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Does Vertical Fiscal Imbalance Affect the Transfer of Rural Surplus Labor?

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Abstract: This paper explores the theoretical mechanisms through which vertical fiscal imbalance influences the transfer of rural surplus labor. Using provincial-level panel data from 1998 to 2017, it empirically examines the effects of vertical fiscal imbalance on this labor transfer process. The findings indicate that: (1) Currently, vertical fiscal imbalance has a significant direct hindering effect on the transfer of rural surplus labor. (2) Vertical fiscal imbalance hinders the transfer of the rural labor force by slowing down regional economic growth and limiting the effectiveness of regional human capital investment. The indirect effect of the former is weaker than the indirect effect of the latter.

Keywords: Vertical fiscal imbalance; Rural surplus labor transfer; Effectiveness of human capital investment; Economic growth rate

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1. Introduction

Rural surplus labor is a historical outcome of the development of a country. The transfer of rural surplus labor reflects the balanced movement of market factor allocation, which is obviously an economic problem [1]. In the development model of government-driven economic growth, the fiscal system has shaped government behavior and deeply affected economic affairs [2]. This means that we cannot ignore the role of fiscal factors in the transfer of rural surplus labor. After the tax-sharing system in 1994, the higher-level governments concentrated their financial power, while the responsibility for their affairs remained at the lower-level governments, showing a state of asymmetry between intergovernmental financial power and expenditure responsibility, making vertical fiscal imbalance a prominent feature of China's fiscal decentralization. The existing literature mentions that vertical fiscal imbalances will guide local governments to consider limited financial decisions that are beneficial to themselves [3,4], and thus affect market activities [5]. For example, deepening imbalances may distort local tax efforts and capital allocation [6], which is not conducive to the long-term development of the region [7].

However, few studies have discussed the relationship between vertical fiscal imbalance and the transfer of rural surplus labor. In the context of the continuation of fiscal imbalance and the bottleneck of labor transfer, will vertical fiscal imbalance really affect the transfer of the rural labor force? If so, what should be done? Solving these problems is conducive to improving the modern financial system and improving the quality

of farmers ' employment. Finding ways to overcome the shortcomings of transfer payments is important for leveraging the role of the financial system in national governance and urban and rural development. Therefore, based on the background of China's transformation, this paper uses a combination of theoretical and empirical research methods to measure the impact of vertical fiscal imbalance on the transfer of rural surplus labor force, hoping to provide meaningful decision-making reference for the realization of common prosperity.

2. Theoretical mechanisms and hypotheses

2.1. The direct hindering effect of vertical fiscal imbalance on rural surplus labor transfer

Under the central-local fiscal relationship in which financial power is concentrated in the superiors and expenditure responsibility is shifted to lower levels, vertical imbalance is an important feature of China's finance and an entry point for understanding the relationship between government behavior and the transfer of rural surplus labor. After the reform of the tax sharing system, the central government has concentrated most of its financial resources, and the local government's own income is difficult to cope with its increasing expenditure responsibilities. This situation has a profound impact on the local government's financial behavior, expenditure structure, and resource allocation choice. When local governments fulfill their expenditure responsibilities [3], they always face double constraints.

The first constraint is limited financial resources. In the face of higher vertical fiscal imbalances, local governments have weak fiscal autonomy, but their expenditure responsibilities have not decreased. In order to cope with this situation, they will first consider the areas of expenditure that can quickly promote economic growth and show political performance. For example, capital-intensive projects. Therefore, it often compresses the scale of human capital investment related to improving the quality of workers and adapting to the city, such as education, medical care and social security. The second constraint is the limited tenure of officials. Local officials must achieve considerable economic growth performance in a limited period of time, so public services such as vocational training and children 's education, which are more important to the transfer of the rural labor force, are often not valued by local officials, because they have a long return period and cannot make the economy grow rapidly.

However, vertical fiscal imbalances also strengthen the productive bias of expenditure through the "flypaper effect" of transfer payments [7]. This bias hinders the transfer of the rural labor force, mainly from two aspects. First, migrant workers have reduced access to public services in the inflow areas, and their basic needs, including their children 's education, health care, and housing security, are increasingly difficult to meet, resulting in their inability and unwillingness to settle in cities. Secondly, because of the lack of local government's ability to provide vocational education and skills training, migrant workers cannot improve their professional competitiveness, their employment stability is low, and finally, the rural labor force will flow but not transfer.

We also need to pay attention to the fact that vertical imbalances have different effects on different types of local government expenditures. Existing research shows that although vertical fiscal imbalance can force local governments to improve the efficiency of some productive expenditures to a certain extent [4], it cannot improve the efficiency of pure welfare expenditures, which further proves that the accessibility of public services for rural laborers is limited.

This paper proposes Hypothesis 1 (H1): Vertical fiscal imbalance has a hindering effect on the transfer of rural surplus labor.

2.2. The indirect hindering effects of vertical fiscal imbalance on rural surplus labor

transfer

Under financial pressure, local governments always increase investment in infrastructure to cause economic growth. However, this kind of investment in physical capital cannot avoid the problem of diminishing marginal returns [8]. Moreover, the vertical fiscal imbalance increases the dependence of local governments on transfer payments, which leads to the weakening of budget constraints and the increase of the scale of productive expenditure of fiscal investment [7]. Investment in technological innovation and industrial upgrading has thus been neglected, so the sustainable growth capacity of the economy has also been weakened. The ability of the non-agricultural sector to accommodate the labor force is weakened. For agricultural workers, especially low-skilled and low-human capital migrant workers, it means fewer employment opportunities and lower incomes, which directly weakens the willingness and scale of labor transfer.

More fundamentally, however, is the impact of vertical fiscal imbalances on the quality of labor. The gap between urban and rural public services caused by vertical fiscal imbalances has fundamentally widened the gap between the ability of urban and rural labor to achieve the same income level, further leading to a greater urban-rural income gap. The excessive gap between urban and rural areas will reduce the human capital investment of low-income families, thereby reducing the quality of the overall labor force and ultimately affecting economic growth [9]. In areas with a high degree of vertical fiscal imbalance, the gap between urban and rural education resource allocation will always widen. Lower incomes limit rural families and prevent them from allowing their children to receive the same high-quality education as cities, perpetuating the intergenerational cycle of poverty. Unlike the short-term employment fluctuations associated with the economic growth pathway, this mechanism directly affects the quality composition of the labor supply, with cumulative and long-lasting effects. Accordingly, this paper proposes Hypothesis 2 and Hypothesis 3:

H2: Vertical fiscal imbalance hinders the transfer of rural surplus labor by slowing down the regional economic growth rate.

H3: Vertical fiscal imbalance hinders the transfer of rural surplus labor by limiting the effectiveness of regional human capital investment.

3. Econometric model specification, variable definition, and data sources

We construct a linear static panel model as the baseline regression model (Equation 1) to empirically test the direct impact of vertical fiscal imbalance on the transfer of rural surplus labor. In the equation, "i" represents the province (autonomous region, municipality), and t represents the year, $Labor_{it}$ represents the transfer of rural surplus labor in province i in year t, Vfi_{it} represents the degree of vertical fiscal imbalance for the government in province i in year t, x_{it} represents a set of relevant control variables, u_i represents individual fixed effects, ϑ_t represents time effects, ε_{it} is the random error term, β0 is the constant term, and β1 and βn are the parameters or parameter vectors to be estimated.

$$Labor_{it} = \beta_0 + \beta_1 Vfi_{it} + \beta_n X_{it} + u_i + \vartheta_t + \varepsilon_{it} \quad (1)$$

To explore the indirect channels through which vertical fiscal imbalance affects rural surplus labor transfer, we follow our theoretical hypotheses and introduce two mediating variables: human investment effectiveness (Hum) and economic growth rate (Econ). We then construct a mediation model (Equations 2 and 3). Here, Med_{it} denotes the mediating variable, α_0 and ζ_0 are constants, α_1, α_m, ζ_1, ζ_2, and ζ_m are parameters or vectors, and other symbols are the same as in Equation 1.

$$Med_{it} = \alpha_0 + \alpha_1 Vfi_{it} + \alpha_m X_{it} + u_i + \vartheta_t + \varepsilon_{it} \quad (2)$$

$$Labor_{it} = \zeta_0 + \zeta_1 Vfi_{it} + \zeta_2 Med_{it} + \zeta_m X_{it} + u_i + \vartheta_t + \varepsilon_{it} \quad (3)$$

3.2. Variable description

3.2.1. Dependent variable: Transfer of rural surplus labor

Given China's context, most rural surplus labor flows into laborintensive private industries in urban areas. Following Liu et al. (2007) [10] and Zhao and Xu (2014) [11], we proxy rural labor transfer by the total number of employees in the mining, construction, and manufacturing industries minus the number of stateowned enterprise employees in those three industries. A larger value indicates more rural surplus labor transferred; a smaller value indicates less.

3.2.2. Core explanatory variable: Vertical fiscal imbalance (Vfi1)

Using the approach of Eyraud and Lusinyan (2013) [12], we denote local government's ownsource revenue as Fisr, expenditure as Fise, population as Pop, with subscripts n for national, k for central, and j for local. We compute revenue decentralization (Fider), expenditure decentralization (Fidee), and the fiscal deficit rate (Budge) via Equations 46, then obtain the vertical fiscal imbalance index (Vfi1) using Equation 7. A higher value means a deeper degree of vertical fiscal imbalance.

$$Fider = \frac{Fisr_j / Pop_j}{Fisr_k / Pop_k + Fisr_j / Pop_j} \quad (4)$$

$$Fidee = \frac{Fise_j / Pop_j}{Fise_k / Pop_k + Fise_j / Pop_j} \quad (5)$$

$$Budge = \frac{Fise\text{-}Fisr}{Fise} \quad (6)$$

$$Vfi = 1\text{-}(Fider / Fidee) \times (1\text{-}Budge) \quad (7)$$

3.2.3. Mediating variables: Effectiveness of human capital investment (Hum) and economic growth rate (Econ)

Human investment effectiveness: Following Tang and Ye (2020) [13], we use the ratio of regional college graduates to the yearend total population. A larger ratio indicates better human investment effectiveness.

Economic growth rate: Following Tang and Ye (2020) [14], we use the difference between the regional GDP index of the previous period and 100. A larger difference means a faster growth rate.

3.2.4. Control variables

Urbanization (Urban): ratio of nonagricultural population to total population. Industrial structure (Indus): share of secondary and tertiary industry output in regional GDP, reflecting the level of nonagricultural development. Agricultural mechanization level (Agri): ratio of total agricultural machinery power to agricultural employment [15]. Government expenditure scale (Exp): ratio of local fiscal expenditure to regional GDP [16]. Urbanrural productivity gap (Str_eco): ratio of the comparative labor productivity of the primary sector to that of the secondary and tertiary sectors [9]. Urban expansion (Exp): ratio of the current urban builtup area to that of the previous period [8]. Openness (Open): regional foreign investment (deflated to 1997 constant prices).

3.3. Data description

Given data availability and comparability, we exclude Hong Kong, Macau, Taiwan, Tibet, and Hainan (due to data quality), and take the other 29 provinces, municipalities, and autonomous regions as our sample for the period 1998–2017. Raw data come from the China Statistical Yearbook, China Fiscal Yearbook, China Labor Statistical Yearbook, provincial yearbooks, and databases of the National Bureau of Statistics, Guoyan, and Qianzhan.

4. Regression strategy and empirical analysis

Table 1 presents three static panel models: pooled OLS, fixed effects (column 1), and random effects. The coefficients of Vfi1 are -0.8170 (significant), -0.2404 (significant), and -0.3362 (significant), all negative, indicating that vertical fiscal imbalance has a significant negative effect on rural surplus labor transfer. A deeper imbalance reduces labor transfer; a shallower imbalance increases it. Based on the F test, likelihood ratio test, and Hausman test (all $p = 0.0000$), we select the FE model as our baseline. This result preliminarily supports Hypothesis 1.

5. Mediation effect analysis

Following our theoretical framework, vertical fiscal imbalance affects economic growth and human investment effectiveness, which in turn influence rural surplus labor transfer. We use a mediation model to test these indirect channels. Table 2 reports the results. Columns (2) and (3) show the mediation through the economic growth rate (Econ). In column (2), with Econ as the dependent variable, Vfi1 has a coefficient of -8.6193 (significant), indicating that a deeper imbalance slows economic growth. In column (3), adding Econ to the baseline labor equation, Vfi1 is -0.2172 (significant) and Econ is 0.0027 (significant). This supports the chain: "Vertical fiscal imbalance↑ → Economic growth rate↓ → Rural surplus labor transfer↑".

Columns (4) and (5) show the mediation through human investment effectiveness (Hum). In column (4), with Hum as the dependent variable, Vfi1 is -0.0020 (significant), so a deeper imbalance reduces human investment effectiveness. In column (5), adding Hum to the baseline labor equation, Vfi1 is -0.2018 (significant) and Hum is 19.3888 (significant). This supports the chain: "Vertical fiscal imbalance↑ → Human investment effectiveness↓ → Rural surplus labor transfer↑".

Comparing column (3) and column (5) with the baseline FE estimate (-0.2404), the absolute coefficients of Vfi1 are smaller, indicating partial mediation. The proportion of the total effect mediated by economic growth is 9.76%, while that mediated by human investment effectiveness is 16.13%. Thus, the indirect effect through human investment is stronger. Hypotheses 2 and 3 are therefore confirmed.

Table 1. Empirical results of benchmark regression and mediation effect test

Variable	Labor	Econ	Labor	Hum	Labor
	FE	FE	FE	FE	FE
	(1)	(2)	(3)	(4)	(5)
Vfi1	-0.8170*	-8.6193***	-0.2172**	-0.0020*	-0.2018*
	(0.4302)	(2.5030)	(0.0927)	(0.0010)	(0.0994)
Econ			0.0027*		
			(0.0015)		

Hum					19.3888* (9.9690)
Control Variables	YES	YES	YES	YES	YES
Time Effects and Region Effects	YES	YES	YES	YES	YES
Within-group R^2	0.7525	0.6685	0.8219	0.9070	0.8238
Observations	580	580	580	580	580

*Due to limited space, the regression results of mixed effects, random effects, and control variable regressions are omitted.

6. Conclusion

Based on the mechanism and theoretical hypotheses of how vertical fiscal imbalance affects rural surplus labor transfer, this paper empirically tests the effect using Chinese provincial panel data from 1998 to 2017. The main conclusions are as follows. First, vertical fiscal imbalance has a significant direct negative effect on rural surplus labor transfer. Specifically, a onepercentagepoint increase in the degree of imbalance reduces the scale of labor transfer by at least 0.24 percentage points. Second, vertical fiscal imbalance also has significant indirect negative effects. It not only slows regional economic growth, thereby reducing labor transfer, but also limits human investment effectiveness, which in turn reduces labor transfer. The indirect effect through human investment effectiveness is stronger than that through economic growth.

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The author declares no conflict of interest.

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