

# Transport-Induced Agglomeration Effects: Evidence for Metropolitan Statistical Areas in the US

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## ABSTRACT

There has been extensive research on the impact of transport infrastructure on economic growth. By and large the majority of existing research has focused on the role of transport as a direct factor of production, entered directly in a production function. Previous evidence for the US on the effects of transport on economic output is characterised by the existence of mixed results, tending towards small, but statistically significant, positive effects.

More recent research has how transport improvements can influence economic output through agglomeration economies. This relationship has been formally described by Venables (2007), who showed that there are productivity gains from urban transport improvements that arise through city size. Although there is abundant research on the relation between productivity and agglomeration economies, only very few studies have attempted to account for the role of transport in this relationship (e.g. Rice et al., 2006, Graham, 2007, Néchet et al., 2011). This has generally been done by specifying agglomeration economies as a function of transport, using *market potential* type measures. These studies, however, cannot measure the extent to which agglomeration effects are reinforced, or reduced, through provision of different types of transport.

In this paper we attempt to uncover the relationship between productivity, agglomeration economies and transport for 98 large Metropolitan Statistical Areas in the US over the period 2001-2008. The objective is to quantify how much of the positive effect of agglomeration economies on productivity arises through transport provision. Using a system of simultaneous equations we measure the indirect effect of transport on productivity which emerges through agglomeration economies.

Our most interesting finding is that the provision of public transport reinforces urban agglomeration economies, while road transport appears to weaken the benefits of urban agglomeration economies. This means that transport-induced agglomeration effects are positively reinforced by public transport but

negatively affected by road transport. Road networks may be more important in ensuring inter-city accessibility but appear to have a negative direct effect of urban agglomeration.

Similarly to existing evidence, we find positive agglomeration effects on productivity. The direct effect of doubling employment density on earnings is approximately 4.5%, while the overall effect is 3%. As for the direct effect of transport provision on spatial economy, we find that the provision of road transport can help increase productivity while the provision of public transport either has no significant impact or has a small negative impact.

*JEL Classification: R11, R12, R41*

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