Economics in Large Metropolis | Final Paper

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Article: Planes, Trains and Automobiles, *The Economic Impact of Transport Infrastructure*

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A Review

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    - Transportation infrastructure induces economic benefits by reinforcing growth in growing economies or regenerating lagging one
    - Investment in transport infrastructure induces local and diffused effects. Consideration for investment should be attentive to these dynamics

1. Introduction

Transportation has been recognized as an important infrastructure critical to economic growth, particularly by expanding the productive capacities of cities or countries, enhancing resource mobilisation and the productivity of such resources. It is suggested that transportation infrastructure can penetrate the production process as a direct input or make other inputs more productive[1]. An improvement in specific transport infrastructure can facilitate the transport of goods within minimal time and thus reduce travel costs. Additionally, transportation infrastructure can induce agglomeration effects by attracting

[1] Pradhan, R. P., & Bagchi, T. P. (2013). Effect of transportation infrastructure on economic growth in India: The VECM approach. *Research in Transportation economics*, *38*(1), 139-148. https://doi.org/10.1016/j.retrec.2012.05.008

people and other resources from other places. It is therefore not surprising that throughout human civilization economic activities have mostly thrived along riverbanks and sea shores where water afforded the most convenient means of transporting goods, raw materials and labour. Investment in transport infrastructure such as planes, trains and automobiles would largely influence the productivity and expansion of cities. However, the impacts of transport infrastructure may not always be direct and explicit. In his article, Steve Gibbons explores the impact of investment in Planes, trains and automobile transportation infrastructure and economic growth in the UK. This paper reviews the article commenting on some inherent urban economics notions, noting which ones are consistent with the article and those that are not.

There has been a growing debate in the UK on whether transportation infrastructure requires investment in roads, railways, high-speed rails, expansion of airports, a combination of all of these or additional subsidies and regulations. The main objective is to reduce transport costs by reducing congestion or fares and inducing economic growth. Those who argue in favour of investments in transportation infrastructure claim that notable economic gains can be realised from infrastructural development. For instance, the article acknowledges that a 10% increase in infrastructure induces about a 0.3% to 0.5% increase in economic growth. Regardless, the author establishes that the economic benefits of transportation infrastructure are hardly explicit.

In this review, I summarise and comment on the arguments made by Gibbons (2015) and make connections with concepts in urban economics.

2. Summary and Comments on Article

2.1 Main Policy Questions for Investments in Transportation Infrastructure

The article highlighted two important considerations to be made when attempting investments in transport infrastructure. First, is the question of whether or not to invest in areas where the economy is growing and where there is a demand for transport to reduce congestion and travel times. Second, is whether or not invested in areas where growth in the economy is lagging in attempts to stimulate growth.

Arguments in favour of investment in growing economies with transport demand suggest that such investment reduces the increasing congestion and travel times associated with the growth of people and economic activities. In the UK this argument seems to dominate the transport infrastructure debate. Indeed this argument is strongly justified since such transport investment induces productivity gains as less time is spent travelling - transportation costs for both people and goods are reduced and people can use their time more productively. At the same time, improvements in transportation infrastructure attract people and businesses from other parts of the city/country/region resulting in the growth of the productive capacity manifested in increased labour supply, increased wages, and an expansion of the area. In contrast, as the city grows and expands, prices of rents and other expenditures as well as other agglomeration diseconomies (noise, pollution) increase higher than the real incomes of workers. This increasing standard of living will eventually disincentivize both firms and individuals to continue living in the city. Their propensity to leave the city for a more affordable location becomes higher.

Those who argue for investments in lagging economies posit that investments in transportation infrastructures are capable of stimulating economic rejuvenation within such locations. Particularly, by connecting people, and firms and facilitating mobility, efficient transport systems accumulate agglomeration effects and hence increase productivity. Investments mean that travel times are reduced and so are travel costs. This makes the city attractive to both businesses and individuals. As the city becomes attractive to more firms and workers, firms share the fixed cost of amenities reducing the fixed cost of production. Additionally, workers are easily matched with firms. In the short run, economic benefits may be obtained through these agglomeration effects. Transport infrastructure could help to reduce locational disparities. However, in the long run, as the city becomes increasingly attractive to firms and workers, the standard of living increases and agglomeration diseconomies begin to accrue, making the city less attractive.

2.2 Summary and Comments on the impacts of improving transport

2.2.1 Reducing Congestion

The article submitted that congestion on roads, and overcrowding on trains and airports cause delays. Congestion induces trade cost as time lost in travel is time loss which could have been used more productively for economic gains. Thus to realise these gains, investments in transportation infrastructure reduce travel time, and enable workers to have more productive time. As commented earlier, improvements in transportation facilities attract both individuals and firms from other locations. This consequently leads to the expansion of the city and the accumulation of agglomeration benefits. The Alonso-Muth condition experienced as transportation infrastructure improves, travel time to the inner-city reduces as well. As such, individuals are more capable of travelling from the fringes to the city center, resulting in increased economic activities and productivity. However, in the long run, reducing congestion in active economic zones and where transport demand is high results in Induced demand: An increase in road capacity leads to increased travel volumes, as many workers and businesses are attracted to the city, and could result in further congestion. Nonetheless, this can be reduced through road tolls and congestion fares. Policymakers must idealise a combination of these transportation infrastructure investments as individual options have their pros and cons. For instance, congestion charges are politically less popular in many countries and their implementation may be challenging.

2.2.2 Stimulating the economy

The author notes two primary ways by which investments in transportation infrastructure could economically benefit a city. First is the Value of Travel Time Savings. Improved Transport infrastructure reduces travel time as mentioned earlier in this review, and hence stimulates economic gains because workers are relieved from unproductive time in traffic. Travel time savings essentially means measuring time savings in monetary terms. The second way which has gained more attention is the agglomeration effects of transportation infrastructure. Recognizing that big cities are more productive than smaller ones, connecting people, firms and resources through improvement in transportation networks ensures the formation of large centres of economic activities. Firms benefit from sharing amenities and resources, people are matched with better employment opportunities, people can easily commute between their homes and the city center, and enjoy amenities

available within the city. The article indicated for instance that reducing the travel time between Manchester and Leeds by 20 minutes results in about a 6% increase in agglomeration benefits or 4.3billion in monetary terms.

Indeed, the agglomeration effects and consequent economic benefits from transportation infrastructure are justified. People are attracted to the city mostly because they can enjoy less travel time and hence less travel costs within the city. The fringe expands along improved transport infrastructure because people can easily commute between where they live and the city center where they possibly work. The city grows and becomes more productive. As the city grows, more firms are attracted to the city to benefit from the agglomeration economies. Firms share resources, workers and knowledge including many other amenities which decreases their cost of production. With this attractiveness, bigger cities have the propensity to attract more firms and people and grow bigger and thus become more productive than smaller cities. It must be acknowledged that knowledge creation and sharing can be fundamental to increased productivity, and big cities are diversified with expertise and innovation that improves productivity. While investment in transportation can stimulate economic growth in one location, it must be emphasised that there is also the possibility of generating diseconomies in another. One can assert that the influx of firms and workers into a city that enjoys improved transport conditions could be a result of those businesses and people leaving another city that has become unattractive due to its limited improvement in transport infrastructure. These local effects are more apparent in developing countries where the infrastructure is mostly in poor conditions before improvements.

2.2.3 Fixing Regional Imbalances

The author submitted that improvement in transport infrastructure has the potential to fix spatial disparities by inducing local regeneration, especially in areas lacking economic growth. Improved transport infrastructure makes the place more accessible and attractive to both firms and people. In effect local regeneration is stimulated through increased demand for land, increased land prices, property development, and development of new businesses - Can rebalance the economy spatially and reduce disparities. Rightly so, new centres become particularly attractive to businesses and individuals struggling with high

rents and high living standards in big cities. The attractiveness of new centres follows additional policy regulations that may not be transport-related. Even so, the inherent benefits of investments in transportation cannot be understated. As firms and individuals relocate to smaller city, demand for housing and other services results in an appreciation of land values. But the agglomeration benefits that arcue induces more attractiveness and the local economy begins to grow, as does the small city. In the long term, the smaller city is likely to grow and be integrated with the bigger city. Thus, the disparities in economic development become fixed.

3. Comments on Policy Questions

Whether transport investment is intended to reduce congestion and travel times in an economy where the demand is high or meant to stimulate economic growth in small cities, policymakers will have to pay attention to the localised and diffuse effects that ensue. A city that benefits from improvements in transportation infrastructure experiences low travel times and costs and improves productivity as workers spend less time travelling. Goods are also transported faster to markets making firms more efficient. Additionally, the city benefits from the agglomeration of firms and people increasing labour supply and wages and consequently leading to high productivity. As these economic gains are realised, there could also be increasing living standards and other agglomeration diseconomies such as noise, more congestion and pollution. While the beneficiary city enjoys the investments in transportation infrastructure, the effects can be diffused to other cities. Mostly, these improvements in the beneficiary city cause displacements in another city that does not benefit from such improvements. People and businesses will be more willing to relocate from the less improved city to the city with the investments causing the latter to shrink in size and economic activities. It should however be emphasised that the willingness to relocate depends on how mobile people are and their idiosyncratic preferences. If people are more mobile and have less idiosyncratic preferences in their locations, they are more likely to move. However, if people have strong idiosyncratic preferences, they are more likely to remain even if their city does not enjoy extensive investment in transportation infrastructure. Policymakers have to consider these in addition to the many items discussed in the paper.

The economic structure of cities largely determines the effects that improvements in transportation infrastructure will have on them. Two structures are identified in this case; cities with large economic and spatial disparities (cities in mostly developing countries), and cities with small economic and spatial disparities (cities in mostly developed countries). In cities with small economic and spatial disparities, investment in transport infrastructure in one city induces little change in other cities, and other cities may even benefit. As the beneficiary city enjoys the agglomeration economies accruing from the transportation improvement manifested in increasing labour supply, wages and productivity, other cities benefit as well. The population in a second city relocates to the beneficiary city but less and as such labour supply decreases inducing higher wages for the remaining workers. At the same time, as the population reduces, demand for housing decreases resulting in a decrease in housing prices. Eventually, the second city becomes attractive again to some of the people in the first city. Similarly, in countries where cities experience large spatial and economic disparities, there is considerable displacement of people and businesses from the secondary city to the city that enjoys investment in transportation infrastructure. As people relocate from the secondary city, it loses its economically active population and any agglomeration gains it could have obtained from the availability of businesses and people. Thus, big cities with large transport demand grow bigger and smaller cities are less likely to grow bigger since they do not merit investments. This exacerbates the spatial and economic inequalities in this context

4. Conclusion

This review has summarised and commented on Gibbons' (2015) position on the impact of investments in transport infrastructure in the UK and the debate surrounding the nature of investments required in which locations as well as the policy direction for policy-makers. Two major perspectives stand out. First, even though argued as difficult to statistically establish and measure, transport infrastructure has economic benefits. Whether investments are meant to reduce congestion in high-demand areas or stimulate local regeneration and reduce spatial and economic disparities, investment in transport infrastructure accrued value in travel times saving and agglomeration effects which ultimately improves productivity. These impacts are both local and diffuse. Diffuse effects are manifested in benefits such as increased wages and low rents for cities with low

economic and spatial disparities, and displacements for cities with high economic and spatial disparities. Meanwhile, the long-term effects of transportation infrastructure investments are also noted, big cities are likely to induce more demand for transport and small cities have the propensity to grow bigger to reach the level of diseconomies experienced by big cities. It is imperative therefore that policymakers acknowledge these dynamics and drive a thought towards achieving a balance between capital and policy investments in both small and large cities.