



Impact of Traffic Accessibility on Urban Economic Growth

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Abstract. As an important part of urban planning and construction, improving urban traffic accessibility has an important impact on promoting economic growth within the urban area. At the same time, it also plays an important role in promoting economic exchanges with the neighboring important transportation cities. Therefore, in order to promote the economic growth of the city, it is necessary to improve the accessibility of the city's transportation, so as to provide more opportunities for the city to enrich more industries, develop the tourism industry, and create new opportunities for the growth of urban economic employment. Therefore, based on this, this paper conducts a series of studies on the impact of traffic accessibility on urban economic growth, and analyzes the important impact of traffic accessibility on urban economy from multiple perspectives.

Keywords: Traffic Accessibility; Economic Growth; City Planning

1 Introduction

In recent years, as the rate of productivity growth of all factors in China's urban economy has declined, new sources of growth must be found for all factors in the context of promoting high-quality economic development. Achievements in the field of intercity transport are growing as China's intercity transport infrastructure continues to improve and railways are opening up. Empirical analysis shows that roads, airports and other large-scale transport infrastructure have a significant positive impact on overall factor productivity and can further boost long-term growth.

2 Statistics Of Traffic Accessibility To Urban Economic Growth

After the province-wide renovation and upgrading of the transportation network in Henan Province, the new high-speed railroad in Henan Province has led to an increase in the growth of the city economy and the growth of industrial clusters under the counties of Henan Province at a significant rate. Whether it is the primary industry, secondary industry or tertiary industry of the city, it can be further verified by the

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L. Moutinho et al. (eds.), *Proceedings of the 2023 International Conference on Management Innovation and Economy Development (MIED 2023)*, Advances in Economics, Business and Management Research 260, https://doi.org/10.2991/978-94-6463-260-6_65

series of statistics that the improvement of traffic accessibility has contributed to the economic growth of the city [table 1].

Table 1. Economic growth statistics of some cities in Henan Province

Industry	Primary industry		Secondary industry		Tertiary industry	
	Before the completion of the high-speed rail	After the completion of the high-speed rail	Before the completion of the high-speed rail	After the completion of the high-speed rail	Before the completion of the high-speed rail	After the completion of the high-speed rail
Zhengzhou City	-0.03	0.06	0.05	0.01	0.14	0.07
Kaifeng City	-0.05	0.23	0.06	-0.07	0.16	0.13
Luoyang City	-0.03	0.04	0.03	0.02	0.15	0.09
Pingdingshan City	-0.15	0.11	0.09	-0.03	0.13	0.11
Anyang City	0.16	0.04	0.08	-0.04	0.19	0.11
Hebi City	-0.11	0.36	0.06	0.01	0.11	0.11
Xinxiang City	0.02	0.31	0.04	0.02	0.13	0.13
Jiaozuo City	-0.04	1.00	0.07	-0.03	0.11	0.08
Puyang City	0.32	0.20	0.09	-0.01	0.15	0.15
Xuchang City	0.24	-0.11	0.04	-0.04	0.15	0.13
Luohe City	0.39	0.02	0.05	-0.04	0.12	0.10
Sanmenxia City	-0.03	0.13	0.14	0.00	0.16	0.12
Nanyang City	-0.01	0.01	-0.02	-0.03	0.14	0.10
Shangqiu City	0.50	0.55	0.04	-0.07	0.14	0.09
Xinyang City	-0.03	0.29	0.05	-0.03	0.13	0.10
Zhoukou City	0.04	0.21	0.03	-0.04	0.14	0.11
Zhumadian City	0.04	0.03	0.02	-0.06	0.18	0.09
Jiyuan City	0.28	-0.19	0.11	-0.03	0.09	0.09

Coincidentally, during the construction of Lanzhou Xinjiang Railway in the western region, the traffic accessibility of Lanzhou, Xining, Urumqi and other cities has been further improved after the construction of Lanzhou Xinjiang Railway. Therefore, in the statistics of the economic growth of Lanzhou, Xining and Urumqi, we obtained the following data summary [table 2]. This further proves that in the years after the construction of Lanzhou Xinjiang Railway, the traffic accessibility of the city has

been improved, which plays a very important role in promoting the economic growth of the city.

Table 2. Economic data of three major industries in three western cities

	Investment in fixed assets var1	Lanzhou primary industry Var2	Lanzhou Secondary Industry Var3	Lanzhou Tertiary Industry Var4	Xining primary industry Var5	Xining Secondary Industry Var6	Xining-Tertiary Industry Var7	Urumqi primary industry Var8	Urumqi Secondary Industry Var9	Urumqi Tertiary Industry Var10
2015	8563500	52.4407	824.8834	1123.6148	37.37	530.68	497.73	27.4275	906.0132	1528.0292
2016	10158700	56.2233	782.6545	1257.1142	37.46	543.47	550.69	31.6439	787.3749	1812.621
2017	13168600	60.3568	790.0955	1413.7795	39.15	595.64	613.37	28.1353	704.0837	1726.7576
2018	16106800	38.3513	881.7386	1580.712	41.8036	556.4361	686.6684	25.0021	823.7981	1881.8453
2019	18037526	42.981	937.9822	1751.9742	46.08	467.99	772.34	25.3202	948.1809	2126.2648
2020	19909500	51.6748	945.3813	1840.2997	51.33	398.78	877.71	27.6998	906.1382	2479.4207

3 Impact Of Improved Accessibility On Regional Economic Growth In Cities Along The Route

3.1 Regional Accessibility Effect

In urban areas, the way to improve traffic accessibility is to build various traffic lines around the city. This includes the city's high-speed railway network, highway network and other types of air lines. Among them, the specific regional accessibility effect describes the enrichment and change effect of regional economic development and industrial clusters due to the construction of transportation network in a period of time.

In the initial construction area, the relevant construction of general economic facilities is distributed in a low density around the site. In the later stage, with the change of human flow and the continuous development of resources, the attraction to capital and resource allocation will contribute to the development trend of the surrounding areas as shown in the figure. At this time, new development opportunities and the construction of transportation infrastructure will be formed.

From the macro level, the transportation convenience formed along the route after the construction of the transportation network will become an important support system for future regional economic development. On the other hand, the direction of resources also forms the transportation space, which becomes the circulation space for the flow of resources, human resources and information within the region. As the development of intrinsic demand within the region will determine the allocation of resources within the transportation system, with the improvement of transportation conditions will also enhance regional economic integration and economic efficiency,

the construction of the transportation network will synergize with regional economic development to mutually promote the sub-functions of the regional economic sub-system. As a result, industrial clusters with advantages will be formed in the region, and the transportation conditions will be maximized to develop the infrastructure construction along the urban areas. While improving the accessibility of the areas along the lines, the capital value and economic benefits born from the construction of the high-speed railway will continue to be invested in the construction of the infrastructure related to the high-speed railway and itself, which will eventually form a form of positive feedback growth between the two and continue to promote the improvement of the accessibility of the region.[1]

On a micro level, the construction of a large transportation network will result in lower time costs and increased spatial proximity effects in terms of transportation along the periphery. The construction of high-speed rail will increase the flow of talent by reducing the commuting time for commuters and business activities, attracting talent to work along the periphery of the city. The time cost savings of high-speed rail will also bring great economic value to the surrounding areas, releasing some of the passenger rail capacity for freight and promoting the growth of urban growth in the era.

At the same time, from a micro perspective, the construction of transportation lines can also promote the flow of information, capital and talent along the peripheral routes. For the process of reallocation and reorganization of these factors of production, the layout and construction of transportation lines often enhance the accessibility of cities at all levels, thus realizing the resource allocation of these factors of production in a broader area. The frequent movement of human capital also leads to employment effects, which are of great importance for the improvement of economic efficiency, optimization of industrial clusters between cities, and enhancement of regional development.

In addition, as the construction of the transportation network changes the accessibility level between cities, cities at all levels along the route will continue to improve their resource allocation and economic location conditions, ultimately widening the geographical boundaries to which each link in the industrial chain can be rubbed from the perspective of the supply chain, which is conducive to the re-generation of a larger spatial division of labor and collaboration within the perimeter of urban areas.

3.2 Industry Optimization Effect

First, the development of transportation has promoted the flow of human capital elements along the line. As population migration becomes easier in this area, it finally promotes the new labor market center in terms of human capital factor flow when the traffic accessibility is improved. And with the continuous development of the economy, it also continuously ensures the requirements of new labor migration for the labor development in the surrounding economic center. Therefore, the demand for economic activities of newly-built enterprises around the city center has a very good role in transporting talents and reducing employment costs.[2] At the same time, the completion of the transportation network and the improvement of accessibility also facilitate

the exchange of high-quality and new technology knowledge-based talents in the western strategy and development of the regional economy, thus promoting the flow of talent elements in the region.

At the same time the process of building transportation also promotes the flow of capital factors, because along its investment in the construction of the regional economic growth effect is stronger than other modes of transportation to bring the significance of economic development. The new investment in the production of materials will make the supply chain process of production materials to bring a certain amount of employment and national income growth, thus increasing the demand for social consumption through the growth of income, and ultimately promote the transformation and layout of industry in the direction of consumer demand.

As the capital factors will flow technical resources, capital resources and human resources in the direction of the growth poles under the effect of the growth pole theory, and finally the layout becomes the industrial layout along the direction of the point axis according to these resources. In some point cities with stronger economic strength and more comprehensive resources, after the new construction these inter-city factors quickly have a flow carrier, and those surrounding areas with superior natural and social conditions more suitable for industrial development will start to appear new commercial bodies and new industrial sprouts. On the contrary, in urban areas with poor accessibility, areas with lack of investment conditions and unsound supporting facilities will encounter bottlenecks in investment and difficulties in industrial development. With the development of the growth pole and the extension of the growth axis in the point axis area continuously attracting investment and various talents, the surrounding configuration facilities and their basic industrial layout situation are gradually improved.[3]

In this process, the flow of information factors varies due to the change of travel means and transportation efficiency, and the optimization and change of the industrial pattern will be brought about according to the difference of industries and capital reserves in the original location. In this process, all the optimization directions will follow the direction of the growth axis, so that the information elements, resource elements and capital elements can form the supply chain and trade chain smoothly as the goal. Therefore, under the speed and direction of industrial optimization, the areas with improved accessibility will be developed into enterprise clusters or industrial clusters with regional advantages and resource characteristics to enhance regional competitiveness, thus optimizing the industrial pattern around urban areas.

3.3 Increased Employment Effect

On the one hand, the improvement of traffic accessibility in urban areas has accelerated the flow of talents and the layout of industries. On the other hand, it has also led to the rapid development of local tourism. At the same time, it has also accelerated the exchange of relevant industrial technologies. Due to the construction of transportation, the life and work of the business travelers and staff traveling around the urban area have become more convenient, and the regionalization and specialization of labor division have broken the original barriers, forming a new enterprise production

efficiency, meeting the basic needs of enterprises for interpersonal communication, travel costs and intellectual elements circulation in the process of industrial layout.[4] At the same time, it makes the labor force between enterprises and the labor force population between surrounding cities transfer and exchange more rapidly and closely.

Due to the improvement of urban traffic accessibility, the pace of economic lifestyle around the growth axis with rich urban traffic network has been greatly accelerated, enabling many highly paid talents and middle class to appear in enterprises around Shenzhen, bringing and promoting local consumption, and enabling local people to make major changes in consumption concepts, consumption structures and values, Therefore, it will quickly reverse the distribution and service quality of local tertiary industry and service industry, thus increasing the effect on tertiary industry employment. The improvement of traffic accessibility will also make the local industrial technology no longer restricted by the space and talent reserves. The flow of resource elements will also make the rapid development of various industries in the region, so as to drive the local employment situation, improve the labor quality of the city, and enhance the resource allocation and regional competitiveness through the employment effect.[5]

4 The Relationship Between The Improvement Of Traffic Accessibility And Regional Economy

4.1 Pulling Effect On The Development Of Related Industries

The construction of transportation will speed up urbanization along the route and will take away a certain amount of agricultural labor from the surrounding areas, especially in the process of industrialization and urbanization, which will cause most of the labor force to be taken away from agriculture. At the same time, the arable land in rural areas will shrink due to the rapid urbanization, but due to the increase of regional accessibility brought by the development along the route and the redistribution of industries after improving the transportation capacity along the route, this will lead to the development of mechanization of agriculture. This will lead to the birth of a new agricultural industry layout and industrial supply chain, which will eventually lead to the restructuring of agricultural products and the development of a series of neighboring industries, as well as laying the foundation for the development of agricultural trade.

The construction of the transportation network has played a very important role in the concentration and structural upgrading of the industries in the region, as a large amount of construction materials and production materials are required at the beginning of the construction, and these construction materials have led to the transformation of the manufacturing industry and the rapid development of many secondary industries after involving machinery, extractive industries, steel industries, material industries and various locomotive parts. At the same time, the demand will drive the peripheral industries of the secondary industry to form numerous industrial clusters

along the point belt, which will be extended outward to develop a larger scale of industries based on the transportation network of the city.

After the improvement of traffic accessibility, it will have a very important impact on the recruitment of talents, the exchange of relevant talents, and the layout and distribution of small and medium-sized enterprises. In this process, the development of service industry and tertiary industry due to personnel mobility and trade exchanges is another product of improving traffic accessibility. Due to the continuous improvement of the proportion of industrial investment and the ability to attract foreign investment brought about by the increasingly smooth transportation conditions, the areas around the city and the important economic hub areas along the transportation lines, as the growth poles, will continue to be favored by capital. Finally, in order to better allocate infrastructure to attract tourism resources and enterprise industry investment, the tertiary industry must first develop, The structural reform of the primary industry and the secondary industry followed. It will eventually converge to play a driving role in the development of related industries.

4.2 Effect On Regional Industrial Agglomeration And Diffusion

The construction of the transportation network is directly driven by the development of manufacturing, construction, machinery, communication equipment and other related industries, and then according to the Keynesian theory of investment multipliers, changes in investment will cause an increase or decrease in national income, the number of increases or decreases is the original investment increase or decrease in the multiplier effect expansion. In fact, as a kind of investment flow factor, the role of transportation investment for the regional industrial agglomeration and diffusion is mainly through the operation of funds to influence the local fiscal revenue, thus affecting the total social demand, and its growth has a certain role in promoting. Secondly, the construction of transportation also improves the local basic environment and transportation operation conditions. As the ability to attract investment relies on the rapid circulation of information flow, knowledge flow, personnel flow and other media to achieve the construction of the supply chain between industries and the distribution of profits, this diffusion of elements through the medium of information flow, knowledge flow, personnel flow and other media makes the capital factors can be rapidly injected into the local regional industrial structure pattern, and drive the local economic development and related construction, and finally step by step make the regional industrial clusters can advance its scale and have a certain radiation effect.

After the construction of transportation capital factors will be directly injected into these areas around the higher return or the surrounding areas radiated by the growth axis, thus promoting the enrichment of enterprise industries. The diffusion effect on industry is due to the uneven distribution of factor mobility between cities, so that resources and technology to continue to drive the development of more distant areas around the city, will make the growth and surrounding advantageous resources outward radiation and the formation of the diffusion effect for industrial enrichment after. Eventually, these lower-level workers will gather in more advantageous areas to

find employment opportunities, and the phenomenon of urbanization will be gradually driven from the towns around the cities with improved accessibility to more distant areas.

4.3 Effect On Non Industrial Economic Factors

The impact of urban traffic accessibility will not only have an effect on economic and industrial transformation, but also have a positive effect on non industrial economic factors, such as services, infrastructure, talent flow, etc. In this process, the original industrial operation and service quality will be gradually optimized. The improvement of urban accessibility can shorten the time spent by passengers during the journey, improve the quality of their work and life, make people's expectations and vision for long-distance travel gradually realized, and enrich people's travel modes. Since people's living standards are rising and their demand for tourism is increasing, they increasingly hope to travel to the local area through self driving or self-help tours. The improvement of urban traffic accessibility has also formed a good situation for the urban tourism situation.

5 Conclusion

Improved accessibility to cities facilitates the development of industries, economic growth and the enrichment of other types of industries in cities. Since launching infrastructure projects in cities is an important form of state investment, and the state invests more in cities to expand employment, develop pillar industries and build local industrial parks, improving accessibility also helps to improve the city's overall ranking, making it easier to develop external tourism and a range of investment attraction. Thus, improving accessibility not only help cities grow economically, but also help them solve their employment problems.

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