

# Research on the Effect of Industrial Structure Upgrading on Poverty Reduction—Grouped Data Based on Household Income in Urban and Rural Areas

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**How to cite this paper:** Chen, J. B. (2020). Research on the Effect of Industrial Structure Upgrading on Poverty Reduction—Grouped Data Based on Household Income in Urban and Rural Areas. *Open Journal of Social Sciences*, 8, 600-615.  
<https://doi.org/10.4236/jss.2020.84043>

**Received:** March 4, 2020

**Accepted:** April 27, 2020

**Published:** April 30, 2020

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## Abstract

This paper selected the household income grouping data of China's urban and rural areas, respectively, calculated the urban and rural poverty lines with the ELES method, calculated the FGT index with the POVCAL software of the world bank, and constructed the VAR model to make an empirical analysis of the mechanism between industrial structure upgrading and the effect of urban and rural poverty reduction. The results show that the upgrading of industrial structure has a significant effect on poverty reduction in urban areas, but has little effect on poverty reduction in rural areas. Therefore, in the process of formulating and implementing poverty reduction policies in China in the future, we should pay attention to the differences between towns and rural areas and constantly improve the national poverty reduction governance system.

## Keywords

Industrial Structure Upgrade, Poverty Reduction in Urban and Rural Areas, ELES Method, FGT Index, The VAR Model

## 1. Introduction

Poverty is a problem that must be faced and solved in the development of human society. Since the 1980s, the Chinese government has devoted itself to poverty alleviation and development. In the past four decades, remarkable achievements have been made. The number of people living in poverty dropped from 770 million in 1978 to 5.51 million in 2019. China has achieved the millennium development goal of halving the number of people living in poverty from

1990 levels. In 2004, the leading group for poverty alleviation and development under the State Council announced that the number of people living in poverty had increased by 800,000 in 2003, marking the first large-scale return to poverty since the beginning of reform and opening up. As the world's largest developing country, China's economy continues to grow, but poverty and income inequality need to be further addressed. The Chinese government has pledged to reduce over 70 million people living below the current poverty line through targeted poverty alleviation by 2020, that is, to complete the building of a moderately prosperous society in all respects. On the one hand, the upgrading of industrial structure promotes the continuous economic growth, provides a large number of new jobs and creates conditions for employment growth, thus improving people's income and living conditions and alleviating poverty. On the other hand, it leads to structural unemployment and frictional unemployment, aggravating the seriousness of unemployment and increasing unemployment poverty.

The evaluation results of China's industrialization progress report (1995-2010) (2012) show that after the "Ninth Five Year Plan", "the Tenth Five Year Plan" and "the Eleventh Five Year Plan", China has basically completed the mid-term stage of industrialization, and will enter the post industrialization stage after entering the "Twelfth Five Year Plan", which will be an important milestone for China's industrialization process. The upgrading of industrial structure is an important factor in the change of supply structure in the process of industrialization, which has a significant impact on economic growth and is an important manifestation of a country's economic development that has made substantial progress. The adjustment of industrial structure has been highly valued by the country. Since the reform and opening up, China's industrial structure has been continuously upgraded, which is embodied in the gradual adjustment of the proportion of the three primary industries. The proportion of the primary industry declined rapidly after the reform and opening up, while the proportion of the tertiary industry has steadily increased since the 1990s. In addition to the dominant industry changes, the upgrading of technology has led to the upgrading of the industrial structure, that is, the transformation from labor-intensive industry to capital-intensive industry, and from the manufacturing of primary products to the manufacturing of final products. On the one hand, the flow of resource endowments brought about by these changes from low-productivity sectors to high-productivity sectors promoted the improvement of social productivity, and the resulting "structural dividend" realized the sustained growth of China's economy. On the other hand, the upgrading of industrial structure makes the workers under the original system and industrial structure face a severe test. Technological progress has broken the balance of the original economy and caused a huge impact on some industrial sectors that could not timely change their business models in the face of market adjustment, and even went bankrupt, directly reducing the income level of employees in these enterprises or causing more layoffs. At the same time, there is great friction in the reconfigura-

tion of production factors. Different social groups cannot get the same benefits and realize equal income distribution, which leads to serious structural unemployment and widening income gap in China.

Previous literatures were mostly based on unilateral studies in urban or rural areas or analysis based on data of a certain province, and the conclusions were relatively one-sided, unable to reflect the overall poverty situation of China and the poverty gap between urban and rural areas. Respectively in this paper, through the scientific method of poverty measurement to measure urban and rural poverty, the poverty of further analyzes the status quo, and build an upgrade of industrial structure and urban and rural poverty reduction effect analysis framework, applied econometrics analysis methods, to our country industrial structure upgrade and empirically studies the relationship between urban and rural poverty reduction effect, clear industrial structure upgrade, respectively, the dynamic effect on rural poverty and poverty in cities and towns, for related macro microeconomic policies provide empirical evidence for and adjustment, so as to realize the purpose of effectively eliminate poverty.

The second part is the literature review and action mechanism, and analyzes the different effects of industrial structure upgrading on urban and rural poverty. The third part is model setting and variable selection. TS and FGT index are selected to build the VAR model. The fourth part studies the impact of industrial structure upgrading on urban and rural poverty level from unit root test, impulse response analysis and variance decomposition. Finally, some corresponding policy Suggestions are put forward according to the conclusion of the model.

## **2. Literature Review and Mechanism of Action**

There is no doubt that industrial structure upgrading will have an impact on poverty reduction in urban and rural areas. However, domestic and foreign scholars have different views on the way and mechanism of industrial structure upgrading's impact on poverty reduction. Some scholars believe that industrial structure upgrading can help alleviate poverty. The world bank has repeatedly (1990, 2000) concluded in its report that, in terms of the impact of industrial structure on poverty reduction, the role of primary industry in poverty reduction is the first. With the same view of Tian (2003) argue that China's rural poverty reduction, such as the great achievements can be attributed to the development of the first industry, the effect of it on China's rural poverty alleviation is four times the size of the effect of the second and third industry growth (Ravalion & Chen, 2007), and the first industry of relatively high poverty reduction effect lasted until the early 21st century (Li, et al., 2010). This conclusion is not limited to China's poverty and economic growth data. Through studies on Nigeria and Ethiopia, Alene et al. (2007) found that the development of the primary industry would increase residents' income and help reduce poverty, especially the reduction of extreme poverty population. However, some scholars believe

that the growth potential of the primary industry sector and its impact on poverty reduction are limited. Joshi (2004)'s study on the upgrading of India's industrial structure shows that the development of the tertiary industry promotes employment and has a positive poverty reduction effect. For the same study in India, Mitra & Schmid (2008) reached the same conclusion. Ravallion & Chen (2005) showed that the growth of three industries had certain effects on poverty alleviation, among which the primary industry had the largest effect and the tertiary industry had the second. However, Jin Yanming and lei Ming (2006) found that the poverty reduction effect of the primary industry still ranked first, but the manufacturing industry and service industry ranked second and third respectively. The main reason for the inter-industry poverty reduction effect is the difference in labor intensity of various industries and the skill demand of inter-industry labor force (Zhang, 2011). Based on the comparative advantages of China's industry, ye chunhui et al. (2004) concluded that the adjustment of agricultural structure could increase farmers' income by 5% - 7%. Liu Xiulan (2005) believed that the current industrial structure of the region was directly related to residents' income, and proposed that the fundamental way to solve the poverty of farmers in the western region and to increase their incomes was to accelerate the upgrading of industrial structure and transfer of surplus rural labor force to cities. The adjustment of industrial structure will promote sustained economic growth, attach importance to education, carry out social security reform, and encourage the whole society to participate in poverty relief work, which can well alleviate the poverty situation of our country (Xu Chong, 2009).

Other scholars believe that industrial structure upgrading will have a negative effect on poverty reduction. From the perspective of economic theory, the upgrading of industrial structure is the transformation from labor-intensive to technology-intensive and capital-intensive, which affects the labor demand among various industries, leading to structural unemployment and increasing the unemployed poor population. Some scholars abroad to countries such as Britain and America's poverty has carried on the empirical study, the results show that in the 1960 s to industrialization makes the manufacturing industry structure adjustment, reduce the labor demand, the low quality of labor force is difficult to find suitable jobs in manufacturing (Mingione, 1996), a low income than high income people are more likely to suffer (Doussard et al., 2009), a long-term increase in unemployment, poverty reduction brought by the service industry development is less than the manufacturing sector to reduce poverty, as a result of increased (Brady & Wallace, 2001), Unemployment and poverty rates rose simultaneously. Similarly, the upgrading of industrial structure since the 1990s has changed the distribution of labor between three industries, within industries, between industries and among enterprises, eliminating a large number of enterprises that lack market competitiveness, thus resulting in large-scale unemployment of workers. These low-quality unemployed people are almost unable to find employment again (Ma, 2005), which aggravates the seriousness

of unemployment problem and leads to the increase of poverty rate (Su, 2002). With the steady growth of our country's economy, the urban poverty of breadth, depth and intensity showed growth trend, the fundamental reason lies in the economic system transition and rapid upgrading of industrial structure sharply (Su Qin, 2003), and cause the change of employment structure and income distribution, and the social security system reform lag behind are exacerbated poverty population increase (Zhang, 2007). In the process of global integration, developed countries transfer traditional manufacturing industries to developing countries, and the number of jobs lost in cities exceeds the number of new jobs, thus increasing the unemployment rate of the whole society. Therefore, the upgrading of industrial structure not only aggravates the situation of absolute poverty, but also improves the degree of relative poverty.

The upgrading of industrial structure has a certain impact on China's poverty situation from its growth effect, employment effect and distribution effect. According to Chenali and others, the flow of production factors from inefficient sectors to efficient sectors promotes economic growth, while the short-term growth effect on poverty alleviation is unstable. The trickle-down theory states that economic growth will stimulate the domestic economy, create more jobs, increase tax revenue, strengthen the government's anti-poverty development efforts, and reduce poverty. However, if inequality worsens, the role of economic growth in poverty reduction will be gradually weakened (Chen, 2008). These influencing factors include natural historical conditions, socio-economic environment, policy and institutional arrangements, etc. Employment and industrial structure are closely linked and mutually balanced. Minor changes in industrial structure will directly lead to corresponding changes in employment situation (Won Army, 2011). In the short term, there is a contradiction between the upgrading of industrial structure and the increase of labor positions, resulting in structural unemployment and frictional unemployment. Unemployment means that there is no income and it is likely to fall into poverty (Li, 2004). In the long run, industrial structure upgrading can reduce unemployment rate and is an effective means to solve the employment problem (Lin, 2008). Income distribution and industrial structure upgrading are interactive dynamic processes. With the huge impact of industrial structure upgrading, the short-term income of laborers will be greatly shaken, directly affecting the poverty situation (Gao, 2009). Su Xueshu (2002) also pointed out that the upgrading of industrial structure would cause the change of income distribution and the change was obvious. At the same time, the widening income gap makes the residents' consumption structure change accordingly, and brings about the adjustment of industrial structure. Some studies believe that income inequality and poverty reinforce each other, creating a vicious circle and weakening the poverty reduction effect brought by the growth effect of industrial structure upgrading. To sum up, the growth effect and employment effect of industrial structure upgrading have a positive effect on poverty reduction, while the distribution effect has a negative effect.

### 3. Model Setting and Variable Velection

#### 3.1. Variable Selection

The upgrading of industrial structure refers to the evolution process of industrial proportion relation from lower level to higher level. There are many measures, such as the proportion of output value of non primary industry in total output value (Chen Wanling and Yang Yongcong, 2014) or Hoffman coefficient (Wang Jianlin and Zhao Jiajia, 2014). The degree of upgrading of industrial structure is mainly reflected in the process of gradual transfer of the focus of industrial structure from the first and second industries to the third industry, that is, the proportion of the first and second industries in GDP gradually decreases, and the proportion of the third industry in GDP gradually increases. The academic circle often reflects the elevation of industrial structure with the proportion of each industry, and USES the output value of the secondary industry and the tertiary industry as the measurement of industrial structure upgrading according to clark's law, such as dry Chunhui (2011). This paper follows this practice and sets the indicator as  $TS = \text{output value of the tertiary industry/output value of the secondary industry}$ . The higher the value of  $TS$ , the higher the industrial structure will be. The data are from China statistical yearbook 2000-2012.

There are many methods to measure poverty line, such as Engel's coefficient method, basic needs method, Martin's method, income proportion method, linear expenditure system model ELES method and so on. These methods have their own advantages in terms of theoretical basis, measurement basis and operability, but also have some limitations. Although engel's coefficient method is relatively stable, it can only be used for reference in China due to the limitation of price and low marketization degree in poor areas. The basic needs method mainly relies on experience judgment, and it is difficult to unify the standards in different periods. Martin method needs a lot of household survey data, which is complicated in calculation and low in operability. Income ratio method is a dynamic indicator, but its method is too simple. The linear expenditure system ELES method divides demand into basic consumption demand and excess consumption demand determined by personal preference. It is consistent with the economic principle to take basic consumption demand as the poverty line, and this method can be measured by using household income and expenditure survey data. In comparison, this paper argues that ELES method is suitable for the objective measurement of poverty line, and the result is lower than the international standard, but higher than the minimum living guarantee standard published in China (Luo, 2006). The model expression is:

$$v_i = p_i r_i + \beta_i \left( y - \sum_{i=1}^n p_i r_i \right) \quad (1)$$

In Equation (1),  $v_i$  consumer expenditure on the goods  $i$ ,  $p_i$  for the prices of the goods  $i$ ,  $r_i$  is the basic demand of the  $i$ -th commodity, the basic consumption demand of the product for the  $i$ -th commodity, beta said the marginal budget of

the products  $i$  share, namely the surplus after the deduction of the basic consumption demand spending allocations in the proportion of the first kind of commodity. The model shows that under a certain price level, assuming that the consumer's income is  $y$ , the basic consumer demand Piri for the  $i$ -th commodity is satisfied first, and  $\beta_i$  part of the remaining income is allocated to the  $i$ -th commodity.

Let  $\alpha_i = p_i r_i - \beta_i \sum_{i=1}^n p_i r_i$ , the sum of both sides is deformed to get the total basic consumption demand expenditure, and the values of alpha and beta are estimated by the least square method. The finally obtained poverty line can be expressed as:

$$PL = \frac{\sum_{i=1}^n p_i r_i}{1 - \sum_{i=1}^n \beta_i} = \sum_{i=1}^n \alpha_i \tag{2}$$

Due to the change in the statistical caliber of household income and expenditure survey data, this paper selects the data from 2000 to 2012 to calculate the poverty line of China's urban and rural areas through the ELES analysis method, and the results are shown in **Table 1**.

In 1984, Foster, Greer and Thorbecke proposed FGT index as a standard to measure poverty degree, which made up for the deficiency of SEN poverty index. Based on the poverty line calculated by the above ELES method, this paper selected household income grouping data from 2000 to 2012 to calculate the poverty degree in each year. The performance formula of this index is as follows:

$$P_\alpha = \int_0^z \left( \frac{z-x}{z} \right)^\alpha f(x) dx \tag{3}$$

where,  $z$  is the poverty line,  $x$  is the residents' income, and alpha is the social poverty aversion coefficient. Generally, the greater the value, the higher the social aversion to poverty. When alpha = 0,  $P_0 = \int_0^z f(x) dx = F(x)$ , that is, the poverty incidence H, represents the proportion of the poor population in the total population; When alpha = 1,  $P_1 = \int_0^z \left( \frac{z-x}{z} \right) f(x) dx$ , is the poverty gap index, reflecting the relative gap between the income of the poor and the poverty line, that is, the depth of poverty, denoted as PG; When alpha = 2,  $P_2 = \int_0^z \left( \frac{z-x}{z} \right)^2 f(x) dx$ ,

**Table 1.** Poverty line units in urban and rural China (yuan/year × person).

year	2000	2001	2002	2003	2004	2005	2006
Urban PLc	2587	2887	2753	3004	3152	3288	3272
Rural PLn	-	-	394	464	488	975	969
year	2007	2008	2009	2010	2011	2012	
Urban PLc	3644	4023	4333	4433	4606	4956	
Rural PLn	1093	1193	1451	1447	2025	2417	

reflects the degree of inequality in income distribution of the poor population. the intensity of poverty, which is denoted as SPG. These three indicators respectively explained poverty in terms of breadth, depth and intensity.  $P_1$  focused on reducing the poverty degree of the poor group, while  $P_2$  focused on the low-income group in the poor group, who were more disgusted with poverty. The biggest advantage of FGT index is its decompositivity, which can decompose the overall poverty level into the poverty of different components, strengthening the depth of poverty analysis and being widely used by scholars in empirical analysis.

In this paper, seven income group data of urban residents and five income group data of rural residents from China statistical yearbook and China economic net database were selected respectively, and POVCAL software developed by the world bank was used to calculate the breadth H, depth PG and intensity SPG of urban and rural poverty from 2000 to 2012. The results are shown in **Table 2**.

As can be seen from the above table, the breadth, depth and intensity of urban poverty gradually increased since 2000, peaked in 2003, and then decreased year by year. Among them, the intensity of poverty rebounded in 2010, indicating that the growth rate of urban residents' income was higher than the average growth rate of national residents' income. Due to the absence of grouping data of rural income from 2000 to 2002, the measurement of rural poverty degree was started in 2002. During the period from 2000 to 2012, the breadth, depth and intensity of rural poverty fluctuated and increased, indicating that the growth rate of rural residents' income was lower than the national average speed, and the

**Table 2.** Poverty degree unit of China's urban and rural areas (%).

year	Urban areas			Pural areas		
	H1	PG1	SPG1	H2	PG2	SPG2
2000	4.2082	0.7484	0.2542	-	-	-
2001	5.4796	0.9824	0.3245	-	-	-
2002	6.5442	1.5751	0.6879	1.7460	0.9080	0.9070
2003	6.8043	1.6755	0.7492	2.5980	1.2473	1.2110
2004	6.2080	1.5626	0.7197	2.0521	1.0715	1.0705
2005	5.5943	1.3568	0.5932	9.4172	2.3972	0.8307
2006	3.5364	0.9008	0.4381	7.3497	1.6156	0.4808
2007	2.8703	0.7633	0.3962	7.3280	1.7626	0.5754
2008	2.8181	0.7094	0.3426	7.1071	1.7596	0.5907
2009	2.6498	0.7146	0.3759	9.8827	2.8011	1.0781
2010	1.9835	0.6547	0.4414	6.6184	1.4725	0.4425
2011	1.3708	0.4748	0.3412	11.2703	3.8115	1.7610
2012	0.9866	0.3719	0.2967	12.0671	3.8860	1.7049



gap was getting larger and larger. The data above show that the extent and depth of rural poverty peaked in 2012, while the intensity peaked in 2011.

Next, we will compare and analyze the incidence of poverty in urban and rural areas. Before 2004, the incidence of poverty in rural areas was lower than that in urban areas. This may be because the poverty line in rural areas was calculated by cash consumption expenditure. At that time, the degree of marketization in rural areas was low and the poverty line calculated accordingly was low. After 2004, the incidence of rural poverty has been higher than the incidence of urban poverty, which is more consistent with China's national conditions.

Secondly, compare and analyze the change and difference of poverty gap rate between urban and rural areas. By above knowable, the poverty gap rate and poverty rate between the two have the same change trend, in 2004 as the dividing line, before the rural poverty gap rate is low, then, on the other hand, shows that urban poverty population is more and more small, the relative gap between income and poverty line and the rural poor instead of the gap between income and poverty line is more and more big.

Finally, by comparing the analysis found that the square of the town and rural poverty gap rate and intensity of rural poverty has been bigger than the town's poor strength, reflects the rural poor income distribution inequality is higher than urban poverty population, and unequal income distribution situation in the town's poor relief, year by year, by contrast, the rural poor in the inequality of income distribution is gradually strengthened.

### 3.2. Model Setting

VAR is to build a model based on the statistical properties of data, and take each endogenous variable in the system as a function of the lag value of all endogenous variables in the system to construct a model, so as to extend the univariate autoregression model to the vector autoregression model composed of multivariate time series variables. It is used to estimate joint endogenous variable dynamic relationship, and not with any prior restraint conditions, can also through the pulse response function to isolate each variable the reaction degree of impact on other variables, and promoted the application of system dynamic analysis, the economy is dealing with the analysis and prediction of multiple related economic indicators is one of the most easy to operation model. In view of the research content and the characteristics of selected data, VAR model is used in this paper for estimation, and its mathematical expression is as follows:

$$y_t = A_1 y_{t-1} + \dots + A_p y_{t-p} + B X_t + \varepsilon_t \quad (4)$$

## 4. The Empirical Analysis

### 4.1. Unit Root Test

In order to prevent the appearance of pseudo-regression phenomenon, unit root test was first performed in this paper, and stability test (ADF method for short) was used to determine the stability of variables. The results are shown in **Table 3**.

**Table 3.** ADF test results of time series.

variable	ADF value	5% critical value	conclusion	variable	ADF value	5% critical value	conclusion
H <sub>1</sub>	3.535902	3.933364	non-stationary	D (H <sub>1</sub> )	4.493609	3.403313	smooth
PG <sub>1</sub>	1.481057	3.175352	non-stationary	D (PG <sub>1</sub> )	4.573739	3.320969	smooth
SPG <sub>1</sub>	0.690827	1.977738	non-stationary	D (SPG <sub>1</sub> )	2.140726	1.995865	smooth
H <sub>2</sub>	3.267281	4.008157	non-stationary	D (H <sub>2</sub> )	5.038923	3.259808	smooth
PG <sub>2</sub>	3.505253	4.008157	non-stationary	D (PG <sub>2</sub> )	5.889703	3.259808	smooth
SPG <sub>2</sub>	1.691789	3.212696	non-stationary	D (SPG <sub>2</sub> )	4.613666	1.988198	smooth
TS	1.419839	3.875302	non-stationary	D (TS)	2.826088	1.977738	smooth

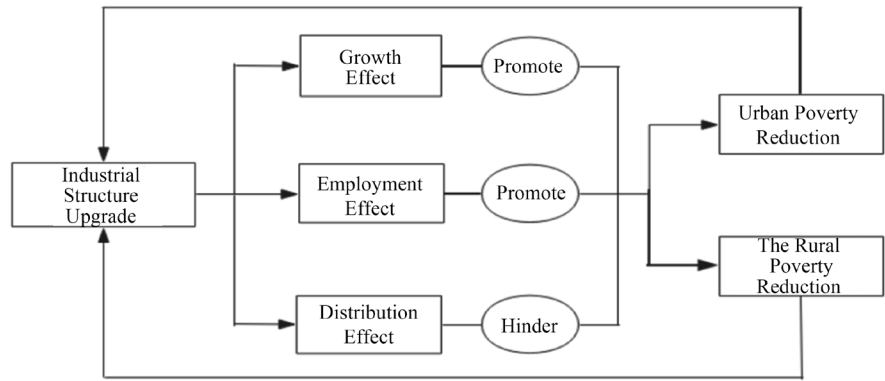
According to the results in the table, when the significance level is 5%, the time series of each variable is non-stationary. After the first-order difference, the ADF test value of each difference sequence is significantly less than the critical value of 5%, indicating that the original sequence is a first-order difference stationary sequence, that is, a single-integral sequence of the first order. In general, the selection of lag order  $p$  is based on AIC and SC criteria, and the minimum lag order of these two values is selected to avoid the phenomenon that the random error term is white noise. As a result, the lag order is determined to be 1.

Granger causality test is usually used to test the causality between variables. Here, it is to test whether the variables are endogenous. If they are not endogenous, it is meaningless to establish a VAR model. Regression results showed that the variables were endogenous and could be further studied. After the VAR model is established, the model stability test must be carried out. If the model is unstable, the standard error of impulse response will be invalid. According to the results of unit root test, both urban and rural models are stable.

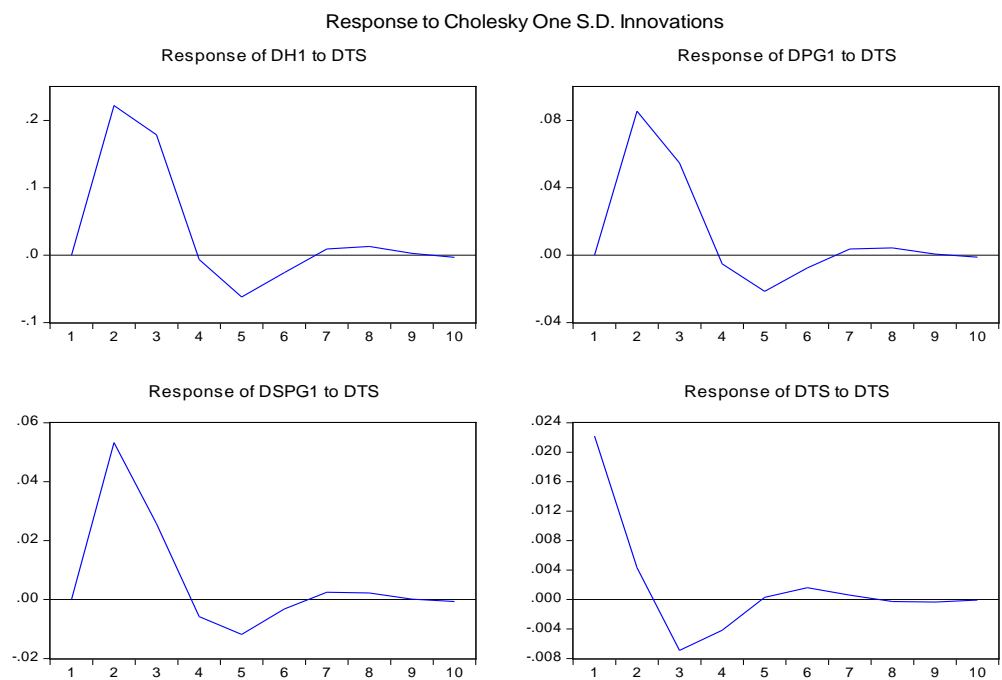
## 4.2. Impulse-Response Analysis

Impulse response function (IRF) describes the response of an endogenous variable to the impact of another variable, intuitively measuring the dynamic interaction between variables and the impact results, so as to judge the time-delay relationship between variables. **Figure 1** and **Figure 2** are respectively the impulse response function diagrams of urban and rural areas. The horizontal axis of each function graph in the figure corresponds to the corresponding period. The lag period selected in this paper is 10, and the vertical axis represents the response degree of an endogenous variable to impact.

As can be seen from **Figure 2**, the impact of D (H<sub>1</sub>), D (PG<sub>1</sub>) and D (SPG<sub>1</sub>) on D (TS) was basically unresponsive in the first phase, and then reached the maximum value in the second phase immediately, in which the response degree of D (H<sub>1</sub>) was the highest, and that of D (SPG<sub>1</sub>) was the lowest. Then the response of the three variables decreased stage by stage, and all of them reached the minimum value in the fifth stage, at which time D (H<sub>1</sub>) was the minimum and D (SPG<sub>1</sub>) was the maximum. Finally, as the lag period increases, the impulse



**Figure 1.** The effect of industrial structure upgrading on poverty reduction in urban and rural areas.



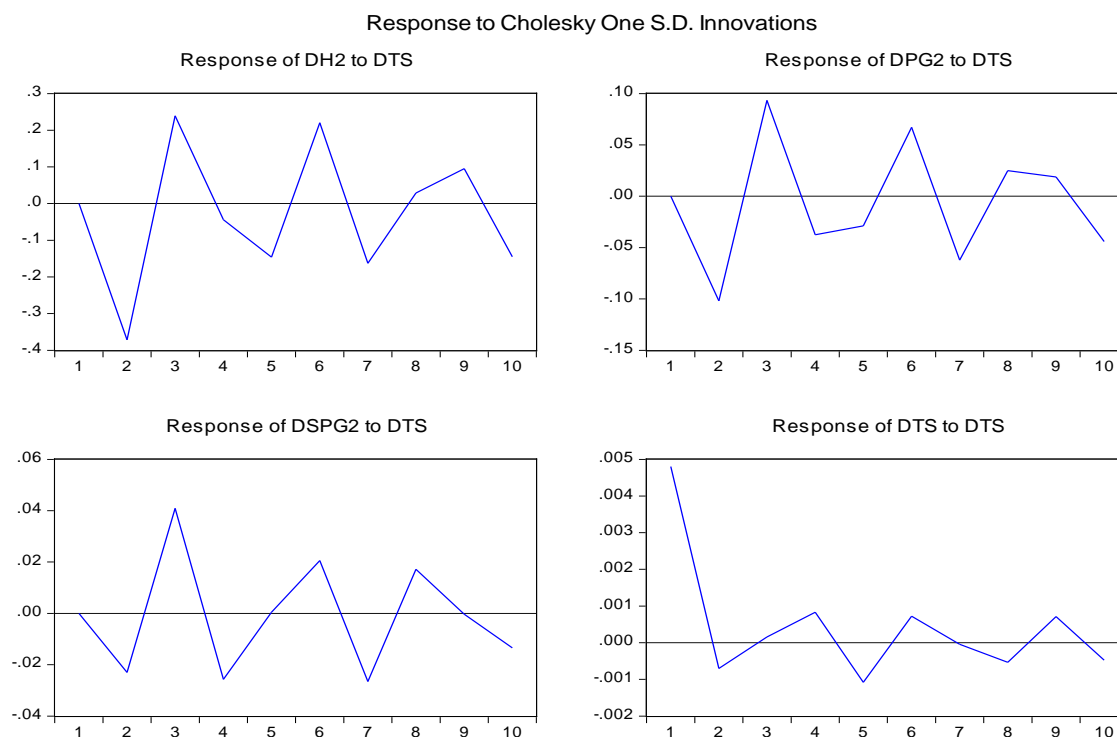
**Figure 2.** Urban impulse response function diagram.

response gradually approaches zero. This shows that the upgrading of industrial structure can help alleviate the breadth, depth and intensity of urban poverty.

**Figure 3** is the pulse response function of rural figure, clear, D (H2), D (PG2), D (SPG2) impact to D (TS) in the first period is basically no reaction, D (H2), D (PG2) and D (SPG2) in the second period quickly turn into negative, and in the third phase of the peak, and then rapidly falling and rising, swings between plus or minus, where D (H2) minimum negative response, as the biggest, suggests that the most volatile, the most unstable, D (SPG2) in 0.3 to 0.4, compared with the other two variables is more stable.

### 4.3. Variance Decomposition

In order to further analyze the degree of interaction between industrial structure



**Figure 3.** Rural impulse response function diagram.

upgrading and urban and rural poverty reduction effects, the variance decomposition was used to measure the contribution of each variable to the change of endogenous variables in the structural impact and evaluate the importance of different structural impact.

As can be seen from **Figure 4**, except for its own contribution, the industrial structure upgrading contributes the most to the extent of urban poverty, which is stable at about 20%. The breadth of poverty contributes the most to the depth of poverty, followed by the upgrading of industrial structure. On the contrary, the depth of poverty contributes negligible to the breadth of poverty. The greatest contribution to the intensity of poverty is still the breadth of poverty, followed by the depth of poverty and the upgrading of industrial structure. Poverty and, for the upgrading of the industrial structure of breadth, depth and intensity of the contribution rate steady at around 20%, instructions for the upgrading of the industrial structure of the urban poverty of breadth, depth and strength of slow have a certain role in promoting, and the intensity of poverty breadth, depth and contribution of industrial structure upgrade gradually reduce poverty shows breadth to upgrade the industrial structure effect is the largest.

**Figure 5** shows that the intensity of rural poverty contributes the most to the breadth and depth of poverty, indicating that the income inequality of the rural poor seriously hinders the process of rural poverty reduction. What contributes the most to the intensity of poverty is the depth of poverty, which indicates that the larger the relative gap between the income level of the rural poor and the poverty line is, the more serious the degree of income inequality is.

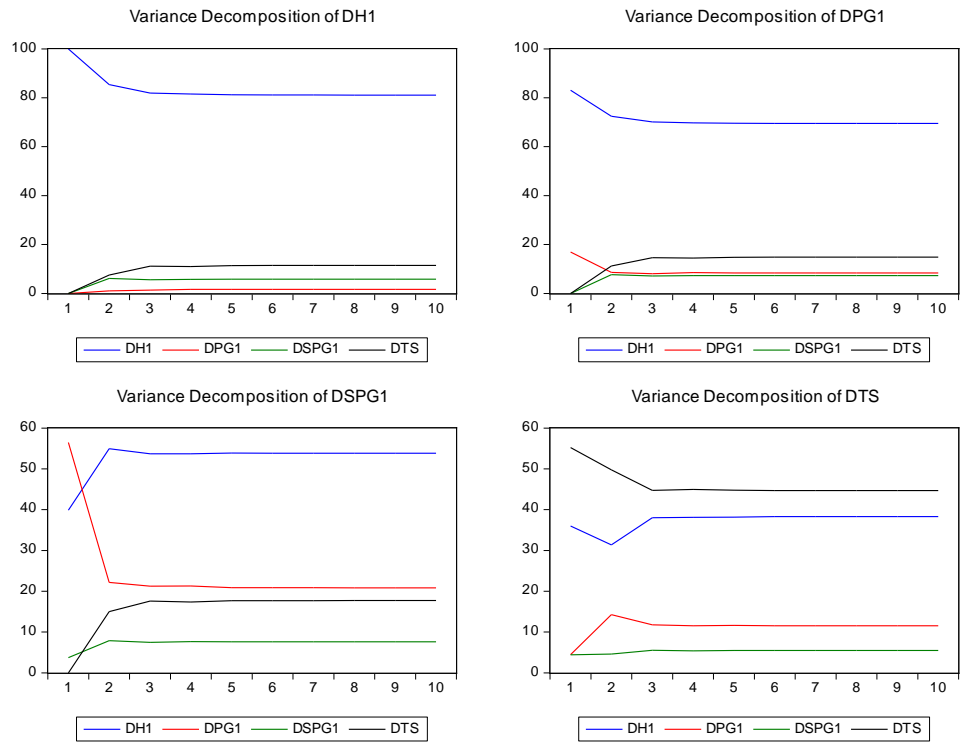


Figure 4. Variance decomposition results of towns.

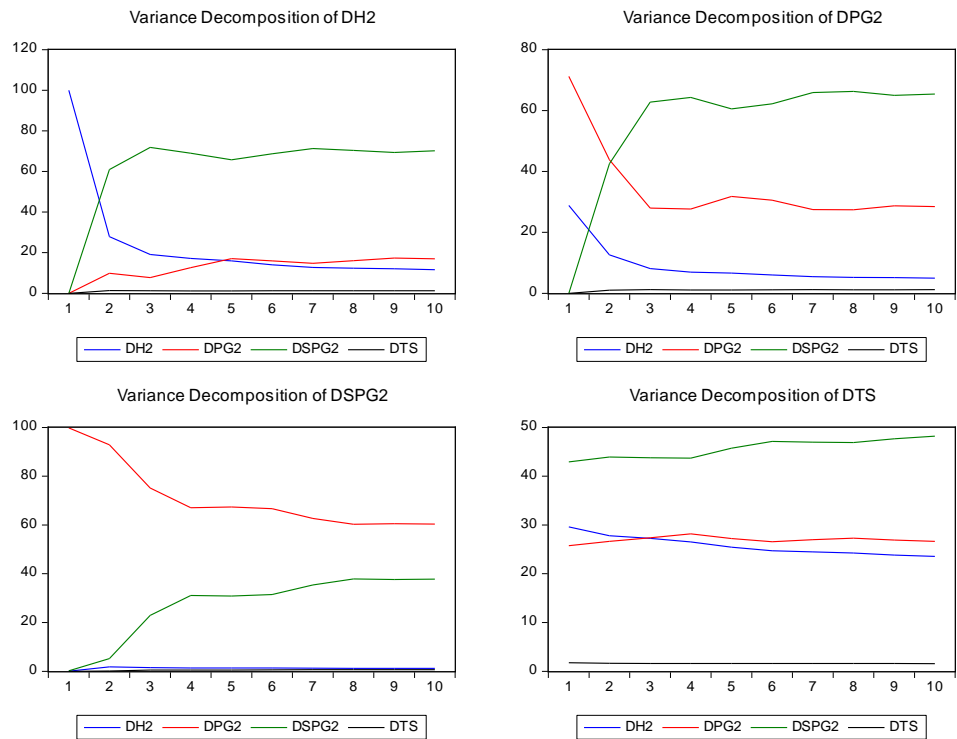


Figure 5. Decomposition results of rural variance.

However, the contribution rate of industrial structure upgrading to the breadth, depth and intensity of rural poverty can be ignored, which shows that the indus-

trial structure upgrading has no obvious promotion effect on the alleviation of rural poverty. The contribution rate of the breadth, depth and intensity of rural poverty to the upgrading of industrial structure is gradually increasing and much larger than its own, indicating that the degree of rural poverty seriously hinders the upgrading of industrial structure, among which the negative effect of poverty intensity is the largest.

## 5. Conclusions and Policy Recommendations

### 5.1. Research Conclusions

In this paper, based on the urban and rural household income in 2000-2012 grouped data, the ELES method is used to calculate the poverty line of urban and rural respectively and the FGT index calculated by the POVCAL software of the world bank to build VAR model, the upgrading of industrial structure and urban and rural poverty reduction effect makes an empirical analysis of the dynamic relationship between through ADF test, impulse response analysis and variance decomposition, the following research conclusions are:

Firstly, urban poverty and upgrading of industrial structure show a stable long-term equilibrium relationship between, although there are fluctuations in the process, it reminds us that we should pay attention to the emergence of the phenomenon of Chinese in cities and towns, as a whole for the upgrading of the industrial structure of the urban poverty of breadth, depth and intensity of slow have obvious roles in promoting, the effects of growth and employment effects of industrial structure upgrade on the positive effect are greater than the distributional effects of negative effect. On the contrary, the breadth, depth and intensity of urban poverty have a weak negative effect on the upgrading of industrial structure, among which the breadth of urban poverty has the most negative effect on the upgrading of industrial structure.

Secondly, the upgrading of industrial structure has no obvious promoting effect on the reduction of the breadth, depth and intensity of rural poverty. At this time, the positive effect of the upgrading of industrial structure on growth and employment is less than the negative effect of distribution effect. Conversely, the breadth, depth and intensity of rural poverty have a significant negative effect on the upgrading of industrial structure, which inhibits the process of upgrading of industrial structure, and thus is not conducive to the reduction of rural poverty, and eventually forms a vicious circle.

Thirdly, the different poverty reduction effects of industrial structure upgrading on urban and rural areas are jointly affected by their growth effect, employment effect and distribution effect. At this stage of the study, the urban industrial structure has been basically upgraded, and the industrial structure will no longer undergo drastic changes. The growth effect and employment effect brought by the structural upgrading are greater than the distribution effect, so the industrial structure upgrading has an obvious promotion effect on the breadth, depth and intensity of urban poverty. Corresponding to beginning of

the rural industrial structure upgrade, in the process of the structural unemployment caused by the friction caused by the not perfect security system to guard against risks, and the gap between urban and rural areas is still in the further expansion, the employment effect of short-term growth and distribution effect of the negative effect is greater than the effect brought about by the positive effect, so for the upgrading of the industrial structure of the rural poverty reduction no obvious role in promoting.

## 5.2. Countermeasures and Suggestions

Through the above research and analysis, it can be concluded that industrial structure upgrading has a significant role in promoting poverty reduction. Eradicating rural poverty is the most arduous task in building a moderately prosperous society in all respects. Therefore, the formulation of targeted policies is of great significance for the realization of comprehensive poverty alleviation and targeted poverty alleviation. Based on the research conclusions, this paper puts forward the following policy suggestions:

One is to set an appropriate poverty line. The current poverty line is low, can not blindly satisfied under the current standards of comprehensive poverty alleviation, this article USES the method of ELES measure is the residents' basic consumption demand, reflect poor reaches a certain standard of living, to share the fruits of economic development in our country, make it has good applicability and practicability, is a good alternative.

Second, rural areas should be the top priority in poverty alleviation. Although there have been great breakthroughs in rural development in recent years, the gap between urban and rural areas is still significant. The widening gap between the rich and the poor reduces the relative income level of low-income groups and deepens the poverty level. The government should adjust redistribution, devote itself to narrowing the income gap, and further improve the legal system related to income distribution. At the same time, industrial structure upgrading to promote poverty alleviation and development work. The common phenomenon in poor areas is that the industrial structure is single and the level of industrial development is low. We will strengthen the capacity of the impoverished population for self-development and narrow the gap between urban and rural areas on the basis of industries with distinctive advantages and with the goal of reducing poverty.

The third is to accelerate the improvement of the rural social security system. Income is an important tool for rural residents to fight against unemployment, disease and other attacks. However, due to the imperfect social security system and the strong impact caused by the upgrading of industrial structure, a part of low-income groups are vulnerable to these attacks, which is very easy to become poor people. No matter from the perspective of economic development or rural people's income, it is required to upgrade the industrial structure and improve the economic growth mode. In this process, if we want to reduce the negative impact of these attacks on low-income people, we need to ensure the establish-

ment of a sound social security system to improve the anti risk ability of low-income people and curb the increase of poverty rate. The social security system can not only improve the ability of low-income people to resist falling into poverty, but also help them get rid of poverty.

### **Conflicts of Interest**

The author declares no conflicts of interest regarding the publication of this paper.

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