Research on the Relationship between the Developments of Logistics Industry and Economic Growth in China

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Abstract: Logistics as a composite service industry, and has close ties to the economic growth in promoting industrial structure adjustment and transformation of the pattern of economic development and strengthen the competitive power of the national economy plays an important role;In order to realize the synchronous development of economic growth and logistics industry, it is of great strategic and practical significance to study the relationship between the development of logistics industry and economic growth. This paper analyzes the relationship between the development of logistics industry and economic growth by using co-integration test and error correction model from the perspective of supply promotion and demand pulling.It is found that there is a balance between the long-term and short-term logistics development and economic growth. Finally, some policy Suggestions are put forward for the development of logistics industry in China and the development of modern logistics industry.

Introduction

The logistics industry, as a basic industry, effectively integrates the original fragmented links of storage, transportation and distribution, and promotes the rapid development of the current national economy.From the perspective of macro-economy, modern logistics is not only the product of new social specialization, but also has become an advanced mode of economic operation.The logistics industry is regarded as the "lubricant" and "propellant" of economic development, which is a powerful driving force for economic development[1].Economic development and the development of logistics industry are the relationship of mutual promotion, that is, the rapid development of the logistics industry promotes economic development and the rapid economic growth can also drive the improvement of the development level of the logistics industry.From the current situation analysis, the study of the theory of the logistics industry development and economic growth relationship behind the development of the practice, thus increasing the theory study of the interaction mechanism between the two can better realize the sound and rapid development of economy and logistics industry[2].

Data and Methodology

Index selection and data collection.

Supply indicators: select logistics network mileage as indicators of description logistics supply capacity, quantifiable logistics network, logistics network mileage in China statistical yearbook on five kinds of mode of transportation, but considering the availability and effectiveness of data, only consider the highway, railway and water transportation mode of transportation of the three main simple sum calculation logistics network mileage, measure the development of the logistics network[3].In this paper, the logistics network mileage is set as WWL.

Development level index: development level index includes a very broad content, but the transportation, warehousing and telecommunication industry in our country is to support the

industry, so the selection of transportation, warehousing and telecommunication industry output value on behalf of the level of logistics industry development[6], logistics industry output value, the logistics industry output value is set to WLC.

Demand indicators: logistics demand refers to the social demand for logistics links, the demand is on the basis of payment ability, this paper adopts the freight turnover reflect the index, setting freight turnover as HYL.

Economic growth indicators: economic growth, it is embodied in the "quantity" is the national output continues to grow, also can consider to the "quality" rise, namely includes not only the speed of economic growth, stable growth and as a result, and also specifically include average of one country or region of the people's quality of life such as education level, health standards, etc., considering the availability and effectiveness of data, selection of gross domestic product (GDP) as the index of economic growth[7].

Research methods

This paper combines the qualitative analysis and quantitative analysis of the two analysis methods, using cointegration test study of long-term equilibrium relationship between logistics development and economic and the use of error correction model to study the short-term relationship between logistics development and economic growth in China

Empirical Analysis

To study relationship between logistics development and economic growth in China, as a result of this article selects the data of index are of time series data, this article USES the time series analysis, this paper USES cointegration test to explore the logistics industry development and the existence of long-term equilibrium relationship between economic growth, the series stationarity test, cointegration test before do because cointegration test sequence with order sheet is the premise of the whole, after inspection residual error correction model describing stationarity do short-term relationship of logistics industry and economic growth[4].

Sequence stationarity test

In a time series data, the periodic change is strictly eliminated, and the mean and variance are not changed by the system (no trend), and the time series is considered to be stable.Therefore, before the analysis of the relationship between logistics industry and economic growth, it is necessary to check the stability of the time series before making the next analysis. In order to eliminate the heteroscedasticity of data, this paper takes logarithmic processing of raw data first[5]. In this paper, Eviews7.2 of econometric software is used to test the stability of China's logistics industry development indicators and economic growth indicators. The results are as follows:

Table1：stability test results of indicators.

variable	Inspection form	ADF test statistics	5% critical value	conclusion
lnGDP	(C, T, 5)	2.46177	3.7332	Not smooth
dlnGDP	(C, T, 3)	7.42119	3.7332	smooth
lnWWL	(C, T, 5)	1.67971	3.67362	Not smooth
dlnWWL	(C, T, 0)	6.49736	3.71048	smooth
lnHYZ	(C, T, 5)	1.40194	3.67362	Not smooth
dlnHYZ	(C, T, 0)	6.30695	3.71048	smooth
lnWLC	(C, T, 5)	3.67362	1.62655	Not smooth
dlnWLC	(C, T, 3)	5.02686	3.7332	smooth

From the test results indicate: under 5% significance level, the critical value of four variables are less than the ADF statistics, it shows the four time series under the significance level of 5% is not smooth.Further to all variables take after the first order difference, found lnGDP, lnWWL, lnHYZ, lnWLC threshold under 5% significance level is greater than the ADF statistics, so after first order difference of four variables are stationary series, shows that four variables are with the order list.

Co-integration analysis

Cointegration refers to the fact that although a single time series is not stable, the linear combination of two or more non-stationary time series is stable.In this paper, EG test method is used to verify the co-integration of time series data.

The first step: to carry out the co-integration test, the coefficient items are all passed the t-test, and all are significant;R2=0.997185, adjusted R.2For 0.996657, the fitting effect of the model is good.

The second step: the residual ADF test items, test of residual error sequence, the test results indicate: the residual sequence of ADF statistics threshold value is less than 0.01 significant level, shows that residual error sequence is stationary time series.Thus, there is a long - term equilibrium relationship between gross domestic product LNGDP and logistics network mileage LNWWL, freight turnover LNHYZ and logistics output value LNWLC.

Error correction model

Can be concluded from the above analysis on behalf of the economic growth indicators LNGDP and on behalf of the logistics industry index LNWWL, there is a cointegration relationship between LNWLC and LNHYZ, in order to describe the relationship between the short-term logistics development and economic growth in China, with the Eviewss7.2 correlation coefficient, between LNGDP and LNWWL, LNWLC and LNHYZ establish error correction model (ECM).

Table2： error correction model results.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.05271	0.01372	3.84216	0.0018
DLNWWL	-0.20571	0.05821	-3.53418	0.0033
DLNHYZ	0.33756	0.08772	3.84835	0.0018
DLNWLC	0.44925	0.13595	3.30453	0.0052
E(-1)	-0.73241	0.17113	-4.27973	0.0008
R-squared	0.81525	Mean dependent var		0.11874
Adjusted R-squared	0.76247	S.D. dependent var		0.04334
S.E. of regression	0.02112	Akaike info criterion		-4.65623
Sum squared resid	0.00625	Schwarz criterion		-4.40769
Log likelihood	49.23414	Hannan-Quinn criter.		-4.61416
F-statistic	15.44468	Durbin-Watson stat		1.24034
Prob(F-statistic)	0.00005			

According to the error correction model, the regression equation is as follows:

DLNGDP= 0.052-0.206 DLNWWL + 0.449DLNWLC + 0.338 dlnhyz-0.732 ecm$_{t-1}$.

    T =(3.842)   (-3.534)   (3.305)   (3.848)   (-4.280)

    R square=Adjust R square = 0.8152   F = 15.44468

The model coefficients are all passed the t test, and the coefficients are all significant and R.2And adjust the R2It is close to 1, the model fitting effect is good, and the symbol of the variable coefficient in the error correction model is consistent with the symbol of the long-term equilibrium relation variable, and the error correction term ECM.t-1The coefficient is negative, which conforms to the reverse correction mechanism.WWL mileage and error correction model shows that logistics

network has reverse revised GDP, logistics network range that the longer the transport routes, in the higher and lower gross domestic product (GDP);The WLC and freight turnover of the logistics industry have a positive impact on GDP.For every 1% increase in the logistics network, the GDP of GDP declined by 20.6%.The output value of the logistics industry increased by 1% and the GDP of GDP increased by 44.9%.Freight turnover of HYZ increased by 1% and GDP increased by 33.8%. In addition, because of the short-term adjustment coefficient is significantly, and it suggests that GDP each year and logistics network mileage WWL, freight turnover HYZ and logistics industry output value of WLC deviation of 73.2% has been fixed.

Conclusion and Policy Implications

The main conclusions of this paper are as follows:

(1) according to the model, there is a cointegration relationship between the development index of logistics industry and GDP, that is, there is a long-term equilibrium relationship;

(2) establish the error correction model to describe the short-term relationship between the development index of logistics industry and GDP.Logistics industry production value and the freight turnover and gross domestic product are related, to compare the coefficient of error correction model can be concluded that: in the three indicators of the logistics industry, logistics industry output value impact on gross domestic product (GDP) is the largest.

(3) Suggestions on promoting the development of China's logistics industry.

Through the above study on the relationship between the development of logistics industry and the economic growth in China, as well as the present problems in the development of logistics industry in our country, put forward the following Suggestions and countermeasures to promote the logistics industry development of our country:

1. Formulate development plan according to the actual situation.

The government should plan the layout of the logistics industry scientifically.Clear industrial policy guidance, set high standards of logistics system of relevant laws and regulations and market regulation mechanism, create a good macro environment for the logistics industry development, efforts to achieve regional logistics resources reasonable use and advantages of restructuring0.

2. Improve logistics informatization level and logistics efficiency.

Using big data to build an information exchange platform exclusively for logistics industry. Use big data network to make the peak of logistics demand normal operation. Logistics links mainly include warehousing, procurement, distribution, etc., reducing the internal share of each logistics link, and ultimately expecting to achieve efficient utilization of each logistics link.

3. Change logistics concept and value logistics development.

The third party logistics is from the supplier and the demand of the third party to provide complete logistics services, countries should integrate logistics business, to strengthen the fostering of modern logistics enterprises, encourage large build logistics group.Leading the industry with significant influence of large logistics groups to play a demonstration role.

4. Strong intellectual support to promote the rapid development of the industry.

Drawing on the successful experience of abroad about the logistics industry, to make the rapid development of modern logistics industry, first of all, we should strengthen the contact with the national various universities, in view of the various logistics link to the training of specialists in the field of logistics; Secondly, we should combine the foreign experience with the domestic actual situation in combination with the local characteristics of our country, and make innovations on the basis of foreign experience to make local special plans.

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