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Financial Deepening, New Urbanization and High-quality Economic Development -- Empirical Analysis Based on Spatial Durbin Model

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Abstract: Based on the panel data of 31 provinces and cities in China from 2011 to 2020, this paper uses the entropy method to measure the comprehensive indicators of high-quality economic development in 31 provinces and cities in China, builds a theoretical analysis framework through the new economic growth theory and new geographic economics, and introduces Spatial Spillover Effect to the traditional regression model, all of which helps explore the impact of financial deepening, new urbanization (industry, population, space) and their interaction terms on high-quality economic development. The results show that the high-quality development level of regional economy is rising year by year and the spatial gap is expanding. The high-quality economic development presents the characteristics of spatial agglomeration, and the local autocorrelation shows the characteristics of HH agglomeration and LL agglomeration. Financial deepening, industrial urbanization and spatial urbanization have significantly promoted the high-quality development of regional economy, among which the industrial urbanization contribute most. Financial deepening, industrial urbanization and spatial urbanization have Spillover effects in space and the coefficients are negative, which inhibits the high-quality economic development in other provinces. The indirect effect coefficients of the interaction term between financial deepening and industrial urbanization and spatial urbanization are positive, indicating that the interaction can promote high-quality economic development.

Keywords: Financial Deepening; New Urbanization; High-quality Economic Development; Moran Index; Spatial Durbin Model

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1. Introduction

For the past 30 years, China's economy has been developing rapidly. Now in order to better build a modern and powerful country, resolve the structural conflicts and break the bottleneck of resources and environment so as to promote the high-quality economic development, achieving the transition from quantity pursuit to quality pursuit, from scale expansion to structure upgrade and from factors drive to innovation drive has been an inevitable choice to adapt to the trend of high-quality development and sustainable development. It is an inevitable choice to adapt to the trend of high-quality development and sustainable development. Since the great historical progress achieved by new urbanization during 13th Five-Year Plan period, we have put forward higher requirements for the improvement and development of new-urbanization, and the promotion of new-urbanization has become a new driving force for high-quality economic development.   Finance, as the blood of

modern economy, can guide the rational flow of capital and optimize the allocation of social resources with its leading and pivotal role in the market mechanism. Through financial deepening to give full play to the function of financial market, to promote the construction of new urbanization, it can be effectively breaking the bottleneck of high-quality economic development.

In the construction of the modern economic system, high-quality economic development has played a crucial role. With the emphasis and advancement of new urbanization development in the new period, studying the influence mechanism of financial deepening and new urbanization to high-quality economic development is conducive to achieve rural revitalization, promote the urban and rural integration, and complete the transformation to high-quality development. Based on this background, the article selects the panel data of 31 provinces in China (not including Hong Kong, Macao and Taiwan) from 2011 to 2020 to study the relations between financial deepening and new urbanization and high-quality economic development at the spatial level, to build a high-quality economic development system, to analyze the spatial heterogeneity and spatial correlation with Kernel Density Function and Moran Index, and to study and analyze the interaction mechanism among urbanization, financial deepening and high-quality economic development with the spatial econometric model, all of which is for the sake of providing important theoretical significance and practical guidance value for financial deepening and new urbanization to promote high-quality economic development.

2. Analysis of Relevant Literature

2.1. Financial Deepening and Economic Growth

Financial deepening refers to the reduction of government intervention in the financial market, so that interest rates and exchange rates can fully reflect supply and demand, and inflation can be effectively controlled. Since Goldsmith (1969) proposed the theory of financial structure and verified the positive correlation between financial correlation ratio (FIR) and GDP, the research on the impact of financial deepening on economic growth has been a hot topic in academic circles [1]. Immediately after that, Mckinnon (1973) took the economic development model of developing countries as the object of research and created the theory of financial deepening, arguing that the intervention and regulation of financial sectors by governments in developing countries artificially hindered financial development and formed the result of financial inhibition of economic growth [2]. With the further in-depth research on the impact of financial deepening on economic growth, many scholars have carried out various researches on its related impact. Xiong Peng and Wang Fei (2006) based on Schumpeter's endogenous growth theory, combined with China's actual situation, discussed the endogenous transmission mechanism of financial deepening on economic growth, and concluded that capital stock, human capital and institutional factors are the links between financial deepening and economic growth. There are three significant endogenous transmission channels among them, among which the role of capital stock is the most prominent [3]. In regional research, Liu Huajun and Yang Qian (2014) used spatial regression model partial differentiation and found that financial deepening has positive intra-regional, inter-regional and spatial spillover effects on China's provincial-level regional economic growth, and the intra-regional spillover effect is far greater than the inter-regional spillover effect [4]; Yang Quan and Guo Yaheng (2020) selected countries along the

"Belt and Road" as the research object, confirming that the effect of financial deepening on economic growth is positive [5].

2.2. Urbanization and Economic Growth

The discussion on the relationship between urbanization and economic growth can be traced back to the 1950s. Lampard (1956) pointed out that there is a very significant positive correlation between urban development and economic growth in the United States, and the degree of economic development is related to the stage of urbanization [6]. There is great consistency among them. Berry (1965) and Northam (1975) used panel data analysis to obtain a linear empirical relationship between the level of urbanization and the level of economic development, confirming the positive correlation between the level of urbanization and economic growth [7, 8]. Then, on the impact path, Bertinelli and Black (2004) concluded that the main driving force for urbanization to promote economic development comes from the improvement of productivity, and the improvement of productivity lies in the accumulation effect of human capital brought about by urbanization [9]. At present, China is in an important stage of economic transformation. In-depth research and accurate grasp of the relationship between urbanization and economic growth are particularly important for economic transformation. According to the development law of urbanization in foreign countries, under the condition that urbanization is used as an explanatory variable, the impact of urbanization on economic growth is estimated through the model. On the whole, the promoting effect of urbanization on economic growth has been confirmed by many scholars (Zhu Konglai et al., 2011; Zheng Xin, 2014; Qu Hua et al., 2021) [10-12]. Urbanization helps the division of labor in the society, which in turn promotes economic growth (Guan Weihua et al., 2016) [13]. Conversely, economic growth will attract more industries and population to flow to cities and towns, thereby enhancing the level of urbanization (Yang Zhen et al., 2016) [14]. Combined with the dual economic institutions of urban and rural areas in my country, urbanization has certain specificity, which can be divided into industrial urbanization, population urbanization and spatial urbanization. Through industrial transfer, the urban and rural industrial structure is optimized (Sun Yefei et al., 2016) [15]; through expanding the scale of land and improving the efficiency of land use; Through the growth of urban population, releasing demand and accumulating human capital can effectively promote economic growth (Chen Linxin et al., 2017; Kong Xuesong et al., 2019) [16, 17].

2.3. Literature Review

On the basis of summarizing and analyzing relevant literature, it is found that in the study of financial deepening, new urbanization and high-quality economic development, domestic and foreign researches focus more on the relationship between financial deepening and economic growth and urbanization and economic growth, and few of them have incorporated the three into the same research system. Financial deepening can provide financial guarantee for the construction and development of new urbanization, meantime exerting scale effect, which will effectively promote high-quality economic development. Therefore, the three are not isolated. Following this background, based on the panel data of 31 provinces and cities in China from 2011 to 2020, this paper will empirically test the impact of financial deepening, new urbanization (industry, population, space) and their interaction items on high-quality economic development. The possible marginal contributions of this paper are as follows: (1) Alleviating the scarcity of research that combines new

urbanization, financial deepening with high-quality economic growth; (2) Innovatively studying the impact of new urbanization levels on high-quality economic growth from different dimensions of industry, population and space; (3) Compared to a single index, a comprehensive index of constructing regional economic high-quality development level can measure regional development level more comprehensive and detailed .

3. Research Design

3.1. Model Setting

Cobb-Douglas production function with constant elasticity of substitution is favored by most scholars in traditional economic growth theory. In order to overcome the limitation of the same technological progress coefficient in the traditional production function, this paper adopts the more general variable substitution elastic production function- Trans-log Production Function proposed by L. Christopher and other professors in 1973. With the help of the estimability and inclusiveness of the production function model, at the same time, in order to explore the influence of the optimal coupling between financial deepening and new urbanization on improving the quality development capacity of regional economy, the interaction term of new urbanization, financial deepening and high-quality economic development has been introduced into the transcendental production function, and the following model is established:

$$HQ_{it} = \beta_1 fin_{it} + \beta_2 iurb_{it} + \beta_3 purb_{it} + \beta_4 surb_{it} + \beta_5 fin_{it} \times iurb_{it} + \beta_6 fin_{it} \times purb_{it} + \beta_7 fin_{it} \times surb_{it} + \varepsilon_{it} \tag{1}$$

In this model, the subscript character of "i" represents different provinces in China, and the subscript character of "t" represents time series. "HQ" represents high-quality economic development index, "fin" represents financial deepening degree and "iurb"、"purb" and "surb" represent industry, population and spatial urbanization respectively. Interaction item represents the influence of different provinces' financial deepening capability and new urbanization integration development on high-quality economic development in different years, $\beta_1 \dots \beta_7$ is the coefficient to explain each variable; ε_{it} is the random disturbance term. According to the formula, the output elasticity of industry, population and spatial urbanization is $\beta_2 + \beta_5 fin_{it}$, $\beta_3 + \beta_6 fin_{it}$ and $\beta_4 + \beta_7 fin_{it}$ respectively, from which it can be seen that the value of fin_{it} will determine whether the financial deepening has a positive or negative impact on the high-quality development of urbanization.

The above formula is a common panel model. Since the research object of this paper is the data from 31 provinces, and the variables of each province are not independent from each other, this paper adopts the spatial econometric model to study the correlation between new urbanization, financial deepening and high-quality economic development. Spatial econometric models are mainly divided into Spatial Error Model (SEM), Spatial Autoregressive Model (SAR) and Spatial Durbin Model (SDM). The difference among the three is that different lag terms are introduced into the classical linear regression model. Among the three, SEM model is the spatial lag term with random perturbation, SAR model is the spatial lag term with explained variables, and SDM model is the spatial lag term with both explained variables and explanatory variables. The most prominent feature of spatial econometric model is the introduction of spatial weight matrix into the model. Referring to the research methods of Lin Guangping (2005), Zhao Fang (2012) and others scholars, in order to

better fit the development status of China's regional economy, the spatial econometric model in this paper is simulated and analyzed by many weight matrices, and finally selected the weight matrix of economic distance, which is the most suitable weight matrix for the spatial model in this paper [18, 19].

3.2. Indicators Selection

In order to ensure the scientific, comprehensive, objective and accurate empirical process, after referring to many literatures, adhering to the scientific, quantifiable, hierarchical and comprehensive principle, this paper divides high-quality economic development (HQ) into 5 first-level indicators and 35 second-level indicators. The indicator details can be seen in Table 1 [20-22]. The index weight method includes Analytic Hierarchy Process (AHP), Principal Component Analysis (PCA) and Entropy Weight Method (EWM) and so on. To get more objective results, the entropy weight method is adopted in this paper, according to the dispersion degree of the data of each index, the information entropy is used to determine the entropy weight of index, and then the entropy weight is corrected according to each index, which helps avoid deviation caused by human factors.

Table 1. Economic high-quality development index design.

The target layer	The first indicators	The secondary indicators	Index explanation
High Quality development (HQ)	Innovation-driven	Factor utilization efficiency	Total factor productivity
		Level of innovation	Number of patent applications granted
		R&D investment intensity	R&D funds/GDP
		R&D personnel input	R&D personnel in industrial enterprises above designated size
		Investment efficiency	Investment rate /GDP growth rate
		Technology trading activity	Technology trading turnover /GDP
		Investment in fixed assets	the social investment in fixed assets
	Structure of coordination	Rate of inflation	Consumer price index
		The unemployment rate	Registered urban unemployment rate
		The industrial structure	Tertiary industry/secondary industry
		Financial development	Loans of financial institutions /GDP
		Urban and rural structure	Permanent population in cities and towns
		Demand structure	Total retail sales of consumer goods /GDP
		Foreign trade dependence rate	Total imports and exports /GDP
		Industrialization rate	Industrial added value /GDP
		The proportion of non-state-owned economy	Ratio of current assets of non-state-owned industrial enterprises above designated size to industrial enterprises
		Government debt burden	Government debt balance /GDP
	Green development	Per capita water resources	Total water resources/total population
		Pollution emission per unit of GDP	Waste water, gas and solid waste emissions /GDP
		Electricity consumption per unit of GDP	Electricity consumption (physical quantity) /GDP
		Environmental protection investment	Completed investment in industrial pollution control
		The living environment	Harmless treatment rate of household garbage
		The green area	Per capita Park green area

	The proportion of private fiscal expenditure	Education, health, housing, social security and employment expenditures/Financial budget expenditures
Well-being of the people's livelihood	Income growth	Growth rate of household income
	Urban-rural consumption ratio	Urban/rural per capita consumption expenditure
	Proportion of labor remuneration	Labor compensation /GDP
	Education investment	Education expenditure/total population
	Medical conditions	Number of health technicians per thousand people
	The poor	Minimum living allowance number
	Highway mileage ratio	Highway mileage/total highway mileage
	Internet broadband penetration	Number of Internet Broadband Access Ports (10,000)
Infrastructure and digitization	Mobile phone penetration	Telephone Penetration Rate (Units / 100 persons)
	Number of Internet related employees	Information transmission, software and information technology services employees in urban units/employees in urban units
	Internet output	Total telecom service/Year-end resident population

Traditional urbanization measurement indicators focus more on the improvement of urbanization level brought by migrants. Based on the traditional method of measuring urbanization, in order to comprehensively measure the development level of new urbanization, this paper measures the level of new urbanization from three dimensions of industry, population and space respectively, among which industrial urbanization (iurb) is the ratio of added value of tertiary industry to GDP, population urbanization (purb) is the ratio of permanent urban population to permanent population, and spatial urbanization (surb) is the ratio of built-up area to urban area. At present, domestic financing mainly consist of indirect financing, financing channels are mostly from the banking industry, so the ratio of deposits and loans of financial institutions to GDP is used to measure the level of regional financial deepening (fin).

3.2. Data Description

Table 2. Descriptive statistics of variables.

Variable	The average	The standard deviation	The minimum value	The maximum value	Skewness	Kurtosis
HQ	0.0934	0.0691	0.0441	0.3325	0.9133	3.7794
fin	1.4369	0.4578	0.6308	2.9959	0.7900	3.3069
iurb	0.4958	0.1020	0.3037	0.8795	1.0674	4.7891
purb	0.5738	0.1387	0.2222	0.9414	0.5303	3.8377
surb	0.3282	0.1387	0.0865	0.7098	0.7988	3.1123
fin*iurb	0.7413	0.3582	0.1994	2.0704	1.1149	4.1928
fin*purb	0.8463	0.4050	0.1490	2.3138	1.3092	4.5867
fin*surb	0.4597	0.2288	0.0632	1.2956	1.2739	4.4945

This paper collects and organizes the relevant economic and financial data of 31 provinces in China from 2011 to 2020 (considering the availability of data, excluding Hong Kong, Macao and Taiwan), and pre-processes and calculate the data. All data comes from China Statistical Yearbooks, Provincial Statistical Yearbooks, China Economic Network database, China Economic and Social Big Data Research Platform, National Bureau of Statistics, etc.

The descriptive statistics of variables are shown in Table 2. From 2011 to 2020, the high-quality development of China's economy has been continuously improving. Among them, the minimum HQ value is -0.0441, which is obtained by Qinghai in 2011, and the maximum HQ value is 0.3325, which is obtained by Beijing in 2020. What can be seen from kurtosis and skewness is that the variables show a certain volatility.

4. Empirical Analysis

4.1. Analysis of Spatial Heterogeneity of High-quality Economic Development

Spatial heterogeneity analysis was used to reflect the general instability of the high-quality economic development relationship among 31 provinces. As the bodies of high-quality economic development, such as the financial institution system and the government, there are individual differences that cannot be ignored in financial deepening and new urbanization behaviors. Finally, there may be a phenomenon of "club" groups or spatial interdependence in high-quality economic development.

The spatial heterogeneity analysis methods to high-quality economic development, whether Dagum Gini coefficient, Kernel density estimation, or spatial Markov chain, although different methods have different principles, the conclusions obtained by different methods are basically same. In this paper, Kernel density estimation method is selected to analyze the dynamic changes of kurtosis, skewness and symmetry of the distribution curve of high-quality economic development, and then reflect its dynamic evolution process. This paper shows the dynamic evolution process of high-quality economic development in a cycle of every two years, as shown in Figure 1.
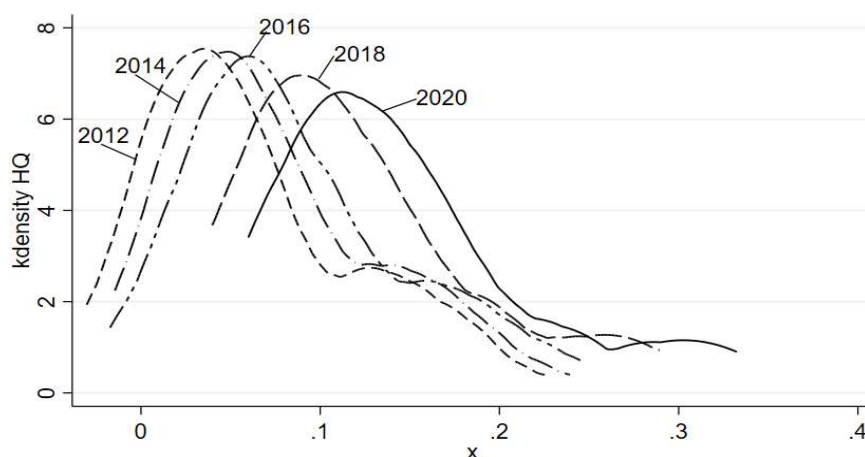

Figure 1. Kernel density function distribution curve of high-quality economic development in 31 provinces.

As can be seen from the figure, the overall level of high- quality economic development in 31 provinces is growing steadily. The center of the kernel density function distribution curve of high-quality economic development shifted to the right year by year, the height of the main peak decreased

year by year, and the width basically showed a trend of expanding, which means the level of high-quality economic development of each province increased year by year and the degree of difference became larger. The distribution curve has a right trailing phenomenon, and the distribution has a right malleability to some extent, all of which means that the spatial gap of high-quality economic development is gradually widening across the country.

4.2. Spatial Correlation Analysis of High-quality Economic Development

4.2.1. Global Spatial Autocorrelation

Based on economic spatial weight matrix, this paper use Moran's I to analyze spatial correlation. Moran's I is defined as follows:

$$Moran's\ I = \frac{n \sum_{i=1}^{n} \sum_{j=1}^{n} w_{ij}(X_i - \bar{X})(X_i - \bar{X})}{\sum_{i=1}^{n} \sum_{j=1}^{n} w_{ij} \sum_{i=1}^{n}(X_i - \bar{X})^2} \tag{2}$$

where "n" represents 31 provinces in China's mainland. w_{ij} is the spatial weight. X and $\bar{X}$ represent variables and average values respectively. The Moran index of high-quality economic development is calculated in the following Table 3.

Table 3. Moran Index from 2011 to 2020.

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
I	0.256	0.287	0.295	0.305	0.294	0.261	0.246	0.244	0.244	0.232
Z	3.224	3.560	3.654	3.763	3.642	3.262	3.102	3.095	3.118	2.979
P	0.001	0.000	0.000	0.000	0.000	0.001	0.002	0.002	0.002	0.003

As can be seen from the above table, the Moran index of high-quality economic development from 2011 to 2020 is all positive, and according to the P value, it can be judged that it has passed the test of 1% significance level. This indicates that high-quality economic development has a positive spatial correlation, which can also indicate that there is a spillover effect in space, that is to say, areas with stronger high-quality development will have a positive impact on the surrounding areas, presenting a stronger spatial agglomeration phenomenon.
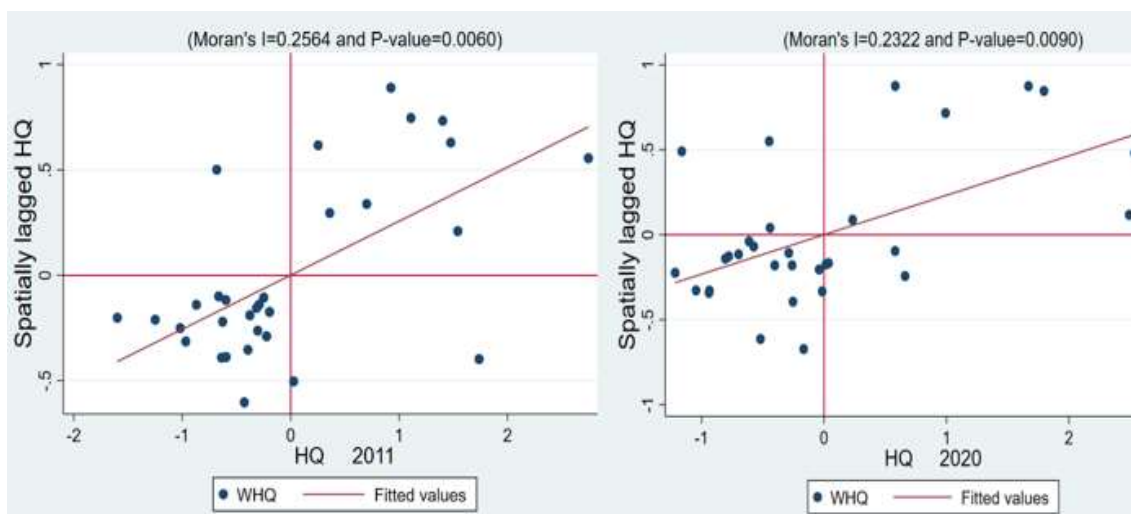

Figure 2. Moran scatter diagram of local spatial autocorrelation.

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4.2.2. Local Space Autocorrelation Test

Moran scatter plots of local spatial autocorrelation of high-quality economic development in China's 31 Provinces in 2011 and 2020 are drawn respectively, as shown in Figure 2. As can be seen from the figure, most provinces are in the first and third quadrants, indicating that high-quality economic development is characterized by HH aggregation and LL aggregation, and indicating that there is an obvious positive spatial correlation and a strong spatial aggregation feature.

4.3. Spatial Econometric Model Analysis

4.3.1. Model Selection Test

LM test, Wald test and LR test were used to select specific spatial econometric models. The test results are shown in Table 4 below.

Table 4. Test Results of Model Selection.

Inspection	The null hypothesis	The test results
LM test	H0: SAR is not selected	Statistic 63.871***
	H0: SEM is not selected	Statistic 24.423***
Wald test	H0:SDM can degenerate into SAR	Prob > chi2 = 0.0001***
	H0:SDM can degenerate into SEM	Prob > chi2 = 0.0011***
LR test	H0:SDM can be simplified to SAR	Prob > chi2 = 0.0002***
	H0:SDM can be simplified to SEM	Prob > chi2 = 0.0013***

Note: *, ** and *** mean significant at the significance level of 10%, 5% and 1% respectively.

According to LM test results, both SEM model and SAR model have passed LM test. On this basis, this paper selects SDM model which combines the above two models. At the same time, Wald test and LR test results showed that the null hypothesis was rejected and the alternative hypothesis was accepted, that is, SDM model was rejected to degenerate into SAR model and SEM model. In order to take the hysteresis of explained variables and explanatory variables into account and avoid the influence of residual autocorrelation on the results. As a result, the spatial econometric model in this paper is determined to be a more comprehensive Spatial Durbin Model (SDM). Combined with the general panel model above, the Spatial Durbin Model of this paper is established as follows:

$$\begin{aligned}HQ_{it} = \beta_0 &+ \rho WHQ_{it} + \beta_1 fin_{it} + \beta_2 iurb_{it} + \beta_3 purb_{it} + \beta_4 surb_{it} + \beta_5 fin_{it} \times iurb_{it} \\ &+ \beta_6 fin_{it} \times purb_{it} + \beta_7 fin_{it} \times surb_{it} + \theta_1 W fin_{it} + \theta_2 Wiurb_{it} \\ &+ \theta_3 Wpurb_{it} + \theta_4 surb_{it} + \theta_5 W fin_{it} \times iurb_{it} + \theta_6 W fin_{it} \times purb_{it} \\ &+ \theta_7 W fin_{it} \times surb_{it} + \varepsilon_{it}\end{aligned} \quad (3)$$

In the above formula, "W" is the weight matrix of economic distance. The success of weight matrix reference integrates the spatial effect into the Spatial Econometric Durbin Model, which can better match the economic development status of all regions in China.

4.3.2. Analysis of Spatial Durbin Model

Before analyzing the Spatial Durbin Model, it is necessary to make a judgment on whether the Spatial Durbin Model chooses fixed effect or random effect. The correlation between spatial effects and explanatory variables has been test by Hausman, then finds that the test statistic is negative, which is inconsistent with the hypothesis of progressive random effects model. Therefore, we can conclude that if the Hausman test value is negative, fixed effects should be adopted [23, 24]. The analysis results of Spatial Durbin Model are shown in Table 5 and Table 6.

Table 5. Spatial Durbin model of financial deepening, new urbanization and high-quality economic development.

Variable	Time-fixed effect	Spatial-fixed effect	Double-fixed effect
fin	0.0210	0.0291**	0.0343**
iurb	0.1346	0.2099***	0.2245***
purb	0.0886	0.0076	0.0266
surb	0.0635	0.0872***	0.0653**
fin*iurb	0.1171*	0.0909***	0.1028***
fin*purb	0.1245***	0.0460**	0.0500**
fin*surb	0.0589	0.0542***	0.0440**
W*fin	0.5690***	0.1059***	0.0977*
W*iurb	0.8220**	0.4183***	0.3807***
W*purb	0.0893	0.1975	0.0389
W*surb	0.7831***	0.0937	0.2229**
W*fin*iurb	0.3596	0.1707**	0.1598**
W*fin*purb	0.5125***	0.0447	0.0106
W*fin*surb	0.5523***	0.0951**	0.1545***
rho	0.3004***	0.5774***	0.2744***
sigma2_e	0.0001***	0.0001***	0.0001***
R^2	0.6684	0.5497	0.3061
Logl	577.6993	969.1304	985.3764

Note: *, ** and *** mean it is significant at the significance level of 10%, 5% and 1% respectively.

According to the model results in Table 5, the Spatial Durbin Model of time-fixed effect, space-fixed effect and double-fixed effect have good logarithmic likelihood values, which are 577.6993, 969.1304 and 985.3764, respectively, among which the double fixed effect model has the best logarithmic likelihood value. On Sigma ^{2}, the three models have passed the 1% significance level test. But in terms of goodness of fit, time-fixed effect model is superior to spatial-fixed effect model and dual-fixed effect model. Combined with the coefficient of explanatory variable and the significance level of the spatial lag term of explanatory variable and explained variable, the Spatial Durbin Model with double-fixed effects is more convincing, which is suitable to the reality of high-quality economic development of 31 provinces in China. Therefore, this paper analyzes and discusses the elasticity coefficient and spatial spillover effect of new urbanization, financial deepening and high-quality development with the SDM model of double fixed effects.

The regression coefficients of financial deepening, industrial urbanization and spatial urbanization- 0.0343, 0.2245 and 0.0653 have passed the test of significance level of 5%, 1% and 5% respectively, indicating that financial deepening, industrial urbanization and spatial urbanization all

is beneficial to promote high-quality economic development, among which industrial urbanization plays the most prominent role in promoting economic development. This shows that in recent years, China's supply-side structural reform have promoted financial deepening, industrial urbanization and spatial urbanization development, contributing greatly to the high-quality development of China's economy. Nowadays, In China, nearly 250 million rural population worked in cities, but due to the constraints of the household registration management system, the migrant workers cannot enjoy the equal public services, limiting the free flow and rational distribution of factors and resources among cities, between rural and urban areas, and among rural areas, which is the main reason why the population urbanization regression coefficient is not significant. Under 5% significance level, the regression coefficients of the interaction terms between financial deepening and the new urbanization (population, industry, space) are significantly, among which the interaction terms between population urbanization and financial deepening can promote high-quality economic development. However, the coefficient of the interaction terms between financial deepening and industrial urbanization and spatial urbanization are negative and there are some individual differences between various regions. These individual differences affect the role of financial deepening and industrial urbanization and the role of financial deepening and spatial urbanization in high-quality economic development. In addition, the processes of financial deepening and industrial and spatial urbanization are unbalanced or even completely opposite, which also makes the interaction between financial deepening and new urbanization may inhibit the development of regional technological innovation. Finally, the coefficients of rho W*fin, W*iurb, W*surb, W* fin*iurb and W*fin*surb were significant at the 5% significance level, revealing the model own the spatial spillover effect due to the spatial lag term of the variables and independent variables. Among them, the interaction terms of financial deepening and industrial and spatial urbanization have significant positive spatial effect on high-quality economic development, while the financial deepening and industrial and spatial urbanization has significant negative effect.

4.3.3. Spatial Spillover Effect Analysis

In order to further study the spatial spillover effect among variables and solve the problem that spatial econometric model coefficients are difficult to explain, this paper has borrowed direct effect, indirect effect and total effect by put forward by LeSage and Pace (2009). Direct effect represents the relationship between financial deepening, new urbanization and high-quality development of regional economy. Indirect effect indicates whether the variable has spatial spillover effect. In other words, the direct effect refers to the influence of a factor change in a province on its own province, while the indirect effect refers to the influence of a factor change in a province on other provinces. The corresponding results are calculated and shown in Table 6.

The overall effect shows that only when the interaction terms of between spatial urbanization and financial deepening and spatial urbanization arrive the significance level of 10%, the changes of the two will produce spatial spillover effects in all regions. The direct effect shows that at the 5% significance level, the explanatory variables of financial deepening and industrial and spatial urbanization in the region will increase by 1 unit, and the explained variable of economic high-quality development (HQ) will change by 0.0303, 0.2092 and 0.0549 unit, respectively. When the interaction term between financial deepening and industry, population and space increases by 1 unit, HQ will change by -0.0964, 0.0505 and -0.0370 unit respectively.

Table 6. Direct effect, indirect effect and total effect coefficient.

Effects	Variable	The coefficient	Z-value	P-value
The direct effect	fin	0.0303	2.09	0.037
	iurb	0.2092	4.89	0.000
	purb	0.0241	0.49	0.625
	surb	0.0549	2.01	0.045
	fin*iurb	0.0964	3.90	0.000
	fin*purb	0.0505	2.51	0.012
	fin*surb	0.0370	2.13	0.033
The indirect effect	fin	0.1228	1.83	0.067
	iurb	0.4245	2.53	0.011
	purb	0.0695	2.33	0.742
	surb	0.2798	2.34	0.019
	fin*iurb	0.1779	1.71	0.087
	fin*purb	0.0343	0.38	0.703
	fin*surb	0.1966	2.61	0.009
The total effect	fin	0.0925	1.28	0.202
	iurb	0.2152	1.21	0.225
	purb	0.0935	0.43	0.669
	surb	0.2249	1.78	0.076
	fin*iurb	0.0815	0.73	0.464
	fin*purb	0.0849	0.87	0.386
	fin*surb	0.1596	2.02	0.044

Indirect effect shows that at 10% significance level, the change of the financial deepening and industrial and spatial urbanization in the surrounding areas will produce the negative space spillover effects to the change of HQ of its region, indicating that the capability of financial deepening, the industrial urbanization and spatial urbanization in a region get enhanced, the high quality and economic development in adjacent areas will receive a certain negative impact. This is because the competition effect of financial resources and industrial distribution among different regions will affect financial activities and industrial regional competition. The radiation effect and diffusion effect of regional financial deepening and industrial urbanization in China are affected by the imperfect financial structure and supervision institutions as well as the imperfect industrial layout and structure, which causes that we have no ideal to break through the limitation of distance to achieve a wider range of resource integration. The interaction coefficient of financial deepening, industry and population urbanization is positive, indicating that the interaction in this region is spatially heterogeneous and contributes to promoting high-quality economic development.

5. Conclusions and Suggestions

At present, the acceleration of financial deepening and the new urbanization have become an important way to promote the high-quality development of China's economy. The interaction between economic growth and structural changes in the new economic growth theory is helpful to build a bridge between financial deepening and new urbanization and high-quality economic

development, and effectively explain the mechanism of how financial deepening and new urbanization agglomeration works on high-quality economic development. Based on the theory of agglomeration economy and new economic growth, this paper constructs a multi-sector spatial analysis framework of the impact of financial deepening and new urbanization agglomeration on high-quality economic development. This paper conducts an empirical study be means of Spatial Durbin Model and panel data of 31 provinces in China from 2011 to 2020. The results show that: (1) from the perspective of spatial correlation, there is an obvious agglomeration phenomenon of high-quality economic development in space, and the development among provinces and cities is not balanced, even the gap is obvious, and the spillover effect and diffusion effect of high-quality economic development will radiate the development of surrounding areas. (2) From the perspective of the system, financial deepening, industrial urbanization, spatial urbanization and the interaction terms between population urbanization and financial deepening all have positive effects on high-quality economic development, among which industrial urbanization have the most significant effect. (3) Financial deepening, industrial urbanization and spatial urbanization have a spillover effect in space and the coefficient is negative, which means this spillover effect inhibits the high-quality economic development of other provinces; The indirect effect coefficient of the interaction term between financial deepening and industrial and spatial urbanization is positive, indicating that its interaction terms can promote high-quality economic development.

In order to better promote high-quality economic development, this paper puts forward the following suggestions based on the above research conclusions: (1) Taking the spatial agglomeration characteristics of high-quality economic development into consideration, high-quality economic development should break provincial boundaries and explore more regional plans that is similar to the integration of Beijing, Tianjin and Hebei, the Guangdong-Hong Kong-Macao Greater Bay Area and the Yangtze River Delta, so as to drive the common high-quality economic development of surrounding regions with the leadership of central provinces and cities and the similar interaction among regions; (2) The government should strengthen financial supervision, accelerate the deepening of the financial system, promote the development of industrial urbanization and the layout of spatial urbanization, so that we can take advantage of the direct effect of financial deepening and industrial and spatial urbanization itself to actively guide and constantly improve regional high-quality economic development; (3) Accelerate the development of the primary and secondary industries to the tertiary industry, and establish a long-term mechanism to promote industrial urbanization. On the whole, the development of industrial urbanization has the most significant impact on promoting high-quality economic development. At the same time, the slow improvement of technological innovation ability will in turn affect the upgrading of industrial structure. (4) The integrated development of financial deepening and population urbanization has a significant impact on the high-quality economic development. The effective integrated development between the two can promote the process of high-quality economic development. Through the guidance of government policies and the coordinated development of financial institutions, we can explore the optimal combination mode, matching degree, integrated development so as to promote high-quality economic development. High-quality economic development is influenced by the interaction of spatial urbanization, industrial urbanization and financial deepening. Due to the imbalanced development of spatial urbanization, industrial urbanization and financial deepening among different regions, it has produced spatial heterogeneity and competition effect. The government

should reasonably consider the correlation and heterogeneity of the development of different regions and guide the western and central regions through policy support, talent assistance, technical support and other ways to promote the balanced and high-quality economic development of each region.

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