Do Economic Growth Targets Affect Health Service Supply
——Empirical Evidence from China's Provincial Panel Data

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Abstract. Expanding the supply of health services is the basic direction of promoting the construction of "Healthy China 2030". Based on China's provincial panel data from 2007 to 2019, this paper demonstrates an "inverted U-shaped" relationship between economic growth targets and health service provision, with the central and western regions more likely to favor productive expenditures over livelihood expenditures under the constraints. Fiscal decentralization plays a moderating role, and the scale of government health expenditure plays a mediating role. The government should set reasonable economic growth targets, adopt differentiated policies, optimize the decentralization of expenditure, and increase the supply of health services.

Keywords: Economic growth target, Provision of health services, Inverted U shape, Fiscal decentralization, Healthy China 2030

1   INTRODUCTION

In 2016, the Central Committee of the Communist Party of China (CPC) and the State Council issued the "Healthy China 2030" Planning Outline [1], and the realization of the coordinated development of people's health and socio-economic development has been explicitly elevated to the level of China's national strategy. Health service is an important way to protect people's health and is one of the determinants of promoting the health of the population (Wang and Chang, 2007; Mayer and Sarin, 2005) [2-3]. Regarding health services, Anne Mills (2015) [4] has previously explored the relationship between fiscal equity and healthcare utilization in Ghana, South Africa, and Tanzania. The topic of health service provision has attracted a lot of attention.

In China, an essential way for the central government to lead the country's economic development is to set growth targets (Li and Xu, 2021) [5]. However, the fiscal decentralization pattern with Chinese characteristics and the competitive relationship between governments can cause local governments to emphasize infrastructure construction and neglect essential public services (Fu and Zhang, 2007) [6]. Due to the constraints of economic growth targets, local governments are usually more inclined to prioritize productive expenditures over unproductive expenditures to promote economic construction (Ma, 2016) [7].

Few studies have examined the relationship between economic growth targets and health supply from the perspective of target management, and although the literature has focused on the role of government-type factors in public service supply, it has not focused on health services. This paper pioneers integrating economic growth target constraints, fiscal decentralization, and health service supply within a single analytical framework. It assumes and tests an inverted "U"-shaped relationship between economic growth targets and healthcare supply, marking a novel theoretical endeavor.

2 MODEL CONSTRUCTION

To examine the impact of economic growth targets constraints on the inverted U-shaped hypothesis of basic public service provision, the following model is constructed:

$$\ln Pro\_hea_{i,t} = \alpha + \beta_1 \ln Tar\_Eco_{i,t} + \beta_2 (\ln Tar\_Eco_{i,t})^2 + Controls + \gamma_i + \vartheta_t + \varepsilon_{i,t} \tag{1}$$

Drawing on the studies of Fu (2010) [8] and Gong and Lu (2009) [9], this paper selects the number of beds in healthcare facilities per 1,000 population as a measure of health service supply The other main variables in this paper are defined in Table 1:

Table 1. Definition of main variables

Variable	Definition
Tar_Eco$_{i,t}$	Annual GDP growth target figures in the Government Work Report
Fis$_{i,t}$	Regional per capita fiscal expenditure (CFE) / sum of regional and central per CFE * 100
Sec$_{i,t}$	Share of value added of the secondary sector
Old$_{i,t}$	Old-age dependency ratio
pFDI$_{i,t}$	Foreign direct investment per 10,000 population
Ope$_{i,t}$	Total exports and imports/GDP
Edu$_{i,t}$	Years of schooling per capita
Une$_{i,t}$	Unemployment rate
Γ_i	Province fixed effect
θ_t	Year fixed effects
Scale$_{i,t}$	Government health expenditure/total regional population

This paper selects the provincial-level panel data of 30 provinces in China (excluding Tibet, Hong Kong, Macao, and Taiwan) from 2007-2019. The relevant data sources are the CSMAR Cathay Pacific database, EPS data platform, China Statistical Yearbook, etc. To exclude the influence of outliers and alleviate the problem of heteroskedasticity, this paper takes logarithmic treatment for all variables.

3 THE EMPIRICAL FINDINGS

3.1 Benchmark regression results and robustness discussion

Columns (1) (2) of Table 2 present the results of the benchmark regressions on the relationship between economic growth targets on the supply of health services. Column (3) is the result of replacing the original explanatory variables with the number of health technicians per 1,000

population, and column (4) is the empirical result of using the independent variable lagged by one period as an instrumental variable, taking into account the possible problem of two-way causality and drawing on the study of Mao, et al. (2015) [10]. It can be seen that the coefficients all pass the test at least at the 1% significance level, and there is a robust "inverted U-shaped" relationship between economic growth targets and health service provision.

Table 2. Benchmark regression results

Variable	(1) $lnPro\_hea_{i,t}$	(2) $lnPro\_hea_{i,t}$	(3) $lnSki_{i,t}$	(4) $lnPro\_hea_{i,t}$	(5) $lnPro\_hea_{i,t}$ (East)	(6) $lnPro\_hea_{i,t}$ (Midwest)
$lnTar\_Eco_{i,t}$	3.104**	1.858***	2.168***	2.749***	2.512*	1.282**
	(1.267)	(0.634)	(0.727)	(0.982)	(1.221)	(0.533)
$(lnTar\_Eco_{i,t})2$	-0.629**	-0.411**	-0.465**	-0.581***	-0.577	-0.254*
	(0.292)	(0.156)	(0.170)	(0.220)	(0.327)	(0.125)
_cons	-2.262	-24.509***	-15.612***	-25.116***	-24.787***	-16.343***
	(1.371)	(4.691)	(3.318)	(3.371)	(4.966)	(4.424)
Controls	No	Yes	Yes	Yes	Yes	Yes
N	390	390	390	360	143	247
R2_adjust	0.799	0.886	0.910	0.861	0.841	0.959
Year effect	Yes	Yes	Yes	Yes	Yes	Yes
Province effect	Yes	Yes	Yes	Yes	Yes	Yes
CDF				59.324		

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The same is below.

3.2   Regional heterogeneity analysis

Due to the heterogeneity of economic development levels among regions, this paper conducts group regression tests based on the location of provinces. As shown in columns (5) and (6) of Table 1, the "inverted U-shape" exists significantly in the central and western regions of China, while it is not obvious in the eastern regions. Probably because economic benefits from development are evident in the East, while central and western provinces, constrained by geography and resources, face greater pressure to meet identical growth targets. This could lead to the neglect of healthcare services.

4   ANALYSIS OF THE MECHANISM

4.1   Mediating effect of the scale of health expenditure

In order to study whether fiscal decentralization can indirectly affect the supply of basic public services by changing the scale of health expenditures, this paper constructs the following mediation effect model for testing:

$$\ln(Scale_{i,t}) = \alpha + \alpha_1 ln(Tar\_Eco_{i,t}) + \alpha_2 [\ln(Tar\_Eco_{i,t})]^2 + Controls + \gamma_i + \vartheta_t + \varepsilon_{i,t} \tag{2}$$

$$\ln(Pro\_hea_{i,t}) = \alpha + \theta_1 ln(Tar\_Eco_{i,t}) + \theta_2[ln(Tar\_Eco_{i,t})]^2 + \theta_3 ln(Scale_{i,t}) + Controls + \gamma_i + \vartheta_t + \varepsilon_{i,t} \tag{3}$$

From columns (1) (2) of Table 3: the coefficient of the squared term becomes more significant and the values of α1, α2, and θ3 all pass the test, the mediating effect exists.

Table 3. Results of the analysis of mediating and moderating effects

Variable	(1) $lnScale_{i,t}$	(2) $lnPro\_hea_{i,t}$	(3) $lnPro\_hea_{i,t}$	(4) $lnPro\_hea_{i,t}$
$lnTar\_Eco_{i,t}$	1.551***	1.288**	-0.398	0.060
	(0.480)	(0.539)	(1.568)	(1.061)
$(lnTar\_Eco_{i,t})^2$	-0.350***	-0.282**	0.093	-0.032
	(0.115)	(0.134)	(0.342)	(0.232)
$nuclei_t$		0.368**		
		(0.140)		
$c\_lnTar\_Eco_{i,t}\times lnFis_{i,t}$			62.340*	43.267**
			(33.144)	(20.042)
$c\_(lnTar\_Eco_{i,t})^2\times lnFis_{i,t}$			-12.870*	-9.227**
			(7.391)	(4.498)
_cons	-17.590***	-18.041***	2.136	-18.630***
	(3.322)	(4.326)	(1.876)	(3.492)
Controls	Yes	Yes	No	Yes
N	390	390	390	390
R^2_adjust	0.989	0.893	0.847	0.896
Year effect	Yes	Yes	Yes	Yes
Province effect	Yes	Yes	Yes	Yes

4.2 The moderating effect of fiscal decentralization

To further study the moderating effect of fiscal decentralization, this paper adds the interaction term between fiscal decentralization and economic growth targets based on the benchmark regression in equation (1). According to columns (3) (4) of Table 3, it can be found that the interaction terms are all significantly negative at least at the 10% level. The moderating effect of fiscal decentralization exists.

5 CONCLUSIONS

Economic growth targets affect health services in an "inverted U-shaped" way, differing by region. Fiscal decentralization regulates positively, while the health expenditure scale mediates. Governments should optimize incentives and evaluation systems, implement differential evaluation, optimize financial spending patterns, and increase support for health services.

REFERENCE

[1]   Xinhua News Agency. CPC Central Committee and State Council issued an Outline of the "Healthy China 2030" Plan [EB/OL]. Government of the People's Republic of China, 2016-10-25.

[2]   Wang J, Chang Z. China Macro Health Production Function: Theory and Positive Analysis [J]. Nankai Economic Studies, 2007, No.134(02): 20-42.

[3]   Mayer S E, Sarin A. Some mechanisms linking economic inequality and infant mortality[J]. Social Science & Medicine, 2005, 60(3):439-455.

[4]   Anselmi L, Lagarde M, Hanson K. Going beyond horizontal equity: An analysis of health expenditure allocation across geographic areas in Mozambique[J]. Social Science & Medicine, 2015, 130(11): 216-224.

[5]   Li S, Xu X. Target Drives Growth [J]. China Economic Quarterly, 2021, 21(05): 1571-1590.

[6]   Fu Y, Zhang Y. Chinese style decentralization and structural bias of fiscal expenditure: Price of competition for growth [J]. Journal of Management World, 2007(03): 4-12+22.

[7]   MA L. Performance feedback, government goal-setting, and aspiration level adaptation: evidence from Chinese provinces[J]. Public Administration, 2016, 94(2): 452-471.

[8]   Fu Y. Fiscal Decentralization, Governance, and Non-Economic Public Goods Provision [J]. Economic Research Journal, 2010(8): 4-16.

[9]   Gong F, Lu H. Public expenditure structure, preference matching and fiscal decentralization [J]. Journal of Management World, 2009(01): 10-21.

[10]   Mao J, Lv B, Ma G. The Transfer Payment and the Government Expansion: A Study Based on "the Price Effect" [J]. Journal of Management World, 2015(7): 29-41