



Fiscal Decentralization, Economic Policy Uncertainty and High-Quality Economic Development

An Empirical Study Based on Systematic GMM

Qifang Xiao¹, Tong Lin², Yuhua Ma³

¹College of Economics, Sichuan Agricultural University, Chengdu, 611130, China

²College of Economics, Sichuan Agricultural University, Chengdu, 611130, China

³College of Economics, Sichuan Agricultural University, Chengdu, 611130, China

¹E-mail: xqf3136@163.com

²E-mail: lintong0710@126.com

³E-mail: mayuhua8023@163.com

Abstract. China has entered the stage of high-quality economic development, how to effectively achieve high-quality economic development has become an important issue in today's society. Based on the data of 30 provincial samples from 2006 to 2020, a comprehensive index system of high-quality economic development was constructed from five aspects of the new development concept, and the entropy method was used to determine the index weight. Based on the moderating effect of economic policy uncertainty, this paper empirically analyzes the impact of Chinese style fiscal decentralization on the high-quality development of Chinese economy by using systematic GMM. The results show that fiscal decentralization can actively promote our economy to achieve high quality development, the more perfect the fiscal decentralization system, the higher the quality of economic development. The uncertainty of economic policies caused by the change of officials will negatively regulate the relationship between fiscal decentralization and high-quality economic development, and weaken the promoting effect of fiscal decentralization on high-quality economic development.

Keywords: Fiscal decentralization, Economic policy uncertainty, High-quality economic development, Moderating effect, Systematic GMM estimation

1 Introduction and literature review

The "Fourteenth Five-Year Plan" outline shows that we should adhere to the new development concept, promote high-quality development, and accelerate the building of a modern economic system. The government's fiscal decentralization system can adjust the structure of central and local resources, but in the context of the pandemic impact and economic transition, the government has frequently introduced various policies, increasing uncertainty about economic policy. The replacement of local officials caused

by "federalism with Chinese characteristics" will have a negative impact on the continuity and certainty of economic policies and affect the development of local economy. Will economic policy uncertainty mediate the relationship between fiscal decentralization and high-quality economic development? Under the current background, it is of great practical significance to solve these problems.

As for the research on the relationship between fiscal decentralization and high-quality economic development, the relevant literature is mainly reflected in the following two viewpoints: one affirming the positive role of fiscal decentralization, holding that fiscal decentralization is the core driving force of social and economic development^[1], can promote the social economy to the high quality stage. Some literature replace the quality of economic growth with total factor productivity and find that fiscal decentralization can significantly improve the quality of economic growth at both the national and regional levels^[2]; based on comprehensive index, the empirical results show that fiscal decentralization is the main driver to promote China's economic growth, which can significantly promote the quality of economic growth^[3]. Another point of view is that fiscal decentralization will lead to local protectionism^[4], market segmentation^[5], undesirable competition among local governments^[6] and suppress regional technological innovation^[7] are not conducive to high-quality economic development.

At present, most of the domestic and foreign research on economic policy uncertainty and its moderating effect focus on micro enterprises and macro economy. At the micro level, increased economic policy uncertainty will hinder investment and development^[8], corporate stock returns have fallen^[9]. The moderating effect of economic policy uncertainty will not only reduce the financial risk caused by firm finalization^[10]; it will also weaken the promotion effect of enterprise innovation on brand growth by discouraging R&D investment^[11]. However, some scholars have found that economic policy uncertainty can positively moderate the promoting effect of corporate governance investment on liquidity creation^[12] and the relationship between innovation and high-quality regional economic development^[13]. From the perspective of macroeconomic variables, economic policy uncertainty will cause inflation and unemployment to rise^[14], result in a negative demand shock and an economic downturn^[15].

In general, a large number of literature have confirmed the various effects of fiscal decentralization on high-quality economic development, but the conclusions are still divergent. Economic policy uncertainty has been studied by many scholars as a moderating variable, but its effect on the relationship between fiscal decentralization and high-quality economic development is rarely discussed. The existing literature has not combined economic policy uncertainty with the specific financial system arrangement of my country and realistic characteristics, and ignores the adjustment of this important factor between fiscal decentralization and high-quality economic development. Therefore, this paper establishes this discussion framework in the hope of providing useful policy implications to achieve high-quality development and transformation of the Chinese economy.

2 Theoretical Analysis and Research Assumption

2.1 High-quality development of fiscal decentralization and economy

The second generation of fiscal decentralization theory holds that the government and government officials have their own interests and needs, and the lack of constraints will make corruption more likely. Due to the competition between the local governments is fierce, which leads to a series of problems. However, compared with the central government, local governments have more sufficient information, and can more effectively provide public services to residents within their jurisdiction to maximize social welfare.

Since the reform of tax sharing system, with the decentralization of financial power, fiscal decentralization will lead to excessive competition among local governments, resulting in market segmentation, restricting regional innovation and development, further exacerbating the gap between the rich and the poor, and affecting inter-regional resource sharing. Vicious competition will also encourage the government to introduce enterprises with high pollution and high energy consumption, resulting in a series of environmental problems. However, through the separation of powers, local governments will choose policy optimization to accelerate resource agglomeration, improve the jurisdiction of fiscal autonomy, give local governments more power to improve environmental pollution, and radiate surrounding areas through "demonstration effect" and "technology spillover effect", so as to promote regional open communication and balanced economic development. Therefore, hypothesis 1 is put forward:

H1: Fiscal decentralization can promote high-quality economic development

2.2 Moderating effect of economic policy uncertainty on the relationship between fiscal decentralization and high-quality economic development

Whether the fiscal decentralization system or the goal of high-quality economic development, the function path and effective realization of both must be established on the concrete political system arrangement of our country. The effective play of fiscal decentralization on promoting the high-quality economic development must cooperate with the relevant system conditions.

Since China implements the system of local governors, the difference of key regional officials will cause great uncertainty in economic policy. The change of officials is inevitable due to the term limit, so it is easy to be shortsighted. Incumbent officials often engage in behaviors that are detrimental to economic growth in order to promote evaluation indicators. The bias of fiscal expenditure and the protective behavior of regional competition have resulted in the low level of regional public services, serious damage to the environment, distortion of economic structure, interference with the effective implementation of the fiscal decentralization system. In the long run, these factors, which are contrary to the new development philosophy, will hinder high-quality economic development in the region and at the national level, and affect China's economic transformation and upgrading. When economic policy uncertainty rises, it will have a

negative impact on government fiscal efficiency and local economic development. Therefore, hypothesis 2 is put forward:

H2: Economic policy uncertainty negatively moderates the relationship between fiscal decentralization and high-quality economic development

3 Study Design

3.1 Model specification

In order to test the theoretical analysis and research hypotheses mentioned above, considering that economic variables generally have inertia, this paper introduces the lag period of high-quality economic development and constructs the following econometric model:

$$edq_{it} = \alpha_0 + \alpha_1 fd_{it} + \alpha_2 edq_{i,t-1} + \alpha_n controls_{it} + \beta_i + \mu_t + \varepsilon_{it} \tag{1}$$

On the basis of Equation (1), a first-order lag term of economic policy uncertainty is added to adjust the possible lag effect of policies. In view of the possibility of bidirectional causality in the selected sample data to overcome the endogeneity of the original model, this paper selects system GMM estimation for analysis, and sets the dynamic panel model as:

$$edq_{it} = \alpha_0 + \alpha_1 fd_{it} + \alpha_2 epu_{i,t-1} \times fd_{it} + \alpha_3 edq_{i,t-1} + \alpha_n controls_{it} + \beta_i + \mu_t + \varepsilon_{it} \tag{2}$$

i appearing in equations (1) and (2) represent the province, t represents the year, β_i represents the individual fixed effect, μ_t represents the time fixed effect, ε_{it} is the random disturbance term, α is the parameter to be estimated, edq_{it} represents the high-quality economic development level of the t year of province i , $epu_{i,t-1}$ 、 $edq_{i,t-1}$ represent the first-stage lag value of economic policy uncertainty and high quality economic development respectively, fd_{it} represents the fiscal decentralization index of i province in the t year, $epu_{i,t-1} \times fd_{it}$ represents the interaction term between economic policy uncertainty and fiscal decentralization, and $controls_{it}$ represents a series of control variables.

3.2 Variable measure and explanation

Based on Ren Baoping's [16] point of view and the comprehensive index system of the new development concept [17-18], this paper uses the entropy method to calculate the weight of each index of economic development quality. Specific indicators are shown in Table 1.

Table 1. The system of indicators for high-quality economic development

Primary indicators	The secondary indicators	Definition of Indicator	Target direction
Innovative development	Patent applications per 10,000 people	Number of patent applications/total regional population	+

High-quality economic development		R&D intensity of expenditure investment	R&D internal expenditure of funds/ regional GDP	+
		Technical trading activity	Technical trading volume/regional GDP	+
	The coordinated development	Demand structure	The added value of GDP/last year's GDP	+
		Urban and rural structure	Value added of the tertiary industry/regional GDP	+
		Industrial structure	The urban population/total regional population	+
	Open development	Trade dependency	Total imports and exports/regional GDP	+
		Intensity of utilization of foreign capital	Actual utilization of foreign direct investment/ regional GDP	+
		Marketization degree	Marketization index by region	+
	Green development	Energy consumption elasticity coefficient	Regional energy consumption growth rate/regional GDP growth rate	-
		Unit of exhaust gas produced	Total industrial SO ₂ emissions/regional GDP	-
		Unit produced wastewater	Total waste water discharge/regional GDP	-
	The Shared development	Elasticity of personal income growth	Growth rate of per capital disposable income/regional GDP growth rate	+
		Urban-rural consumption gap	Urban per capital consumption expenditure/Rural per capital consumption expenditure	-
		Expenditure rate for ensuring people's well-being	Social, housing, education and health expenditure/ General public finance budget expenditure	+

In this paper, fiscal autonomy(f_d), fiscal expenditure decentralization(f_de) and fiscal revenue decentralization(f_dr) to describe the degree of fiscal decentralization. All of them are calculated in terms of per capital fiscal revenue. The calculation expression is as follows:

$$fd = \frac{\text{fiscal revenue within the provincial government budget}}{\text{fiscal expenditure within the provincial government budget}} \tag{3}$$

$$fde = \frac{\text{Per capita fiscal expenditure within the provincial budget}}{\text{The sum of provincial and central per capita fiscal expenditures}} \tag{4}$$

$$fdr = \frac{\text{Provincial budget per capita fiscal revenue}}{\text{The sum of provincial and central per capita fiscal revenue}} \tag{5}$$

The moderating variable is economic policy uncertainty, denoted epu. Under the current system arrangement, the policy uncertainty measured by the change of local core officials has good continuity. This paper chooses the change of provincial party secretary to measure the degree of economic policy uncertainty^[19]; if the change of officials occurs from January to June of the same year, this year is defined as the change year, change=1; if the change occurs between July and December of the current year, change=0^[20].

According to the availability of data at the provincial level, the following control variables are selected: GDP per capital, human capital, consumer price index and unemployment rate.

3.3 Data source and processing

This paper selects 30 provincial-level panel data from 2006 to 2020. All data were obtained from *China Statistical Yearbook*, *China Fiscal Yearbook*, *statistical yearbooks of provinces and cities*, *local leadership database*, etc. Linear interpolation method was used to fill in individual missing data, and the econometric analysis of all data was completed by STATA17.0. The descriptive statistical analysis of each variable is shown in Table 2.

Table 2. Descriptive statistics for each variable

variable	Indicators show	sample size	mean	S.D.	min	max
edq	economic development	450	0.190	0.103	0.065	0.641
	index					
fd	fiscal decentralization	450	0.503	0.196	0.004	0.951
	and autonomy					
fde	decentralization of fiscal	450	0.838	0.057	0.669	0.937
	expenditure					
fdr	fiscal revenue decentrali-	450	0.493	0.132	0.263	0.838
	zation					
epu	policy uncertainty	450	0.247	0.432	0.000	1.000
gdp	per capital GDP	450	4.609	2.787	0.634	16.49
lnedu	log of human capital	450	2.164	0.103	1.886	2.503
CPI	consumer price index	450	1.209	0.121	1.008	1.590
unem	unemployment rate	450	0.342	0.066	0.120	0.510

4 Empirical Results and Analysis

4.1 The benchmark returns

In order to reduce the influence of heteroscedasticity, the logarithmic transformation of some control variables was carried out, and the lag term of the explained variables was introduced. In the estimation results, the first-order lag term of the explained variable is significantly positive, indicating that the early economic development will significantly improve the quality of the current economy, and there is inertia in economic growth, so it is reasonable for the model to consider the inertia effect.

In terms of the core variables, the regression results show that fiscal decentralization can significantly promote the economic development quality of China's provinces and regions. The economic logic of these empirical results may lie in: under the background of fiscal decentralization, local governments have the freedom of economic development; Rich tax sources provide a guarantee for local fiscal revenue and expenditure. Active economic development in all regions has promoted high-quality regional economic development. H1 is verified.

As far as control variables are concerned, the selected control variables will have different degrees of significant impact on high-quality economic development. Among them, GDP per capital and years of education per capital all show that they have a significant positive impact on high-quality economic development. The regression results of CPI and urban registered unemployment rate show that the higher the CPI and

urban registered unemployment rate, the lower the level of high-quality economic development. The above results accord with the law of economic development.

Table 3. The benchmark returns

variable	(1)	(2)	(3)
ledq	0.185*** (3.34)	0.188*** (4.02)	0.157*** (2.98)
fd	0.278*** (3.69)		
fde		1.486*** (6.40)	
fdr			0.279*** (2.91)
lngdp	0.046*** (2.81)	0.040** (1.90)	0.050* (1.93)
lnedu	0.247*** (3.19)	0.417*** (5.47)	0.305*** (4.20)
CPI	-0.366*** (-3.31)	-0.389*** (-3.94)	-0.356*** (-3.12)
unem	-0.948** (-2.53)	-0.924** (-2.31)	-1.055** (-2.52)
AR (1)	0.001	0.001	0.001
AR (2)	0.132	0.318	0.286
Sargan test	0.400	0.299	0.360

Note: ***, **, * are respectively significant at 1%, 5% and 10% respectively. The z value is in parentheses. The same is true in the following tables.

4.2 Test of moderating effect

In Table 4, models (1), (2) and (3) introduce the interaction term between fiscal decentralization and economic policy uncertainty to test the moderating effect of economic policy uncertainty. The results show that the interaction coefficient of the three measures of fiscal decentralization is significantly negative, and the coefficient of the independent variable is significantly positive, indicating that economic policy uncertainty has a moderating effect, and the effect is negative. Economic policy uncertainty will weaken the role of fiscal decentralization in promoting high-quality economic development. So H2 is verified.

Table 4. Moderating effect test

variable	(1)	(2)	(3)
fd	0.098** (2.07)		
fde		0.165* (0.61)	
fdr			0.325*** (3.74)
epuxfd	-0.126** (-2.53)		
epuxfde		-0.091* (-0.56)	

epuxfdr			0.132*
			(1.81)
R^2	0.2894	0.2748	0.3034

4.3 Test for robustness

In this paper, the robustness of the above results is tested as follows: first, the samples of Beijing, Shanghai, Tianjin and Chongqing are removed; Secondly, change the measure index of human capital in the control variable into the number of university students per 10,000 people, record as lnhuman.

After removing the samples of the four municipalities directly under the central government, as shown in models (1), (2) and (3) in Table 5, in this regression result, the significance level and regression coefficient of the core explanatory variables are basically consistent with the estimation results of the full sample. It shows that the model is reasonable.

After replacing the control variables, the empirical results are shown in columns (4), (5) and (6) in Table 5. Compared with the benchmark regression model, the core explanatory variables, explained variables and moderating variables of the model only show changes in coefficient size, and the control variables do not change much either. From the perspective of the coefficient and significance level of the moderating effect, the hypothesis test results of this model are basically consistent with those in Table 3, indicating that the empirical results are reliable.

Table 5. Robustness test

variable	(1)	(2)	(3)	(4)	(5)	(6)
fd	0.067*** (1.27)			0.111** (2.20)		
fde		0.109** (0.39)			0.563*** (1.75)	
fdr			0.337*** (3.49)			0.285*** (3.30)
epuxfd	-0.123** (-2.01)			-0.124** (-2.48)		
epxfde		-0.084* (-0.44)			-0.079* (-0.48)	
epuxfdr			-0.085* (-0.77)			-0.128* (-1.75)
lnedu	0.209*** (2.70)	0.627*** (8.28)	0.266*** (3.44)			
lnhuman				0.023* (1.13)	0.063*** (3.72)	0.037** (2.07)
R^2	0.2925	0.2975	0.3047	0.2833	0.2708	0.2889

5 Conclusions and Policy Recommendations

Based on panel data of 30 provincial samples from 2006 to 2020, this paper conducts a systematic GMM estimation. Firstly, a comprehensive evaluation system of high-quality economic development is established, and the high-quality development index of

each region is obtained by entropy weight method. Secondly, from the perspective of official changes, the uncertainty of economic policies is taken as a moderating variable to empirically test the relationship between fiscal decentralization, high-quality economic development and economic policy uncertainty. Finally, the following conclusions are obtained:

(1) The current fiscal decentralization system can effectively promote the high-quality economic development of China. The higher the degree of decentralization and the more perfect the decentralization system, the higher the quality development level of China's economy.

(2) The change of official will cause economic policy uncertainty and interact with fiscal decentralization, and inversely adjust the promotion of fiscal decentralization to the high-quality economic development, which supposes the high-quality economic development of our present.

(3) On the whole, the control variables are significantly correlated with the high-quality development level of regional economy. Raising per capital GDP, per capital years of education and improving infrastructure construction can significantly promote the high-quality development of China's economy, which will be negatively affected by rising inflation and unemployment.

On the basis of the above conclusions, this paper puts forward the following policy recommendations:

(1) Further reform the fiscal system. In allocating financial resources, the central government should give greater weight to local governments to better leverage their primary role. Release the dividend of fiscal decentralization, promote institutional efficiency reform, and promote economic development.

(2) Improve the stability of economic policy. When transferring officials, we should fully consider the background and the forward-looking policy; on the basis of the new development concept and the goal of high-quality economic development, a dynamic accountability assessment mechanism for officials should be established to limit short-term self-interested economic activities.

(3) Improve the public service system. The government should further increase investment in education and technical training, increase transfer payments and poverty alleviation expenditures, foster a sound environment for innovation and entrepreneurship, and increase policy support to create more jobs, so as to provide constant impetus for high-quality economic development.

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