The Spatial Spillover Effect of Regional Financial Resource Allocation Efficiency on the Quality of Economic Development

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Abstract— *In the general environment of slowing economic growth and the transformation of industrial structure, the efficiency of financial resource allocation plays an important role in formulating effective policies and promoting high-quality economic development. Based on the panel data of 11 provinces and cities in the Yangtze River Economic Belt from 2005 to 2018, the DEA is used to measure the efficiency of regional financial resource allocation, the entropy method is used to calculate the economic development quality index, and the spatial Dubin model is established to study and analyze the effect of regional financial resource allocation efficiency on the quality of economic growth. The impact mechanism and spillover effects on surrounding cities. The results found that: the quality of regional economic growth has spatial autocorrelation; the improvement of financial resource allocation efficiency has a significant positive effect on the quality of regional economic development; the optimization of regional financial resource allocation can bring significant positive spillover effects to neighboring regions.*

Keywords— *Financial resource allocation efficiency, economic growth quality, spatial Dubin model, spillover effect.*

I. INTRODUCTION

The Chinese economy has entered a stage of high-quality growth from a stage of rapid growth. High-quality economic development has gradually become the primary goal of economic development in various regions. With the development of financial supply-side reforms, the efficiency of financial resource allocation as an endogenous driving force for high-quality economic growth has triggered a series of new demands. At the same time, the regional coordinated development strategy proposed by the "Belt and Road" construction has brought about the acceleration of the inter-regional flow of production factors and the transfer of industrial space. Therefore, the demand for financial resources in various fields such as infrastructure, trade finance, and cross-regional and cross-border services has great potential. Economic growth is inseparable from financial support. To achieve the goal of high-quality economic development, it is necessary to thoroughly study the relationship between the efficiency of regional financial resource allocation and the quality of economic development.

Western developed countries started early in finance, with a sound financial system and a well-developed market economy. Therefore, they began to study the relationship between the efficiency of financial resource allocation and economic growth earlier. The relevant results have a certain reference effect for the current research on Chinese theories. At first, Western countries focused this kind of research on the relationship between financial development and economic growth. In [1], Goldsmith believes that financial development is the short-term and long-term changes in the financial structure. The empirical results show that the financial structure actively promotes economic growth. In [2], the empirical evidence of Beck and Levine pointed out that financial development is an important factor affecting

economic growth. In [3], the research of Christooulos and Tsionas showed that there is no short-term effect between the two, but only a long-term positive effect. Generally speaking, western scholars have not highlighted the impact of the efficiency of financial resource allocation, and only studied from the general direction of financial development.

Chinese scholars have found that there is a long-term balanced two-way relationship between the efficiency of financial resource allocation and economic growth. However, the impact of macro-financial efficiency on economic growth is not large enough, and China's financial efficiency still has a lot of room for improvement. Wang Jinhui and Lan Faqin found that economic growth has a "demand-induced" effect on macro-financial efficiency. Li Zheng believes that macro-financial efficiency is further refined into indicators such as savings rate and savings investment conversion rate. Resident deposit savings rate in macro-financial efficiency does not have a significant effect on economic growth. Savings investment conversion rate and capital use Efficiency has a significant positive effect on economic growth, while micro-financial efficiency has a significant positive correlation with economic growth., scholars such as Yang Youcai, Chen Xiaoling, and Lu Wenxiang also demonstrated the relationship between financial efficiency and economic growth from different angles. However, due to their differences in research perspectives, data selection, and research methods, their conclusions are obviously divergent. In recent years, high-quality economic development has also brought about an upsurge of industrial agglomeration. The high requirements for the distribution of financial resources in agglomeration regions make it very important to rationally allocate financial resources in the region so that the improvement of regional financial efficiency will drive regional economic development. In response to this problem, different scholars have chosen different regions to study the impact of financial efficiency on

economic development. However, the existing literature regards the research object as an independent individual in the research method, ignoring the spatial correlation between individuals, and therefore failed to find that financial resources are in Whether the inter-regional flow and the improvement of financial efficiency in the region have spillover effects on the economies of the surrounding provinces and cities, or whether the overall macro- and micro-financial system has been neglected in the measurement of financial resource efficiency. At the same time, some of them focused on purely studying the effect of the efficiency of financial resource allocation on the speed of economic development and ignored the current background of high-quality economic development. In view of this, this article will take the Yangtze River Economic Belt as an example and introduce the panel data of provinces and cities from 2005 to 2018 to verify the feasibility of the spatial Dubin model to study the spatial spillover effect of regional financial resource allocation efficiency on the quality of economic growth.

II. THE MEASUREMENT OF THE QUALITY OF ECONOMIC GROWTH AND THE EFFICIENCY OF FINANCIAL ALLOCATION

A. Economic Growth Quality Measurement

This article uses the "Regional Development and People's Livelihood Index (DLI)" indicator system issued by the State Council to measure the quality of regional development. This indicator system calculates the quality of regional economic growth from five dimensions: economic development, improvement of people's livelihood, social development, ecological construction, and technological innovation, and filters or transforms the data based on the availability of data. The resulting indicator system is more comprehensive. This paper adopts the objective entropy method to measure the quality of economic development. The entropy method can calculate the information entropy of each indicator. According to the amount of information provided by the indicator and the degree of variation, it determines the weight of the comprehensive evaluation index. Finally, it is corrected. Determine the final weight, and the obtained comprehensive index value is objective and credible.

Eliminate the different dimensions and dimensional units between different indicators, and standardize the data, so that the indicators are in the same order of magnitude. This article chooses the more commonly used range method. Since the entropy method needs to prevent the appearance of 0, this paper adopts the adjusted range method to solve the problem. The dimensionless processing formula is as follows:

- Positive indicators:
$$x'_{ijt} = \left[\frac{X_{ijt} - X^{ij}_{\min}}{X^{ij}_{max} - X^{ij}_{\min}} \right] \times 0.9 + 0.1$$

- Negative indicators:
$$x'_{ijt} = \left[\frac{X^{ij}_{\max} - X_{ijt}}{X^{ij}_{\max} - X^{ij}_{\min}} \right] \times 0.9 + 0.1$$

In the formula, i is a certain area, j is the index item, t is the year, x' is the dimensionless value, X is the observed value, and X_{ijmax} and X_{ijmin} are the maximum and minimum values of the same index respectively.

Determine the index weight:

$$y_{ijt} = x'_{ijt} / \sum_t \sum_i x'_{ijt}$$

Calculate the entropy value of the j index:

Where k>0, k=ln(rn),

$$e_j = -k \sum_e \sum_i y_{ij} \ln(y_{ijt})$$

Calculate the information utility value of the indicator:

$$g_j = 1 - e_j$$

Calculate the weight of each indicator:

$$w_j = g_j / \sum_j g_j$$

Calculate the comprehensive score of the economic quality of each province, city and city:

$$H_{it} = \sum_j (w_j x'_{ijt})$$

TABLE I. The efficiency of financial resource allocation in 11 provinces and cities in the Yangtze River Economic Belt from 2005 to 2018

Area	2005	2006	2007	2008	2009	2010	2011
Shanghai	0.999	0.964	0.943	0.903	0.870	0.707	0.683
Jiangsu	0.982	0.938	0.991	0.963	0.928	0.887	0.792
Zhejiang	0.986	0.999	0.930	0.916	0822	0.879	0.712
Anhui	0.844	0.728	0.854	0.799	0.693	0.645	0.672
Jiangxi	0.756	0.747	0.791	0.645	0.636	0.584	0.556
Hubei	0.798	0.756	0.798	0.869	0.729	0.627	0.564
Hunan	0.798	0.740	0.770	0.716	0.747	0.682	0.689
Chongqing	0.893	0.837	0.788	0.713	0.799	0.717	0.642
Sichuan	0.799	0.796	0.699	0.625	0.575	0.558	0.427
Yunnan	0.663	0.709	0.737	0.694	0.599	0.515	0.514
Guizhou	0.682	0.589	0.514	0.519	0.543	0.493	0.427

Continued							
Area	2012	2013	2014	2015	2016	2017	2018
Shanghai	0.685	0.75	0.831	0.877	0.977	0.954	0.966
Jiangsu	0.795	0.734	0.899	0.926	0.976	0.955	0.947
Zhejiang	0.799	0.777	0.890	0.893	0.983	0.976	0.976
Anhui	0.693	0.681	0.776	0.789	0.889	0.901	0.913
Jiangxi	0.624	0.696	0.761	0.752	0.713	0.768	0.784
Hubei	0.585	0.686	0.741	0.774	0.793	0.774	0.784
Hunan	0.51	0.575	0.641	0.676	0.736	0.768	0.794
Chongqing	0.743	0.747	0.822	0.891	0.872	0.858	0.894
Sichuan	0.517	0.561	0.573	0.699	0.725	0.765	0.784
Yunnan	0.582	0.545	0.671	0.663	0.685	0.697	0.692
Guizhou	0.492	0.515	0.589	0.602	0.642	0.674	0.686

B. Measurement of the Efficiency of Financial Allocation

Starting from the definition of financial resources, this paper selects financial efficiency measurement indicators from the aspects of funding sources, tool resources, organizational resources and guarantee resources, and uses the panel-based generalized data envelopment method (DEA) to measure the financial resources of 11 provinces and cities in the Yangtze River Economic Belt Configuration efficiency.

Data Envelopment Method (DEA) is a non-parametric method to measure efficiency based on input-output index data. Find the optimal solution for efficiency through linear programming. The application of this method can solve the problem of measuring the efficiency value of financial resource allocation in various provinces and cities from 2011 to 2018. Taking each year as a decision-making unit, each decision-making unit has five resource inputs such as credit and manpower. The added value of the financial industry and per capita GDP are two types. Output, construct the following model:

$$\min_{\theta,\lambda} \theta$$

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$$s.t - y_i + \sum_{\substack{j=1 \\ j \neq i}}^{I} \lambda_j y_j \geq 0$$

$$\theta x_i - \sum_{\substack{j=1 \\ j \neq i}}^{I} \lambda_j x_j \geq 0, \lambda \geq 0$$

TABLE II. Evaluation Index System of Financial Resource Allocation Efficiency

Indicator type	Variable name	Variable description
Investment	Credit resource input	Deposit balance of financial institutions in the region (10 thousand RMB)
	Human resources investment	Number of employees in the financial industry in the region (10,000 people)
	Local government funding	Amount of financial expenditure of the financial industry in the region (10 thousand RMB)
	Stock market capital investment	Total market value of stocks in the region (10 thousand RMB)
	Insurance industry capital investment	Insurance industry income value (10 thousand RMB)
Output	Financial industry value added	Contribution of the region's financial industry to the region's GDP (10 thousand RMB)
	GDP per capita	GDP per capita in the region (10 thousand RMB)

TABLE III. The efficiency of financial resource allocation in 11 provinces and cities in the Yangtze River Economic Belt from 2005 to 2018

Area	2005	2006	2007	2008	2009	2010	2011
Shanghai	0.6828	0.6906	0.6847	0.5529	0.6123	0.6244	0.5671
Jiangsu	0.4625	0.4364	0.4358	0.4411	0.4751	0.5305	0.5143
Zhejiang	0.6883	0.6798	0.6817	0.6722	0.7090	0.7165	0.6817
Anhui	0.3427	0.3567	0.3611	0.3338	0.3462	0.3356	0.3357
Jiangxi	0.2856	0.2972	0.2987	0.2479	0.2634	0.2657	0.2584
Hubei	0.3489	0.3576	0.3710	0.3588	0.3636	0.3626	0.3503
Hunan	0.2741	0.2759	0.2964	0.2899	0.3012	0.3319	0.3270
Chongqing	0.3331	0.3546	0.3824	0.3759	0.4087	0.4056	0.4598
Sichuan	0.3241	0.3672	0.4257	0.4069	0.3571	0.3464	0.3414
Yunnan	0.2143	0.2894	0.3232	0.2883	0.2875	0.2895	0.2637
Guizhou	0.3125	0.3347	0.3422	0.2843	0.3517	0.3638	0.2946

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Area	2012	2013	2014	2015	2016	2017	2018	综合
Shanghai	0.5103	0.5941	0.6311	0.6477	0.6332	0.6187	0.6003	0.6390
Jiangsu	0.4588	0.4723	0.5312	0.5178	0.5254	0.5331	0.5720	0.4741
Zhejiang	0.6498	0.6515	0.6574	0.6576	0.6548	0.6511	0.6522	0.6848
Anhui	0.3270	0.3424	0.3481	0.3520	0.3546	0.3578	0.3594	0.3416
Jiangxi	0.2559	0.2560	0.2587	0.2394	0.2348	0.2305	0.2316	0.2658
Hubei	0.3116	0.3253	0.3433	0.3128	0.3270	0.3113	0.3217	0.3477
Hunan	0.2907	0.2896	0.3389	0.3345	0.3358	0.3403	0.3457	0.3036
Chongqing	0.4058	0.3268	0.4168	0.4153	0.4210	0.4243	0.4250	0.4024
Sichuan	0.3570	0.3937	0.4427	0.4039	0.4094	0.4150	0.4148	0.3612
Yunnan	0.2553	0.2643	0.2230	0.1756	0.1450	0.1143	0.1137	0.2990
Guizhou	0.3007	0.4941	0.5311	0.4009	0.5187	0.4365	0.4568	0.3839

III. RESEARCH HYPOTHESIS

A. The efficiency of Financial Resource Allocation and the Quality of Economic Development

The process of regional finance affecting the quality of economic development can be simply summarized as: various financial activities affect the conversion rate of savings and investment in various regions, and savings and investment

determine whether a country or region's economy can maintain sustained growth. From a quantitative point of view, only the continuous increase in the total amount of savings and investment can ensure that the regional economic growth rate continues to increase. However, in the long run, only quantitative expansion of financial resources can ensure that rapid economic growth is insufficient and it is difficult to meet the needs of high-quality economic growth. When savings and investment are quantitatively expanded to a certain extent, they must be improved by improving the efficiency of financial resource allocation. Ensure the healthy development of the economy.

First of all, the regional financial mechanism of financial resources depends critically on the ability to transform part of liquid assets into productive assets, which ultimately has the effect of capital accumulation. The improvement of the efficiency of the allocation of financial resources is conducive to the promotion of the total marginal savings and the improvement of the financial risk management level of enterprises, rational risk aversion to further create accumulated regional capital and increase the total amount of regional economy.

Second, follow the regional capital-oriented mechanism. Only by improving the level of financial resource allocation can financial institutions expand in the region, financial talents can be reserved in the region, and high-end financial products can be popularized in the region at the same time, ensuring investment efficiency, and guiding capital to investments with high returns and great development potential. Realize the redistribution of social capital. This will help optimize and upgrade the industrial structure of the regional economy, and the financial activities that can be achieved become flexible and diverse, which will naturally improve the quality of regional economic development.

In summary, this article proposes hypothesis H1:

H1: Optimizing the efficiency of financial resource allocation is conducive to promoting the quality of economic development in the region.

B. The Spillover Effect of Financial Resource Allocation Efficiency and High-quality Economic Development

The spatial imbalance of the allocation of financial resources is mainly due to differences in the sources of capital accumulation, differences in capital allocation channels, unequal financial information between regions, and differences in asset returns. Therefore, the allocation direction of financial resources is determined by the operation of the regional market economy and the degree of economic development. For the allocation of financial resources, financial information facilities in regions with a high level of economic development, financial institutions and financial infrastructure are more complete, financial products are diversified, financial resource allocation and investment have more options, and higher resource allocation efficiency helps regions Diversify risks to complete the further accumulation of capital. On the contrary, due to the limited access to financial information in areas with low levels of economic development, resource allocation and investment options are

single, which may easily lead to capital loss or idleness. However, China's regional market economic development levels vary greatly, and there are also significant differences in financial development levels, resulting in the spatial heterogeneity of regional financial resource distribution.

With the rapid development of the socialist market economy, the market plays a decisive role in the allocation of financial resources. Together with the improvement of transportation infrastructure and effective government policy intervention, the accumulation and diffusion of financial resources has been accelerated. Increased economic relevance. The accelerated flow and exchange of resources such as financial funds and factors between the two regions will have an impact on the economic development of the two regions and radiate to surrounding cities. According to the "core-periphery" theory in regional economics, the accumulation of factors in core areas with high levels of economic development will continue to obtain financial elements such as funds from the peripheral areas. The core areas themselves have capital and higher resource allocation. Form a good cycle and further accumulate capital to improve the efficiency of financial resource allocation. However, due to the limited financial resources in the region, the core regions will inevitably seize the resources of the marginal regions, resulting in the convergence of regional development patterns and intensifying the competition for financial resources between regions. This is the negative spillover of financial resources. Therefore, under the condition of a certain amount of financial resources, financial resources in regions with scarce financial resources and low financial allocation efficiency due to the profitability of assets will flow to regions with rich resources and high efficiency in financial allocation, which is not conducive to the development of economically backward areas.

In summary, propose hypothesis H2:

H2: The improvement of the efficiency of the allocation of foreign financial resources will have a negative effect on the quality of local economic development.

IV. MODEL DESIGN AND VARIABLE DESCRIPTION

A. Model Design

Based on the above theoretical analysis, construct a measurement model: $\ln Eq = \lambda \ln F + \alpha \ln con + \varepsilon$

Among them, *lnEq* represents the quality of economic growth, *lnF* represents the efficiency of financial resource allocation, and *lncon* represents the control variable. E is the random error term, and λ and α are the explanatory variable coefficients.

In order to examine the spatial spillover effect of the efficiency of financial resource allocation on the quality of economic growth, the next step is to introduce a spatial weight vector to construct an empty measurement model:

$$y_{it} = \alpha + \sum_{j}^{n} \rho W_{ij} y_{jt} + \beta x_{it} + \sum_{j}^{n} \theta W_{ij} x_{jt} + c_i + \mu_t + v_{it} \quad (1)$$
$$v_{it} = \sum_{j}^{n} \lambda W_{ij} v_{jt} + \varepsilon_{it}$$

The establishment of a spatial weight matrix is the basis for spatial econometric analysis. Geographically weighted

regression can include economic development level adjacent, geographic adjacent and spatial distance. This article selects the most intuitive geographic adjacent factors in economic geography to measure the mutual influence of regions. Weight assignment rules. The binary adjacency matrix defines the spatial weight matrix:

$$W_{ij} = \begin{cases} 1 & i \text{ is adjacent to } j \\ 0 & i \text{ and } j \text{ are not adjacent} \end{cases} \quad (2)$$

When $\theta=0$ and $\lambda=0$, the formula (1) can be simplified into a spatial autoregressive model (SAR):

$$y_{it} = \alpha + \sum_{j}^{n} \rho W_{ij} y_{jt} + \beta x_{it} + c_i + \mu_t + v_{it} \quad (3)$$

When $\theta=0$ and $\rho=0$, the formula (1) can be simplified to the spatial error model (SEM):

$$y_{it} = \alpha + \beta x_{it} + c_i + \mu_t + v_{it}$$
$$v_{it} = \sum_{j}^{n} \lambda W_{ij} v_{jt} + \varepsilon_{it} \quad (4)$$

When $\lambda=0$, the formula (1) can be simplified to the spatial error model (SDM):

$$y_{it} = \alpha + \sum_{j}^{n} \rho W_{ij} y_{jt} + \beta x_{it} + \sum_{j}^{n} \theta W_{ij} x_{jt} + c_i + \mu_t + v_{it} \quad (5)$$

B. Model checking

In order to test whether the model can use the spatial measurement model, it is necessary to perform a global spatial autocorrelation test on the quality of regional economic growth. We usually choose the Moran index to test whether the space is related. Indicates the size of the correlation, *Moran's I* as the global spatial autocorrelation test index expression is:

$$I = \frac{n \sum_{i=1}^{n} \sum_{j=1}^{n} w_{ij} (x_{it} - \overline{x_t})(x_{jt} - \overline{x_t})}{\sum_{i=1}^{n} \sum_{j=1}^{n} w_{ij} \sum_{i=1}^{n} (x_{it} - \overline{x_t})^2} \quad (6)$$

Where *n* represents the number of regions, which is a spatial weight matrix. In the above formula, x_t represents the average value of *n* regions in time *t*, and x_i and x_j represent the location attributes of regions *i* and *j*, that is, the value of the economic growth quality index.

Moran's I in this formula is the global spatial autocorrelation index, and the index range is [-1,1]. If the value is positive, it is expressed as a positive spatial correlation. If the value is negative, it means negative spatial correlation, and if the value is 0, it means irrelevant. In order to test the significance of the *I* value, the *Z* test is generally used. When $Z > 1.96$, it indicates that *Moran's I* is significant:

$$Z = \frac{I - E[I]}{\sqrt{V[I]}} \quad (7)$$

Due to the introduction of the spatial lag term, when the model is selected as the SAR or SDM model, the explanatory variable coefficient will no longer be a direct effect on the explained variable. In order to accurately explain the model, the direct, indirect and total effects of the efficiency of financial resource allocation on the quality of economic growth must be measured, and the partial differential method

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proposed by LeSage and Pace is used to decompose and calculate the spatial effects.

C. Variable description

- Explained variable: The explained variable in this article is the comprehensive index of economic growth quality calculated by the selection entropy method in the previous section.
- Core explanatory variable: The core explanatory variable of this article is the efficiency of financial resource allocation measured by the generalized data envelopment method (DEM) in the previous article.
- Control variables: In order to control the four variables that may affect the quality of economic development, education, finance, industrial structure, and transportation, this article selects a commonly used variable as the control variable for each factor, namely:
  a) Technological innovation degree (T) . Select the ratio of the number of patent applications granted in each region to the total number of patent applications granted in the country as an indicator to measure the level of innovation in a region.
  b) Government fiscal policy (G). The ratio of fiscal expenditure to GDP measures the intensity of policy control.
  c) Regional industrial structure (I). According to the theory of industrial development, economic development will be accompanied by the adjustment of industrial structure, and the continuous increase in the proportion of the added value of the tertiary industry is the result of continuous optimization of the industrial structure. Select the proportion of tertiary industry in GDP.
  d) Infrastructure construction level (H). The highway mileage is used to measure the level of regional infrastructure construction.

V. EMPIRICAL ANALYSIS

A. Data Source and Processing

This paper selects 11 provinces and cities in the Yangtze River Basin as the research sample, and the time span is from 2005 to 2018. The data mainly comes from the data collection and calculation processing of the statistical yearbooks and financial yearbooks of various provinces and cities. The missing data of individual provinces and cities are interpolated. Complete, the descriptive statistics of each variable are shown in Table 4.

TABLE IV. Descriptive statistics of variables

Variable	Number of observations	Mean	Standard deviation	Minimum	Maxmum
Eq	132	0.547	0.103	0.329	0.775
F	132	0.94	0.445	0.334	2.057
T	132	4.641	1.384	2.215	7.992
G	132	1.016	0.306	0.332	1.511
I	132	0.112	0.021	0.069	0.167
H	132	0.267	0.071	0.175	0.428

B. Choice of Space Measurement

According to the measured economic growth quality, the global spatial autocorrelation test is performed to determine whether the spatial measurement model can be used. The results of the global spatial autocorrelation test of the economic growth quality index are shown in Table 5.

It can be seen that the economic quality inspection indicators *Moran's I* of the 11 provinces and cities in the Yangtze River Economic Belt have all passed the significance level test and the numbers are increasing year by year, indicating that with the rapid economic development, the spatial correlation of economic quality in various regions along the Yangtze River is increasing year by year. And there is a significant positive correlation.

We can initially judge that the efficiency of financial resource allocation may have a direct impact on the quality of the regional economy, and at the same time this impact will have spillover effects on surrounding areas. The Husman test is used to determine whether to choose fixed effects. The P value of the test statistics is 0.0004<0.001, rejecting the null hypothesis. Therefore, this article should choose the fixed effects model for empirical analysis. Next, when selecting the spatial measurement model type, the spatial lag model (SLM) and the spatial error model (SEM) are tested by LM test. The results are shown in Table 6:

TABLE V. Descriptive statistics of variables

Year	2005	2006	2007	2008	2009
Moran's I	0.12	0.13	0.15	0.21	0.22
	(2.03)	(2.18)	(2.89)	(3.75)	(2.15)
Year	2010	2011	2012	2013	2014
Moran's I	0.24	0.23	0.23	0.33	0.31
	(2.08)	(3.67)	(3.97)	(4.96)	(4.67)
Year	2015	2016	2017	2018	
Moran's I	0.35	0.38	0.41	0.45	
	(5.84)	(6.55)	(6.78)	(6.54)	

TABLE VI. Model selection test results

Testing method	Statistics	P
LM-Lag	70.4551	0.00
Robust LM-Lag	145.6782	0.00
LM-Error	225.6734	0.00
Robust LM-Error	134.2379	0.00

The results showed that *LM-lag* and Robust *LM-lag* were 70.4551 (*P*=0) and 145.6782 (*P*=0), while *LM-Error* and *Robust LM-Error* were 225.6734 (*P*=0) and 134.2379 (P=0), respectively, Because the test index values of both pass the test and the *P* is 0, it means that the spatial lag model (SLM) and the spatial error model (SEM) are both suitable. Therefore, in order to include the statistical information reflected by both, we Choose to build a more robust spatial Dubin model (SDM).

C. Empirical Results and Analysis

a. Analysis of regression results based on the spatial panel Dubin model

Using sata14.0 software to analyze the spatial spillover effect of the efficiency of financial resource allocation on the quality of economic development, the results are shown in Table 8 below. To enhance the robustness of the model, we

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compare the results of the three models and make a comparative analysis with the traditional OLS model. Among them, *W** variable name represents the space lag coefficient of the explanatory variable and the control variable, and *W*dep*. represents the space lag coefficient of the explained variable. From the comparison of the three models, it can be seen that the fitting coefficient of the spatial Doberman model is the largest, which shows that the choice of constructing the spatial Doberman model in this paper is reasonable.

TABLE VII. Comparison of model regression results

Variable	OLS	SLM	SEM	SDM
lnF	0.214	0.105**	0.236***	0.628***
lnT	0.036	-0.035**	-0.003	-0.234***
lnG	0.114	-0.174*	-0.237**	-0.157***
lnI	0.314***	0.124**	0.256***	-0.143***
lnH	0.035	-0.077	0.155*	0.348***
W* lnF	——	——	——	0.234***
W* lnO	——	——	——	0.241***
W* lnG	——	——	——	0.158**
W* lnI	——	——	——	-0.645***
W* lnH	——	——	——	0.537***
Spatial error term or lag term	——	0.640*	-0.166	0.247***
R^2	0.699	0.694	0.332	0.929
Log-L	——	35.932	29.345	108.364

Note: *, **, *** indicate significant at the levels of 10%, 5%, and 1%, respectively.

The regression results show that under the ordinary panel regression, the efficiency of financial resource allocation is positively correlated with economic quality, and the significance level test is not passed. Other control variables have a positive impact on the quality of economic development, but the positive impact of education level, fiscal expenditure and infrastructure construction level on economic development is not significant, only the industrial structure has a significant positive impact on the quality of economic development. After the introduction of spatial weights, the significance of the variables of financial resource allocation efficiency has changed from insignificant to significant, indicating that the efficiency of financial resource allocation affects economic quality through spatial factors. The coefficient of the spatial lag term of the efficiency of financial resource allocation passed the 1% significance level test, and the fitting coefficient of the spatial Dubin model from the fitting coefficients of the four models reached 0.929, which is higher than other models, indicating that Dubin The model has the best fitting effect. The economic quality of a certain area in the Yangtze River Economic Belt will be affected by the efficiency of the allocation of financial resources in the surrounding areas.

b. Analysis of decomposition results of spatial spillover effects

The estimated coefficient of the basic panel model can represent the elastic impact of the efficiency of financial resource allocation on the quality of economic growth, but the estimated coefficient of the spatial Dubin model cannot. Therefore, to further explain the spatial effect of the efficiency of financial resource allocation on the quality of economic growth, we need to The effect is broken down into direct and indirect effects and the total effect is calculated. The results of direct utility, introduction utility and total utility of the impact

of regional financial resource allocation efficiency on economic quality are shown in Table 8:

TABLE VIII. Decomposition of the Effect of Regional Financial Resource Allocation Efficiency on Economic Quality

Variable	lnF	lnT	lnG	lnI	lnH
Direct utility	0.961***	0.187*	0.228***	0.935***	0.290***
Indirect utility	-1.692**	0.419**	0.979***	-0.196	0.509**
Total utility	0.731***	0.606*	1.208***	0.139**	0.799**

Note: *, **, *** indicate significant at the levels of 10%, 5%, and 1%, respectively.

It can be seen from Table 8 that the direct effect of the efficiency of financial resource allocation is positive, and it has passed the 5% significance level test, indicating that the efficiency of financial resource allocation has a significant role in promoting the quality of local economic development, and the efficiency of financial resource allocation increases by 1 %, the quality of local economic development increased by 0.961%. This is in line with China's national conditions. In the process of high-quality financial development, as the contribution of the tertiary industry to the quality of economic development increases, the quality of financial resource supply is improved to promote the quality of economic development, promote resource integration and industrial capital agglomeration, and achieve Optimizing the allocation and optimization of financial resources, and the effective transfer of capital from labor-intensive to capital-intensive and knowledge-intensive, is conducive to better and faster investment of financial capital in industries that are conducive to the improvement of the quality of economic development. This confirms the previous hypothesis based on theoretical research: Optimizing the efficiency of financial resource allocation is conducive to promoting the quality of economic development in the region. The indirect effect of the efficiency of financial resource allocation on the quality of economic development is negative, and it has passed the 5% significance level test, indicating that the efficiency of financial resource allocation has a significant inhibitory effect on the economic development between provinces. The efficiency of local financial resource allocation is always An increase of 1% will reduce the quality of economic development in the surrounding area by 1.692%. This shows that the flow of resources between regions, including financial resources, is a common phenomenon under the conditions of a market economy, and this phenomenon has led to differences in the efficiency of the allocation of financial resources in various regions. Based on the assumption of a certain total amount of resources, when a region's financial resources have a high level of allocation, it will obviously further weaken and reduce the allocation efficiency of financial resources in the surrounding area, thus having a negative impact on the economic development of the surrounding area.

Analyze direct effects, indirect effects and total effects from the perspective of control variables. The direct effect of the level of technological innovation on the level of economic development is positive but the significance level test is not passed, indicating that technological innovation is not sufficient to drive local economic development. Judging from the status quo of technological innovation, China's

technological innovation is still dominated by imitation, lacking core technology, lack of independent intellectual property rights, and lack of world-renowned brands. These "three deficiencies" can no longer generate the power to drive China's economic development. To this end, it is necessary to accelerate the reform of the scientific and technological system, strengthen digestion, absorption and re-innovation, and promote the development of high-tech and high value-added industries. The indirect effect is positive and can pass the 5% significance test, indicating that technological innovation in neighboring regions can drive the economic development of the region to a certain extent. High-tech products in neighboring regions can easily be introduced into neighboring provinces and cities to drive technological innovation and industrial agglomeration in the entire region, thereby promoting the coordinated economic development of the region. The overall effect of the level of technological innovation on the quality of economic development is positive and can pass the 10% significance level, which enlightens us to improve the quality of technological innovation and promote regional economic prosperity through technological innovation.

The direct and indirect effects and total effects of government fiscal policies on the quality of economic development are all positive and pass the 1% significance test, indicating that local governments are closely following the correct policy guidelines of the central government, and the coordinated development of various regions under the intervention of regional economic policies Conducive to the improvement of the quality of economic development in various regions. In addition, the level of industrial structure development has an impact of 0.739 on the quality of local economic development and has passed the 1% significance test, indicating that the optimization and upgrading of industrial structure has a profound impact on the quality of economic development. The current state of China's industrial structure is that the growth of the primary industry is slow. The secondary and tertiary industries are growing rapidly, and the primary and secondary industries are transforming into the tertiary industries. The tertiary industries are breaking through the single development pattern dominated by commerce and catering. The industries of finance, insurance, R&D, and consulting are developing rapidly, so they have a greater impact on economic quality. Large, but the indirect effect is negative and not significant. It can be seen that the industrial structure of each region is adapted to local conditions, and changes in the local industrial structure have limited impact on the economic development of other regions. Finally, from the perspective of regional infrastructure construction, the direct effect of infrastructure construction level on the quality of economic development is 0.29, and the indirect effect is 0.509, and it has passed the 1% significance level test, indicating that the completeness of the transportation infrastructure has realized the interconnection of surrounding areas. , Reducing the cost of trade and transportation can also promote the improvement of economic quality.

VI. CONCLUSION AND SUGGESTION

This paper uses the 2005-2018 panel data of 11 provinces and cities in the Yangtze River Economic Belt to study the spillover effect of the efficiency of financial resource allocation in the Yangtze River Basin on the quality of economic growth. First, the data envelopment method (DEA) was used to measure the allocation efficiency of the existing financial resources in various provinces and cities, and the entropy weight method was used to calculate the economic development quality index of each province and municipality, and then the spatial Dubin model with the best model effect was compared and selected. The spillover effect of the efficiency of financial resource allocation on the quality of economic growth. The results show that the improvement of the efficiency of local financial resource allocation is conducive to the improvement of the quality of local economic development, but it has a negative effect on the quality of economic development of the surrounding areas. Analyzed from the perspective of other control variables, the level of technological innovation is not significant to the quality of economic growth, and the fiscal policy, the level of industrial structure development and infrastructure construction all have a significant effect on the quality of economic growth. Based on this conclusion, this article puts forward the following suggestions:

First, focus on improving the efficiency of regional financial resource allocation to promote the quality of economic development. The improvement of the quality of economic development driven by financial quality and the improvement of the ability of financial services to the real economy need to focus on quality rather than quantity. While broadening financing channels and optimizing the credit structure, it is necessary to strengthen regional coordination and cooperation.

Second, strengthen inter-regional system development, and fully consider the external influence of the allocation of financial resources in the region to other regions. That is, while optimizing the efficiency of local financial resource allocation and improving the quality of local economic development, it is necessary to consider spillover effects to other regions. First of all, this requires the support of the higher-level government. The policy formulation takes into account the macro level, strengthens the regional economic coordination mechanism, breaks administrative barriers, and avoids fighting in each region. Through the coordination of policies, various regions are mobilized to cooperate with each other to reduce this unfavorable spillover effect, and guide the allocation of regional financial resources, so that resources can complement each other and be fully utilized. Secondly, it is necessary to unite the provinces and cities in the region to develop together to attract high-end financial resources outside the region, so that financial resources can be concentrated in the region, in order to achieve the purpose of enhancing the economic strength of the region.

Third, improve the initial uneven distribution of financial resources. Optimize the efficiency of financial resource allocation in combination with the characteristics and current situation of economic development in various regions. For

example, the central and western regions, which are the inheritance of economically developed and underdeveloped regions, have a vast economic hinterland and strategic depth, as well as resource endowments, factor costs, and geographic location. It has obvious inherent advantages and favorable conditions. Therefore, it is necessary to give priority to guiding the central and western regions to conform to economic development trends and follow the objective laws of development to actively meet the requirements of supply-side reforms, so as to guide their capital flow to innovative industries suitable for local development and those that can bring greater economic benefits and improve people's lives. industry. In addition, in order to optimize the allocation of financial resources and promote economic development, it is not only a quantitative improvement, but also a qualitative leap. The central and western regions need to be encouraged to continue to invest more financial funds in productive and living service industries.

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