

The Influential Factors of Rural Residents' Income Distribution Gap and Its Adjustment Measures in China

Han Jian-yu^{a, +}, Sun Xiao-yu^b, Zhi Da-lin^b

^a School of Economics, Anhui University, Hefei, 230601, P.R.China

^b School of Economics, Northeast Normal University, Changchun, 130024, P.R.China

Abstract. In this article, we built two independent models: Gini coefficient model and rural residents' income model, at the same time, we put forward a principle: "the economic development of a country tends to choose measures or policy variable which can both narrow income distribution gap and increase rural residents' income". Through model analysis, we found that promoting urbanization process, facilitating labor force flow from countryside to city, increasing income from properties of rural residents are the double excellence variables which can both increase economic efficiency and maintain social equity. Then, we can select the policy and measures to adjust rural residents' income gap.

Keywords: rural area; residents' income distribution gap; Gini coefficient; policy and measures

1. Introduction

From Alfred Marshall (1890) to representatives of neo-Cambridge school Kaldor (1956) and Robinson (1956), from Kuznets (1956) to Alesina and Rodrik (1994) and Galor and Moav (2004), many famous economists have chosen this topic as their life-long research interest, put forward many significant research conclusions and left us numerous literature. But there are still some problems for which important research breakthroughs are not made and there are large differences among opinions, such as the relationship between income distribution and economic growth, what is the impact of income distribution on economic growth, and so on. Even for them it is unable to decide whether the famous inverted U curve in income distribution field really exists or not.

Integrating the need of Chinese political, economic and social development, some economists did the relatively systematic research of the development tendency, causes and other problems concerning Chinese rural residents' income gap. Li Shi (1994, 1999, 2002) proposed in his serial books and some papers that based on the reality that China is a developing country in transformation period, reasons of changes in residents' income gap should be investigated from three aspects: Economic development, economic reform or institutional change, economic policy and its changes. While explaining income gap in the countryside, he held that the differences of farmers' job opportunities between non-agriculture and agriculture and differences of labor reward rate between them are the main reason of generating income gap in the countryside. For this reason he inferred that education, rural labor flow, income redistribution policy in the countryside and others are also the important reasons to lead to extensive income gap. Zhang Ping (1998) thought that the core reason of income inequality among regions was country deagrification in rural area, especially the unbalanced development of industrialization, so the core problem of solving regional inequality is to promote country deagrification, especially rural industry. Zhang Ping (2003), Zhu Ling (1992), Wei Houkai (1996) and other scholars also put the country deagrification in the important

⁺ Corresponding author. Tel.: + (13844800891); fax: + (0431-84536210).
E-mail address: (hanji403@yahoo.com.cn).

position. Wan Guanghua (1998) raised a different point of view based on the calculation of Gini coefficient and decomposition of other factors, that is the rising trend of income gap among Chinese rural areas was closely related to changes of rural economic structure and so whether at present or in the future it should not be advocated to solve income gap among areas from the perspective of developing rural industry but we should vigorously support the development of family-run operation in poverty-stricken area to achieve the aim of effectively narrowing the income gap among areas. Integrating regression model and Shapley's framework (1999), Wan Guanghua and other scholars (2008) investigated the trend and causes of income inequality of Chinese rural areas from 1985-2002 and they found that regional income inequality was the main reason to lead to the increasingly extensive income gap, capital stock, human capital and country industrialization contributed a lot to income inequality and population did some good to narrow income gap but the influence was little. Wang Xiaolu and Fan Gang (2005) put forward that influencing factors of income gap could be investigated from the aspects of economic growth, income redistribution and social security, public goods and infrastructure, systems and others. Other scholars like Chen Zongsheng (1994, 2000, 2002) and Zhou Yunbo (2008) also dealt with the issue of rural residents' income distribution gap in their related books and raised some valuable methods and conclusions.

Based on the above consideration, research topic of this paper is set as: main influencing factors and adjustment of rural residents' income gap. Meanwhile we consider to change the consistent research habit of former research on influencing factors of income gap and not to use the decomposition method usually used by many scholars. Instead we use model in modern metering method to do the research. Specifically speaking, we try to build two independent models, one is Gini coefficient model which is used to discuss which economic variables influence change of income gap; the other is income model which is used to study which variables make for increasing rural residents' income. Then we set a principle, that is economic development trend of a country tends to choose measures or policy variable which can both narrow income distribution gap and increase rural residents' income, these variables will be chosen from the research results of two equations and then according to policy meaning stood by these variables we can put forward the correspondent policy and measures to narrow rural residents' income distribution gap.

2. Model Analysis

2.1. Model design

In this paper we try to build two independent model equations including 18 different economic variables.

Of the above variables some are flow data, some are stock data, some are only ratio data. So it is not reasonable to introduce them into the same equation. Considering above variables are all time series data, from unit root tests we know that the above series are all nonstationary series and lags are not in full accord, so building a whole model is not the optimal method. Generally speaking, change rate series has zero lag, so we get the growth rate series of above variables through calculation and after inspection they are all stationary series. So we can use the modeling method of stationary time series to build the model. Explained variable of Gini coefficient equation is GR and explaining variables are above 16 variables and per capita net income (Y). Per capita net income series data are from China Rural Household Survey Yearbook of each year. Explained variable of income model equation is per capita net income and explaining variables are above 16 variables. Data processing is the same with Gini equation. As described above, the ideal variable we look for is the one which is negative in Gini equation positive in income equation.

2.2. Gini coefficient model analysis

First we build Gini coefficient model equation which includes all explaining variables. From the inspection results we can see that there is relatively severe serial correlation in Gini equation because of large number of explaining variables and their certain internal relationship and LM and Q inspection show the existence of high order serial correlation. Combining autocorrelation and partial correlation coefficients, we use of AR (4) model to modify equation's serial correlation. After modification degree of equation's serial correlation largely decreases, but relatively big P value of some variables shows they have no remarkable influence to change of Gini coefficient. After many trials, we knock out three variables pay, hyd and ti. This shows that during 1978-2008 changes of labor remuneration's share in GDP, installed capacity of village

hydropower station and per capita net income from transfers of rural residents did not have any remarkable influence to change of Gini coefficient. Gini equation after knocking out three variables successfully pass all kinds of inspections.

$$gr = -0.05 - 0.67y - 0.17wi + 0.1nae - 0.48lm - 1.52urb + 0.85edu - 0.06fex + 1.54amp - 0.63pro + 0.34acp + 0.5app - 0.06pi - 1.52lb + 0.76fix \quad (1)$$

NOTE: The first line in the bracket is t statistic, the second line is standard error. It is the same with equation (2).

First we do the preliminary analysis of economic significance represented by model results. We divide 14 explaining variables having passed inspection into two groups, one group is positive variables in the equation, the other group is the negative variables in the equation. We build Gini coefficient equation in order to look for the variable which can narrow residents' income gap. So we should pay great attention to variables with negative coefficient in equation, arranged coefficients from smallest to largest, variables in negative group include urb, lb, y, pro, lm, wi, pi and fex.

The coefficient of Urb is -1.524 which shows that when growth rate of level of urbanization has one percentage point change, growth of rural residents' income gap will have 1.524 percentage point change in the negative direction, that is the promotion of urbanization level will be helpful to narrow rural residents' income distribution gap. This shows that it is meaningful for Chinese government to positively push the progress of urbanization from the perspective of narrowing rural income gap. The coefficient of Lb is -1.516 and this shows that Chinese rural household labor burden is helpful to narrow income gap which is not consistent with our expectation. When choosing variables we expected that increasing labor burden may make family with low income more difficult, and then it functioned to expand income gap. We think that may be because in the carrying out of birth control policy in the countryside, rich families are cared much and then there were more descendants while poor family give up reproduction due to high raising cost. This makes rich family's wealth is diluted by many persons and then in a certain period income gap narrows. The coefficient of per capita net income of rural resident is negative and this interests us. This means that increasing of per capita net income helps to narrow income gap of residents. We think it may be because most rural residents take up agricultural activities and at present the background of expansion of income gap of rural residents is the whole income level of rural residents is relatively low and only small part of them who have opportunities to take up non-agricultural activities increase their income, but the majority residents are still in the low level of income. If most rural residents are given the opportunity to increase income level, the whole income level will correspondently increase and the income distribution gap will also narrow correspondently. Or rather, rural residents' income distribution gap is the general low level gap. Therefore developing rural economy may be more urgent than narrowing income gap at the present stage. This is different from the background of dealing with urban residents' income gap.

The coefficient of Pro is negative which shows that increasing of per capita grain output helps to narrow rural residents' income distribution gap. We think that it is because most rural residents take agricultural activities as the principal thing and this group is generally the group with low income in the village. So if increasing of per capita grain output is helpful to increase their income, it is definitely of great significance to narrow rural residents' income gap. Wi coefficient is -0.168 and this means when growth rate of farmers' income from wages has one percentage point change, growth rate of Gini coefficient will have 0.168 percentage point change in the negative direction. Development of rural enterprises do not have the function described in the literature in the expansion of rural residents' income distribution gap. Even increasing of income from wages can do a little good to narrow income gap. We think it may be because with the development of new rural construction and rapid expansion of industrialization more and more rural residents can get income from wages. So different from some scholars' previous research results, increasing of income from wages may become the important variable to narrow income gap because of expansion of its coverage.

Pi is negative and it shows that increasing of income from properties of rural residents will help to narrow income distribution gap. Its policy implication is to increase residents' income from properties level and its share in total income, which is consistent with Chinese government's proposal in these years. Fex is

negative and it shows that central government's support of agriculture, farmer and village is helpful to narrow income distribution gap, but t_i is knocked out of equation because it is not outstanding. P value of fex is as high as 0.125 and in a relatively high level we can think that expenditure on agriculture, farmer and village helps to narrow income gap. The two show that in order to narrow rural residents' income gap the present expenditure of supporting agriculture and efforts of transferred payment are still needed to continuously intensified.

2.3. Residents' income model analysis

In the common research, the studies end with analyzing which economic variables will influence rural residents' income distribution gap because Gini coefficient model has answered this question preferably, that is, which variables function to narrow income gap. But we think for the issue of rural residents' income gap, the study is still not enough if we stop here. Because there is a big development background in the expansion of rural residents' income gap, that is the backward of rural macroeconomic development. At the present stage developing economy is a more urgent task and seen from the conclusion of Gini coefficient model study increasing of per capita income is helpful to narrow residents' income gap. So when investigating the problem of adjusting income distribution gap, we think it also needs to take sustainable development of social economy into consideration. At the beginning of the paper we put forward a point of view the economic development of a country tends to choose measures or policy variable which can both narrow income distribution gap and increase rural residents' income. We can get the variables that can narrow residents' income distribution gap while the variables which helps to increase farmers' income are needed to choose from the following income model.

Using the same method and after the serial related modification and many trials, we successively knock out the variables w_i , nae , hyd , amp and pro . The remaining 11 variables all can successfully pass the inspection and the whole model can also pass the inspection. We get the following residents' income model equation:

$$y=0.04+0.31lm+0.97urb-2.45edu-0.1fex+0.13ti+1.17pay+0.33acp+0.29app+0.01pi-0.38lb+0.4fix \quad (2)$$

Of remaining 11 explaining variables, there are 8 variables with positive sign in the equation, that is to say change of their growth rate can bring about the change of growth rate of net income in the same direction. We choose some important variables to explain and because of other variables are in line with our expectation there is no need to describe the details.

The coefficient of pay is 1.17 and this means that when the growth rate of labor remuneration share increase 1%, the growth rate of per capita net income of rural residents will also increase 1.17%, that is to say, with raising of labor factor of production in the first distribution of national wealth every year, rural residents' income will get a bigger increasing. This is in line with the rising appeal of reforming national income distribution system and increasing worker's salary level. This can also explain that most rural residents make a living by selling labor and so the increasing of labor remuneration is easier to make their income level have a big change.

3. Further Analysis

In order to find the economic or policy variable which helps to both narrow residents' income gap and increase rural residents' per capita income, combining the above research results of two models we further divided 16 variables into four types and the specific classification is shown in table 1.

Starting from our research hypothesis toward the problem and combining the standard of variable classification, it is very easy to judge that A type of variables are the optimal variables in the all variables available to choose in solving the problem of rural residents' income distribution gap and those variables include urb , lm , pi , even can include y . the economic meaning of this conclusion is that urbanization, labor flow from village to city, increasing of rural residents' income from properties all will realize the unity of economic efficiency and social equity. They are helpful to both narrow income equality of rural residents and increase common income level of rural residents.

4. Conclusion

The adjustment of internal income gap of rural residents is different from that of urban residents' income gap. The increasing of growth rate of per capita net income of rural residents can help to narrow the increasingly expansion of rural residents' income gap and in some sense it is the most reasonable policy to narrow rural residents' income gap in the process of development. So in order to adjust rural residents' income gap, the country needs to continuously intensify the efforts of supporting agriculture, farmer and village, increase per capita income of farmers through all kinds of means, and realize the equal increasing of most farmers' wealth. Promoting the rapid development of rural economy is the material basis for adjusting rural residents' income gap.

Of all economic or policy variables available to choose, urbanization may be the most feasible and most effective measure. While urbanization growth rate increase one percentage point, rural residents' income gap will be narrowed by 1.524 percentage point and at the same time it can also make net income of rural residents increase by 0.967 percentage point. This kind of policy effect is just what we wish for.

Labor flow from rural area to city is helpful to increase farmers' income and it is also the important policy and measure to narrow rural residents' income gap.

Besides urbanization and free labor flow, urging the rapid increasing of income from properties of rural residents is the only double excellent variable we can choose.

There are other important policy and measures to narrow rural residents' income gap: promote development of non-agriculture industries, increase income from wages for rural residents; intensify central financing's efforts to support agriculture and pay attention to regional balance and social equity; promote agriculture by scientific and technological advances, increase grain production, protect grain price and farmers' grain income; intensify efforts of supporting rural education, realize educational equity.

Table 1. Further classification of variables

Explaining variables	Influence to change of gr	Influence to change of y	Classification of evaluation
y	—	/	/
wi	—	Not remarkable	B
nae	+	Not remarkable	D
lm	—	+	A
urb	—	+	A
edu	+	—	D
fex	—	—	B
ti	Not remarkable	+	C
pay	Not remarkable	+	C
hyd	Not remarkable	Not remarkable	/
amp	+	Not remarkable	D
pro	—	Not remarkable	B
acp	+	+	C
app	+	+	C
pi	—	+	A
lb	—	—	B
fix	+	+	C

Note: + shows influence of the same direction, — shows influence of the reverse direction. A means it is helpful to both narrow rural residents' income gap and increase rural residents' income; B means it is helpful to narrow rural residents' income distribution gap but it will cause the decline of residents' income level or the influence is undefined; C means it is helpful to increase rural residents' income level but it will cause expansion of income gap or the influence is undefined; D means it is unhelpful to increase rural

residents' income and it also will expand income gap, or it has negative influence on one aspect while the influence to the other is undefined.

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