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Resource-based Economic Growth on Poverty Reduction Role-in Rural Areas of Shanxi

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Abstract: This study uses the income of rural residents per capita income grouping and panel data of 2001-2010 from "Shanxi Statistical Yearbook". The study uses the World Bank's software Povcal and the purchasing power of \$ 1.25 per person per day as the poverty line to measure the index of the extent of poverty in rural areas in Shanxi Province. It was found that the poverty rate decreases exponentially significant effect, but the poverty gap index decreased to a lesser extent and the poverty gap squared index relatively rose. This suggests that economic growth to poverty reduction of the total population especially to the poor in the richer part of the population has a distinct role, but to the poor population living in extreme poverty has negative effects. Rapid economic growth will increase extreme poverty, resulting in further widening the gap between rich and poor.

Key words: Resource-based regions Economic growth Poverty Reduction, Shanxi Province

INTRODUCTION

Resource-based cities (including resource-based regions) production and development and resource development are closely related. These cities or regions depend on the exploitation of mineral resources, processing and related industries. These cities in the development process has accumulated a many contradictions and problems, primarily including economic structural imbalances, unemployment and poverty-stricken a bigger population, splice substitute industries development of fatigue and so on. In 2011, Shanxi Province was identified as the third installment of the 25 resource-exhausted cities (including regional). China has strongly advocated in the context of industrial restructuring, resource-based regional poverty has become hot issues.

As energy province of Shanxi, entering the 21st century, the rapid development of economic growth are creating opportunities for the Shanxi Poverty Reduction, but the current rural poverty is still serious, between regions, between urban and rural areas, the gap between farmers is widening. The province's jurisdiction over 119 counties (cities, districts) there are 35 state-level poverty-stricken districts, 17 poverty districts and five floral districts (these districts are part of the rural poor areas), representing the province's total number of poverty-stricken districts nearly 50% (Guo, 2009). Shanxi's

economy is growing, the problem of poverty, but not as some researchers would expect solved, contrary growing gap between rich and poor.

LITERATURE REVIEW

Economic growth and poverty research: On economic growth and reduce rural poverty research in recent years has become a hot topic of concern. Economic growth, effectively reducing the number of low-income population in rural absolute (Xie, 2008) and to promote economic growth is an effective way to reduce poverty (Li, 2008) also pointed out that China's economic growth in the contribution rate of rural poverty reduction up to 70%. By observing the changes in economic growth elasticity of poverty and found its stimulating effect increased first and then decreased and finally in a stable trend, obtained stable economic growth continue to implement the policy conclusions.

Han and Zhao (2007) studied the relationship between China's economic growth and rural poverty reached a similar conclusion that the country's economic growth is the main driver of poverty rate has dropped, but it also pointed out that the progress and effectiveness of poverty reduction is currently showing a decreasing trend. Ren (2012) by Shanxi's economic growth and poverty reduction effects studies suggest that after entering the 1990s, economic growth on poverty

reduction effect of Shanxi began to slow down and pointed out that over-reliance on coal resources extensive mode of growth, inequality between urban and rural areas, lack of non-agricultural employment, the proportion of individuals in the initial distribution of national income continued to decline these are the main reason for poverty reduction effect of slowing down.

As can be seen, both in the national point of view and in Shanxi Province to study, most scholars agree that the current economic growth on poverty reduction effect has a significant role, but that role has not been so important. This is consistent with the conclusions of this study. In addition Li (2010) and Shi (2010) and other scholars also combines natural, economic, environmental, cultural and ideological aspects to research the relationship between economic growth and poverty reduction in Shanxi. Economic growth reached significance for poverty reduction and should be made ??through the development of agricultural economy, strengthen rural infrastructure, adjusting income distribution and other means to improve the income of rural residents and further reduce poverty.

Rural poverty situation and solving approach in resource-based regions: Shanxi is a typical resource-based regions Shanxi coal reserves account for 30% of the national reserves, in 2004 the province of Shanxi coal sales accounted for 70% of the amount transferred out above .Coal exports accounted for more than 50% of total national coal exports but the net income of rural residents in Shanxi is lower than the national average level and the gap is further widening trend (Zong and Zhao, 2012). Coal is the main mineral resources in Shanxi and Shanxi has a great dependence on coal economy. The economic caused by coal resources plays an important role in Shanxi province's GDP and fiscal revenue. However, coal interests but not bring improvement to the local farmers' life Energy-rich areas of rapid economic growth, but the majority of local farmers not only did not benefit, but due to involvement in the development of various ecological disaster caused by increasing poverty (Guo, 2009). But for a long time due to the impact of planed economy, the coal price was low. While Shanxi, the country's economic construction and make a great contribution, but did not get in line with the contribution of income and benefits. At the same time environmental pollution, water shortages, land subsidence, ecological degradation and other problems are getting worse due to coal mining, washing and other mining activities. Shanxi has long been based on national coal and heavy chemical industry base itself, to develop the coal industry, which led to the Shanxi solid industrial

structure deformity. With the eastern coastal areas of reform and opening up, the market continues to accelerate, Shanxi and eastern developed area gap is also growing (He, 2006). The problem of poverty in rural residents of Shanxi is more and more serious.

Zong and Zhao (2012) and Guo (2009) have proposed an effective solution to poor farmers in Shanxi approach is the development of modern agriculture, increase farmers' income, the economic conversion of coal for the development of modern agriculture and financial capital (Zong and Zhao, 2012). Investment policy to the agricultural sector, the implementation will help improve the income of the poor in the county policy (Guo, 2009). Liu (2012) by calculating the urban-rural income ratio found out that urban-rural income gap is widening and that should be taken to adjust the structure of fiscal expenditure, strengthen the new rural construction, deepening rural education and other measures to reduce rural poverty.

Xie (2008) and Zhang (2011) were calculated by using Povcal poverty index for OLS regression analysis and analysis method, obtained while widening the gap between rich and poor income distribution and social justice will affect economic growth on poverty reduction conclusions.

POVERTY MEASUREMENT INDICATORS AND METHODS

In this study, on the basis of previous studies, based on the total number of the poor, the poor people in relatively affluent part of the proportion of poor people living in extreme poverty in the proportion of simultaneous observations, the conclusion can be more targeted.

Poverty indicators based on the use GQ Lorenz curve parameter estimation method, this method is the most basic elements of the two functions, ie, $L = (p; \pi)$ P is the percentage of the population; π is estimated Lorenz curve parameter vector; $P = P(\mu/z, \pi)$ μ is the per capita consumption or income per capita; z is the poverty line, P contains a series of poverty indicators, here is the FGT index. FGT index is a measure of poverty, the main method.

FGT index can be expressed as:

$$P_{\alpha} = \int_z^0 \left[\frac{z-x}{z} \right]^{\alpha} f(x) dx \quad \alpha \geq 0 \quad (1)$$

X is household consumption expenditure or income level, $f(x)$ is the density function, i.e. income or consumption expenditure as a proportion of the

population x , z is the poverty line, α is non-negative parameters, α were taken 0,1,2 have three poverty indicators.

When $\alpha = 0$, the 1 of the Eq:

$$p(0) = H = \frac{q}{n} \quad (2)$$

where, q is the number of poor, n is the total population. H is the poverty incidence (%), also known as the proportion of poor population index finger per capita net income or consumption expenditure of the population below the poverty line and the percentage of the total resident population. This is the most intuitive and most important core indicators of poverty, how many people can be reflected or special poverty reduction through economic development crossed the poverty line or returned to the poverty line.

When $\alpha = 1$, the (1) of the Eq:

$$p(1) = PG = \frac{1}{n} \sum_{i=1}^q \left[\frac{z - x_i}{z} \right] \quad (3)$$

x_i represents the i -th level of income poverty. PG is the poverty gap index (%), also known as the poverty gap ratio is based on the income of the poor relative to the poverty line on the basis of the cumulative distance obtained, referring to a percentage of the existing poor out of poverty requires total income and the total population out of poverty. Poverty depth index reflects the population below the poverty line income or consumption changes.

When $\alpha = 2$, the (1) of the Eq:

$$p(2) = SPG = \frac{1}{n} \sum_{i=1}^q \left[\frac{z - x_i}{z} \right]^2 \quad (4)$$

SPG poverty intensity index (%), also known as the weighted poverty gap ratio, calculation methods and poverty depth index is basically the same, just give poorer people to greater weights. Poverty intensity index among the poor of the poor can be improved first case, to better reflect the poor results.

α values greater poverty indicators for the poor more sensitive to the degree of inequality of income distribution is more sensitive to the poor, the lower-income population, the stronger the degree of concern. Because of large rural population is also relatively more low-income population, so FGT indicators better suited current situation. FGT indicators α were taken from different angles 0, 1, 2 can fully reflect the extent of poverty and poverty changes.

This study used the World Bank Povcal software to calculate the poverty line of U.S. \$ 1.25 per person per day selected PPP index (converted result is 1789.230 Yuan) relative poverty line with international standards.

DATA SOURCES AND PROCESSING

This data comes from the "Shanxi Statistical Yearbook," 2001-2010, per capita income and the income of rural residents grouped data and to the annual CPI data were processed, in addition to price factors, the increase in the credibility of the results. Calculation using Povcal software, p -values represent the cumulative percentage of population, L value represents the cumulative percentage of income. In this study, using different income groups of the population, the proportion of the total population instead of p -values and the mean income of each income group as the L value. Use Povcal software to calculate the required H , PG , SPG results.

OPERATIONAL RESULTS AND ANALYSIS

This section of the net income of rural residents in Shanxi trends are analyzed, calculated using Povcal FGT indicators, poverty incidence, poverty gap, poverty gap squared, in order to determine whether the economic growth of Shanxi Province in favor of poverty reduction.

Analysis on per capita net income of rural residents of Shanxi: Shanxi 2001-2010 ten years per capita net income increases ceaselessly, 2009 growth slow down slightly. Per capita net income of data has been removed price factors. In this decade as the country's economic growth rate greatly enhance policy Shanxi during this period the average annual price growth of 17.3% of GDP, the direct impact of the role is to enhance the residents' income, the corresponding income of rural residents greatly improved. However, whether economic growth can effectively reduce poverty or not still need further study (Fig. 1).

Analysis of poverty trends: Combining Table2 and Fig. 2, from the overall point of view, H , PG , SPG (ie., Fig. 2 FGT2) overall trend is on the decline, indicating that the overall decline in poverty. 2001-2004 this stage the poverty rate in the high value of more than 50% and in 2004 when PG and SPG reached the peak, indicating that during this period despite rapid economic growth, but poverty is increasing, the widening gap between rich and poor and become the largest in ten years. The poor population decreased sharply after 2005, the possible reason is 2005, when the Shanxi coal prices hit a record high, at the same time poverty gap and poor distance square ratio also

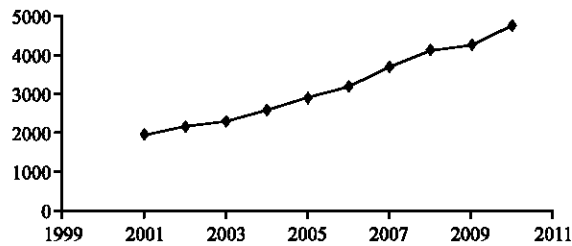


Fig. 1: Shanxi rural residents per capita net income (2001-2010)

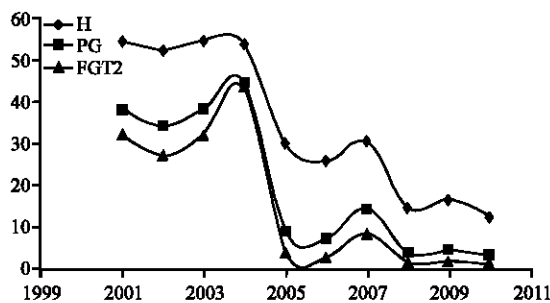


Fig. 2: Changes in poverty indicators trend

Table 1: Poverty index and the change percentage

Years	H	PG	SPG	Percent change in poverty indicators		
				H	PG	SPG
2001	54.2157	38.0255	31.6984			
2002	52.0437	34.0406	26.9677	-4	-10	-15
2003	54.2157	38.0255	31.6984	4	12	18
2004	53.4631	44.3018	43.1875	-1	17	36
2005	30.0326	8.9776	3.8193	-44	-97	-91
2006	25.5971	7.1374	2.7284	-15	-2	-29
2007	30.3066	14.2915	8.2380	18	100	202
2008	14.6118	3.9461	1.4761	-52	-72	-82
2009	16.3833	4.4031	1.6231	12	12	10
2010	12.3269	3.1530	1.1027	-25	-28	-32
				-107	-68	17

H, PG, SPG denote poverty incidence, poverty gap and squared poverty gap ratio

decreased rapidly. In 2007 there are a rising, there is a close relationship between this and Shanxi launched the “zero growth strategy” since 2006. The curve after 2007 was stable, volatility decreases, the incidence of poverty is also reduced to about 10% which indicates that at the beginning, Shanxi unsuitable to enter the market, because the state fully liberalized coal price control policy and then Shanxi's coal policy began to stabilize, economic growth is on track, reduce poverty in a steady state.

From the percentage of poverty index changes, 2001-2006 changes during the overall poverty index is negative, indicating that a period of economic growth on poverty reduction effect is obvious, but in 2007 the

poverty index change is positive which shows that the extreme poverty has reached a peak, economic growth on poverty reduction has not positive effect. After the changes in 2008 and negative indicators of poverty, which to some extent slowed down in 2007 poverty levels move up the role at this stage of economic growth has a positive effect on poverty reduction.

Overall poverty incidence and poverty gap significantly reduced -107 and -68, respectively, but the squared poverty gap ratio is 17 indicating that economic growth is conducive to reducing the total number of poor people and has a positive impact on those who are not very poor, in this sense, poverty reduction effect is very significant. But instead of rising poverty gap squared ratio indicates that poverty in the poorer part of the population of people, who are living in extreme poverty have actually increased.

CONCLUSION

This study use change percentage of FGT index, index, use Povcal software to carry on the research of the problem, the results are as follows:

- First, Shanxi per capita net income of rural residents during the decade 2001-2010 has been greatly improved, while Shanxi significant decline in the total number of poor people, the poor are more affluent part of the population out of poverty, reducing dilution effect is remarkable
- Second, the different stages of economic growth for poverty reduction effects are different. The overall poverty reduction effect with rapid economic growth, fluctuations in decline and before 2004 economic growth to poverty reduction effect is not very obvious. The effect is significant poverty reduction, poverty dropped significantly after 2005, but in 2007, the overall decline in poverty, while extreme poverty began to rise, from reducing the wealth gap and focus on more poor people's perspective, the effects of economic growth on poverty reduction is negative
- Third, the economic growth to reduce extreme poverty showed negative effects. The first goal of economic growth is poverty eradication but the rapid growth of the economy in Shanxi, not only did not reduce the number of extreme poverty, but increased, resulting in a widening gap between rich and poor, such a direct consequence is the increasing number of extreme poverty and extreme poverty will be more poor people. In the above conclusions and based on the poverty reduction policies in Shanxi made the following recommendations:

- First, the Government should maintain economic growth, but to make the transformation of the economic structure. Economic growth on poverty reduction of the total population has a significant role. But for such a resource-based regions of Shanxi, too dependent on mineral resources, a single economic structure, if not timely restructuring, improve the industrial structure, not only can not guarantee sustained high economic growth, but also in the case of dwindling resources, increasing unemployment, poverty will increase and poverty levels will exacerbate
- Second, to assess the effect on poverty reduction phases and goals. The effect of economic growth on poverty reduction have different effects at different stages in Shanxi and measure whether the expected effect of poverty reduction has to choose consider the total number of poor people or from a focus on wealth gap, the poorer part of the population
- Third, increasing the number of poor people living in extreme poverty in the policy of subsidies to reduce the wealth gap. Shanxi's economic growth on poverty reduction in the total number of the poor and the more affluent part of the population has a strong pull resistance, but it will cause an increase in extreme poverty. The government from the policy subsidies, increasing the minimum intensity on impoverished, reduce economic growth to reduce negative effect of poverty population. According to the different poverty groups, adopt different poverty policy

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