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Transport policies in light of the new economic geography: The Portuguese experience

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Abstract

Using the case study of Portugal over the period 1985 to 1998, this paper reports on an empirical test of hypotheses derived from the new economic geography paradigm and on its policy implications. Our results seem to confirm the empirical relevance of the underlying model over different periods of time. We also find that Portuguese transport policy has not contributed towards spatial equity. However, our simulation of a further planned expansion of the transport network shows that if transport costs are lowered sufficiently industry will spread. This suggests a bell-shaped relationship between transport costs and agglomeration, as has already been proposed by theory.

JEL classification: R3; R11; H54
Keywords: Economic geography; Agglomeration; Portuguese transport policy

1. Introduction

The idea that the interaction between transport costs and increasing returns to scale gives firms an incentive to locate near large markets is a central element in the New Economic Geography (NEG) literature. In this regard, the NEG constitutes a conceptual framework with which to investigate the pecuniary externalities that arise from this interaction. In particular, it highlights transport costs as a possible choice parameter to influence industry agglomeration. However, importantly, the effect of transport costs on industry location in NEG models is argued to be bell-shaped, so that the effect of transport policy is contingent on the degree of integration of regions.

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More precisely, as transport costs fall, the same centrifugal and centripetal forces driving the agglomeration of economic activities in early stages of integration will also cause the spread of industry to less developed regions as integration proceeds (Fujita et al., 1999). While this has now been widely documented theoretically by many of the most prominent scholars, "we know that economic argumentation succeeds at least as much on its aesthetics as its empirical support" (Krugman, 1991, p. 34). Thus, if one were to use the NEG models as frameworks within which to consider decreasing transport costs as a possible channel through which policymakers may influence the location of activities, it is crucial to be confident of their empirical relevance. In the current paper we explicitly test the hypotheses of the NEG paradigm regarding transport costs and its policy implications using the case study of Portuguese transport policy.

Our empirical test is based on the structural framework recently developed by Combes and Lafourcade (2001), which models the strategic interaction between agents, input–output linkages, and endogenous demand, and allows for the heterogeneous impact of the transport costs across industries.[1] Proposing a linear specification of their model, these authors create a tractable methodology allowing for structural estimation of the impact of transport costs on industry agglomeration, that hence can be used to test the predictions of the NEG paradigm in this regard. Moreover, since transport costs are largely determined by transport infrastructure (e.g., Limão and Venables, 2001) and transport infrastructure is generally an outcome of transport policy, Combes and Lafourcade's framework naturally lends itself as a tool for the analysis of transport policy. To the best of our knowledge, our study constitutes the first attempt to explicitly investigate the impact of transport policy on industry location using a NEG framework.[2]

Arguably, Portuguese transport policy is particularly suitable to the task at hand. Indeed, Portuguese public investment in transport infrastructure represents more than 1.90% of GDP between 1985 and 1998 (Pereira and Andraz, 2001). More than 70% of the Portuguese public investment in transport infrastructure was related to road networks. Additionally, 13.5% of European structural funds received by Portugal during the period 1986–1998 were allocated to transport infrastructures (62.2% of the transport infrastructure amount was allocated to road networks). As a result of this investment, for instance, the motorway network increased from 234 km to 1393 km over this period.

There are already a number of studies that have adopted a structural approach to test the empirical relevance of the NEG models. Examples at the country level include Hanson's (2005) seminal paper linking nominal wages to market access within the United States, and Ross' (2001) and Brakman et al.'s (2004) implementation of Hanson's approach on German data, while Redding and Venables (2004) conduct a cross-country level analysis (see the survey by Overman et al., 2003). Importantly, however, all of these works do not explicitly examine the impact of transport costs on industry location and hence their results can not directly be used to assess transport policy. While the implementation of the Combes and Lafourcade methodology to France by the authors themselves seminally addresses this aspect, their data are arguably not ideal for assessing transport policy. More specifically, their cross-sectional data is not exhaustive,

[1] Following Head and Mayer (2004, p. 3), this paper considers that NEG models can also rely on Cournot competition with free entry.

[2] A related study is that of Venables and Gasoriek (1999). These authors used a CGE-model à la Dixit-Stiglitz for a set of regions of the four Cohesion countries to simulate the effects of road projects. There are, however, important differences between their work and the current paper. First, their model structure is imposed and not subjected to econometric testing. Second, the matrix of transport costs between regions had to be inferred on the basis of distance and not on real inter-regional transport cost. Third, they simulate the changes induced by individual projects and not the full road network.