Chapter 6

Infrastructure and Growth: Comparing Latin America and East Asia

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ABSTRACT

Infrastructure plays a critical role in explaining the growth differentials between regions. The growth performances of Latin America are lagged behind East Asia and this fact is often attributed to the infrastructure gap between these regions. It is advised to Latin America to increase its infrastructure investments in order to record high growth rates. But as infrastructure is multidimensional, in which sector the investments should be channeled? This study tries to determine this with an empirical model. The empirical model in this study is a growth function and the infrastructure variables are added as an input to this function. Empirical results suggest that the long-run elasticity of transportation is higher than the long run elasticities of telecommunications and power. Thus, in order to catch-up East Asia quickly, Latin America should invest in transportation.

INTRODUCTION

Infrastructure consists of basic systems as well as services that a country uses in order to sustain efficient production. Infrastructure has been viewed as a critical agent to address the development challenges. It is accepted that the availability of infrastructure is vital in the growth of private sector. In this manner, after the Global Financial Crisis, governments have invested in infrastructure in the context of counter-cyclical policies.

The link between infrastructure and growth could be explained via direct and indirect channels. Directly, infrastructure investments contribute positively to the relevant year’s output. However, indirect channels have more important and lasting effects on growth. First of all, infrastructure raises general productivity of other inputs. Better electricity could lead to better education as well which in turn boost the growth rate. Second, infrastructure is a necessity for private investment. Better infrastructure ends
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up with higher investment – both domestic and foreign. Finally, infrastructure lowers transaction costs which enhance the effectiveness of markets and augments trade.¹

Infrastructure and growth nexus has been studied empirically in the literature till 1980s. The seminal work of Aschauer (1989) finds strong and substantial effect of infrastructure on productivity in US. This study has been criticized on various – especially methodological-grounds.

¹Several channels could be presented here. For details, see Agenor and Moreno-Dodson (2006) and Straub (2008). But generally studies exhibit a positive link between infrastructure and growth. Furthermore, it is accepted that the adequacy of infrastructure helps to determine the income differentials. The growth differential between East Asia and Latin America is often attributed to the infrastructure gap between these two regions. In the aftermath of the debt crisis in Latin America, governments had to consolidate their fiscal balances. They cut back their infrastructure investment spending accordingly. However; in East Asia, infrastructure investments have exiled even though the Asian crisis. The infrastructure gap has mounted as well. To close the stated infrastructure gap, Latin America should raise its infrastructure stocks. But in which sector should the investment be channeled? According to World Bank (1994) we could classify the infrastructure into four broad categories: power (or energy), transportation, telecommunications and water and sanitation. It is important to detect the sector that is more effective in promoting the growth as the resources of the countries are scarce.

The aim of this study is to analyze the growth effects of different sectors² of infrastructure in order to determine in which sector to invest. With this aim we construct a panel data from Latin American and East Asian countries between 1990 and 2014. We model Latin America and East Asia separately to compare the growth effects. Accordingly, we develop a growth model and add infrastructure as an input to the growth function along with capital and labour. It is important to note that, the relation with infrastructure and growth may run in reverse. The countries that grow faster could devote more resources to infrastructure investments. In order to take this endogeneity problem into account, we use panel cointegration and Vector Error Correction (VEC) methodology. We try to capture the long-term relationship between infrastructure sectors and growth. As we are working with different countries, we have to consider heterogeneity. For this reason, we use fixed effect estimators.

According to the empirical analysis utilized in this chapter, all infrastructure sectors positively contributes to growth in the long run. In Latin America the growth effect of the transportation slightly higher than the growth effect of telecommunications. In East Asia, the elasticity of transportation is greater than the elasticity of telecommunications. The elasticity of the power infrastructure is the smallest in both regions.

The rest of this paper is organized as follows. In the following section, we present a literature review. In the third section, we display the stylized facts briefly. In the fourth section, we develop a theoretical model that our empirical study rests upon. In the fifth section, firstly we employ unit root tests. Then we utilize panel cointegration tests and detect the long term relationship. Finally, we analyze the results of our empirical tests briefly. In the sixth section, we offer concluding remarks and policy options.

LITERATURE REVIEW

The studies that focus on the impact of infrastructure on growth began with the seminal study of Aschauer (1989). In his study, he argues that the major reason behind the slowdown in total factor productivity observed in the US in 1970s is due to the lack of infrastructure investment. Munnell (1990), Easterly