

Relationship Between Transport and Economic Development in Hubei Province

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Abstract: The essay introduces the present situation of transport investment and economic development of Hubei Province, from macroscopic and microscopic analysis of highway traffic impact on economic development, which points out highway transportation not only promote regional economic output but also to strengthen foreign economic ties, adjust industrial structure and promote urbanization. By constructing econometric model which concluded that: there is a significant relationship between the highway traffic in Hubei Province and economic development. This essay gives a suggestion of rationally programming the highway transportation network in Hubei Province and improving the level of transportation management, harmonizing development of economy under making full use of features of regional resources.

Keywords: Hubei province, transportation, economic, relationship

I INTRODUCTION

Hubei Province as the important economic province and transportation hub which is situated in southern China, the middle and lower reaches of Yangtze River. The total economic output of Hubei Province is at the forefront of the central and western provinces, but it is extremely unbalanced. Wuhan, a large city, occupies half of the province's GDP with a 35% share, and is a still poverty-stricken area in northwest and southwest of Hubei Province. There is a linkage relations between transportation and regional economic, Hubei Province highway network has been basically completed meanwhile regional economic developing, regional transportation construction will toward its goal which convenient for people, expedient to logistics. However, the imbalance of economic development in the region reflects the traffic development imbalance, part of the economically backward regions still faces the situation of strained transportation and poor transportation infrastructure. How to treat and solve this situation correctly is the urgent problem that needs to be solved in the process of economic development in Hubei.

Based on the collection and collation of related literatures on highway traffic and economic development, the research on highway traffic and economic development in Hubei Province, especially the research on quantitative aspects is not very fruitful. As Ye Liang [1], he thinks that the development of road network construction has different characteristics at different times, in the early

stage, it lags behind economic development demand. There is a positive correlation between traffic volume and economic development. LiuShenglong [2] argues that transportation investment has dramatically positive promoting role on China's economic growth, the differentiation of geographic position and the condition of transport investment play an important role in regional economic development gap in China. Han Biao [3] holds the opinion that in a particular transport system, economic development cannot be divorced from the development of transport, and must be developed with transport. The accumulation of further expansion also forces the emergence and development of new transport modes. Qin Chunya considers that strengthening the construction of highway plays a crucial part in optimizing the industrial structure and increasing the income of economy, therefore, only constantly strengthening regional highway construction by government department can promote the regional coordinated development Hu Xiaoling believes it is obvious to see that the development of highway traffic promotes the development of regional economic, but at the same time to speed up the integration of urban and rural development, optimizing the allocation of resources rationally, highway traffic development will inevitably bring some destruction to land, forest resources, thus emphasizes the importance of environmental protection [4, 5].

Adam Smith[6] suggests that economic efficiency comes from the division of labor, but the division of labor is restricted by the market scope and transportation conditions. Benjamin Franklin [7] put

forward the engineering cost –on the basis of economy calculation theory, on the influence of the basic theory and the need of social development at that time, the methods lay particular importance on analysis micro benefits in the form of monetary unit, not the effect of the monetization of project construction Ahmed [8] once said "the lack of transport facilities is one of the main reasons for economic development in many developing countries." The lack of transport facilities hinder the spread of modern technology, the input of agricultural production, links between agriculture and other sectors of the economy through the market. Banister [9]. Whether the traffic development itself can promote economic growth or not and its contribution to the economic growth effect is depends on different areas. Berechmanetal [10] whose empirical results to America show that from different level transportation infrastructure spatial spillover effect is not consistent, in the state, county, and city these three different levels ,their spatial spillover effects are 0.37, 0.34 and -0.01 respectively.

II. THE RELATIONSHIP BETWEEN HIGHWAY TRANSPORTATION AND ECONOMIC DEVELOPMENT IN HUBEI PROVINCE

A *The Present Situation of Highway Traffic in Hubei Province*

Since 2011-2015, in the country, with the

construction of Hubei province transportation system has obtained the remarkable result, not only expand the transport network, coverage, but also improved a lot in management and service level. By the end of 2015, the total traffic network of the whole province was about 272,000 km (excluding civil aviation routes and urban roads), and the density of integrated transport network reached 146.3 km / 100 square kilometers. Among them, the total mileage of highway traffic is 253,000 km (6204 kilometers of expressway). From 1995 to 2015, the length of traffic routes in Hubei province was basically increasing.

B *The Present Situation of Economic Development in Hubei Province*

In 2014, the GDP of Hubei province was 2736.704 billion yuan, an increase of 9.7 percent over the previous year. Among them: the first industry increased by 317.689 billion yuan, an increase of 4.8%; The second industry increased by 12,840.22 billion yuan, up 10.1 percent. The tertiary industry increased by 11349.93 billion yuan, up 10.5 percent. The tertiary industry structure is 11.6: 46.9: 41.5. The total fiscal revenue for the whole year was 409.58 billion yuan, an increase of 14.8% over the previous year, with the local public budget revenue of 256.69 billion yuan, up 17.1%. In the local public budget revenue, the tax revenue was 187.311 billion yuan, an increase of 16.7%. Fiscal expenditure for the whole year was 5.885 billion yuan, up 14.6 percent.

Table 1. Length of transport routes in Hubei Province from 1995 to 2015 (Unit: km)

Years	1995	2000	2005	2010	2011	2012	2013	2014	2015
Highway traffic	48728	57850	91131	206212	212746	218151	226912	236932	252980
Grade highway	30910	48062	76075	187812	196452	203145	212893	224184	240936
highway	487	569	1649	3674	4006	4006	4333	5096	6204
A highway	641	611	1092	2210	2395	2515	2789	3344	5231
Secondary highway	4967	7911	15225	16159	16852	17233	17576	18033	21555

Table 2. GDP in Hubei Province from 2006 to 2015.

Years	GDP (Billion Yuan)	Primary industry	Secondary industry	Tertiary industry	Rer capita GDP (Yuan)
2006	7617.47	1140.41	3365.08	3111.98	13360
2007	9333.4	1378	4143.06	3812.34	16386
2008	11328.92	1780	5082.07	4466.85	19858
2009	12961.1	1795.9	6038.08	5127.12	22677
2010	15967.61	2147	7767.24	6053.37	27906
2011	19632.26	2569.3	9815.94	7247.02	34197.27
2012	22250.45	2848.77	11193.1	8208.58	38572.33
2013	24791.83	3030.27	11786.64	9974.92	42825.76
2014	27379.22	3176.89	12852.4	11349.93	47144.6
2015	29550.19	3309.84	13503.56	12736.79	50653.85

III. AN EMPIRICAL ANALYSIS OF THE RELATIONSHIP BETWEEN HIGHWAY TRANSPORTATION AND ECONOMIC DEVELOPMENT IN HUBEI PROVINCE

Through the above study that showed a trend of steady growth in Hubei province highway traffic development, and economy of Hubei province is also in a state of steady development, therefore, the basic condition of the highway traffic and economic development of Hubei province roughly related, but doesn't give a definite correlation, the following will take rigorous empirical.

A Variable Selection and Modeling

In order to analyze the impact of road traffic on the economy of Hubei Province, it is mainly considered from the aspects of regional GDP, and the impact of highway traffic is investigated. The general definition of the model is:

$$Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t}$$

Among t is the year; β_i ($i = 0, 1, 2, 3$) is the parameter to be estimated; Y for the regional GDP; X_1 for road freight turnover, X_2 for the level of highway mileage, X_3 for the road passenger turnover. Road freight turnover X_1 , grade highway mileage X_2 and road passenger turnover X_3 represents the level of road traffic development. According to the existing study, it is expected that Y is positively correlated with X_1 , X_2 and X_3 .

B Analysis of Regression Results

The results of the regression analysis are as follows. There are four parts: the first part is the result of regression statistics including the multiple correlation coefficient, the coefficient of succession R^2 , the correlation coefficient after adjustment, the standard deviation of regression and the number of samples. The second part is the results of the variance analysis including interpretable deviations, residuals, total deviations and their degrees of freedom, and the calculated F statistic and corresponding significant levels. The third part is the estimate of the intercept and slope of the regression equation and their estimated standard error, the t statistic size of the bilateral smear probability value, and the upper and lower bounds of the estimated value. According to the results of these parts, we can see the regression equation:

$$Y_t = -29177.1 - 1.19891X_{1t} + 0.423645X_{2t} - 0.14009X_{3t}$$

The corrected R^2 is 0.976911234, indicating that the variables in the model jointly explain the 97.69% change in Y , which is a good result, $F = 127.9333212 > F_{0.05}(3,6) = 19.37$, indicating that the overall regression equation is significant.

$t_1 = 3.201836446 > t_{0.025,8} = 2.306$, that X_1 has a significant effect on Y_1 ;

$t_2 = 0.917847836 = 0.9213157 < t_{0.025,8} = 2.306$, that X_2 has no significant effect on Y_1 ;

$t_3 = 1.195673401 < t_{0.025,8} = 2.306$, that X_3 has no significant effect on Y_1 . Thus, when establishing the regression model, X_2 and X_3 can not enter the model as explanatory variables.

In the relationship between road freight turnover Y and grade highway mileage X , the corrected R^2 is 0.933472, indicating that the variables in the model jointly explain the 93.35% change in Y , which is a good result, $F = 127.2823 > F_{0.05}(3,6) = 19.37$, indicating that the overall regression equation is significant. $t = 11.28195 > t_{0.025,8} = 2.306$, that X has a significant effect on the Y .

In the relationship between road freight turnover Y and civil traffic X , the corrected R^2 is 0.936654204, indicating that the variables in the model jointly explain the 93.67% change in Y , which is a good result, $F = 134.0773048 > F_{0.05}(3,6) = 19.37$, indicating that the overall regression equation is significant. $t = 11.57917548 > t_{0.025,8} = 2.306$, that X has a significant effect on the Y .

Regression analysis results obtained by above, Hubei province has rich resources, abundant capital, large population, and continuing to improve transportation system construction, there has a close contact and influence between the development of highway traffic and economic development of Hubei province, the construction of the highway traffic has a effect of promoting the development of the economy.

IV. CONCLUSION

In Hubei province, the level of economic development determines its transportation investment's standard. The economy being more booming, the development in transportation, manufacture, elites, management, storage and communication will be more flourishing. Hence more sufficient methods will be put in force to develop modern transportation, and more comprehensive the transportation construction will be. The space distribution of the economy shapes that of the modern transportation investment. The difference in economic development determines the difference in traffic investment. In those better-off areas, the population is huge, people richly live, and the resources is ample, which gather similar enterprises and factories. They co-harness resources and bring down production prices. According to this circumstance, distribution of transportation must be combined with the actual situation. To satisfy market demands, distribution of transportation investment must fit the requirement of economic regions. The galloping development of Internet in the Information

Age brings forth the sudden rise of logistics industry, which alters the forms of payment and purchase. This status quo is based on the foundation of advanced transportation web, and it will progress further with the gradual development of transportation construction. Highway transport is the main method among those reliable means used by the logistics industry, which asks for the highway construction to suffice the soaring demand from the logistics industry. Therefore, the highway construction in a region can facilitate it's transfer in economic construction and economic development.

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