Analysis of Coordination degree on integrated transport system and economic development in Blue Economic Zone

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Abstract: Blue Economic Zone in Shandong Peninsula is the most dynamic and fastest-developing area with many advantageous resources and relatively advanced infrastructure in East China Shandong Province. The integrated transportation system and economic development has a close inner link, both are interdependent and influence each other. Based on the reference of the comprehensive transportation system, the paper focus on the analysis about transportation increase of gross domestic product, and studies Comprehensive transportation investment in fixed assets accounted for the proportion of total investment in fixed assets, and analyzes the elasticity coefficient on transport

The planning and development goals of the integrated transportation system in the Shandong Peninsula Blue Economic Zone

Transport equipment as well as economic efficiency differs in various modes of transport during the passenger and freight transportation. Therefore, comprehensive utilization of various transport modes can complete transportation tasks with less labor consumption by exploiting advantages of each mode.

Although competition exists among various modes of transport during their development, the overall trend is to form an integrated transportation system in which diverse modes of transport operate more coordinately, thus to optimize the transport structure and transportation management by properly planning and fully utilizing the advantage of each mode of transport with the goal of completing transportation tasks surely achieved. The Blue Economy includes marine exploration, utilization and protection as well as all related industries and social activities.

Therefore, we need to balance the infrastructure quantity in the integrated transportation system, optimize the transportation network, rationally allocate the resources, program better transportation chains and accelerate the construction of integrated transport hubs.

Transportation increase of gross regional production in Shandong Peninsula

The effect of transportation for economic growth gives expression to through the relationship between Gross regional production and transportation. The relationship between Gross regional production and transport can well reflect the role of integrated transportation system in the economy in Shandong province. Tab.1 reflects the relationship between gross regional production and transportation in Shandong province.

Tab.1 Relations of gross regional production and transport development in Shandong province

Grouping	In 2011 (Million)	In 2012 (Million)	In 2013 (Million)	% of 2010 in 2011	% of 2011 in 2012	% of 2012 in 2013
Gross regional production	45361.85	50013.24	54684.33	110.9	109.8	109.6
Tertiary industry	17370.89	19995.81	22519.23	111.3	109.8	109.2
Transport industry	2328.38	2516.19	2602.91	111.4	106.2	106.4

Source: statistical yearbook of Shandong province

Tab.1 shows the transportation and the development of economy has obvious alternation villa effect. Transportation industry is rapid development. From the point of transportation accounts for gross product, compared with 2010 in 2011 increased by 11.4%. In 2012, increased by 6.2% in 2011. In 2013 than in 2012 increased by 6.4%. Transport industry sustainable development.

Transportation increase of gross regional production in Shandong Peninsula

The development of the transportation industry is dependent on the fixed assets investment. Thus the construction of comprehensive transport system can be reflected through the investment in fixed assets. At the same time, the development on Shandong economic can also be reflected through the investment in fixed assets. There is an upward trend in fixed investment in Shandong province. Transportation industry was also increasing fixed assets investment. In recent years, the investment in fixed assets as shown in tableb.2 in Shandong province.

Tab.2 Investment in fixed assets table in Shandong province in 2009-2013

year	2009	2010	2011	2012	2013
overall investment （billion）	119030.97	23276.69	26769.73	31255.96	36789.07
Transport investment （Million）	10180912	13388048	13956809	15910010	19830961

Source: statistical yearbook of Shandong province

The coefficient analysis of transport elasticity in Shandong Peninsula

The ratio of growth rate on transport volume and the national economy is defined as a elasticity coefficient of transport. The elasticity coefficient of transport is used to reflect the proportion relationship between transportation and economic development in different period, the change characteristics and its parameters. The elasticity coefficient of transportation expressed in e. The elasticity coefficient of transport determined by two variables, namely the growth rate and economic growth. Relation of function constraint between them is: e= transport growth/economic growth. The growth index of freight and passenger traffic and freight turnover used to represent the transport rate. While economic growth is directly expressed in gross regional production. Different values of e reflect the different relationship between transportation and economic growth, specifically for: $e<0$, Transportation is negatively related to the economic growth. $|e|>1$ is the high elastic, transportation is growing faster than economic growth. Therefore economic growth greatly

affects transportation, the transportation is very sensitive to changes in the economy. |e|<1 is the low elasticity, Transport growth slower than economic growth. So it has a little influence on economic growth of transportation, the transportation is not sensitive to changes in the economy. From 2004 to 2012, the original data on passenger traffic, passenger turnover, freight volume and quantity as shown in table 3 and table 4 in Shandong province.

Tab.3 Passenger transport table in Shandong province in 2004-2012

year	Passenger volume(ten thousand people)	Railway	Highway	Waterway	Turnover(One million kilometers)	Railway	Highway	Waterway
2004	89388	3952	93178	1355	74799	28268	53910	600
2005	98485	4757	103298	1417	82778	32223	60128	663
2006	109472	5127	117309	1527	93014	34039	72022	818
2007	123963	5470	205917	2000	106879	36694	104569	604
2008	213387	5806	226134	2294	141867	37993	119723	997
2009	234234	6041	240044	2635	158713	42135	121151	1185
2010	248720	6609	241457	2403	164471	45872	125691	1188
2011	250469	7650	254711	2574	172751	50951	130995	1250
2012	264935	8484	258327	2580	183196	54995	133137	1153

Source: statistical yearbook of Shandong province

Tab.4 Freight transport table in Shandong province in 2004-2013

year	freight volume	Railway	Highway	Waterway	Turnover	Railway	Highway
2004	132036	17862	106887	7287	478309	111109	59606
2005	147999	18338	120455	9206	558286	121908	71182
2006	167511	19126	136750	11635	665521	151159	84510
2007	198507	19923	163959	14625	642854	131151	106926
2008	247489	20872	216604	10013	1010234	134133	511792
2009	284463	19596	251587	13280	1095569	134139	604502
2010	298055	18056	264366	15633	1174705	144775	621680
2011	314962	19711	279380	15871	1258364	152606	662435
2012	330270	19814	296752	13704	1099119	149384	705922
2013	344401	19043	311812	13546	1026088	138910	749888

Source: statistical yearbook of Shandong province

The elasticity coefficient of transportation is calculated by the index which use growth rate of

Shandong integrated transport and gross regional production from 2005 to 2012. The elasticity coefficient of transportation as shown in Tab.5.

Tab.5 Transport elasticity coefficient table

Mode of transportation		2005	2006	2007	2008	2009	2010	2011	2012
Freight volume	Gross	0.55	0.68	1.06	1.25	1.67	0.31	0.38	0.50
	Railway	0.14	0.21	0.22	0.25	-0.67	-0.50	0.56	0.10
	Highway	0.59	0.74	1.11	1.60	1.78	0.31	0.38	11.6
	Waterway	1.18	1.37	1.44	-1.60	3.67	1.13	0.13	-1.40

Summary

Such as Tab.5, respectively with the total freight, rail freight, road freight, sea freight as transport growth index, and with gross regional production as an index of economic growth, can draw elasticity coefficient of railway freight transport is -0.67 and -0.50 in 2009 and 2010.The elasticity coefficient of waterway freight volume is -1.6 and -1.4 in 2008 and 2012, it shows negative correlation with integrated transport growth and economic growth in Shandong province. The elasticity coefficient of highway freight transport was 11.6 in 2012, more than 1, for the high elasticity. It explains that road transport is growing faster than economic growth in 2012.So economic growth largely affects the road transportation. The highway transportation is sensitive to economic changes. The elasticity coefficient of railway freight transport was 0.1 in 2012 for the low elasticity. It declares that railway lags behind economic growth. It can not adapt to the requirements of economic development in Shandong province.

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