50 households. The laborers worked for his or her team to earn labor credits, for instant, which can be one credit for a labor day. The labor credits were transferred into income in the form of products or money by the end of the year. The products produced such as grains were either distributed to households in the team or sold to state owned or collectively-owned enterprises in national standard prices. The distribution of products was first based on a food ration to each population and then, if there was surplus, on labor credits or other rules. After paying for farming inputs such as fertilizers and farming tools, the total profit for a production team was the sum of the net cash income and monetary-equivalent income of the products counting in the national standard prices. This net profit was the labor income and shared by all the labors according to labor credits. Therefore, each household had two accounts, one for the products received and the other for the labor credits earned. The balance of the two accounts might be break-even, surplus, or deficient. The household with more labors might have a surplus and then earned cash income at the end of the year; the households with more non-labor members might have a deficit and had to pay cash. Meanwhile, working for his or her team was almost the only way to support the family because no

production teams would share their products and awarded labor credits to outsiders. At the same time, working for the off-farm was also considered illegal. Therefore, laborers had to rely on their own production teams and could not move to other places. The consequence of this collective production system was immobility of rural labor and relatively equality in labor incomes. The rural labor was bound up with the limited resources in the production team. The rural reform assigned the land to individual households and released rural labor from the limited rural resources.

The situation of immobile rural labor changed after the economic reform. Although it was considered illegal at the beginning, the off-farm employment of rural labor was increasing with the domestic and foreign investments in the eastern coastal cities. Later, the government released the labor mobility control and finally accepted the labor mobility as a measure to improve the living standard of rural population. The mobility of the rural labor changes the structure of employment in urban and rural areas. Figure 1 illustrates the evolution of the shares of the urban and rural employment. The trend of urban employment was up and the rural employment down. Figure 2 shows the distribution of the sources of cross-province out-migrants in 1995. The provinces in the middle China were the major labor suppliers. Especially Sichuan, Henan, and Anhui Provinces, each of them had about 1.65-6 millions labors found off-farm jobs outside their provinces. Their destinations are indicated in Figure 3. The coastal provinces provided major destinations for cross-province migration. These provinces are also the major destinations for foreign investments and the production bases for export, where both the opportunity and wage are higher.

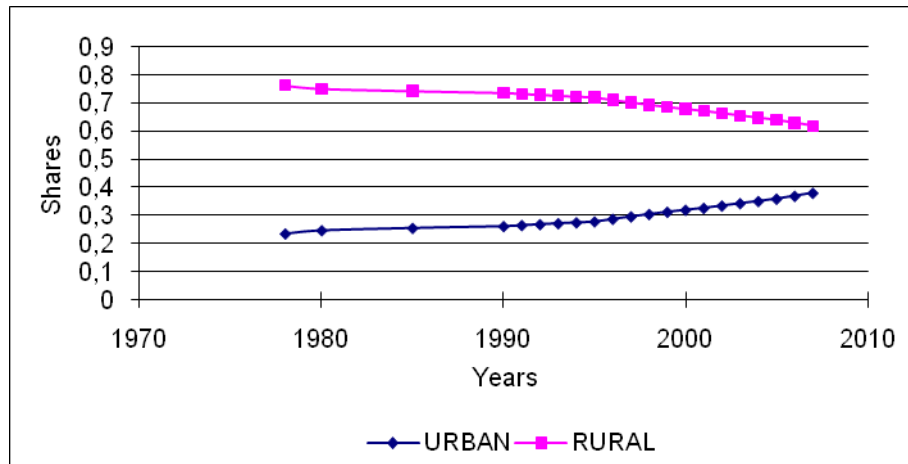


FIGURE 1 The Shares of Labor Employed in Urban and Rural Areas

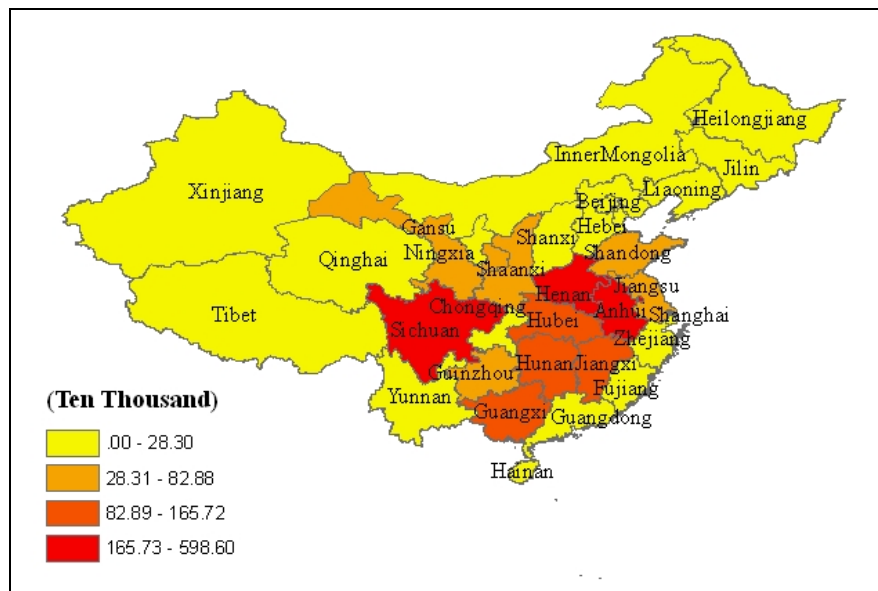


FIGURE 2 The Distribution of Source of Cross-Province Out-migrants in 1995

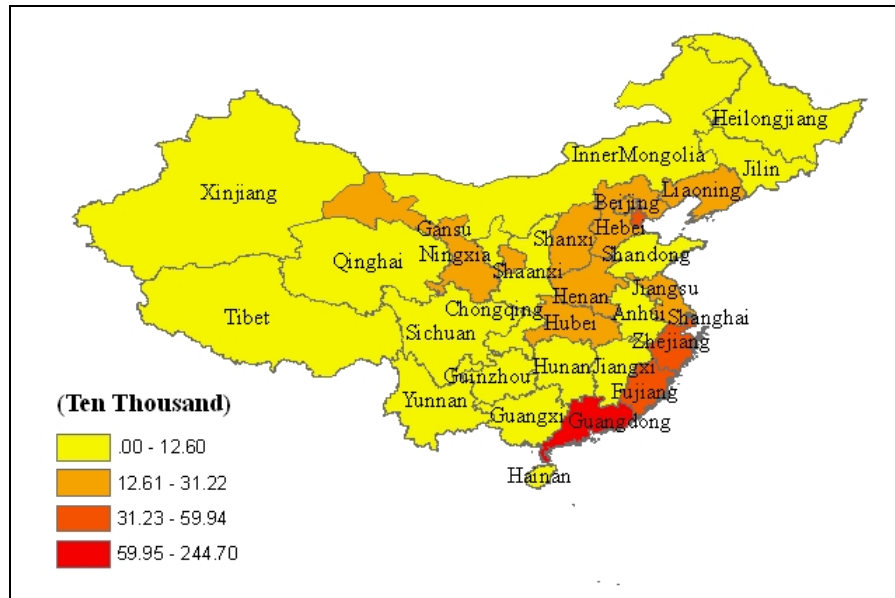


FIGURE 3 The Distribution of Major Destination for Cross-Province Migrants in 1995

The change of employment structure leads to the change in income source structures. The share of wages in rural income has increased after economic reform. The four major sources for rural income from 1995 to 2007 are depicted in Figure 4. In 1995, more than ten years of economic reform, over seventy percent of rural income still came from household farming. The wage income was the second large source of rural income. By 2007, the farming income declined to slightly over a half of total income while wage income account for about 40 percent of rural income. The other two sources of income—rent and transfer incomes were relatively stable. Now the question is if this increase in wage earnings results in a reduction in urban-rural income inequality.

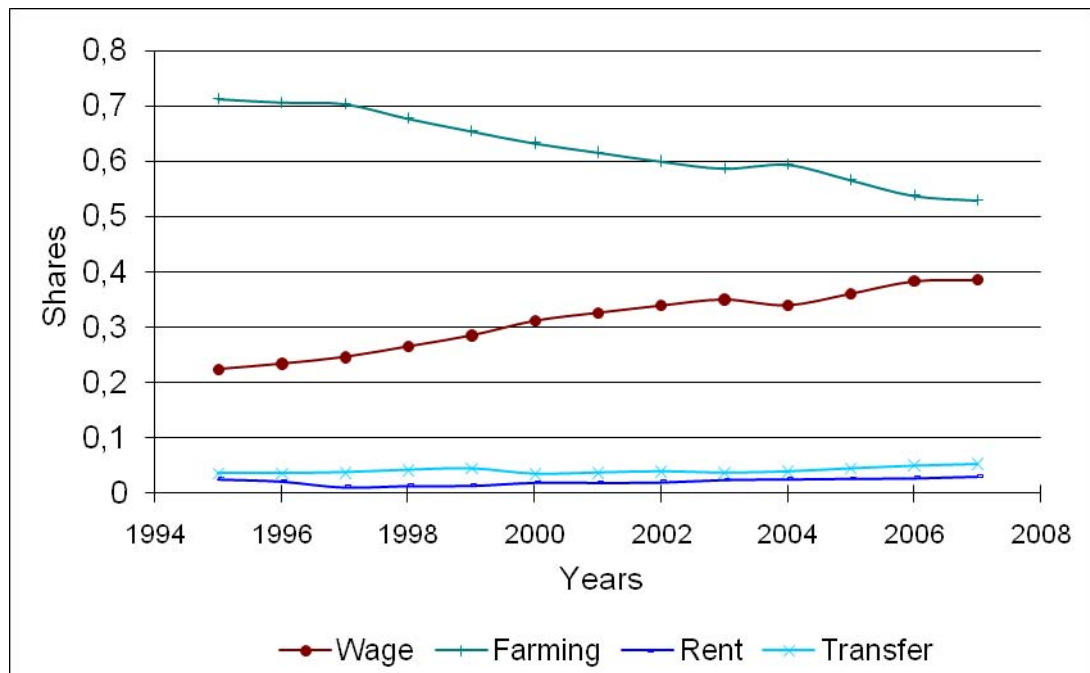


Figure 4 Graph of the Shares of Rural Income Sources

The uneven impact on individuals from the reform can explain the existence of urban-rural inequality. First, the reform does not provide the equal opportunity each laborer. The incomes of the successful laborers in off-farm employment increase with the economic growth while that of the unsuccessful laborers remain low. The remaining laborers continue to rely on the low productive farming. Meanwhile, the inadequacy of resources and capital and undeveloped market keep rural laborers under-employed. The incomes of these laborers do not increase with the economic growth. Second, the skilled laborers have more opportunity to be employed in urban areas. Therefore, the remaining rural laborers are usually the unskilled and the less productive. Finally, comparing to the urban residents, the rural laborers are new immigrants. They usually engage in low-skill jobs, such as construction and manufacture. The wages for these jobs are low. The division of skilled labor into productive sectors and unskilled labor into low productive farming further widens the urban-rural income gap.

To summarize, the Chinese economic reform releases the rural labor from low productive farming and creates a more flexible labor market. However, this flexible labor market does not provide equal opportunity for every rural laborer. Those laborers who are successful in off-farm employment improve their living standards faster. Those laborers remaining rural areas fail to catch up with the formers in living standards improvement. Besides the flexible labor market, this paper is also interested in investigating the impact on inequality from changes brought by the reform in fixed asset investment, government spending, education, international trade.

III. MODEL

The model for this research takes the normal assumption in economics. The maximization of utility by households can be derived through decisions on consumption. The equivalent problem of utility maximization is to maximize income in a complete competitive market economy. For the rural laborers, who can engage in both farming and off-farm jobs, the existence of a large amount of surplus labors implies that participation in labor market is the major way to increase their incomes and utilities. Thus, the rural incomes depend on the profits in farming and the wages offered by firms. The marginal profit to labor equals to the wage. On the other hand, urban laborers only depended on wages. The major difference between the urban and rural labor in wages is resulted from the difference in productivity.

The model for the wage difference takes the form of constant elasticity of substitution (CES). Firms maximize profits and pay wages on the marginal product of labor. The production function:

$$(1) \quad Y = \left[(A_r L_r)^{\frac{\theta-1}{\theta}} + (A_u L_u)^{\frac{\theta-1}{\theta}} \right]^{\frac{\theta}{\theta-1}}$$

Where, Y is the output. A presents the technology. L is the labor. Subscript r and u denote the rural and urban sections. θ is the elasticity. The Lagrangian function for the profit maximization is

$$(2) \quad \mathcal{L} = \left[(A_r L_r)^{\frac{\theta-1}{\theta}} + (A_u L_u)^{\frac{\theta-1}{\theta}} \right]^{\frac{\theta}{\theta-1}} - w_r L_r - w_u L_u$$

Where, w is wages. The wage or income for the urban and rural labors can be derived by solving equation (2)

(3)

$$\frac{\partial \mathcal{L}}{\partial L_r} = \frac{\theta}{(\theta - 1)} \left[(A_r L_r)^{\frac{\theta-1}{\theta}} + (A_u L_u)^{\frac{\theta-1}{\theta}} \right]^{\frac{1}{\theta-1}} \frac{1}{\theta} (A_r L_r)^{\frac{\theta-1}{\theta}-1} A_r - w_r = 0$$

(4)

$$\frac{\partial \mathcal{L}}{\partial L_u} = \frac{\theta}{(\theta - 1)} \left[(A_r L_r)^{\frac{\theta-1}{\theta}} + (A_u L_u)^{\frac{\theta-1}{\theta}} \right]^{\frac{1}{\theta-1}} \frac{1}{\theta} (A_u L_u)^{\frac{\theta-1}{\theta}-1} A_u - w_u = 0$$

$$(5) \quad w_r = \left[(A_r L_r)^{\frac{\theta-1}{\theta}} + (A_u L_u)^{\frac{\theta-1}{\theta}} \right]^{\frac{1}{\theta-1}} (A_r L_r)^{\frac{-1}{\theta}} A_r$$

$$(6) \quad w_u = \left[(A_r L_r)^{\frac{\theta-1}{\theta}} + (A_u L_u)^{\frac{\theta-1}{\theta}} \right]^{\frac{1}{\theta-1}} (A_u L_u)^{\frac{-1}{\theta}} A_u$$

From equation (5) and (6), the difference of income or wage between urban and rural labors can be expressed as

$$(7) \quad \frac{w_u}{w_r} = \left(\frac{A_u}{A_r} \right)^{\frac{\theta-1}{\theta}} \left(\frac{L_u}{L_r} \right)^{\frac{-1}{\theta}}$$

Taking the logarithm of equation (7), we obtain an equation for empirical estimation of the urban-rural income inequality.

$$(8) \quad \ln \left(\frac{w_u}{w_r} \right) = \alpha_0 \ln \left(\frac{A_u}{A_r} \right) + \alpha_1 \ln \left(\frac{L_u}{L_r} \right) + \alpha_2 \ln(X) + \varepsilon$$

Where, α is the parameters. ε is the error. X is a vector of explanatory variables, including economic growth rate, fixed asset investment, government spending, immigration, education and dummy variables for location and time. $\ln(w_u/w_r)$ denotes the urban-rural income gap. The equation (8) is estimated with a panel data across 31 provinces of China from 1980 to 2007. The estimated results will be discussed in next section.

IV. DATA AND EMPIRICAL RESULTS

1. Data

The panel dataset is obtained from the Statistical Yearbook issued by the Department of National Statistic Bureau of China. The dataset contains variables such as ratios of urban-rural income per capita, urban-rural employment ratios, total values of import and export per capita, government expenditure per capita, fixed asset investment per capita, and the ratios of secondary students and primary students in school for each of 31 provinces from 1980 to 2007. Table 1 describes the logs of these variables. The distributions of the major variables are depicted in Figure 5-8. The urban-rural income gap seems to have an opposite distribution as GDP growth. As shown in Figure 5 and 6, the urban-rural income ratios grew faster in the middle and western provinces, where the GDP grows slower. The coastal provinces have lower urban-rural income gap growth rate and higher GDP growth rate. Similar patterns are also seen in comparison the Figure 5 to the Figure 7 and 8. The middle and western provinces have lower growth rate in urban-rural employment ratio and international trade while the coastal provinces have higher growth rate in these variables. However, the relationships need further investigation by the regression model.

Table 1 The Variables and Discription

Variables	MEAN	MEDIAN	MIN	MAX	S.D.
Log Urban-Rural Income Ratio	0.8789	0.8686	-0.0245	1.6913	0.2996
GDP Growth rate	0.0945	0.0821	-0.1190	4.7331	0.2787
Log of Urban and Rural Employment Ratio	-0.6906	-1.0122	-2.0410	4.8402	0.9979
Log of Import and Export Value per Capita	3.4571	3.4714	-6.9729	9.6873	2.4741
Log of Govement Expenditure per Capita	5.5134	5.3880	1.7222	9.3709	1.3558
Log of Fix Asset Investment per Capita	-2.9360	-3.1056	-14.0650	0.8724	1.5072
Log Ratio of Secondary Students and Primary Students in School	-0.7913	-0.8095	-2.5503	0.4321	0.4310

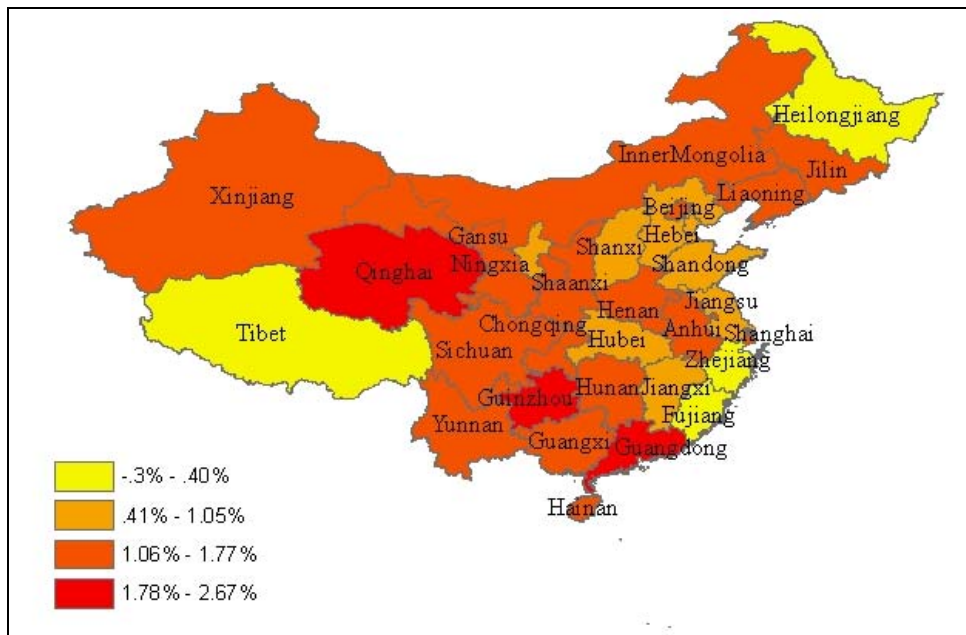


FIGURE 5 Distribution of the Annual Change in Urban-Rural Income Ratio over 1980-2007

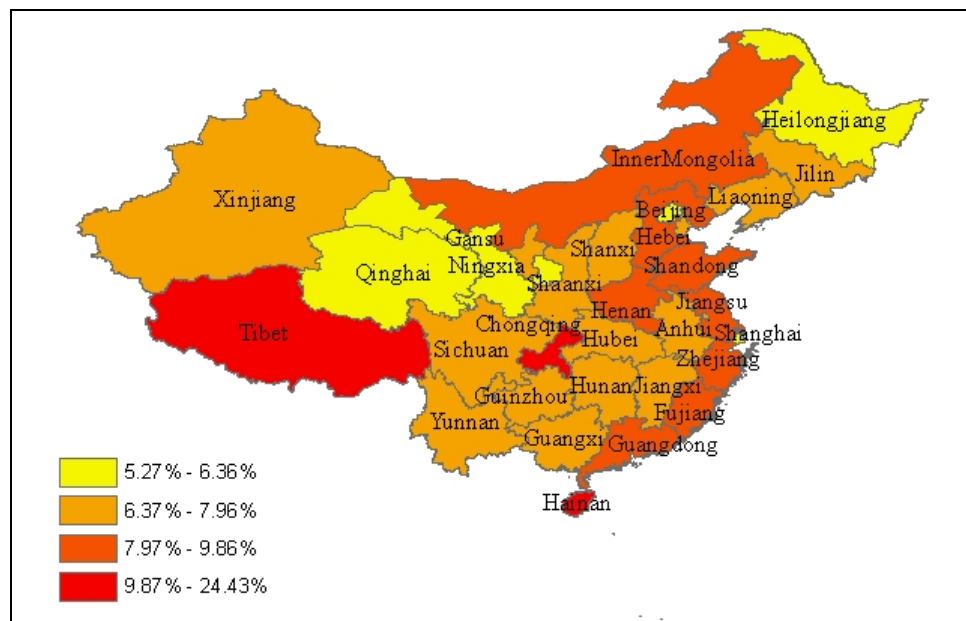


FIGURE 6 Distribution of Annual GDP Growth Rate over 1980-2007

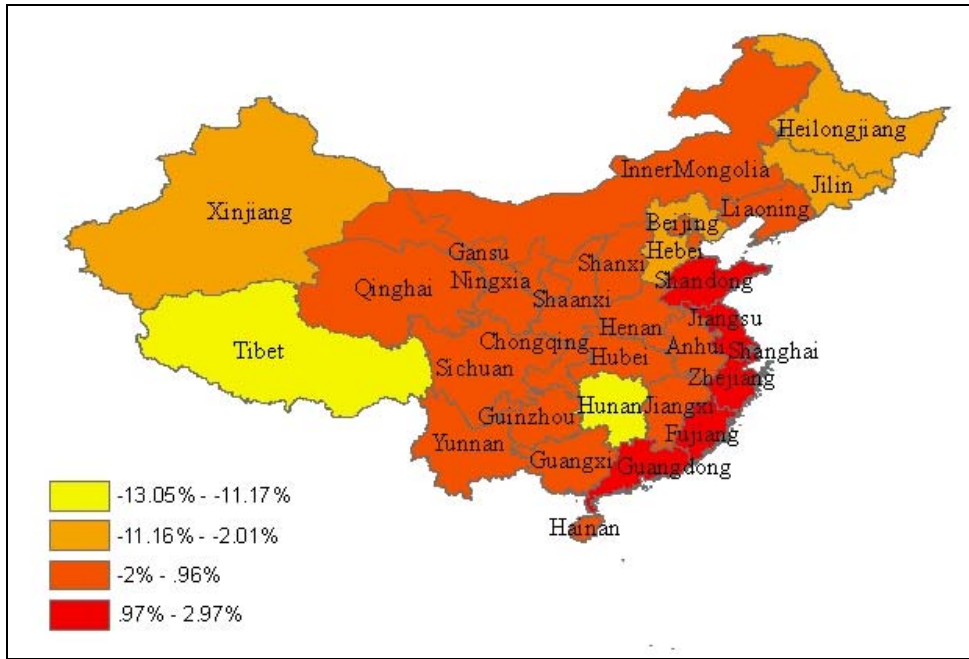


FIGURE 7 Distribution of the Annual Change in Urban-Rural Employment Ratio over 1980-2007

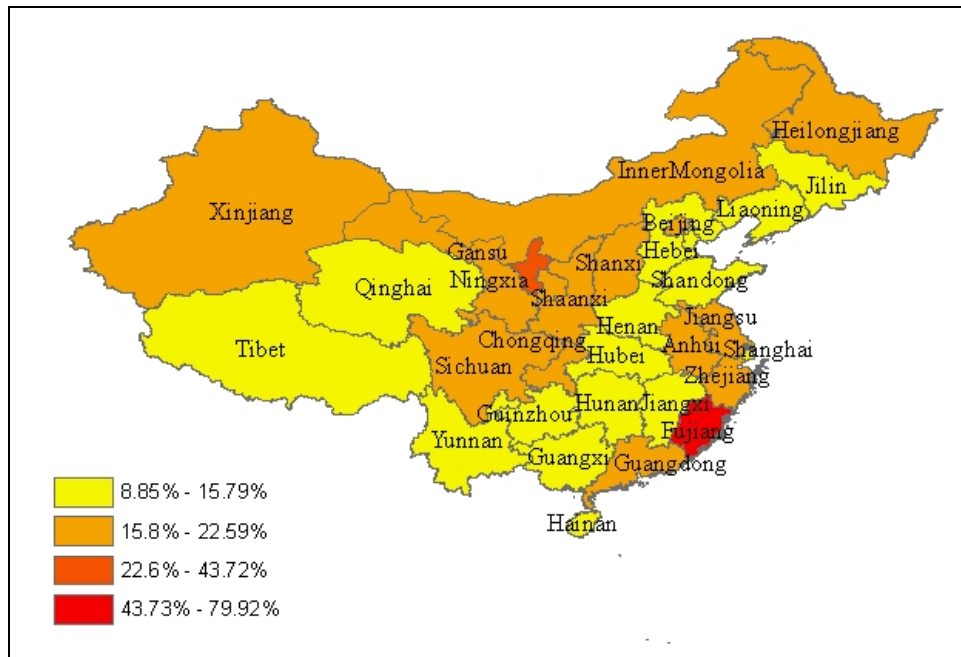


FIGURE 8 Distribution of International Trade Annual Growth Rate over 1980-2007

2. Empirical Results

The equation (8) is first estimated by fixed effect estimator including both provincial and time dummy variables. Testing for the heteroskedasticity finds the TR^2 value is 187.1.

The hypothesis of homoskedasticity is rejected. Then the equation (8) is re-estimated by

GLS estimator to correct heteroskedasticity. The R square value of GLS model is 0.9246.

The discussion and conclusion presented below are based on the results of GLS model.

In contrast to some literatures, as shown in table 2, the result of the fixed effect model indicates that the economic growth reduces the urban-rural disparity in China. The coefficient of the GDP growth rate is negative and significant at ten percent level, meaning the urban-rural income ratio decreases by about 0.0251 if the GDP grows by one percent. The economic growth benefits the rural population more than the urban population in terms of net income. This result can be explained by the Solow (1956) model. The rural regions with lower income grow faster than the urban regions and then the urban-rural income gap become smaller. On the other hand, the economic growth is derived mainly through the increase in employment of rural labor. Next, let's investigate how the mobility of rural labor brings benefits to both rural and urban population.

As mentioned above, labor mobility and urban-rural inequality are the results of the Chinese economic reform. The model tries to estimate the impact of labor migration on the urban-rural income inequality. However, the availability of panel data is a problem. Instead, a dummy variable was constructed from the migration data in 1995-1998. The dummy variable presents the net immigration of labor and equals to one if the immigration is greater than out-migration. Comparing the dummy variables over the period of 1995-1998 finds that they are consistent. That is to say, the situation of out-migration in certain province is quite stable over times. Therefore, it is used as a proxy for migration over 1980-2007. In Figure 2 and 3 above, the provinces with net immigration are the developed coastal provinces, such as Beijing, Tianjin, Liaoning, Jilin,

Shanghai, Zhejiang, Fujian, Guangdong, and Hainan, and the inland provinces with mining industries, such as Shanxi, Yunan, and Xinjiang. As shown in table 2, the coefficient is positive and significant at five percent level. This implies that the provinces with out-migration have higher urban-rural inequality. In inverse, net immigration benefit urban population more than the rural population of the destination provinces. The new immigrants are more likely to find job in urban areas and create a surplus to the urban economy although they may compete down the wage. Intuitively, the immigrants increase the value of wealth owned by local residents.

The benefit of urban population is also indicated in the results of urban-rural employment ratio in table 2. The relationship between urban-rural income inequality and employment ratio is nonlinear. The coefficient of the linear term is negative and insignificant but the nonlinear term is positive and significant at one percent level. This implies that the magnitude of the impact of urban employment on the urban-rural gap depends on the proportion of labor employed in urban areas. When the urban-rural employment ratio is small, it produces less impact on the urban-rural income gap. The larger the proportion of labor works in urban areas, the larger the urban-rural inequality is. The results imply that the higher urban-rural employment ratios favorite the urban population in metropolitan cities. Meanwhile the urban-rural inequality should be higher in the provinces with higher value of international trade because they attract a great amount of laborers from rural regions.

Export and import as a proxy for openness also relate to income gap nonlinearly. Both linear and nonlinear terms are significant at one percent level but the linear term is

negative and nonlinear term is positive. Therefore, the total impact can be negative and positive. The turn point is \$98 total import-and-export value per capita. For the provinces with the total import-and-export value below \$98, the openness of economy favors the rural population and then reduces the urban-rural income gap. Over \$98, the openness of economy benefits the urban population more than the rural and increases the urban-rural income gap. This result is consistent with the Stolper and Samuelson (1941) that the liberalizing international trade increases the wage of unskilled labor as an abundant factor in low developed regions but decrease the wage of unskilled labor in developed regions. In China, the regions with low export-and-import value are the underdeveloped west provinces. In these provinces, the rural laborers who are usually unskilled laborers benefit more than the urban laborers from the openness of economy. Therefore, the urban-rural income inequality relates to international trade negatively. The provinces of high international trade value are the developed eastern provinces. There the relationship between the urban-rural income inequality and international trade is positive.

The other two variables relate to the government fiscal policy. Government expenditure is one of the tools to stimulate economic growth. As shown in table 2, the expenditure of Chinese government does not impact on the urban-rural income gap. The coefficient of log government expenditure per capita is negative and insignificant. However, in table 2, the fixed asset investment has a negative and nonlinear relationship to urban-rural income gap. The coefficients of both terms are negative. The more fixed assets are invested, the larger the urban-rural income gap declines. The results are relevant in policy making. Although government is not the only investor of fixed assets, the

government plans usually act as a very important incentive for the fixed asset investment.

Table 2 Estimated Results of Weighted Fixed Effect Model

Dependent Variable: Log Urban-Rural Income Ratio		
Independent Variables	Coefficients	T-Value
Intercept	0.6775	7.3800 ***
GDP Growth rate	-0.0251	-1.6560 *
Log of Urban and Rural Employment Ratio	-0.0027	-0.3260
Squared Log of Urban and Rural Employment Ratio	0.0183	3.0880 ***
Log of Import and Export Value per Capita	-0.0078	-4.7730 ***
Squared Log of Import and Export Value per Capita	0.0017	4.0150 ***
Log of Government Expenditure per Capita	-0.0097	-0.9210
Log of Fix Asset Investment per Capita	-0.0401	-2.3190 **
Squared Log of Fix Asset Investment per Capita	-0.0036	-2.9010 ***
Migration Dummy (1 if out-migration is great than immigration)	0.0655	2.0120 **
Log Ratio of Secondary Students and Primary Students in School	-0.0187	-0.5530
Squared Log Ratio of Secondary Students and Primary Students in School	0.0038	0.2220
Province Dummy (shown in Figure 9)		
Time Dummy (shown in Figure 10)		
R Squared	0.9246	
Number of observation	867	

Note: * presents significance at ten percent level.

** presents significance at five percent level.

*** presents significance at one percent level.

Human capital is a factor impacting income distribution. However, the education, using the ratio of the middle school students and primary school students as a proxy, does not relate to the urban-rural income gap significantly. In Table 2, both linear and nonlinear terms are insignificant. The opposite signs seem to imply that low level of education benefits the rural population while the high level of education associates to urban-rural income gap.

The urban-rural income gap is well explained by the above variables. However, there must be other missing variables. The dummy variables for each province are included in the model. As shown in Figure 9, location can significantly explain the urban-rural income gap. The interesting result is that the provincial dummy variables divide China into two parts. The eastern provinces have negative coefficients. Comparing to the Xinjian and Ningxia provinces, the eastern provinces have smaller urban-rural gap. Except Anhui and Hunan provinces, the coefficients of other eastern provinces are significant at one percent level. In contrast, western provinces have positive signs. Except Sichuan province, other provinces have significantly larger urban-rural income gap. By individual province, the urban-rural income gaps are smaller in Shanghai, Beijing, Tianjin, Jiangsu, Jilin, Zhejiang, and Liaoning Provinces (or Cities). These provinces are all developed and have higher GDP per capita.

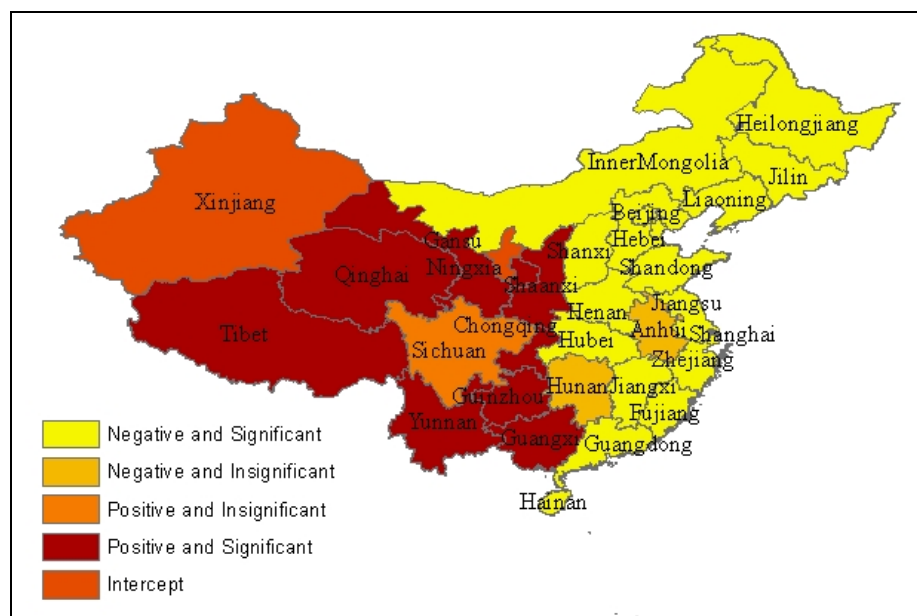


FIGURE 9 Distribution of the Coefficients of Provincial Dummy Variables

The urban-rural income gaps vary over times. As shown in Figure 10, the coefficients of time dummy variables increase in time. The coefficients are negative and significant

before 1985 and then positive and significant after 1989. The magnitudes of the coefficients increase over times. A model is also estimated with time trend in stead of dummy variables. The coefficient of the time trend is 0.0221 and significant at one percent level, meaning the urban-rural income inequality increases by about 2.21 percent annually. The causes for the increase of the urban-rural inequality over time are unclear.

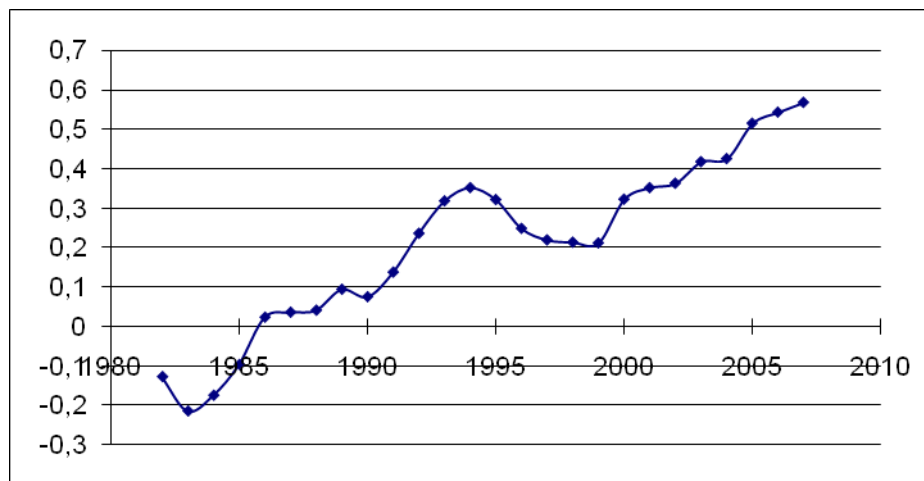


FIGURE 10 Graph of the Coefficient of Time Dummy Variables

V. CONCLUSIONS

The Chinese economic reform that started in 1978 is characterized by faster growth of urban employment, fixed asset investment, and international trade. The institutional changes in the reform are to release the control of labor mobility and trade. The observable result is the tremendous improvement in living standard of population both in urban and rural areas. Meanwhile, the income inequality, especially between urban and rural areas, has been in the trend of widening. The purpose of this paper is to investigate the causes of the urban-rural income inequality.

The urban-rural income inequality was analyzed by the fixed effect model estimated by FGLS from a panel data across 31 provinces from 1980 to 2007. First, the major results indicate economic growth and fixed asset investment are the major factors reducing the urban-rural inequality. Economic growth itself does not contribute to but reduces the urban-rural income gap. The relationship between urban-rural inequality and fix asset investment is nonlinear. The magnitude of reduction increases with the intension of the fixed asset investment. Second, the off-farm employment and international trade are positively and nonlinearly related to urban-rural inequality. They have very small impact or even improve the rural population more than the urban population when the level of off-farm employment and international trade are low. Above a certain level, they benefit urban population more. The net immigration provides an income surplus to the urban population and increase the urban-rural inequality. Increase in middle school education is found to have significantly impact on urban-rural inequality.

Except from above factors, there are other factors that widen the urban-rural income

inequality. The coefficients of time dummy variables are increasing in times. The urban-rural income inequality also distribute spatially. The western provinces have wider urban-rural income inequality than the eastern provinces. What factors acting behind the time and location remains a topic for further researches.

The above results suggest that urban-rural income inequality can be reduced by economic policies. The stimulus policies of fixed asset investment are the effective tools to decline urban-rural disparity. Fixed asset investment improves the rural population more than the urban. At the same time, it also stimulates economic growth which also benefits rural population more. The off-farm employment and international trade are also a choice for the undeveloped areas but not for the developing regions. It is possible for developing countries to moderate income inequality in the process of development by choosing appropriate policy.

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