Research on the Economic Growth Effect of Shaanxi Free Trade Zone

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Abstract: At this stage, China's economy has stepped into a new era of high-quality development, and the construction of free trade zones has provided new growth momentum for the country's economic development. The establishment of Shaanxi FTZ is a major initiative to comprehensively deepen reform, expand opening up, accelerate the construction of "Belt and Road" and deeply promote the development of western China under the new situation. Based on the development status quo of Shaanxi FTZ, this paper empirically examines the economic growth effect of Shaanxi FTZ by using the principal component analysis method, and concludes that the establishment of Shaanxi FTZ has a significant positive impact and economic effect on regional economic growth through institutional factors such as trade facilitation and investment liberalization. Therefore, it is necessary to change government functions, promote the transformation and upgrading of foreign trade, accelerate the reform in the field of investment, and deepen the innovation in the field of finance in order to promote the development of Shaanxi FTZ, so as to promote the high-quality development of Shaanxi's economy.

1. Introduction

At this stage, China's economy has stepped into a new era of high-quality development, and the establishment and development of multi-functional economic special zones such as Pilot Free Trade Zones (hereinafter referred to as "FTZs") have far-reaching significance in the current economic environment. Most scholars believe that China's FTZs are the "upgraded version" of China's economy, and that the establishment and development of FTZs are of far-reaching significance in the current economic environment. Focus Point the FTZs are the "focus point" of China's economic "upgrading". On September 29, 2013, China established the first FTZ in domestic history - Shanghai FTZ, which is the earliest FTZ approved by the State Council. Up to now, the number of China's FTZs has grown from 1 to 21, and the coverage has developed from coastal areas to inland, and China's FTZs are constantly expanding, expanding and upgrading.

The construction of free trade zones is an important initiative to promote economic development following the reform and opening up, and in recent years, the relationship between the construction and development of free trade zones and economic growth is a hot issue studied by many scholars. Zhang Jun et al. (2019) analyzed that, in general, the establishment of the FTZ will have a

significant positive promotion effect on economic growth, and it is necessary to increase the implementation of the FTZ strategy, so that the FTZ strategy can better contribute to China's economic development [1]. According to Zhao Liang (2017), the FTZ can have a driving effect on China's economic growth by pulling the growth of foreign trade, expanding the economic aggregate and improving social welfare [2]. Ning Xianmei (2020) adopts the synthetic control method to conclude that the establishment of Guangdong FTZ has a different degree of positive impact on regional economic operation, but the economic impact of different zones has obvious differentiation characteristics [3]. Xu Shiteng (2005) analyzed through one-dimensional regression analysis that foreign trade has a significant promotion and pulling effect on economic growth in Shandong, in which the contribution of imports to economic growth is higher than that of exports, while the role of net exports on economic growth is not obvious [5]. Kang Peiyue (2020), through empirical tests, concluded that the construction of Tianjin FTZ has promoted the economic development of the Beijing-Tianjin-Hebei region, and has produced significant spillover effects on the Beijing and Hebei regions, which has strongly driven the regional economic development [4]. Liu Wen and Fang Guangting (2008) concluded through empirical analysis that human capital is increasingly becoming an important factor in promoting economic growth in Shandong; the role of human capital externality is apparent, and the direct and indirect contribution rates of human capital exceed the national average of the same period [6]. Wang Ping (2020) analyzes through the double difference method to conclude that China's GDP is mainly affected by the added value of the primary industry, the number of unemployed people, the industrial producer factory price index and the consumer price index and other factors, and comes to the conclusion that vigorously promoting the construction of the development of economic free trade zones is conducive to the high-quality development of China's economy [7].

In summary, the existing relevant literature has laid a good foundation for the development of this study, however, most of the literature to the national FTZ as the main body of a wide range of research, specifically for the Shaanxi FTZ empirical analysis is relatively lack of, which provides a broad space for the development of this study. In view of this, this paper will analyze the current situation of the development of Shaanxi FTZ, take the method of principal component analysis to study whether the establishment of Shaanxi FTZ has produced a significant economic effect on the economic growth of Shaanxi Province, and in what way it affects the economic growth of Shaanxi region, and then put forward corresponding countermeasures and suggestions for the future construction of Shaanxi FTZ as well as the high-quality development of Shaanxi Province's economy.

2. Analysis of the Development Status of the Shaanxi Free Trade Zone

Shaanxi FTZ is an important part of the economic and social development of Shaanxi Province, focusing on the implementation of the requirements of the central government to better play the role of "One Belt, One Road" construction in driving the development of western China and to increase the opening up of the gateway cities in the western region, to create a new inland reform and opening up, and to explore the economic and social development of inland countries along the Belt and One Road. One Belt and One Road" countries, explore new modes of economic cooperation and humanistic exchanges between inland and "One Belt and One Road" countries. Shaanxi FTZ has a total area of 119.95 square kilometers, covering three zones: the center zone, Xi'an International Port Area zone, and Xi'an Yangling Demonstration Zone zone. According to the regional layout, the center zone of Shaanxi FTZ focuses on the development of strategic new industries and high-tech industries The center area of Shaanxi FTZ focuses on the development of high-end

manufacturing, aviation logistics, trade and finance industries, pushes forward the construction of the service trade promotion system, expands the depth and breadth of humanistic exchanges in science and technology, education, culture, tourism, health care, etc., and builds a high-end industrial highland and humanistic exchanges highland facing the "Belt and Road"; Xi'an International Harbor District Area focuses on the development of Xi'an International Port Area focuses on developing international trade, modern logistics, financial services, tourism, exhibition, e-commerce and other industries, and building a "Belt and Road" inland hub port for international transit, an open financial industry innovation highland, and a new platform for Eurasian trade and humanistic exchanges and cooperation; Yangling Demonstration Area focuses on agricultural science and technology innovation, demonstration and popularization, and will create a "Belt and Road" international cooperation and exchanges by comprehensively expanding the field of agricultural science and technology. Yangling Demonstration Zone focuses on agricultural science and technology innovation, demonstration and promotion, and through comprehensively expanding international cooperation and exchanges in the field of agriculture, it will build a "Belt and Road" modern agricultural international cooperation center. Driven by a series of reforms and innovations, Shaanxi FTZ has made excellent achievements in promoting regional economic development, which are mainly reflected in the following aspects:

For one thing, it has achieved remarkable results in both institutional innovation and project introduction. Since its inauguration in April 2017, Shaanxi FTZ has carried out in-depth institutional innovation around strategic positioning and development goals, and played a leading demonstration role in deepening reform and expanding opening-up in the province. As of the end of March 2021, 83,528 new market entities have been established in Shaanxi FTZ, including 57,517 new enterprises; the new registered capital is 931,237 million yuan. Up to now, 165 pilot tasks specified in the Overall Program of China (Shaanxi) Pilot Free Trade Zone have been fully implemented, and 511 innovative cases have been formed, of which 21 reforms and innovations have been replicated and popularized in the whole country, and 83 reforms and innovations have been replicated and popularized in the whole province.

Second, the business environment continues to be optimized. Shaanxi FTZ will simplify government, decentralization, release of management, optimization of service reform as to promote the transformation of government functions of the "bull nose", effectively reduce the systemic transaction costs, and constantly enhance the sense of enterprise access. 2020 cumulative total for the "separation of licenses" reform of full coverage Pilot matters 68,000 pieces, benefiting more than 24,000 market players. At the same time, we will promote the deep integration of online and offline "One Net One Office", implement "no-meeting examination and approval" and "one thing at a time" on a wider scale, and take the lead in carrying out the "cross-provincial and cross-region pass-through" program. It has also taken the lead in launching the "inter-region office within the province" and "inter-provincial office" services.

Thirdly, the level of investment and trade liberalization and facilitation is constantly rising. Shaanxi FTZ 2020 set up 88 new foreign-invested enterprises, the actual utilization of foreign capital 3.78 billion U.S. dollars, accounting for 15.3% and 44.8% of the province respectively. The international trade "single window" has promoted the application of the national standard version of the 18 major categories of 729 services, and the main business coverage rate has reached 100%.

Fourthly, the gathering of industries with special advantages has been accelerated. Shaanxi FTZ introduced 14 regional headquarters of airlines, such as China Eastern Airlines, and the scale of the airside economy exceeded 10 billion yuan; to strengthen the superimposed advantages of "FTZ + Comprehensive Insurance + Cross-border", the development of air and land ports, boosting the rapid formation of international trade corridors; to speed up the construction of cross-border e-commerce pilot zones, and the well-known cross-border e-commerce platforms have settled

down.

Fifthly, economic cooperation and humanistic exchanges with the countries jointly constructing the "Belt and Road" have been continuously strengthened.2021 From January to March, a total of 879 China-European liner trains were operated on the Chang'an, 1.4 times more than that of the same period of the previous year, with fruitful results of interconnection and intercommunication. Meanwhile, international production capacity cooperation continues to deepen, international exchange and cooperation in agriculture has been effective, cooperation in science and technology education continues to expand, cultural and tourism exchanges are increasing, and medical cooperation continues to deepen.

However, while Shaanxi FTZ has achieved fruitful results, there are also some problems and challenges. As a matter of fact, Shaanxi is located inland, with insufficient transportation advantages and average economic strength of its own, backed by the Northwest, and without the support of a strong economic circle. On a national scale, Shaanxi is still affiliated with the mediocre period of high-quality economic development [8], the efficiency and quality of its economic development is not high or even low, and the basic strength of FTZ construction is relatively weak. In the process of promoting regional economic and social development, Shaanxi FTZ has a high relative index of openness in cultural exchanges, but its performance is relatively weak compared to other FTZs in terms of trade outward orientation, investment outward orientation, and economic cooperation outward orientation. Therefore, how to further accelerate the construction of Shaanxi FTZ in order to promote the high-quality growth of Shaanxi's economy is an important topic that needs to be explored urgently at present.

3. Analysis of the Economic Growth Effect of the Shaanxi FTZ

3.1. Selection of Relevant Variables

Initially, the establishment of the Pilot Free Trade Zone was to divide an area into separate zones and promote the economic development of the area through the establishment of systems such as the "Negative List" and other institutional innovations, which resulted in economic and trade policies that were different from those of other regions (Xiang Houjun et al., 2016) [9]. Among them, these economic policies different from other regions are mainly focused on achieving a higher degree of trade facilitation and investment liberalization. It can be seen that the economic effect of the establishment of the FTZ is mainly reflected in the institutional factors, the FTZ has different policy measures and policy preferences from the regions that have not established the FTZ, and at the same time, the institutional factors of the FTZ are mainly reflected in the development of trade facilitation and investment liberalization [10].

The formula for the Cobb-Douglas function is as follows: Y=AK $L^{\alpha\beta}$, then after adding institutional factors to the formula, the model formula becomes: $Y=IK^{\alpha}$ $(AL)^{\beta}$, A denotes technology, K denotes physical capital, L denotes human capital and I denotes institutional factors. The specific description of the variables is shown in Table 1.

- (1) In this paper, GDP, the gross domestic product of Shaanxi Province, is used as an explanatory variable. Generally speaking economic growth is manifested as the continuous increase of the total amount of products and labor produced by a country or a region, that is, the continuous increase of the gross national product. Therefore, Shaanxi gross product GDP is used to represent and measure the economic growth and development of Shaanxi Province.
- (2) Physical capital input K. This economic variable is represented by the total fixed asset investment in Shaanxi Province.
- (3) Human capital input L, which is chosen to be represented by the average wage of workers in Shaanxi Province in this paper.

(4) Institutional Factor I. Trade facilitation is measured by the total amount of imports and exports in Shaanxi Province, and investment liberalization is measured by the amount of foreign direct investment actually utilized in Shaanxi Province.

Table 1: Meaning of variables

variable	Variable Meaning				
name	v arrable ivicalling				
x1	Total import and export of Shaanxi Province (thousands of dollars)				
x2	Actual utilization of foreign direct investment in Shaanxi Province				
х3	Total investment in fixed assets in Shaanxi Province (billions of				
X3	yuan)				
x4	Average wage of workers in Shaanxi Province				
у	Shaanxi GDP				

3.2. Modeling and Data Description

This paper takes GDP as the research object and uses the method of regression analysis to study the influencing factors of GDP, and before regression, the data are logarithmized in order to prevent the appearance of heteroskedasticity. The relevant data were obtained from China Statistical Yearbook (2001-2020) and Shaanxi Statistical Yearbook (2001-2020).

(1) Descriptive statistics

Table 2: Results of descriptive statistics

	Number	minimum	maximum	average	(statistics) standard
	of cases	value	values	value	deviation
lnx1	20	16.658	18.712	18.019	0.667
lnx2	20	12.003	14.564	13.393	0.754
lnx3	20	6.415	9.456	8.236	1.089
lnx4	20	9.432	11.623	10.666	0.704
lnv	20	7.373	9.551	8.615	0.741

From Table 2, the mean value of lnx1 is 16.658, the maximum value is 18.712, the minimum value is 16.585, and the standard deviation is 0.667. Similarly, the descriptive statistics of other variables can be derived.

(2) Multiple regression

Table 3: Multiple regression results

	Unstandardized coefficient		Standardized coefficient	t	significance	
	В	standard error	Beta			
(Constant)	-1.178	0.918		-1.283	0.219	
lnx1	0.037	0.043	0.033	0.87	0.398	
lnx2	0.005	0.032	0.005	0.143	0.889	
lnx3	0.217	0.096	0.318	2.263	0.039	
lnx4	0.683	0.137	0.648	4.989	0.000	
R^2	0.998					
F	1824					
P	0.000					

A multiple regression model was established with GDP as the dependent variable, and as shown in Table 3, the goodness of fit of the model is 0.998, indicating that the independent variable explains 99.8% of the dependent variable, which is a good level of explanation. The F-test of the model was conducted and the F-statistic of the test was 1824, corresponding to a p-value of 0.000, which is less than 0.05, so the model is statistically significant.

A t-test was performed on the equation (here is the focus, during the test, as long as the significance level p is greater than 0.05, the parameter is not significant, and less than 0.05, the parameter is significant.) The t-statistic for lnx1 is 0.87, which corresponds to a significance level p of 0.398, which is greater than 0.05, therefore lnx1 has no effect on lny, the t-statistic for lnx2 is 0.143, which corresponds to a p-value of 0.889, which is greater than 0.05, therefore lnx2 is insignificant, the t-statistic for lnx3 is 2.263, which corresponds to a p-value of 0.039, which is smaller than 0.5, therefore there is an effect of lnx3 on lny, and similarly, there is an effect of lnx4 on lny.

The reason for the non-significant parameters may be caused by the existence of multiple covariance in the model, in multiple regression, due to the existence of correlation between independent variables, which will lead to the problem of covariance in the model, according to this theory, the correlation coefficient matrix can be used to determine whether there is covariance in the model or not.

	lny	lnx1	lnx2	lnx3	lnx4
lny	1				
lnx1	0.947**	1			
lnx2	0.766**	0.783**	1		
lnx3	0.994**	0.943**	0.811**	1	
lnx4	0.998**	0.942**	0.736**	0.989**	1

Table 4: Matrix of correlation coefficients

Note: * indicates significant at the 0.05 level and ** indicates significant at the 0.01 level.

Absolute values of correlation coefficients between 0.3 and 0.6 show low correlation, coefficients between 0.6 and 0.8 show medium correlation, and coefficients greater than 0.8 show high correlation. The absolute value of the correlation coefficient is less than 0.3 there is no correlation. A positive sign of the correlation coefficient indicates a positive correlation, while a negative coefficient indicates a negative correlation.

As shown in Table 4, the correlation coefficient between lny and lnx1 is 0.947, which shows a highly positive correlation, and the correlation coefficient between lny and lnx2 is 0.766, which shows a moderate correlation. Similarly, lny has a highly positive correlation with lnx3 and lnx4.

The correlation coefficients between the independent variables were analyzed and the test yielded that there is a correlation between the independent variables and hence there is multicollinearity in the model, which causes the parameters to be insignificant due to multicollinearity.

For the treatment of multicollinearity, the traditional practice is to exclude the variables from the model, but this will make the model lose certain information and cannot respond to the quantitative relationship between all the variables, so this paper utilizes principal component regression to correct the model.

(3) Principal component analysis

Principal component analysis is actually a weighted synthesis of multiple variables into one variable. First of all, due to the fact that the units of the variables selected in this paper are not uniform, the data should be standardized before performing the principal component analysis. The

$$X^*_{i} = \frac{X_{i} - E(X_{i})}{\sqrt{D(X_{i})}}, (i = 1, \dots, p)$$
 ormula for standardizing the data is

 $X^*_{i} = \frac{X_i - E(X_i)}{\sqrt{D(X_i)}}, (i = 1, \cdots p).$ formula for standardizing the data is $X^*_{i} \text{ denotes the standardised number,} \quad X_i \text{ refers to the original data,} \quad E(X_i) \text{ denotes the mean}$ and $\sqrt{D(X_i)}$ denotes the standard deviation.

In principal component analysis, the extraction method to determine how many principal components were extracted is the same often based on whether the value of the eigenroot is greater than 1. As can be seen from Table 5, the eigenroot of the first principal component is 3.609, and only the first principal component has an eigenvalue greater than 1. Therefore, the first principal component is extracted in this paper. The cumulative variance contribution is 90.236, which indicates that the variable extracted 90.236% of the information, and the extracted information is more adequate.

				Extract the		
inamadiant	Initial			sum of the		
ingredient	eigenvalue			squares of		
				the loads		
	(amond) total	Percentage	Cumulativa 0/	(amond) total	Percentage	Cumulativa 0/
	(grand) total	of variance	Cumulative %	(grand) totai	of variance	Cumulative %
1	3.609	90.236	90.236	3.609	90.236	90.236
2	0.315	7.879	98.115			
3	0.072	1.793	99.907			
4	0.004	0.093	100			

Table 5: Interpretation of total variance

Table 6: Component matrix

	ingredient		
	1		
zlnx1	0.968		
zlnx2	0.871		
zlnx3	0.988		
zlnx4	0.969		

Table 6 shows the principal component loading matrix, and the loading values show the correlation coefficients of the variables with the principal components. For example, 0.968 shows that the correlation coefficient of lnx1 with the principal components is 0.968. From the correlation coefficients, the coefficients of the principal component expressions, i.e., the eigenvectors of the principal components, can be obtained. Since the analysis is done from the correlation matrix:

$$\sqrt{\sigma_{ii}}=1 (i=1,2,\cdots p), \ \rho(Z_k,X_i)=a_{ki}\sqrt{\lambda_k}(k=1,2\cdots k)$$
 The coefficients before X_i^* in each principal component expression are the principal component loading matrix divided by $\sqrt{\lambda_k}$. Substituting $\lambda_1=3.609$ into the formula yields the principal component eigenvectors. We require the coefficients of the principal component expressions, i.e., the principal component features.

Table 7: Principal component scores

	Scoring factor
zlnx1	0.510
zlnx2	0.458
zlnx3	0.520
zlnx4	0.510

According to Table 7, the expression for the principal component score is:

$$Z = 0.510z \ln x_1 + 0.458z \ln x_2 + 0.520z \ln x_3 + 0.510z \ln x_4$$
 (1)

According to this expression, the standardized variables are substituted into the above equation to obtain the composite score z of the four independent variables, and a one-way regression model is built by using z as the independent variable and the standardized lny as the dependent variable, with the following results.

Table 8: Principal Component Regression

	Unstandardized coefficient		Standardized coefficient	t	significance	
	В	standard error	Beta			
(Constant)	-0.0001	0.047		0.000	0.999	
Z	0.515	0.026	0.979	20.172	0.000	
R^2	0.958					
F	406.899					
P	0.000					

From Table 8, the expression of the model is:

$$z \ln y = -0.0001 + 0.515z \tag{2}$$

3.3. Analysis and Interpretation of Regression Results

Substituting the expression for the principal component scores into the model yields the reduced model that

$$z \ln y = -0.0001 + 0.262z \ln x_1 + 0.236z \ln x_2 + 0.268z \ln x_3 + 0.263z \ln x_4$$
(3)

As can be seen from the model, the coefficients of all independent variables are greater than 0, indicating that the independent variables have a positive effect on the dependent variable, which is consistent with the results of the previous correlation analysis. From the expression, it can be seen that when the standardized lnx1 increases by 1 unit, the standardized GDP changes by 0.262%; lnx2 increases by 1 unit, the GDP changes by 0.236%; lnx3 increases by 1 unit, the GDP changes by 0.268%; lnx4 increased by 1 unit, GDP change 0.263%. The results show that fixed asset investment and average salary of employees in Shaanxi Province have a significant positive impact on GDP, and the total amount of import and export as well as the amount of actual utilization of foreign direct investment have a significant positive impact on GDP. In other words, physical capital investment and human capital investment have a promoting effect on Shaanxi's economic development, while trade facilitation and investment liberalization also have a significant positive effect on Shaanxi's economic development.

4. Conclusions and Recommendations for Countermeasures

4.1. Conclusions of the Study

This paper firstly analyzes the development status quo of Shaanxi FTZ, and concludes that Shaanxi FTZ has achieved remarkable results in terms of system innovation and project introduction, continuous optimization of business environment, continuous improvement of investment and trade liberalization and facilitation, accelerated aggregation of featured and advantageous industries, and continuous enhancement of economic cooperation and humanistic exchanges with the countries that jointly build the "One Belt and One Road". The level of investment and trade liberalization and facilitation has been continuously improved. At the same time, there are still many problems in the process of Shaanxi FTZ construction, such as weak foundation strength, low degree of outward trade, outward investment and outward economic cooperation. Then, the economic growth effect of Shaanxi FTZ is empirically examined through principal component analysis, which concludes that the total amount of import and export as well as the amount of actual utilization of foreign direct investment in Shaanxi Province has a significant positive impact on GDP, i.e., the institutional factors in the Cobb-Douglas function are introduced to play an important role in economic growth. In other words, the establishment of Shaanxi FTZ promotes the development of trade facilitation and investment liberalization in Shaanxi, which in turn boosts the economic growth of Shaanxi Province. Therefore, the establishment of the FTZ should be closely linked to the local economic development of Shaanxi, to clarify the significant impact of the FTZ on economic growth, and to further pull the high-quality growth of Shaanxi's economy through better development of the FTZ.

4.2. Recommendations for Countermeasures

Shaanxi Province should give full play to its advantages in location, science and education, culture and resources, play a leading role in the FTZ, build the five centers of the "Belt and Road" at a high level, and strive to build a new pattern of opening up that links land and sea, east and west, and drives the province's economy to realize high-quality development [11].

First, the Government's functions should be effectively transformed. On the one hand, it is necessary to reform and innovate the way of government management. In accordance with the requirements of the rule of law, internationalization and facilitation, we should actively explore the establishment of an administrative management system that is compatible with the system of international high-standard investment and trade rules and regulations, and push the government management from focusing on pre-approval to focusing on post-approval supervision [12]. On the other hand, it is necessary to actively carry out the pilot reform of comprehensive management of intellectual property rights. This study explores the establishment of an inter-departmental intellectual property law enforcement cooperation mechanism in Shaanxi Free Trade Zone, and improves the working mechanism of dispute mediation, assistance and arbitration.

Secondly, we should promote the transformation and upgrading of foreign trade. First, enterprises should be actively guided to set up "overseas warehouses", carry out overseas cargo collection, and enhance the operational capacity of the "Chang'an" Chinese-European liner. Priority should be given to supporting the import of advanced technical equipment and resource commodities, and promoting the formation of new competitive advantages in foreign trade centered on technology, brand, quality and service. Second, this study supports enterprises in Shaanxi FTZ to participate in the implementation of major national projects along the "Belt and Road", promotes the construction of overseas economic and trade cooperation zone of Xi 'an Aigu Group, drives related industries to gather and develop overseas, and strives for the leading growth rate of foreign

investment in free trade zones of the province [13]. Lastly, it is necessary to increase the business guidance and training in cross-border trade, utilization of foreign investment and international cooperation in Shaanxi FTZ, and improve the policy level and professional skills of personnel in related fields.

Thirdly, we should speed up reforms in the area of investment. Foreign investment should be subject to national treatment before entry Add a negative list management system, and strive to build a system of supervision during and after the event that is compatible with the negative list management method [14]. This study builds Shaanxi FTZ into a window and comprehensive service platform for enterprises to "go out". In addition, Shaanxi FTZ should formulate tax incentives with international competitiveness, and give substantial tax incentives to all kinds of enterprises in the FTZ to attract domestic and foreign enterprises and investments.

Fourth, deepen the opening up of the financial sector innovation. The government supports eligible financial institutions from countries along the Belt and Road to set up or participate in RMB direct investment financial institutions in the FTZ. The government encourages banking and financial institutions in the region to provide efficient and high-quality financial services to enterprises in the fields of energy, science and technology, culture, green and environmental protection. The government allows foreign equity investment management institutions and foreign venture capital management institutions to initiate and manage RMB equity investment and venture capital funds in the pilot FTZ.

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