

Transport Infrastructure and Economic Efficiency – A cross country comparison using Data Envelopment Analysis

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Investments in transport infrastructure are considered to be one of the key impetuses for economic growth of nations. In the recent years and especially due to decrease in government expenditures across the globe, studies have been conducted to explore the impact that government spending on transport infrastructure has on regional or national growth of economies. The rationale has been that transport infrastructure spending is fundamental for the growth of economies and must be sustained even if government spending is falling. In the literature, however, cross country comparison on the impact of transport infrastructure is virtually missing. Thus one does not get to know whether the results derived for one particular country or region applies to others. Furthermore, a question can be addressed whether additional infrastructure spending in developed countries enhances growth as compared to developing countries. Developed countries have a higher level transport infrastructure supply and therefore the elasticity of growth with respect to infrastructure spending can be hypothesized to be lower as compared to developing countries.

This paper has the objective of supplementing and widening transportation research on the impact of transport infrastructure on the efficiency of nations. The performance of nations (i.e., efficiency and productivity) is estimated using the well known Data Envelopment Analysis (DEA) to efficiency measurement. The approach proceeds in two stages. In the first stage, efficiency of nations is calculated with GDP as the output and labor and capital as inputs. In the second stage, factors thought to influence (in) efficiency e.g. the level of spending on transportation infrastructure, pattern of development, access to hub airport and ports and demographic characteristics are regressed on the efficiency scores attained in the first stage. From this, inferences can be made on the impact of transportation spending on growth. The second stage of analysis can be extended by using statistical methods such as the F-test, the Mann-Whitney tests to analyze the differences on the impact of transportation investment on growth between groups. There is an option to subsequently use Malmquist productivity index to analyze how countries progress or regress relative to each other depending on their levels of infrastructure investments.