Frontier Public Service and Central General Transfer Payment in China：A Quantitative Study Based on Panel Data of 9 Provinces in 2000-2015

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Abstract. Frontier provinces are the main battlefields to fight against poverty in China. Based on the panel data of the nine provinces from 2000 to 2015, we find that the decision-making factors of the central general transfer payment for the frontier provinces are in line with the expectations of the central government policy, which is conducive to balancing the imbalance of financial resources and solving the spillover problem of public products. The central government is more driven by the efficiency factor of the economic man rather than the equal value pursuit. There is an interactive feedback mechanism in public service between the frontier and the external financial incentive.

Introduction

Frontier provinces are the main battlefields to fight against poverty in China. Due to their unique strategic positions, improving the level of public services in the border areas is not only important for reducing the gap between the border areas and inland regions in public services, or promoting the equalization of basic public services, but also playing a significant role in maintaining national territorial security, ecological security, national unity and stability, social harmony, economic development and opening -up cooperation. In recent years, the transfer payments in remote and poor areas of our country have increased from 108.1 billion yuan in 2013 to 153.8 billion yuan in 2016, with an average annual increase of 12.5%. Thus,we try to explore whether the central general transfer payment policy has effectively improved the level of social public service in the frontier, then define what factors affect the general transfer payment decision to these areas, so as to provide empirical evidence for government to adjust and improve the fiscal transfer payment policy and promote the rational distribution of financial transfer payment funds and the equalization of basic public services in the border areas.

There is little literature exploring the factors which influence general transfer payments in frontier regions. Most studies focus on its structure and the evaluation of the equalization effect of public services. Due to the literature, we divide the inducing factors of transfer payments into five dimensions including the natural environment, economic factors, government preferences, administrative costs, and public policy.

From the perspective of the natural environment, space, population, and ecology affect the general transfer of the current transfer payment. Jia Junxue et al. (2010)believe that spatial factors between regions affect the mechanism of transfer payments. Liu DaShuai et al. (2013) said that the ignorance of population mobility factor in central transfer payment reduces the equalization effect of public services. Fu Runmin and Miu Xiaolin (2015) believe that some central transfer payment to Ningxia and Heilongjiang are due to ecological and environmental factors. [1-3]

From an economic point of view, the speed and the total amount of economic growth are important factors. Ma shuanyou and Yu Hongxia (2003) proved that the allocation of transfer payments showed an unequal tendency by not taking into account the per capita GDP factor. Some researchers believe that the amount of local transfer payments has a negative relationship with the local economic development level(Chen Xiusha and Zhang Qichun, 2004)) and provincial economic aggregates (Guo Qingwang and Jia Junxue ,2008). [4-5]

Local government preferences including production preferences and people's livelihood preferences also influences the direction and strength of the central general transfer payment. Local

governments tend to favor production-construction governments in promotion championships during their term of office and neglect education, science and technology, medical care which could not transfer into economic indicators in short-term (Zou Li'an, 2007). When the transfer payment is obtained, distortions in fiscal expenditures will occur, which will result in a flying paper effect and are not conducive to the equalization of public services (Yin Heng and Zhu Hong 2011). On the other hand, local governments who adopt a preference for people's livelihood, limit transfer payments into the economic industry, and increase social spending including education and health care (Fan Ziying et al., 2008) gain more from the Central Government. [6-9]

From the perspective of the structure of local fiscal expenditure, the administrative costs also work on this issue. Taking into account the operation of the local government, the central government would transfer additional payments to areas where financial support is excessive and the financial resources are in short supply with continuing growth of the financial support population.(Ma Guangrong and Guo Qingwang,2016) On the other hand, if officials increase expendable expenses such as administrative expenses, they will reduce the supply of public goods, thereby weakening the effect of general transfer payments.(Wang Qingdong,2012) [10-11]

The influence of ethnic minorities is a factor that cannot be ignored in the decision-making of the central transfer payment policy. Raiser (1998) found that the provinces with the most transfer payments in China are not the poorest provinces, but rather thoes that are engaged in mineral resources and resource production and are mainly ethnic minorities. Wang Shaoguang (2002), Song Xiaoning and Yuan Deyu (2008)pointed out that for reasons of appeasement, areas where ethnic minorities are majority often receive more per capita transfer payments than other regions. [12-13]

Research Hypothesis

Ensuring that everyone enjoys basic public services which is a basic right of citizens is an important responsibility of the government. It is necessary to promote the equalization of public services and to provide basic social services for members of society that are generally equal to the level of economic and social development and that can reflect the principles of fairness and justice. service. Cheng Aihua (2010) believes that the expenditure effect of basic public services in the region is significant, and the central government will increase its fiscal transfer payment to the region and give full play to its equalization efficiency of basic public services[14]. Based on this, hypothesis 1:

H1: The greater the expenditure on public services in frontier regions, the more the central general transfer payment.

The frontier region's government has undertaken a few more responsibilities compared with non-ethnic regions, such as carrying out propaganda and education on ethnic and religious policies, mediating ethnic interests, resolving ethnic and religious disputes, and cracking down on separatist activities by hostile forces. And staffing is also higher than non-ethnic areas. (Lei Zhenyang and Cheng Aihua,2008)Based on this, put forward hypothesis 2.

H2: The smaller government administrative costs in frontier regions, the more the central general transfer payment.

Regional per capita basic education is a pure public goods with increasing social returns.(Sun Guoying etc.,2002) It has a significant positive external effect and it is closely related to the most concerned, most direct and most realistic personal interests of the entire people (Xie Shanfeng,2008) .However, due to its large investment, long cycle and high spillover, under the conditions of collective *free ride* and hidden *real income*, local government and market supply will fail, and public products are difficult to supply effectively. To solve the problem of insufficient supply of public goods with positive externalities is also a policy objective of the central general transfer payment.   Based on this, put forward hypothesis 3.

H3: The higher percentage of per capita basic education expenditure per capita in educational expenditures in the frontier regions , the more the central general transfer payment.

The number and density of population will naturally affect the change of behavior and the choice of system(Caifang and Wangmeiyan,2001). Song Xiaoning et al. (2009) believe that the supply of public goods is an economy of scale. Regional public goods with high population density can be

fully utilized and costs can be shared more. Conversely, areas with low population densities cannot always make full use of public goods, which leads to insufficient supply of public goods. Frontier provinces are often vast territories with a comparatively small population density, poor natural conditions, poor infrastructure which lead to a high cost on public services. Thus, lack of financial resources conversely attract more of the central general transfer payments. Therefore, hypothesis 4 is proposed.

H4: The smaller the population density in frontier regions is, the more the central general transfer payment.

The frontier areas of China are often areas where ethnic minority population accounts for about half of the total population of the border areas. On the one hand, ethnic minorities vary in customs, cultures, levels of development which results in more complicated ethnic relations , more frequent ethnic disputes and even special economic rights and political rights . To some extent ,stability of border areas and the national identity of ethnic minorities. On the other hand, the proportion of the ethnic minority population in the province's population has affected the central government. The only Xinjiang work conference and the Tibet working conference in the country have demonstrated the priority of the central policy-makers in caring for the interests of ethnic minorities. From this hypothesis 5 can be put forward.

H5: The larger proportion of ethnic minorities population in frontier regions ,the more general central transfer payment.

The financial power of the central government far exceeds its expenditure responsibilities, and local governments are just the opposite. Therefore, part of the fiscal deficits of local governments should be made up by the central government. Fan Bonai believes that fiscal transfer payments have the function of smoothing the differences in regional economic development levels. Regional fiscal revenues directly affect central government transfer payments, and the regions with the weakest fiscal capacity and strongest financial needs should receive the most transfer payments (Boadway & Wildasin, 1984). Based on this, put forward hypothesis 6.

H6: The larger fiscal deficits in frontier regions ,the more general central transfer payment.

Data, Variables and Models

Data and Variable Description. The data in this paper is mainly from provincial-level macroeconomic databases in nine frontier provinces (Heilongjiang, Jilin, Liaoning, Inner Mongolia, Xinjiang, Gansu, Tibet, Guangxi,Yunnan) from 2000 to 2015. The explained variable is central general transfer payment, and the key explanatory variable is frontier public service level. Public service level mainly refers to the sum of education spending, cultural sports and media expenditures, social security and employment expenditures, health and family planning expenditures, which in fact reflect the scale of local public service provision in border areas. The public services expenditure, fiscal deficits, per capita basic education of each province by government scale fee, the proportion of the minority population in the province, the population density, and the scale of the government (administrative cost) are used as control variables. All the data in this paper are from China Statistical Yearbook, China Financial Yearbook, China Educational Funds Statistical Yearbook and Chinese National Statistical Yearbook.

Table 1   Variable Description

Variable	type	Means	Std.Dev.	Min	Max	Observations
Public Services Expenditure	overall	1309477	457714.80	13937.17	2569176.00	N= 144
	between		245553.80	875142.00	1695984.00	n = 9
	within		394374.20	25817.62	2423596.00	T = 16
Administrative Cost	overall	0.13	0.03	0.06	0.22	N = 144
	between		0.02	0.10	0.16	n = 9
	within		0.03	0.07	0.19	T = 16
Population Density	overall	103.02	90.99	2.15	296.69	N = 144
	between		96.14	2.41	290.39	n = 9
	within		2.54	95.33	109.32	T = 16
Educational Expenditure	overall	0.77	0.21	0.00	0.93	N = 144
	between		0.05	0.69	0.82	n = 9
	within		0.20	-0.05	0.88	T = 16
Minority Propotion	overall	0.30	0.35	0.001307	2.00	N = 144
	between		0.35	0.001365	1.06	n = 9
	within		0.12	0.15	1.24	T = 16
Fiscal Deficits	overall	1336.17	942.70	185.64	6260.61	N = 144
	between		324.20	1044.66	2070.49	n = 9
	within		891.40	-548.67	5526.30	T = 16

Model Settings. The data types in this paper are mixed-section data and have the dual characteristics of time series and cross-section data. The LM test shows that there is no individual random effect in the model, and mixed regression should be used instead of random effects for estimation. Due to the heteroscedasticity of the model data disturbances, the panel estimation was performed under standard error conditions. Walder's test showed that the model had significant first-order autocorrelation in the group. The Breusch-Pagan LM test showed that there was a significant correlation between the two groups. Therefore, taking full FGLS estimation parameters, the reliability and consistency of statistical results are higher. Then, the mixed regression model (1), the fixed effect model (2), and the comprehensive FGLS autoregressive coefficient different estimation model (2) are sequentially input to check the robustness of the model estimation.

In formula (1), the explained variable y_{it} is general central transfer payment (2000-2015) by provinces. x'_{it} includes all the explanatory variables above. $z'_i \delta$ are individual characteristics that do not change over time, such as ethnic culture and resources, talents, geographical hydrology etc., $\mu_i + \varepsilon_{it}$ are complex disturbances. The subscript i represents the province and t represents the year.

Model Estimation Results and Analysis

(a) Analysis of Estimation Results

Although models 1 and 2 indicate that there is no significant correlation between the expenditure preference of local government public service and central transfer payment. However, Model 3 shows (Table 2) that the lower the level of public service provision in border provinces, the more likely it is that the central government will receive general transfer payments (P<0.05), assuming H1 is supported. Models 1 and 2 show that under the condition of individual fixed effects, the

greater the government's administrative costs in public service affairs, the easier it is to obtain central general transfer payments. ($p<0.05$), but if you control the common regional characteristics of border provinces such as resource endowment, geomorphology, hydrology, ethnic culture, etc., and the lagging effect of local public service provision, it assumes that H2 is supported ($p<0.1$).Research shows that the lower the proportion of basic education spending to education expenditure is, the higher the degree of imbalance in educational investment structure in border provinces, the more likely the central government will increase transfer payments ($p<0.05$) which assumes that H3 is supported. The models all show that the higher the proportion of ethnic minorities, the greater the amount of general transfer payments received by the central government ($p<0.01$)which assumes that H5 is supported. The model also reveals that the population density and local fiscal revenue and expenditure of the border provinces are not significantly related to the central general transfer payment ($p>0.05$), assuming that H4 and H6 are not supported.

Table 2   Model estimates

Variable	Model 1	Model 2	Model 3
Public Services Expenditure	-0.831	-0.884	-0.448***
	(1.35)	(1.25)	(4.03)
Administrative Cost	44.52***	38.97**	-3.269*
	(6.24)	(4.67)	(2.24)
Population Density	0.000938	-0.118	-0.00908
	(0.46)	(2.10)	(1.05)
Educational Expenditure	-3.476**	-3.729**	-2.993***
	(3.62)	(3.52)	(5.60)
Minority Propotion	2.689*	6.820***	3.020***
	(2.51)	(8.24)	(8.00)
Fiscal Deficits	-0.0005	-0.00064	-0.000085
	(0.70)	(0.94)	(1.10)
Reference Group	Inner Mongolia		
Liao Ning			2.274
Ji Lin			0.399
Hei Longjiang			0.0555
Guang Xi			2.454
Yun Nan			1.564
Tibet			1.796**
Gansu			-0.287
Xin Jiang			1.371**
Year			-0.106
cons	23.63*	38.99*	236.6
Effective N	144	144	144

Note: *$p<0.1$, ** $p<0.05$, *** $p<0.01$

Conclusions and policy recommendations

The more the financial structure of frontier provinces is in line with policy formulation motives, the easier it is to obtain transfer payments. Firstly, the general transfer payment of the central government will smooth the uneven level of economic development in the border provinces to balance fiscal revenue and expenditure. Secondly, reducing public product spillovers is an important function of the central general transfer payment policy. National or government attention to basic public education and other productive knowledge investment will lead to an increase in the basic public education system's remuneration. What's more, to improve the provision of public

services is the policy objective of the central general transfer system. Frontier provinces have an interactive incentive mechanism for their own efforts to develop public services and external financial incentives. That is, local governments pay more attention to public services, the more central transfer payment will be given.

Economic rationality rather than population structure is the driving factor in the central government's financial transfer decision-making. Taking consideration of safeguarding national unity, promoting the prosperity and development of the nationalities, and ensuring the security of the territory, the central government did give certain support to ethnic minority areas, though its intensity was limited. The current transfer payment policy is to serve the ultimate purpose of the transfer payment and the current macroeconomic and political goals. It considers more economic rationality, such as provincial administrative costs, fiscal deficits, public product spillover, and other factors. Population structure such as the proportion of minority population and population density cannot induce the increase of central general transfer payment supply.

People's livelihood orientation is an internal preference for inducing general transfer payments. With the advancement of modernization of frontier governance systems and governance capabilities, frontier provinces' government has achieved good social benefits in the transition from relying economic development to promoting social and people's livelihood. The more obvious the government's public service functions, the more investment in the social and people's livelihood, the greater the external incentives of the central government for general transfer payments in the frontier provinces and the financial security of the modern governance structure in the frontier provinces is becoming more rational, professional and refined shorten the regional development gap and achieve equalization of basic public services.

Policy recommendations. On one hand, building a service-oriented government is an interactive pattern between the frontier provinces and central government which help promote the transformation of the border government, balance the weaknesses in infrastructure, public services, short-boarding, project funding, and resource allocation to the border provinces , increase spillover compensation, promote the equalization of public services. On the other hand, taking the special rights of the ethnic groups as an important factor in transfer payments to meet the needs of economic and social development in the ethnic regions, to ensure the realization of the government's basic public service functions, and to safeguard the stability of ethnic and border areas.

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