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The role of public infrastructure and subsidies for firm location and international outsourcing

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Abstract

This paper presents a model in which final goods producers outsource intermediate input production. Intermediate inputs are differentiated and their production can be located at home or abroad. The model is used to examine competitive location policy in a (two-country) free trade area (FTA). It is shown that national public infrastructure investment has a positive effect on both the number of intermediate input producers and the return to the immobile factor in the home country. International outsourcing from home declines. Opposite effects are triggered in the partner country. In a welfare analysis we characterize national infrastructure policies that aim to maximize national income (net of tax costs) and compare the non-cooperative FTA-equilibrium with optimal policies from an integrated point of view. We show whether or not there is a need for policy coordination. Firm subsidies are discussed as an alternative to public infrastructure investment.
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1. Introduction

Location has become a key issue in the political debate on the macroeconomic consequences of the recent wave of globalization. Modern industrial production is characterized by a high and increasing degree of vertical fragmentation and international

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outsourcing.[1] The optimal location is chosen for individual production stages, and specialized input producers make use of competitive location advantages all over the world. These changes in firm location are usually associated with international capital flows.

Indeed, it is a salient feature of the empirical evidence that at the same time capital mobility, firm mobility and the volume of intermediate goods trade have increased substantially. However, an integrated approach for analyzing these phenomena is so far missing in the literature. To close this gap is the purpose of our paper. It provides a simultaneous explanation of the location of input producers, the volume of international outsourcing (in the form of intermediate input trade) and the returns to immobile production factors in a model with international capital mobility. Explanatory variables are the economic fundamentals and national public infrastructure provision which is used for the purpose of competitive location policy.[2] Firm subsidies are another instrument of competitive location policy that is considered.

Our model emphasizes the importance of public infrastructure investment for a country's attractiveness as a location for intermediate input production. There is broad consensus among economists and politicians that public infrastructure for firms is an important aspect of competitive location policy. EU members, for example, agreed upon a benchmark method to determine the competitiveness of the EU economies. Among 54 indicators that are used for the assessment, provision of infrastructure plays a prominent role (see Brakman et al., 2002). And the Portland Development Commission (2002) states that "an important role of government is to increase economic capacity by improving quality and efficiency of public infrastructure and utilities necessary to business operation" (p. 7). In the context of vertical fragmentation, governments can use public infrastructure provision as a policy instrument to attract a higher number of intermediate input producers and therefore to reduce the volume of a country's component imports from abroad and to increase its attractiveness as a target for foreign outsourcing.[3]

We set up a general equilibrium model with one final good and differentiated intermediate inputs. Production in the final goods sector employs internationally immobile labor for assembling the outsourced (differentiated) intermediate inputs, which are supplied under monopolistic competition. The intermediate inputs can be imported from foreign suppliers (international outsourcing) or be purchased at home (national outsourcing). Intermediate input production makes use of internationally mobile capital. Final goods markets as well as factor markets are competitive.

We assume that two small industrialized economies characterized by identical production technologies form a free trade agreement (FTA). Endowments consist of immobile labor and mobile capital that is owned by residents of the respective country. Intermediate input suppliers can decide about their location within the FTA, thereby taking into account the attractiveness of the two FTA member countries for intermediate

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[1]See Hummels et al. (2001) and Feenstra and Hanson (2004) on the relevance of vertical fragmentation and international outsourcing in modern industrial production. For recent theoretical contributions to the topic of international outsourcing, compare Grossman and Helpman (2005), Jones (2000) and Kohler (2004).

[2]"A competitive location policy is a comprehensive policy ... that includes all aspects that define the attractiveness of a location." (Brakman et al., 2002, p. 2; in translation of Dutch Ministry of Economic Affairs, 1999, p. 114 f.)

[3]For instance, Egger and Egger (2005) find that infrastructure quality in the target countries explains about 30–40% of EU outward processing trade.

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