Chapter 16
Transportation and Urban Development:
Urban Growth and Spillover Effect of Transportation Infrastructure Investment

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ABSTRACT

It is noteworthy that there is a substantial literature review that examines the impact of transportation infrastructure on urban and regional economic performance. It is observed that such infrastructure investments are focused on the economic growth as well as the spillover effect in applied studies carried out in this respect. In this study, in which the effects of highway transportation infrastructure on urban output and the spillover effect of these investments are determined using the spatial econometric method, 81 cities in Turkey have been taken into consideration, and according to the results of the study, transportation infrastructure investments in Turkey have been found to contribute positively to urban output. Also, while the Moran's I test statistic reveals the spatial dependence of such investments, the Lagrange multiplier test results also determine the need to use the spatial error model. The spatial error model results reveal the existence of the positive spillover effect of transportation infrastructure investments.

INTRODUCTION

While it is stated that infrastructure investment types are an important factor affecting regional and urban economic growth and productivity, the development of transportation infrastructure and services in these types of infrastructure can affect some costs of firms during investment periods. For instance, a better road connection could reduce spending on new company setup or transportation costs. The decline in production costs and the anticipated increase in demand are affecting private investments positively. At the same time, the development of this kind of infrastructure that allows for the development of network connections enables increased trade relations between the regions, reducing the cost of access to the different markets by the sellers, and facilitating the access of merchants to their preferences. Transpor-

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tation infrastructure investments are said to have a positive effect on economic performance through a reduction in costs, a decrease in travel times and an increase in accessibility.

On the other hand, due to the network structure of the transportation infrastructure, the transportation infrastructure investment made in one place can affect another site positively or negatively. When the positive effect is referred to as positive spillover effect, it is expressed that this effect is caused by the increase of trade between regions and cities, in particular with the development of transportation infrastructure. The negative effect is expressed as negative spillover effect, which is since the resources in one region are directed towards the neighboring region and the development of the area suffering from resource loss is adversely affected by the elaboration of the transport infrastructure of the neighboring regions.

While considering the applied studies that examine the impact of urban and regional growth and spillover effect on the increase in transportation infrastructure, it is generally observed that such infrastructure investments are positively affecting the outcome, but it is seen that different results have emerged in efforts to determine the existence of positive or negative spillover effect of such investments. In this study, which aims to identify the transportation infrastructure, urban growth and spillover effect in the Turkish economy, transportation costs related to transportation infrastructure are firstly considered within the framework of establishment theories for the firms and the importance of this infrastructure for the regional and urban economy is put forward. Then, the transportation infrastructure is determined by using the examples of applied economic studies which are the effect of economic growth and spillover and finally the influence of the highways on the urban output and the spillover effect are determined from Turkey by the spatial econometric method.

SPATIAL SIGNIFICANCE OF TRANSPORTATION INFRASTRUCTURE

In regional economies investigating the factors that identify the preferences of the firms and the households in the place and the elements that determine the structure of the major regional systems (urban systems etc.) and why they are more advanced than the others, cities, places and others, these questions are being answered to be given by two major groups of theories in regional economies, known as theories of establishment place and regional development and growth theories (Capello, 2009). Establishment theories analyze settlement preferences of firms and households within microeconomic concepts and transport costs are considered as a basic factor in determining establishment place, especially in establishment location theories. For instance, in the Von Thünen model which is one of the first establishment theories, land rents, and transportation costs are shown as factors that determine the distribution of land among farmers (Krugman, 1997). In the Weber approach, while the determination of the location of the industrial establishment is explained by the transportation costs, it is determined that the firms in the model make a minimizing comparison between the establishment location, the production zones and the transportation costs for the final goods consumption zone (Capello, 2007). In Moses' establishment, place and production theory, the location of the establishment of firms is analyzed through the effect of substitution between the input costs and the difference in the carrying costs of the input goods (Moses, 1958). While Hotelling (1929) focuses on the determination of the location of the establishment and the sharing of the market, determining the output, determining the transportation costs in spatial competition and price decisions in the approach of market region and spatial competition, in Palander's approach it is stated that the existence of transportation costs causes firms to obtain monopoly power in their specific market regions and that each of the firms prefer to be established in a region farther than