

## Research on the Impact of Graduate Scale on Labor Income Share from the Perspective of Human Capital

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### Abstract

Abstract: Since the reform and opening up, China's labor income share has shown a downward trend, and a series of negative impacts such as slow economic growth caused by low labor income share and widening income gap among residents have hindered development. This article studies the relationship between graduate student size and labor income share from the perspective of human capital, and uses graduate student size data from 26 provinces and cities in China from 2002 to 2017 to conduct regression analysis on China's labor income share. The results indicate that changes in human capital caused by the size of graduate students have a positive effect on labor income share. And provide corresponding suggestions on how to increase the share of labor income.

**Keywords:** labor income share, graduate scale, labor quality.

### 1. Introduction

After China's reform and opening up, the economic growth rate has accelerated and it has become the second largest economy in the world. However, behind the high growth rate, it is difficult to hide the "decline" of labor income share and the "rise" of wealth gap. Undoubtedly, this will inevitably lead to the widening of the national income gap (Cai Fang, 2005), resulting in a decline in domestic consumption, a sluggish market, and a decrease in social output (Li Daokui, 2009). In recent years, China has begun to vigorously develop domestic demand, relying on it to support economic development and drive the improvement of consumption levels. Harrison (2002) found that the labor income share shows two completely opposite situations in developed and underdeveloped regions. The more developed the region, the easier it is for the labor income share to increase; On the contrary, underdeveloped areas have shown a strange downward trend. Li Daokui (2009) found in his research that the evolution of labor income share follows an inverted U-shaped pattern. The evolution of labor income share can be expressed as a gradual decline from an initial increase, with a trend chart resembling an inverted U-shape. Furthermore, the inverted U-shaped curve will have a turning point, which is the highest value of the curve. At present, China has not yet reached the highest value, which indicates that the share of labor income in China is still in the upward stage. Figure 1 shows the evolution trend of China's labor income share from 1992 to 2017. Throughout domestic and foreign literature research, most scholars have mentioned that the increase in human capital stock has a positive impact on increasing labor income, thereby increasing the share of labor income, improving primary distribution, and promoting the healthy development of the national economy. 1999 can be regarded as the first year of China's "expansion of enrollment", and universities across the country have responded one after another. The national higher education base has increased and the scale has grown, especially the master's education with a larger base, richer knowledge reserves, and more advanced skills and technology. It plays an important role in increasing the country's human capital stock, regulating economic and social development, and income distribution gaps. In this context, this article studies the relationship between graduate education scale and labor income share from the perspective of human capital, explores its influencing mechanism, and proposes corresponding suggestions on how to improve labor income share.

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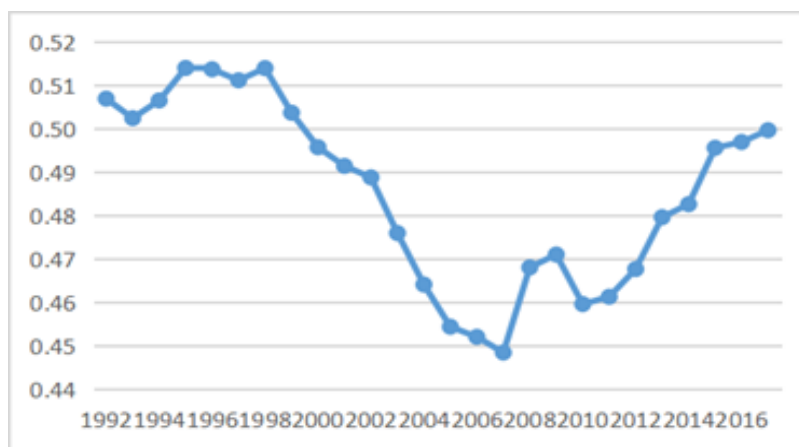


Figure 1 Evolution Trend of Domestic Labor Income Share from 1992 to 2017

## 2. Literature review

Since the beginning of the last century, the share of labor income in China has not shown any upward trend until 2008, when it began to show a slight upward trend. The lower labor income has led to an expansion of the wealth gap and a decline in the living standards of the working class, which goes against China's pursuit of common prosperity. There have been various studies on the factors that lead to a decrease in the share of labor income. Bai Chong'en and Qian Zhenjie (2009) used digital imagery in their research to demonstrate the degree of impact of industrial structure on labor income share - a decrease of 3.36% was caused by changes in industrial structure. Wei Xiaohai (2012) pointed out that there is currently a large shortage of high-quality talents in China. Reasonable and accurate optimization of human capital levels can bring "good news" to the increase of domestic labor income share. Guo Hongyi (2019) pointed out that there is also a "high low distinction" in industrial structure, and high polarization can have a positive effect on labor income share. After reviewing and organizing literature, it was found that many studies believe that human capital is a major factor in the evolution of labor income share. Xiao Wu (2020) found that human capital has a positive impact on labor income share. Daudey and Decryse (2006) found that improving education levels can increase talent mobility, enhance the quality of workers, and increase the share of labor income. This article summarizes the influencing factors of the evolution of labor income share and summarizes the mechanism of the impact of human capital on labor income share.

### 2.1 Factors influencing labor income share

2.1.1 The impact of factor inputs in the production process. Zhao Hongshan (2011) found that there are two relationships between labor and capital: one is that they are mutually substitutable; Secondly, they complement each other. Both are put into production, and the different relationships have vastly different impacts. In the production factors of Luo Changyuan (2009), when labor and capital show a complementary relationship, under the condition of unlimited labor supply, capital output continues to rise and the share of labor income also continues to increase; vice versa. There is a clear positive correlation between the two. Bai Chongen (2009) believes that when capital and labor are in a substitution relationship and the factor substitution elasticity of the industrial sector is less than 1, enterprises tend to choose capital intensive production methods, which ultimately leads to a lower share of labor income.

2.1.2 The impact of social production technology progress and technological progress bias on labor income share. When the overall production technology of society rises, production enterprises will choose to use capital factors with lower costs, resulting in a decrease in the proportion of labor, a natural decrease in labor income in production, and a corresponding decrease in the share of labor income. Numerous studies suggest that technological progress has a negative impact on labor income share. After studying and analyzing the influencing factors of the evolution of labor income share in China from 1995 to 2016, Zhang Jiabin (2020) concluded that capital biased technological progress has led to a downward trend in labor income share. Huang Xianhai (2009) found in his research on different types of production sectors that when the proportion of labor-intensive and capital intensive industries changes, the more labor input is reduced, the lower the income brought by labor.

2.1.3 The impact of comprehensive labor quality on the evolution of labor income share. Schultz was the first to study human capital, believing that the education level, health level, and knowledge reserves of workers can all be converted into income. After industrial upgrading, Zhou Mao et al. (2018) found that the demand for human capital has increased, the degree of dependence has increased, the number of skills mastered by labor has increased, and the structure has also tended to be more perfect. Ultimately, the income of labor will increase,

meaning that relative wages will rise, and the growth in income will ultimately increase the share of labor income. [9] The personal qualities of workers include many aspects, such as technical knowledge, job proficiency, and mobility level. Different types of qualities will have different impacts. When workers lack proficiency in their work due to technical issues, it often leads to low production efficiency. For workers, low efficiency means low income.

2.1.4 The impact of changes in industrial structure on labor income share. Since the reform and opening up in 1978, the development situation in mainland China has undergone significant changes, with rapid changes in industrial structure. Among the three major industries, the proportion of the primary and secondary industries has gradually decreased, while the proportion of the tertiary industry has rapidly increased. The impact of industrial changes is gradually becoming apparent, such as the improvement of social productivity and the rationalization of resource allocation. In addition, the transformation or optimization of industrial structure is closely related to the share of labor income. Guo Hongyi (2019) found that optimizing the industrial structure has a significant impact on increasing the share of labor income. During the process of industrial restructuring, Chen Han (2018) found that compared to the primary industry, the secondary and tertiary industries have a greater impact on the evolution of the share of national labor income.

## 2.2 The impact of human capital on labor income share

The concept of human capital is generally defined by Theodore Schultz, recognized as the father of human capital in the industry. In Schultz's view, human capital can be characterized by the abilities held by workers themselves. Moreover, human capital has an important characteristic - it is linked to labor income, with both advancing and retreating together and having a permanent nature. This is undoubtedly one of the ways for workers to increase their labor income. The characteristics of human capital determine its correlation with the share of labor income, and its impact can be summarized as follows.

2.2.1 Health level: The health condition of workers directly affects the quantity and quality of the final products produced during the production process. The health level of workers includes two parts: physical health and mental health. Their food, clothing, housing, transportation, education, health care, entertainment, and exercise all have an impact on their health level. Good physical and mental health is a necessary condition for labor production. Yang Hanxiang (2020) found in his research that among migrant workers seeking income in developed areas, the average income from health is 29.21%, far higher than 4.07% of the urban registered residence population. There is a positive correlation between health capital and income. In the study, it was also found that as the education level increases, the dependence of migrant workers' income growth on their health level gradually decreases. The education level, age, and other factors of migrant workers can also affect the degree of dependence of income on their health level. Pan Sisi (2007) concluded in the regression analysis of introducing health variables into income that the health of workers is a direct influencing factor on their income, and this factor is significantly stronger in rural populations than in urban populations.

2.2.2 Talent mobility level. With the development of society, the mobility of talents has become a necessary condition for meeting the needs of social production. Nowadays, talent mobility is no longer simply about changing service units. Various forms such as part-time jobs, lectures, and loans are all ways for talent mobility. Diversified mobility channels and reasonable talent allocation also greatly promote the income of workers and the progress of social production. After reaching a certain level of economic growth, the demand for labor continues to rise, leading to a decrease in the supply of surplus labor. As a result, the wages of workers will gradually recover to be influenced by the supply and demand relationship in the labor market. Sun Linmei (2022) states that talent mobility in universities not only promotes personal development, but also plays a significant role in driving industrial structural changes and socio-economic progress. Yang Tianze (2017) pointed out that the flow of innovative talents not only brings about the adjustment and optimization of the social talent structure, but also promotes the transformation of the industrial structure. Meeting the basic requirements of social welfare, salary and benefits for talents can better play its role.

2.2.3 Technological progress and knowledge growth. The technological progress under human capital refers to the individual technological progress of workers, and does not represent the production technological progress of society. As workers increase their knowledge and proficiency in learning or work, their own skills will make certain progress. This progress will significantly increase their income. After the revolution of Zhang Tao (2003) in 1978, domestic technology continued to evolve. The more the labor force chooses to receive higher levels of education and is willing to bear the cost of improving their overall quality, the higher their income, which in turn increases their wage level. Wei Xiahai (2012) pointed out that there is a shortage of professional talents in China, and the talent gap is large. The improvement of human capital can significantly increase China's labor income share. Wan Lin (2016) believes that improving the technological and cultural literacy of farmers has a positive impact on the development of new agriculture and the construction of a socialist new countryside. The advancement of technology is inseparable from the improvement of knowledge. The reserve of knowledge can broaden the

horizons of workers and increase their adaptability. Zhang Kerong (2015) stated that as the education level of the new generation of farmers increases, their income becomes more diversified and their employability improves. The income of farmers is directly proportional to their level of education. Xu Fangda and Wang Zengtao (2021) found that high intelligence labor has a positive driving effect on enterprise development. High intelligence labor directly promotes enterprise development through various aspects such as knowledge and technology output, team management training, and decision-making. Wang Min (2021) believes that education investment has a positive effect on employment in human capital investment. In education investment, the role and effect of higher education are more significant.

In summary, existing literature has conducted extensive research on the impact of human capital on labor income, providing a foundation for our study. However, there is relatively little research based on the scale of graduate education. Against the backdrop of expanding enrollment in higher education institutions, this article studies the impact of changes in the scale of "graduate education" on labor income share from a new perspective of human capital. Intended to supplement the current research results on labor income share, explore its impact mechanism, and provide corresponding suggestions on how to improve labor income share.

### 3. Theoretical mechanism analysis

Collin's (2002) method represents the labor income share as the ratio of the product of average employee compensation and total employment to total income. Based on the approach of Dong and Zhang (2009), calculate the labor income share using equation (1).

$$LS=(w*L)/Y \quad (1)$$

In equation (1),  $w$  is used to represent the wage rate,  $L$  is the quantity of labor factors, and considering the difficulty of calculating production factors, the total amount of labor input in the production process is used to represent it.  $Y$  refers to the total income of the nation. (1) It can be further transformed into

$$LS= (w*L) /L/Y/L =w/B \quad (2)$$

In equation (2),  $B$  represents the ratio of total income to total labor force. The ratio of the value of the final product produced by the worker to the cost of consumption of the product within a specified time can be approximately equivalent to labor productivity. Further transform both sides of the equation into

$$\ln(LS)=\ln(w)-\ln(B) \quad (3)$$

According to equation (3), the labor income share, also known as  $LS$ , is influenced by both the wage rate and labor productivity. Further analysis of its impact mechanism, considering that contemporary technological progress has not been interrupted, production technology and methods are gradually improving, and wage rates and labor productivity are showing an upward trend. By incorporating this overall social situation into the analysis, it can be concluded that the condition for an increase in the share of labor income is the need to increase the wage rate, and this increase must be greater than the increase in labor productivity. This is the intuitive impact reflected in equation (3). Indirectly, as mentioned earlier, the overall technology of society is increasing year by year, and the primary condition for technological progress is the emergence of higher-level and more scientific innovative methods. Considering the impact of human capital on scientific innovation and technological progress, research suggests that both wage rates and labor productivity may be affected by changes in human capital. Liang Yunling and Li Bo (2020) and Du Jingxuan (2018) found that human capital has a positive impact on labor income in the process of urban development. The latter also found that this effect is more significant in the eastern region than in the central region, and is more pronounced for women or those with higher education levels. After analyzing the impact of education on residents' income, Bai Xuemei (2014) believes that increasing the length of education can bring greater returns to the originally low-income population. Many scholars have conducted in-depth research on analyzing labor productivity separately. Zhao Xindong (2020) stated that increasing the proportion of "education" in human capital investment will have a significant positive impact on the share of labor income, with this effect being more pronounced among males and urban residents. Li Dandan (2018) conducted an analysis and study on whether human capital has an impact on regional labor productivity based on data from China's industrial provinces from 1999 to 2015. Healthy human capital can affect labor productivity. In coastal cities or developed areas with higher education years, the healthy improvement of human capital can lead to a significant increase in labor productivity. Summarizing various viewpoints, it is found that human capital has an impact on labor income share, and the mechanism of action is through changing wage rates and labor productivity.

Further exploration of its impact mechanism reveals that one of the ways in which human capital improves wage rates and labor productivity is through changing the educational or technical level of the workforce, which is related to graduate education. Higher education can enhance the relevant technical and knowledge levels of the workforce.

Kong Lixia (2019) believes that higher education plays a positive role in promoting technological innovation and industrial structural reform. Yu Changlin (2021) believes that higher education can enhance the human capital level of the workforce, as one of the important production factors, promote enterprise development and innovation, improve the technological and capital intensity of products, and enhance the innovation capability of cities. In recent years, the scale of graduate students in China has been continuously expanding, which has a significant impact on the composition of the labor force. More and more highly educated laborers are entering the labor market, which has an important impact on the changes in the domestic labor income share. Jiang Yucheng (2020) states that higher education plays two roles in industrial transformation. Firstly, higher education can enhance the human capital level of the workforce, which has become a driving force for promoting economic growth; Secondly, higher education has brought about an increase in labor productivity through the spillover of knowledge. Alayande (2003) conducted a study using data from Nigeria and found that higher education has a significant positive effect on narrowing income inequality. The income gap caused by the expansion of enrollment in universities will vary with the level of economic development and technological advancement, according to Fan Xiaoting (2020). In addition, in recent years, the expansion of enrollment in Chinese universities has been continuously advancing, and the annual changes in the scale of graduate students caused by the expansion of enrollment have also had an impact on wage rates and labor income shares.

This article proposes the hypothesis that changes in graduate student size affect human capital levels, thereby increasing labor productivity and wage rates, and have a positive effect on labor income share.

#### 4. Empirical analysis

##### 4.1 Model Construction

Regarding the research object of this article - labor income share and graduate student size, firstly, based on the theoretical mechanism analysis in the previous text, the following panel data analysis model is constructed:

$$ls_{it} = \alpha_0 + \alpha_1 edu_{it} + \alpha_2 \ln lk_{it} + \alpha_3 fdi_{it} + \alpha_4 trade_{it} + \alpha_5 ind_{it} + \alpha_6 gov_{it} + \varepsilon_{it}$$

In the model,  $ls$  refers to the labor income share of province  $i$  in year  $t$ , and is the dependent variable;  $Edu$  refers to the educational level of province  $i$  in year  $t$ , represented by the size of graduate students, and serves as the core explanatory variable;  $\ln lk$ ,  $FDI$ ,  $trade$ ,  $ind$ , and  $gov$  are the model control variables representing per capita capital, foreign direct investment, total trade, industrial structure, and government expenditure, respectively.  $\alpha$  is used to characterize the coefficients of each variable;  $\xi$  it is used as a random perturbation term.

##### 4.2 Indicator selection and data explanation

This paper collects and collates the data of China's provinces from 2002 to 2020, and uses the labor income share and graduate scale data of 26 provinces in China<sup>3</sup>.

As the dependent variable of this study, labor income share,  $ls$  is calculated using the ratio between labor remuneration and GDP. The data is sourced from the website of the National Bureau of Statistics.

The core explanatory variable  $edu$ . To represent the scale of graduate students, use the total number of graduates in the current period. The scale of graduate students is represented by the total number of graduates in that year, and the data is sourced from the "China Education Statistical Yearbook" and the "China Economic and Social Development Statistical Database".

Control variables. According to existing literature research, the following control variables are added to the model:  $lk$  is used to represent the control variable - per capita capital. In this paper, the current fixed capital stock is compared to the number of employed people at the end of the previous period to calculate per capita capital, and 1978 is used as the base year for fixed capital stock. Drawing on the method of Dan Haojie (2008), the labor input is expressed as the number of employed people at the end of each year in each province;  $FDI$  refers to the utilization of foreign direct investment, expressed in terms of the  $FDI/GDP$  of each province;  $Trade$  is the proportion of total trade to GDP, reflecting the foreign trade situation over a certain period of time; The industry structure of  $IND$  represents the composition of various industries, the relationships between them, and their proportional relationships, expressed as the proportion of industry to GDP; Government expenditure is the activity of redistributing financial resources after the country has concentrated them. It is an economic behavior of a government nature, expressed as the proportion of local government fiscal expenditure to GDP.

<sup>3</sup>Excluding Hong Kong, Macao and Taiwan; the number of graduate students in Xizang, Hainan, Qinghai and Gansu is seriously missing, so it is not included in the sample; Chongqing is incorporated into Sichuan for investigation.

The data is sourced from the "China Economic and Social Development Statistical Database", historical statistical yearbooks of various provinces, and the website of the National Bureau of Statistics.

The final total of data from each province yielded 416 observations over a period of 19 years. The descriptive statistics of the core explanatory variables, dependent variables, and control variables in this study are shown in the following figure.

Table 1 Descriptive Statistics of Various Variables

| Variable Name | Variable Description      | Observation Number | Standard Deviation | Variance | Minimum | Maximum |
|---------------|---------------------------|--------------------|--------------------|----------|---------|---------|
| ls            | Labor income share        | 416                | 0.482              | 0.057    | 0.333   | 0.651   |
| edu           | Graduate student scale    | 416                | 13370              | 13650    | 200     | 84680   |
| fdi           | Foreign direct investment | 416                | 0.031              | 0.025    | 0.001   | 0.166   |
| trade         | Total trade volume        | 416                | 0.359              | 0.412    | 0.032   | 1.732   |
| gov           | Government Spending       | 416                | 0.201              | 0.078    | 0.081   | 0.451   |
| ind           | industrial structure      | 416                | 0.437              | 0.092    | 0.297   | 0.827   |
| lnlk          | Per capita capital        | 416                | 10.091             | 0.823    | 8.403   | 11.809  |

### 4.3 Empirical Results Analysis

#### 4.3.1 Benchmark Regression

Table 2 describes the results of the basic regression. (1) Column (3) displays the regression results of basic OLS regression. From the perspective of the core explanatory variable of concern in this article, the edu coefficient is positive and significant at the 1% level. At the same time, fixed effects and random effects models were used for regression. According to the Hausman test, the fixed effects model was used, and the estimated results are shown in Table 3. Although the significance decreased, the sign was positive. The expansion of graduate education scale has a positive effect on the increase of labor income share, which is consistent with the previous expectations.

In addition, from the perspective of controlling variables, the FDI and trade coefficients are negative and significant at the 1% level, indicating that the introduction of foreign investment and the development of China's foreign trade have a negative impact on the labor income share. Foreign investment and foreign trade can reduce the labor income share by changing the relative prices of factors, reducing labor bargaining power, and leading to capital biased technological progress (Harrison 2002; Tang Dongbo, 2011; Zhang Li, 2012; Tao Minyang, 2019). The government coefficient is positive and significant at the 1% level, indicating that government policies such as minimum wage and social security have a positive effect on increasing the share of labor income. The per capita capital coefficient of Lnlk is negative, and the deepening of capital has increased its bargaining power and reduced its share of labor income.

Table 2 Benchmark Regression Results

| Variable  | (1)<br>OLS           | (2)<br>FE            | (3)<br>RE            |
|-----------|----------------------|----------------------|----------------------|
| edu       | 0.009***<br>(4.03)   | 0.004<br>(1.52)      | 0,005*<br>(1.90)     |
| fdi       | -0.51***<br>(-4.49)  | -0.193*<br>(-1.71)   | -0.219**<br>(-1.99)  |
| trade     | -0.027***<br>(-3.38) | -0.048***<br>(-3.82) | -0.046***<br>(-4.10) |
| gov       | 0.205***<br>(5.36)   | 0.364***<br>(5.53)   | 0.349***<br>(6.05)   |
| ind       | 0.004<br>(0.36)      | -0.179***<br>(-7.30) | -0.114***<br>(-5.74) |
| lnlk      | -0.025***<br>(-6.09) | -0.027***<br>(-4.99) | -0.026***<br>(-5.06) |
| constant  | 0.777***<br>(19.46)  | 0.776***<br>(16.78)  | 0.732***<br>(16.93)  |
| N         | 416                  | 416                  | 416                  |
| R—squared | 0.363                | 0.287                |                      |
| Hausman   |                      | 18.242***            |                      |

Note: \*\*\*, \*\*, \* respectively indicate significance at the 1%, 5%, and 10% levels, and the numbers in parentheses represent t-values.

With the improvement of education level, the comprehensive quality of workers is constantly improving, which helps alleviate the decreasing share of labor income. The fact that the scale of graduate students can increase the share of labor income also indicates that even with changes in industrial structure and growth in foreign trade, the main way for labor to increase income is still through education. The main influencing mechanism mentioned in the previous theoretical analysis is that the factors affecting labor income share include wage rate and labor productivity. The improvement of education level can significantly increase the wage rate and labor productivity of the labor force, because the changes in industrial structure make the production process more inclined towards capital investment. When the knowledge and technical level of the labor force improves, they can master more high-tech machinery and more complex labor production skills. Furthermore, the increase in government transfer spending and the growth of foreign trade have expanded the development of high-tech and labor-intensive industries. Especially the latter can have a greater impact on promoting the development of domestic advantageous enterprises. With the acceleration of economic globalization, trade between countries has become increasingly frequent. According to the theory of comparative advantage, in order to obtain high profits, countries or enterprises usually choose industrial products with greater advantages to participate in international competition and trade. China's ability to become a manufacturing powerhouse is closely related to its high-quality and relatively cheap labor force domestically. Among the well-developed industries, labor-intensive enterprises account for a considerable proportion, and the large number of high-quality and cheap labor groups have led to the rapid development of China's foreign trade. However, behind the rapid development, the share of labor income is decreasing. The reason behind this is that the basic quality of labor is not high, and they can only engage in simple production, bringing low value-added products, ultimately resulting in a low proportion of income. After research, this article believes that improving the comprehensive quality of labor can bring high productivity, promote the development of high-tech industries, and increase the proportion of labor income.

### 4.3.2 Robustness test

In order to ensure the reliability of the core conclusion of this article, two methods are used for robustness testing - replacing variables and removing outliers.

Re calculation of labor income share. At present, there are various methods for calculating the share of labor income. Considering that different calculation methods may affect the results, the net production tax is excluded from the calculation of labor income share for re calculation. Re estimate and the results are shown in column (1) of Table 3. The edu coefficient is positive and significant at the 1% level, indicating robust results.

Table 3 Results of robustness test

| Variable           | (1)       | (2)       |
|--------------------|-----------|-----------|
| edu                | 0.001***  | 0.006***  |
|                    | (4.45)    | (3.09)    |
| fdi                | -0.616*** | -0.34***  |
|                    | (-5.24)   | (-3.12)   |
| trade              | -0.015*   | -0.017**  |
|                    | (-1.83)   | (-2.14)   |
| gov                | 0.258***  | 0.152***  |
|                    | (6.54)    | (4.38)    |
| ind                | 0.009     | 0.016*    |
|                    | (0.91)    | (1.76)    |
| lnlk               | -0.032*** | -0.017*** |
|                    | (-7.53)   | (-4.68)   |
| constant           | 0.837***  | 0.627***  |
|                    | (22.28)   | (18.98)   |
| Mean dependent var | 0.557     | 0.481     |
| N                  | 416       | 374       |
| R—squared          | 0.390     | 0.242     |

Note: \*\*\*, \*\*, \* respectively indicate significance at the 1%, 5%, and 10% levels, and the numbers in parentheses represent t-values.

Remove outliers. The abnormal high and low values of labor income share may affect the conclusions of this article. To reduce such effects, data above 95% of the average labor income share and below 5% of the average value were excluded from the sample data collection area, and the remaining data was used for estimation. The results obtained are shown in column (2) of Table 3, which are robust. The hypothesis is valid, that is, the impact of graduate student size on labor income share is positive.

## 5. Conclusion and policy recommendations

### 5.1 Conclusion

This article is supported by graduate graduation data from 26 provinces and cities in China from 2002 to 2017, and studies the impact of graduate education scale on China's labor income share from the perspective of human capital. Through the study of a statistical model with education level as the core explanatory variable represented by graduate student size, this article concludes that graduate education size positively affects labor income share by influencing human capital levels, improving labor productivity and wage rates. Research has found that:



The expansion of the scale of graduate students and the deepening of the education level of workers have improved their knowledge and abilities, accelerating the level of talent mobility. The diverse channels of talent mobility and reasonable talent allocation have promoted the adaptability of workers to the rapidly developing society, increased employment rates, and brought about the adjustment and optimization of social talent structure and the transformation of industrial structure through the flow of innovative talents. While realizing the dividend of human capital, the wage rate of workers has been increased, thereby increasing the share of labor income. Furthermore, with the acceleration of the domestic industrial structure optimization process, the proportion of the tertiary industry has rapidly increased. The demand for high-quality talents in the tertiary industry has also increased. In addition to traditional technical and knowledge-based talents, comprehensive talents are now the talent demand that meets the requirements of the times.

The change in the scale of graduate education will promote social and technological progress and improve the overall knowledge and skills reserve. The increase in knowledge reserves and work proficiency of workers has improved their own skills, filling the gap in China's lack of professional talents. The increase in knowledge reserves has broadened the horizons of workers and their ability to adapt to various employment positions, resulting in corresponding improvements in bargaining and labor productivity.

## 5.2 Policy Suggestions

Based on the conclusions drawn in this article and the mechanism of action of the research object, the following suggestions are proposed:

Firstly, increase the stock of human capital and promote educational equity. Although the population of Chinese students continues to expand, the number of graduate students only accounts for 2.66% of the total enrollment in higher education. Furthermore, there is an imbalance in domestic education, with significant urban-rural differences and uneven quality of education. High quality and high-level education is mostly concentrated in major cities and in border and remote mountainous areas, where there are problems such as insufficient teaching staff and difficult educational conditions. The same applies to higher education between provinces. Developed cities such as Beijing and Shanghai gather most of the country's educational resources, while in underdeveloped provinces, universities have significant differences in both quantity and quality compared to developed regions. Ultimately, it leads to economic stagnation or even regression in underdeveloped areas, with per capita income decreasing year by year. Therefore, striving to improve the overall level of education in the country and achieving rational allocation of educational resources is the top priority for achieving healthy economic development.

Secondly, from the perspective of individual graduate students, the high-quality development of human capital. Although the awareness of graduate students in Chinese universities is constantly growing, there are generally phenomena such as insufficient innovation ability, lack of dialectical thinking, practical ability, and weak learning atmosphere. Compared to doctoral education with a lower base and secondary education with lower levels, graduate students can bring greater human capital improvement to the overall level. When striving for progress, one should not waste good development opportunities for simple diplomas and job hunting. Self directed learning, striving for excellence, bold innovation, and the courage to make changes contribute to social construction. In short, learning must keep pace with the times and adapt to the changes of the times and society. In today's era full of challenges and opportunities, bold innovative exploration should be carried out to contribute to China's socialist construction.

Thirdly, from the perspectives of university institutions and society, increase attention to human capital construction. The improvement of discipline construction is one of the prerequisites for achieving stable development of education. Chinese universities should set lofty goals, cultivate students with foresight, and prepare for future development rather than focusing on the current situation. They should always grasp the future direction. China's emerging industries have already lagged behind Western countries, with a larger talent base and a significant shortage of high-tech talents. Therefore, universities should pay more attention to cultivating talents for society and the country, improving the human capital level of graduates, and preparing them adequately to cope with more complex situations in the future.

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