

**The Effects of Urban Transport on Agglomeration Economies and  
Productivity in Cities of High Growth Developing Countries**

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Extended Abstract

Over the last 30 years economic development has exhibited enormous and unparalleled economic growth rates in many of the world's developing countries. While the rapid economic growth has brought and is bringing many countries to prosperity, this process is in most cases not a smooth transition. Along the way of economic development, countries face many organizational obstacles that may prevent a country from sustained long term economic growth and development. Economic development is closely related to urbanization or the share of population that resides in cities. By 2030, between 4 and 5 billion people will live in cities, which will nearly be a double of the urbanization level of the year 2000. While economic development leads to an increase in urbanization, urbanization itself does not cause further economic development if cities aren't managed sustainably (Henderson, 2010). Cities in high growth developing countries face issues with a lack of education, problems of healthcare and sanitation, non-existent or inefficient public infrastructure (including public transport) and high levels of pollution due to high levels of congestion. However, while developing countries face these organizational issues in their cities, these cities in particular are a major engine of a country's economic growth. Cities foster the exchange of knowledge, the promotion of innovation, the development of advanced skills and the import and adaption of new technologies. The big cities of developing countries also mostly act as the first entry points of introducing new technologies to the country. Therefore, for the reasons cited above, cities are

indispensable for a country's development and it is crucial that governments govern and manage these cities sustainably.

A good body of literature exists on the economy of cities in the developing world. However, research on cities of high growth developing countries still leaves many issues untackled and questions unanswered. A particularly important and interesting question is the issue of agglomeration economies or the productivity effects of cities on firms. There are a variety of factors that make the localization of firms in cities advantageous for them. Improved access to specialised services (sharing facilities and suppliers as well as being able to share gains of individual specialisation), better access to thick labour markets (sharing of a labour pool and higher probabilities of better matches between unemployed workers and vacant positions) and additional positive effects of learning (of workers) and knowledge exchange (see Puga (2010) for a more detailed discussion). Within the body of literature there appears to be a general consensus that urban agglomeration economies have a positive impact on productivity of firms and that firms benefit are able to benefit from positive externalities from close spatial concentration. Even though the general result can be stated as a positive effect, the magnitude of calculated elasticities varies between studies. This variation can be attributed to a variety of factors. First, different studies employed different data, some studies relied micro-level data, while others used aggregate data sets. Second, in some studies wage models have been employed to calculate the effect of urban agglomeration on productivity, other studies relied on production functions to do so. Third, one other important difference is the measure of agglomeration employed. The first wave of literature employed mostly measure of total urban population, while later and more recent studies employed measures of employment density or market potential. There have concerns of reverse causality between productivity and urban agglomeration, and it is for this reason that regressions employing the instrumental variable approach have become prominent in this field. The reported estimates of the effects of urban agglomeration on productivity range from 4% to 8%. An important paper by Rosenthal and Strange states that a doubling in size of a

given particular local industry results in a 2 to 10 percentage points increase in their worker productivity. In the same paper they state that a doubling of city size will lead to a high productivity increases, especially for firms that rely heavily on advanced technologies.

The industrial structure of developing countries differs greatly from that of a developed country. While developed countries have diversified economies with a strong service sector, developing countries rely heavily on the manufacturing industry. Manufacturing tends to be located in cities during economic development and transition but at later stages, as the rents of cities become high, manufacturing firms tend to decentralise and relocate. The service sector of developing countries is mostly non-existent or negligibly small. While patterns of the development of sectors in conjunction with the economic development of countries have been studied (Imbs and Wacziarg, 2003 for example) urban agglomeration effects within cities of high growth developing countries have not.

Following the paper of Duranton and Turner that draws the connection between urban transport and city productivity by looking at U.S. highways and productivity of U.S. cities, this paper aims to fill the gap in the literature connecting urban agglomeration in cities of high growth developing countries and urban transport. This paper focuses on researching the effects that public transport has on agglomeration economies and consequently on productivity in cities of high growth developing countries.

We find positive elasticity estimates that are in line with the previous literature on developed countries, but exceed them slightly. We hypothesise that this is due to the heavy reliance of developing countries on their cities as entry points for innovations and new technologies and as their role as engines of the overall economic development.

*JEL Classification: C21, C23, O14, O18*

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## **References**

Duranton, G. 2008. Viewpoint: From Cities to Productivity and Growth in Developing Countries, *Canadian Journal of Economics*, 41 (3), 689 – 736.

Duranton, G. & M. A. Turner, 2012. Urban Growth and Transportation. *Review of Economic Studies*, 01, 1 – 36.

Graham, D. J. 2007. Agglomeration, Productivity and Transport Investment, *Journal of Transport Economics and Policy*, 41 (Part 3), 317 – 343.

Gwilliam, K. 2003. Urban Transport in Developing Countries. *Transport Reviews*, 23 (2), 197 – 216.

Henderson, J. V. 2010. Cities and Development. *Journal of Regional Science*, 50 (1), 515 – 540.

Imbs, J. & R. Wacziarg. 2003. Stages of Diversification. *American Economic Review*, 93 (1), 63 – 86.

Melo, P., D. J. Graham & R. B. Noland. 2009. A Meta-Analysis of Estimates of Urban Agglomeration Economies. *Regional Science and Urban Economics*, 39, 332 – 342.

Puga, D. 2010. The Magnitude and Causes of Agglomeration Economies. *Journal of Regional Science*, 50 (1), 203 – 219.

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Venables, A. J. 2007. Evaluating Urban Transport Improvements. Cost-Benefit Analysis in the Presence of Agglomeration and Income Taxation. *Journal of Transport Economics and Policy*, 41 (Part 2), 173 – 188.

Vickerman, R. 2008. Transit Investment and Economic Development. *Research in Transportation Economics*, 23, 107 – 115.