

Employment Structure, Lewis Turning Point and the Labor Share of Income: Theoretical and Empirical Analysis

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In the context of the labor market segmentation in China and its reaching the Lewis turning point, this paper interprets the changing trend of the labor share of income in China from the changing perspective of the employment ownership structure. The theoretical analysis reveals that the labor share of income follows a U-shaped curve when the agricultural labor force gradually moves into the private and self-employed sectors. Using the Chinese provincial-level panel dataset between 1990 and 2016, our empirical study finds that there is a critical threshold. When the share of agricultural labor force is above this threshold value, the impact of the increase in the employment share of the urban private sector on the labor share of income is negative. In contrast, the impact becomes positive when the share of the agricultural labor force is less than or equal to this threshold value. Moreover, the impacts of other variables of employment ownership structure don't show this kind of feature on both sides of this threshold value. The increase in the employment share of the urban private sector accounted for about 29.37% of the growing labor share of income between 2007 and 2016. This paper provides policy implications in the following four areas: institutional guarantee improvement, harmonious labor relations establishment, redistribution policy imposition and economic development pattern transformation.

Keywords: labor share of income, employment ownership structure, Lewis turning point, urban private sector employment

1. Introduction

Changes with the labor share of income exert influence over a series of major

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economic issues. Its decrease not only restrains consumption power of citizens and negatively affects the expansion of consumer demand (Li *et al.*, 2009), but also widens the income gap and therefore may induce social contradictions and undermine social stability and development (Cai, 2005). As the construction of socialism with Chinese characteristics enters a new era, it's important to increase the share of labor remuneration in primary distribution, ensure that people have a greater sense of gain in co-contribution and shared development, and develop a reasonable and orderly income distribution pattern, in order to complete the process of building a moderately prosperous society in all aspects. To this end, exploring the periodical features of changing labor share of income in China and its influential factors has important policy and realistic implications.

According to GDP data accounted with the income approach, the labor share of income in China declined from 53.42% in 1990 to 39.74% in 2007 and then climbed back gradually to 47.46% in 2016 (refer to Figure 1 for the “GDP approach”). Since the 1990s, decrease of the share attracted wide academic attention. However, increase of the share since 2007 has not been paid sufficient attention. This leads to the research contribution of the paper, which, based on the basic stylized fact of the labor market segmentation in China and its reaching the Lewis turning point, interprets the changing trend of decreasing first and then increasing of the labor share of income since 1990 from the changing perspective of the employment ownership structure.

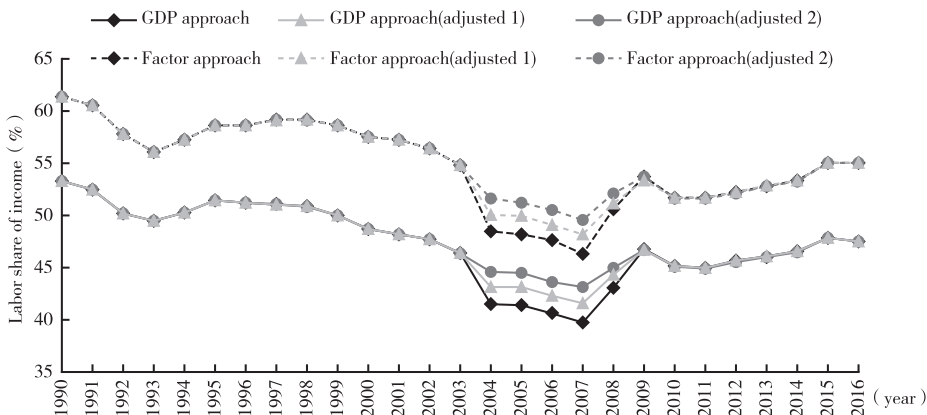


Figure 1. Changing Trend of the Labor Share of Income in China

Sources: China Statistical Yearbooks, Data of Gross Domestic Product of China 1952—1995 and Data of Gross Domestic Product of China 1952—2004.

Due to the diversity of economic sectors, the employment ownership structure in China underwent tremendous changes (Cai and Wang, 2004). As shown in Figure 2, noticeable changes with the structure were rapid increase of the employment share of private and self-employed sectors, initial decline and then slow increase of the

employment share of urban units and continuous decrease of the share of agricultural labor force.¹ By 2016, self-employed and private economic sectors absorbed nearly 40% of national employed population and urban self-employed and private economic sectors even absorbed nearly half of urban employed population. As Chinese labor market is segmented into employment in urban formal sectors, urban informal sectors and rural employment sectors, agricultural labor force that has been transferred mostly moves into urban informal sectors. Therefore, changes with employment ownership structure can better reflect fundamental features of labor transfer in the context of Chinese dual economic structure and to this end, the paper takes the perspective of changing employment ownership structure to analyze the change with labor share of income.

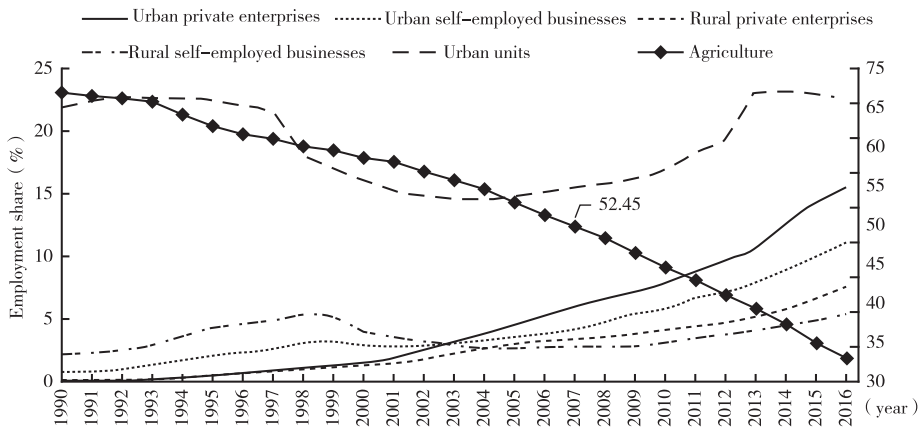


Figure 2. Changing Trend with Chinese Employment Ownership Structure

Note: “52.45” in the figure means that the share of agricultural labor force in 2007 was 52.45%.

Sources: *China Statistical Yearbook 2000* and *China Statistical Yearbook 2017*.

In the context of the labor market segmentation in China and its reaching the Lewis turning point, the paper constructs a theoretical model covering agricultural production sectors, self-employed and private sectors and urban units. The theoretical analysis reveals that the labor share of income follows a U-shaped curve when the agricultural labor force gradually moves into the private and self-employed sectors, and the wage of self-employed and private sectors and that of urban units will converge. Using the Chinese provincial-level panel dataset between 1990 and 2016, our empirical study finds that there is a critical threshold. When the share of agricultural labor force is above this threshold, the increase in the employment share of the urban private sector drives down the labor share of income; when the share of the agricultural labor force

¹ As defined in this paper, agricultural labor force = rural employed population – rural privately employed population – rural self-employed population.

is less than or equal to this threshold, the increase in the former will drive up the latter; moreover, the impacts of other variables of employment ownership structure don't show this kind of feature on both sides of this threshold. The increase in the employment share of the urban private sector contributed to about 29.37% of the growing labor share of income between 2007 and 2016 in China.

In the remaining parts of the paper, the second part is dedicated to literature review. The third part gives institutional background, theoretical analysis and hypothesis. The fourth part illustrates variables, data and descriptive statistics. The fifth part presents the empirical analysis and the last part is conclusions and provides some policy suggestions.

2. Literature Review

In the process of economic development, the factor share of income may remain constant, as indicated in one of Kaldor's stylized facts (Kaldor, 1961). However, since the 1980s, most countries worldwide experienced noticeable decrease of the labor share of income (Karabarbounis and Neiman, 2014) and hence sizeable literature on influential factors on the change of labor share of income was produced in the academic circle. Domestic and foreign studies were mainly conducted from the perspectives of technology bias (Karabarbounis and Neiman, 2014; Huang and Xu, 2009; Wen and Lu, 2018), adjustment of industrial structure (Luo and Zhang, 2009a; Bai and Qian, 2010), trade and globalization (Zhang *et al.*, 2012), foreign direct investment (Luo and Zhang, 2009b; Shao and Huang, 2010) and transformation of labor relations (Wei *et al.*, 2013).

Despite the immense literature on the influential factors on the change with Chinese labor share of income, they mostly focus on the decrease of the labor share of income, with little attention to the trend of decreasing first and then increasing. Kuznets' "inverted U curve" hypothesizes that economic inequality increases first and then decreases as economy develops (Kuznets, 1955). Theoretical analysis by Li *et al.* (2009) reveals that the labor share of income decreases first and then increases as labor force is continuously transferred from agricultural to industrial sectors and their empirical study based on transnational data also shows that labor share of income and per capita GDP display a U-shaped relationship. Unlike Li *et al.* (2009) that interprets from the general law of transfer from agriculture to industry, this paper innovatively explains the changing labor share of income that decreases first and then increases from the perspective of changing employment ownership structure, the fundamental feature of labor transfer, in the context of the labor market segmentation in China and its reaching the Lewis turning point. Some other literature indicates that along with industrialization and adjustment of industrial structure, the labor share of income may display the trend of decreasing and then increasing (Luo and Zhang, 2009a; Bai and Qian, 2010; Liu

et al., 2018). Such literature helps us understand the U-shaped trend of Chinese labor share of income from the perspective of industrial structure adjustment, but unlike them, we will interpret from the perspective of changing employment ownership structure.

3. Institutional Background, Theoretical Analysis and Hypothesis

3.1. Institutional Background

3.1.1. Reform of the Employment System and Evolvment of Labor Share Segmentation in China

Before the reform and opening up, the Chinese government implemented the strategy of prioritizing the heavy industry for development (Lin *et al.*, 1994) and adopted policies discriminating against agriculture to transfer the surplus labor from agriculture to industry. In order to restrict the outflow of labor force from rural areas (Zhao, 2004) and secure the full employment and no welfare spillover for urban residents (Cai *et al.*, 2001), the government promulgated the *Regulations of the People's Republic of China on Household Registration* in 1958, which marked the birth of the household registration system limiting free flow of population and directly caused serious segmentation in Chinese urban and rural labor markets.

After the reform and opening up, the household contract responsibility system improved the labor productivity of agriculture and also generated enormous agricultural surplus labor.¹ Meanwhile, the rapid economic development in urban areas and greater favor for labor-intensive industries in the development strategies stimulated urban needs for agricultural labor force. Subsequently, a large number of agricultural laborers entered the urban labor market. However, as local government practiced protective policies against migrant labor force in protection of interests of urban residents (Cai *et al.*, 2001), Chinese urban and rural labor markets were still segmented and the massive agricultural labor force that had entered the urban labor market didn't have equal access to rights and security in employment with urban residents. Employment in urban informal sectors was featured by low wage, low requirements for skills and education background and predomination by agricultural labor force in its target of absorption (Wang *et al.*, 2004). This contrasted sharply with employment of formal sectors. As sizeable agricultural labor force entered urban informal sectors and found it difficult to enter formal sectors, the urban labor market was also segmented into formal and informal sectors internally.

To sum up, as the employment system was reformed and the labor market

¹ As defined by Lewis (1954), surplus labor refers to labor force with insignificant marginal productivity of labor (zero and even negative). The definition is also adopted by Cai (2010) and Wang and Zhong (2011).

developed, Chinese labor market was segmented into employment in urban formal sectors, urban informal sectors and rural employment sectors. The majority of the agricultural labor force that had been transferred actually entered urban informal sectors.

3.1.2. Lewis Turning Point and Wage Convergence

The reform and opening up has brought profound changes to Chinese demographic structure. The share of working-age population aged 15~64 reached the peak of 74.53% in 2010, but agricultural surplus labor had been nearly absorbed completely. Urban demand for labor force has outgrown the supply of labor (Cai and Wang, 2008), which means that China has reached the Lewis turning point in its economic development (Cai, 2010).

Under the joint impact of the advent of Lewis turning point and constant decrease of share of the employed with poor education background, the scarcity of regular workers with low education and low skills (mainly agricultural labor force) is considerably intensified, while the supply of proficient laborers with high education and high skills is relatively stable. The former is mainly employed in urban informal sectors, while the latter mainly in urban formal ones. According to the determination mechanism for wages based on supply and demand in the labor market, wage in urban informal sectors should outgrow that in urban formal sectors. Cai and Du (2011) found that systematic wage convergence had emerged in Chinese labor market.

3.2. Theoretical Analysis and Hypothesis

Lewis (1954) divided an economy into the subsistence sector and the capitalist sector, with the former continuously providing surplus labor for the latter at a wage level only for subsistence and the latter constantly expanding with cheap labor force and capital accumulation. As the capitalist sector keeps expanding, it will take away all the surplus labor from the subsistence sector at some point. Afterwards, the wage of the labor force transferred from the subsistence sector to the capitalist sector is equal to its marginal productivity of labor and keeps rising, and this point is named Lewis turning point (Cai, 2010; Wang and Zhong, 2011).

In the context of the segmented Chinese labor market and its reaching Lewis turning point, this paper constructs a theoretical model on the basis of the study by Lewis (1954) and Li *et al.* (2009), with the purpose of establishing the relationship between employment ownership structure and labor share of income. With the transfer of agricultural labor force taken as the start of theoretical analysis, this paper focuses on the influence of the change with employment ownership structure on the labor share of income according to characteristics of the dual economic development in China and

its particular labor market segmentation.

According to the statistics provided by the National Bureau of Statistics, the employment ownership structure discussed herein includes employment in urban units (covering state-owned units, collective units, joint-stock cooperative units, associated units, limited liability companies, stock corporations, Hong Kong, Macao and Taiwan invested units, and foreign invested units), urban private enterprises, urban self-employed businesses, rural private enterprises, rural self-employed businesses and agriculture. In order to simplify the theoretical analysis, we combine employment in urban private enterprises, urban self-employed businesses, rural private enterprises and rural self-employment businesses into employment in self-employed and private sectors. Given that part of the transferred agricultural labor force has entered rural private enterprises and rural self-employed businesses as previously pointed out, it's reasonable to regard the segmentation of Chinese labor market as segmentation among agricultural production sectors, self-employed and private sectors and urban units. On such basis, we categorize the economy into the agricultural production sector, self-employed and private sectors and urban units. Suppose the following production functions for the three sectors respectively:

$$Y_1 = A_1 L_1^{a_1} M_1^{1-a_1} \quad (1)$$

$$Y_2 = A_2 L_2^{a_2} K_2^{1-a_2} \quad (2)$$

$$Y_3 = A_3 L_3^{a_3} K_3^{1-a_3} \quad (3)$$

To explain, Y_j refers to output, $A_j (>0)$ technological coefficient, L_j quantity of labor force, and $a_j (\in(0,1))$ the coefficient of elasticity of labor output. $j=1,2,3$; $L=L_1+L_2+L_3$ is total quantity of labor force; M_1 refers to the land of agricultural production sector as a production factor, which puts marginal productivity of labor of the sector in degression; K_2 and K_3 respectively mean the capital of self-employed and private sectors and the urban unit sector. According to institutional background analysis, suppose the transferred agricultural labor force flows into the self-employed and private sectors, while labor force in the urban unit sector remains constant.¹ Consequently, make $\bar{L}=L_1+L_2$, with $\bar{L}$ meaning the sum of labor quantity in the agricultural production sector and the self-employed and private sectors and make L_3 constant, leaving aside the growth of population and labor force.

Before the advent of Lewis turning point, the agricultural production sector can provide surplus labor non-stop for the self-employed and private sector, and wage

¹ The hypothesis also complies with the feature of the changing employment ownership structure in China. Employment share of urban units in 1990–2016 changed only narrowly.

at this time is far lower than marginal productivity of labor in the latter. Given that marginal productivity of labor in the latter is greater than that in the former, total output will outgrow total labor remuneration. As agricultural surplus labor is constantly transferred, the latter keeps expanding and thus before the Lewis turning point, labor share of income will keep decreasing as the employment share of the self-employed and private sector increases. After reaching the point, agricultural surplus labor is completely absorbed. When the self-employed and private sector continues with demand for labor, wage (w_2) of the agricultural labor force further transferred from the agricultural production sector to the self-employed and private sector will equal marginal productivity of labor in the agricultural production sector (w_1). In this case,

$$w_2 = w_1 = a_1 A_1 L_1^{a_1-1} M_1^{1-a_1} \quad (4)$$

Wage of the urban unit sector (w_3) is its marginal productivity of labor:

$$w_3 = a_3 A_3 L_3^{a_3-1} K_3^{1-a_3} \quad (5)$$

Suppose that total labor remuneration of the economy is W and total output Y , and then the labor share of income (SH) can be expressed as:

$$SH = \frac{W}{Y} = \frac{a_1 A_1 (\bar{L} - L_2)^{a_1-1} M_1^{1-a_1} \bar{L} + a_3 A_3 L_3^{a_3} K_3^{1-a_3}}{A_1 (\bar{L} - L_2)^{a_1} M_1^{1-a_1} + A_2 L_2^{a_2} K_2^{1-a_2} + A_3 L_3^{a_3} K_3^{1-a_3}} \quad (6)$$

Take natural logarithms on the both sides of formula (6) and seek partial derivative on self-employed and private employment (L_2):

$$\frac{\partial \ln(SH)}{\partial L_2} = \frac{\partial \ln(W)}{\partial L_2} - \frac{\partial \ln(Y)}{\partial L_2} = \frac{\partial W / \partial L_2}{W} - \frac{\partial Y / \partial L_2}{Y} \quad (7)$$

In the formula,

$$\frac{\partial W}{\partial L_2} = -a_1 A_1 (a_1 - 1) (\bar{L} - L_2)^{a_1-2} M_1^{1-a_1} \bar{L} \quad (8)$$

$$\frac{\partial Y}{\partial L_2} = a_1 A_1 (\bar{L} - L_2)^{a_1-1} M_1^{1-a_1} + a_2 A_2 L_2^{a_2-1} K_2^{1-a_2} \quad (9)$$

At the initial stage of agricultural labor force being further transferred, as labor marginal productivity of the self-employed and private sector is far higher than that of

the agricultural production sector, the transfer of agricultural labor force makes total output outgrow total labor remuneration and thus the labor share of income keeps declining. According to (8) and (9), $\partial W / \partial L_2 > 0$, $\partial Y / \partial L_2 > 0$, $\partial^2 W / \partial L_2^2 > 0$ and $\partial^2 Y / \partial L_2^2 < 0$. In other words, total labor remuneration and total output both increase as self-employed and private employment rises, but the acceleration of rising labor remuneration is greater than that of rising output. Therefore, when agricultural labor force is transferred to a certain degree, the increase of total output will be smaller than that of total labor remuneration and since then, labor share of income will start to keep climbing. When $\partial \ln(SH) / \partial L_2 = 0$, the share hits the bottom. Based on (7) ~ (9), when the labor share of income hits the bottom, the number of the employed in the self-employed and private sector (L'_2) fits the following formula:

$$(a_1 - 1) \ln(\bar{L} - L'_2) - (a_2 - 1) \ln(L'_2) = \ln \left[\left(\frac{a_2 A_2 K_2^{1+a_2}}{a_1 A_1 M_1^{1+a_1}} \right) / \left(1 - \frac{(a_1 - 1) \bar{L}}{(\bar{L} - L'_2) W / Y} \right) \right] \quad (10)$$

When the agricultural production sector and the self-employed and private sector have equal marginal productivity of labor, the transfer of labor force comes to an end. At this point, the number of the employed in the self-employed and private sector (L''_2) fits the following formula:

$$(a_1 - 1) \ln(\bar{L} - L''_2) - (a_2 - 1) \ln(L''_2) = \ln \left(\frac{a_2 A_2 K_2^{1-a_2}}{a_1 A_1 M_1^{1-a_1}} \right) \quad (11)$$

In comparison between (10) and (11), we find that as the function $(a_1 - 1) \ln(\bar{L} - L_2) - (a_2 - 1) \ln(L_2)$ increases along with the growth of L_2 and

$1 - \frac{(a_1 - 1) \bar{L}}{(\bar{L} - L'_2) W / Y} > 1$, it's inferred that $L'_2 < L''_2$. In other words, the bottom of labor

share of income appears before the transfer of labor force stops.

Since after the advent of Lewis turning point, the wage of the self-employed and private sector will be equal to marginal productivity of labor in the agricultural production sector and keep rising and the wage in the urban unit sector is relatively stable, the self-employed and private sector and the urban unit sector will show the trend of wage convergence.

Based on the analysis, this paper comes to the following proposition:

Proposition: In the context of the segmented Chinese labor market and its reaching Lewis turning point, when agricultural labor force is continuously transferred to the self-employed and private sector, the labor share of income will display the trend of decreasing first and then increasing and the bottom of the share appears before the

labor force stops transferring. Moreover, the self-employed and private sector and the urban unit sector will experience wage convergence. On such basis, we propose the following hypothesis that remains to be tested:

Hypothesis: There exists a critical threshold. When the share of agricultural labor force is above the threshold, the increase of the employment share in the self-employed and private sector will cause the labor share of income to drop. When the share of agricultural labor force is below or on the threshold, the increase of the employment share of the self-employed and private sector will drive the labor share of income to rise.

4. Variables, Data and Descriptive Statistics

4.1. Labor Share of Income and Its Changing Trend

According to currently available literature (Luo and Zhang, 2009b), labor share of income in primary distribution of national income can be calculated with the GDP approach or the factor approach. Also, GDP accounting with the income approach in China was changed in two areas in 2004–2007. First, income of the employed in the self-employed sector was changed from labor income to operating surplus; second, operating surplus was no longer accounted for agriculture. The changes with the statistical coverage caused the labor share of income in 2004–2007 to plunge. The paper adjusts the labor share of income in 2004–2007 based on the method proposed by Zhou *et al.* (2010) and Zou and Yuan (2018) and marks the two adjustment methods as “adjusted 1” and “adjusted 2”. We will take labor share of income (SH_1) with the “GDP approach” as the benchmark for empirical analysis and use another five indicators for prudence analysis. As revealed in Figure 1, no matter which method is used for adjusting the labor share of income in 2004–2007, the share shows the trend of decreasing first and then increasing in 1990–2016 and hitting the bottom in 2007.

4.2. Employment Ownership Structure and Other Control Variables

In this paper, variables of the employment ownership structure include the employment share of urban units, urban private enterprises, urban self-employed businesses, rural private enterprises and rural self-employed businesses and the share of agricultural labor force. Besides, based on existing literature, this paper selects the following control variables, including per capita GDP (at constant price of 1990, taking the natural logarithm), capital-output ratio (at constant price of 1990), share of public finance expenditure in GDP, share of import/export in GDP, share of FDI in GDP, average schooling years and proportion of working-age population.

4.3. Data Source and Descriptive Statistics

We get access to data on these variables from *China Statistical Yearbooks*, *China Compendium of Statistics 1949—2008*, *Data of Gross Domestic Product of China 1952—1995*, *Data of Gross Domestic Product of China 1952—2004*, *China Population and Employment Statistics Yearbook* and provincial statistical yearbooks. As some data is not available, the paper eventually adopts the panel dataset of 29 provinces, autonomous regions and municipalities directly under the central government in China in 1990—2016. Table 1 lists descriptive statistics on all the variables and regarding the variable of labor share of income with GDP approach, the mean value is 0.486 and standard deviation 0.072. Besides, variables of the employment ownership structure show strong variability, satisfying the regular requirements for empirical analysis.

Table 1. Descriptive Statistics on the Variables

Variable	Definition	Observed	Mean	SD	Min	Max
SH_1	Labor share of income with GDP approach	783	0.486	0.072	0.315	0.681
SH_2	Labor share of income with factor approach	783	0.565	0.082	0.368	0.797
$SH_{1_adj_1}$	GDP approach (adjusted 1)	783	0.489	0.070	0.323	0.681
$SH_{2_adj_1}$	Factor approach (adjusted 1)	783	0.567	0.080	0.379	0.797
$SH_{1_adj_2}$	GDP approach (adjusted 2)	783	0.491	0.068	0.323	0.681
$SH_{2_adj_2}$	Factor approach (adjusted 2)	783	0.569	0.078	0.390	0.797
$Priv_U$	Employment share of urban private enterprises	783	0.050	0.061	0.000	0.442
$Self_U$	Employment share of urban self-employed business	783	0.046	0.032	0.002	0.178
$Priv_R$	Employment share of rural private enterprises	783	0.026	0.031	0.000	0.165
$Self_R$	Employment share of rural self-employed business	783	0.035	0.021	0.001	0.170
$Formal$	Employment share of urban units	783	0.240	0.139	0.087	0.736
$Agri$	Share of agricultural labor force	783	0.570	0.184	0.001	0.866
$PGDP$	Per capita GDP (at constant price of 1990)	783	8184	8048	779	52874
K/Y	Capital-output ratio (at constant price of 1990)	783	2.525	0.904	1.199	8.533
Gov	Share of public finance expenditure in GDP	783	0.166	0.086	0.049	0.627
$Open$	Share of import/export in GDP	783	0.303	0.398	0.032	2.258

Variable	Definition	Observed	Mean	SD	Min	Max
<i>FDI</i>	Share of FDI in GDP	783	0.033	0.035	0.000	0.243
<i>Edu</i>	Average schooling years	783	7.855	1.316	4.608	12.304
<i>L_prop</i>	Proportion of working-age population	783	0.708	0.046	0.602	0.838
<i>TP₁</i>	Whether <i>Agri</i> ≤ 0.56 or not; 1 if yes	783	0.398	0.490	0	1
<i>TP₂</i>	Whether <i>Agri</i> ≤ 0.53 or not; 1 if yes	783	0.354	0.478	0	1
<i>East</i>	Whether in East China or not; 1 if yes	783	0.345	0.476	0	1

5. Empirical Analysis

In this part of empirical analysis, the paper first studies the overall impact of the variables of employment ownership structure on the labor share of income, produces a critical threshold in the share of agricultural labor force through threshold regression, and then constructs dummy variables with the threshold to analyze if the impact of the variables on the labor share of income changes on both sides of the threshold.

5.1. Basic Estimation Results

In order to study the overall impact of the variables of employment ownership structure on the labor share of income, this paper sets the following estimating equation:

$$SH_{it} = \alpha + \beta'X_{it} + \gamma'Z_{it} + u_i + u_t + \varepsilon_{it} \quad (12)$$

In the equation, i and t respectively refer to area and year, u_i and u_t fixed effects of area and year, and ε_{it} a stochastic disturbance term. SH_{it} is labor share of income; X_{it} means a column vector of employment ownership structure, including the employment share of urban private enterprises (*Priv_U*), that of urban self-employed business (*Self_U*), that of rural private enterprises (*Priv_R*), that of rural self-employed business (*Self_R*) and that of urban units (*Formal*); Z_{it} represents a column vector including a series of control variables.

Table 2 lists the basic estimation results. The coefficient estimate of the variable of employment share of urban private enterprises is significantly positive; the estimate of employment share of urban self-employed business and that of rural private enterprises are positive, but not highly significant; the estimate of employment share of rural self-employed business and that of urban units are both negative. As the purpose of this paper is to study whether the variables of employment ownership structure can explain the decrease-and-then-increase changing trend of Chinese labor share of income, these estimation results are only for reference.

Table 2. Basic Estimation Results

	(1)	(2)	(3)	(4)	(5)	(6)
Explained variable	SH_1	SH_2	$SH_1_adj_1$	$SH_2_adj_1$	$SH_1_adj_2$	$SH_2_adj_2$
<i>Priv_U</i>	0.241** (0.113)	0.231* (0.129)	0.240** (0.114)	0.231* (0.130)	0.240** (0.115)	0.230* (0.131)
<i>Self_U</i>	0.014 (0.148)	0.227 (0.176)	0.021 (0.152)	0.233 (0.179)	0.024 (0.154)	0.235 (0.182)
<i>Priv_R</i>	0.290* (0.170)	0.326 (0.193)	0.296* (0.170)	0.333* (0.193)	0.301* (0.171)	0.338* (0.193)
<i>Self_R</i>	-0.150 (0.132)	-0.273 (0.161)	-0.148 (0.133)	-0.272 (0.161)	-0.148 (0.133)	-0.273* (0.160)
<i>Formal</i>	-0.059 (0.069)	-0.055 (0.080)	-0.064 (0.070)	-0.061 (0.081)	-0.069 (0.070)	-0.065 (0.081)
Observed value	783	783	783	783	783	783
Inner-group R^2	0.597	0.558	0.552	0.518	0.516	0.485

Notes: Those in brackets are heteroskedasticity-robust standard error of coefficient estimates. In the regression equations, provincial/regional fixed effect, fixed effect of year and control variables (including $\ln PGDP$, K/Y , Gov , $Open$, FDI , Edu and L_prop) are all controlled, and due to limited space, coefficient estimation results of control variables and constant terms are not reported. *, ** and *** respectively stand for the level of significance at 10%, 5% and 1%. Hereinafter it is the same.

5.2. Interpretation with the Variables of Employment Ownership Structure for the Decrease and then Increase of Labor Share of Income

According to the hypothesis in the theoretical analysis, on the both sides of the threshold share of agricultural labor force, the coefficient symbol for the influence of employment share in self-employed and private sectors on labor share of income has changed. Besides, since various employment ownership sectors within self-employed and private sectors are affected by the changing supply of labor to different extents, it's necessary to analyze the variables of employment ownership structure within self-employed and private sectors. In the paper, a threshold regressive model (Hansen, 1999 and 2000) on panel data is constructed as follows to estimate the threshold of share of agricultural labor force.

$$SH_{it} = \alpha + \beta'_1 X_{it} I(Agri_{it} \leq \theta) + \beta'_2 X_{it} I(Agri_{it} > \theta) + \gamma' Z_{it} + u_i + u_t + \varepsilon_{it} \quad (13)$$

Here, the threshold variable is the share of agricultural labor force ($Agri$). $I(Agri_{it} \leq \theta)$ is an indicative function and it is valued 1 when $Agri$ is below or equal to the threshold value (θ) and valued 0 otherwise. Similarly, the indicative function $I(Agri_{it} > \theta)$ is defined. Others are set in the same way as in (12).

Table 3 lists the estimation results of the threshold model. The critical value of the

share of agricultural labor force is 0.53 when only fixed effects of area are added, and 0.56 when fixed effects of both area and year are added. When the share of agricultural labor force is above the critical value, the increase of the employment share of urban private enterprises exerts negative impact on the labor share of income; when the share of agricultural labor force is below or equal to the critical value, the increase exerts positive influence in a significant way. However, other variables of employment ownership structure don't exhibit similar characteristics on both sides of the critical value.

The labor share of income in China displayed the trend of decreasing first and then increasing in 1990—2016 and hit the bottom in 2007, which was perfectly matched by the critical value of the share of agricultural labor force estimated in the threshold model. Based on the critical value, we develop two dummy variables (TP_1 and TP_2). (1) When the share of agricultural labor force is lower than or equal to 0.56, TP_1 is valued 1; otherwise, it is valued 0. (2) When the share is lower than or equal to 0.53, TP_2 is valued 1; otherwise, it is valued 0. On the basis of the estimation equation (12), we add interaction terms of the employment ownership structure variables and the dummy variables and the estimation results are shown in Table 4.

Take the column (1) in Table 4 for example. The variable of employment share of urban private enterprises ($Priv_U$) has a coefficient estimate of -0.171, while its interaction term ($Priv_U \times TP_1$) with dummy variable of the critical value has an coefficient estimate of 0.468, significant at the level of 10%. This indicates that when the share of agricultural labor force is above the critical value, the increase by one percentage point of the employment share of urban private enterprises will cause the labor share of income to drop by 0.171 percentage point; when the share of agricultural labor force is below or equal to the critical value, it will cause the labor share of income to rise by 0.297 percentage point. Interaction terms of the employment share of urban self-employed business, rural private enterprises and rural self-employed business and the dummy variable of the critical value all have negative coefficient estimates and therefore none of the three variables can explain the U-shaped change of the labor share of income. Though the interaction term of the employment share of urban units and dummy variable of the critical value has a positive coefficient estimate, it's found in calculation that after the share of agricultural labor force is below or equal to the critical value, the coefficient estimate of influence of the employment share of urban units on the labor share of income is -0.050. Therefore, the variable of the employment share of urban units cannot explain the U-shaped trend of the labor share of income. In the column (2) with another dummy variable of the critical value (TP_2) used for interaction, the estimation results are consistent with those in the column (1), meaning that the results are robust. The analysis reveals that among all the variables of employment ownership structure, only the change of employment share of urban private enterprises is able to explain the changing trend of Chinese labor share of income in decreasing first and then increasing.

Table 3. Estimation Results of the Threshold Model

Explained variable		(1)	(2)
		SH_1	SH_1
Critical value of threshold variable (<i>Agri</i>)		0.53	0.56
<i>Priv_U</i>	<i>Agri</i> ≤ critical value	0.577*** (0.093)	0.296*** (0.098)
	<i>Agri</i> > critical value	-0.490** (0.211)	-0.171 (0.248)
<i>Self_U</i>	<i>Agri</i> ≤ critical value	0.121 (0.262)	-0.018 (0.203)
	<i>Agri</i> > critical value	1.254*** (0.341)	0.807** (0.333)
<i>Priv_R</i>	<i>Agri</i> ≤ critical value	-0.145 (0.185)	0.259 (0.172)
	<i>Agri</i> > critical value	0.006 (0.292)	0.447* (0.259)
<i>Self_R</i>	<i>Agri</i> ≤ critical value	0.694** (0.258)	-0.174 (0.233)
	<i>Agri</i> > critical value	0.243 (0.181)	-0.112 (0.172)
<i>Formal</i>	<i>Agri</i> ≤ critical value	0.020 (0.072)	-0.061 (0.058)
	<i>Agri</i> > critical value	0.122 (0.092)	-0.147* (0.086)
Fixed effect of province/area		Controlled	Controlled
Fixed effect of year		Un-controlled	Controlled
Observed value		783	783
Inner-group R^2		0.445	0.614

According to the law of economic development, East China absorbs agricultural labor force faster than Central and West China. Given so, after the share of agricultural labor force is below or equal to the critical value, the wage in the urban private sector in East China will outgrow that in Central and West China and the increase of employment share of urban private enterprises in the east may drive the labor share of income to increase by a greater margin than in the central and western regions. In order to test the difference, on the basis of Table 4, we add an interaction term of three variables, namely the employment share of urban private enterprises, the dummy variable of the critical value (TP_1) and eastern regions (*East*). As found in the result, the interaction term ($Priv_U \times TP_1 \times East$) of the three variables has a coefficient estimate that is significantly positive. It illustrates that after the share of agricultural labor force is below or equal to the critical value, compared with that in central and

western regions, the increase of the employment share of urban private enterprises in the east causes the labor share of income to rise by a greater margin.¹

Table 4. Heterogeneity of the Influence of Employment Ownership Structure

	(1)	(2)
Explained variable	SH_1	SH_1
Dummy variable of critical value	TP_1	TP_2
<i>Priv_U</i>	-0.171 (0.259)	-0.209 (0.186)
<i>Self_U</i>	0.762** (0.360)	0.725** (0.291)
<i>Priv_R</i>	0.476* (0.265)	0.467 (0.305)
<i>Self_R</i>	-0.122 (0.177)	-0.156 (0.177)
<i>Formal</i>	-0.143 (0.126)	-0.064 (0.080)
<i>Priv_U</i> × <i>TP</i>	0.468* (0.273)	0.544*** (0.185)
<i>Self_U</i> × <i>TP</i>	-0.751* (0.415)	-0.788* (0.431)
<i>Priv_R</i> × <i>TP</i>	-0.215 (0.245)	-0.292 (0.257)
<i>Self_R</i> × <i>TP</i>	-0.047 (0.283)	0.087 (0.267)
<i>Formal</i> × <i>TP</i>	0.093 (0.113)	0.010 (0.081)
<i>TP</i>	-0.008 (0.033)	0.009 (0.030)
Observed value	783	783
Inner-group R ²	0.613	0.613

Note: *TP* in column (1) refers to TP_1 and *TP* in column (2) refers to TP_2 . Hereinafter it is the same.

Development of the focus of the industrial structure from the primary sector to the secondary and then to the tertiary sector also causes the labor share of income to drop first and then climb. In order to test whether the industrial structure poses any influence, we add in the equation several variables related to the industrial structure, namely the share of output value of the secondary and tertiary sectors in GDP (GDP_Ind_2 , GDP_Ind_3) and the share of employed population in the secondary and tertiary

¹ Due to limited space, estimated result of the regression is not reported. Please contact the author if needed.

sectors in total employed population (L_Ind_2 , L_Ind_3). The estimation results are consistent with the previous analysis.¹

5.3. Relationship between the Change in the Employment Share of Urban Private Enterprises and the Change in the Labor Share of Income

By combing the variable regression coefficient and its margin of change in corresponding time periods (Wen and Lu, 2018), we use the estimate result in column (1) in Table 4 to explain the influence of the changing employment share of urban private enterprises on the changing labor share of income. Chinese labor share of income (SH_1) dropped by 12.81 percentage points in 1990—2006 and rose by 7.72 percentage points in 2007—2016; the employment share of urban private enterprises increased by 5.18 percentage points in 1990—2006 and climbed by 9.49 percentage points in 2007—2016. Based on the coefficient estimate of the employment share of urban private enterprises on both sides of the critical value of the share of agricultural labor force, it's calculated that the employment share of urban private enterprises contributed to 6.92% of the change of labor share of income in 1990—2006 and 36.50% in 2007—2016.

Table 5. Contribution of the Changing Employment Share of Urban Private Enterprises to the Changing Labor Share of Income

Critical value	Time period	Benchmark(%)	Share of output value of the secondary and tertiary sectors added(%)	Share of employment in the secondary and tertiary sectors added(%)
TP_1	1990—2006	6.92	4.49	10.60
	2007—2016	36.50	32.32	25.19
TP_2	1990—2006	8.46	7.00	12.38
	2007—2016	41.17	36.50	29.37

Following this method, we calculate the contribution of the changing employment share of urban private enterprises to the changing labor share of income when using different dummy variables of the critical value and adding the industrial structure variables, with the results shown in Table 5. The critical value of the agricultural labor force share used as the basis for constructing the critical value dummy variable (TP_2) is exactly the agricultural labor force share in 2007 and when the share of employment in the secondary and tertiary sectors is added, the contribution of the employment share of urban private enterprises is the lowest. Hence it's conservatively estimated that the increase of the employment share of urban private enterprises roughly contributed to 29.37% of the increase of Chinese labor share of income in 2007—2016.

¹ Same as above.

6. Conclusions and Policy Suggestions

In the context of the segmented Chinese labor market and its reaching Lewis turning point, this paper interprets the changing trend of labor share of income that decreases first and then increases from the perspective of changing employment ownership structure. First, by constructing a theoretical model covering the agricultural production sector, self-employed and private sector and urban unit sector, the paper shows that when agricultural labor force is constantly transferred to the self-employed and private sector, labor share of income will display the trend of decreasing first and then increasing. Second, empirical study based on provincial-level panel data in 1990–2016 indicates that within the self-employed and private sector, only the employment share of urban private enterprises exerts influence on labor share of income, which complies with the theoretical hypothesis and in other words, there exists a critical threshold value. When the share of agricultural labor force is above the threshold, the increase of the employment share of urban private enterprises will cause the labor share of income to decrease; when the share of agricultural labor force is below or equal to the threshold, it will drive the labor share of income to increase; other variables of employment ownership structure don't show similar characteristics on both sides of the threshold value. Besides, after the agricultural labor force share is below or equal to the threshold value, compared with central and western areas, the increase of the employment share of urban private enterprises in eastern areas drives up the labor share of income by a greater margin. The increase of the employment share of urban private enterprises roughly contributed 29.37% to the increase of labor share of income in China in 2007–2016.

Based on the conclusions, this paper proposes the following policy suggestions. (1) Institutional guarantee should be provided. It's important to persist with employment priority strategies and proactive employment policies and reform the household registration system and policies to help the transferred agricultural labor force to settle in cities, avoid their return to countryside for policy reasons and ensure the continuity and stability of such transfer. (2) Harmonious labor relationships should be constructed. It's necessary to put into better play the role of labor unions, increase the labor contract signing rate, reasonably increase the minimum wage level, safeguard legitimate rights and interests of laborers (especially transferred agricultural labor force) and improve employment quality. (3) Redistribution adjustment should be enhanced. When setting the individual income tax threshold, the average income taken as basis should allocate greater weight to non-private sectors to lower tax payable for laborers in the private sector. Individual income and financial information systems should be established to prevent high income earners from evading tax in various ways and the implementation effect of the progressive rate of individual income tax should be intensified. (4) Economic development mode should be transformed. The advent of

the Lewis turning point means that population dividend in China is diminishing and the traditional mode dependent on high savings and high investment won't be able to sustain economic development. China should shift to technological advance and higher total factor productivity to drive economic development and stimulate the vitality and boost labor productivity of the self-employed and private sector.

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