# Sectoral analysis of foreign direct investment and growth in the developed countries

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## ARTICLE INFO

## ABSTRACT

Empirical studies on foreign direct investment (FDI) and growth in developed countries have yielded conflicting results using cross-country regressions. We use sectoral data for a group of six country members of the OECD. Our paper is the first to identify the sector-specific impact of FDI on growth in the developed countries. Our results show that FDI has positive, or no statistically discernible, effect on economic growth directly and through its interaction with labor. Moreover, we find the effects seem to be very different across countries and economic sectors.

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## 1. Introduction

During the past two decades, foreign direct investment (FDI) has become increasingly important, with increasing volumes of direct investment flowing between and into the developed countries recently. The theoretical literature in economics identifies several channels through which FDI inflows are predicted to benefit the receiving economy. Yet, the empirical literature has lagged behind and has had more trouble identifying these advantages in practice. Most prominently, a large number of applied papers have looked at the FDI-growth nexus, but their findings have been far from conclusive.[1]

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[1] With the availability of better data, the last few years have seen an especially large number of empirical papers devoted to this question (e.g., Alfaro et al., 2004; Bengoa and Sanchez-Robles, 2003; Durham, 2004; Hsiao and Shen, 2003; Li and Liu, 2005).

Notwithstanding the absence of any robust conclusions, most countries continue to vigorously pursue policies aimed at encouraging more FDI inflows.[2]

In this paper, we use an endogenous growth framework to estimate the impact of FDI on growth using sectoral data for the OECD member countries. Using an augmented production function, we let FDI directly affect GDP growth and also indirectly through its interaction with labor. This approach creates heteroskedasticity, and so feasible generalized least squares (FGLSs) are employed. The results show that FDI has a positive and statistically significant effect on economic growth operating both directly and indirectly through its interaction with labor. Interestingly, the effect is not equally distributed across economic sectors.

Our paper contributes insights on the FDI-growth nexus in several ways. First, we employ a country-panel fixed effects regression-based approach that enables us to disregard variables that measure the time-invariant institutional, legal and cultural environment in which FDI projects are implemented and which may have an important impact on growth. These time-invariant institutional details are very difficult to quantify precisely, and our approach allows us to overcome this potential omitted-variables bias.

Second, our paper is one of the very first to use data from different sectors to examine the sectoral differences in the impact of FDI on economic growth. This is potentially important since much of the recent theoretical and empirical micro-econometric literature concludes that FDI spillovers, if they exist, are found in intra-industry rather than in inter-industry settings.[3] This finding further justifies our attempt to ask whether the impact of FDI on growth might be different for different sectors and to begin to investigate whether particular sectoral characteristics are conducive to a positive impact of FDI.

Section 2 provides a brief survey on the state of current research on the growth effects of FDI. Section 3 presents our model and the data we use. Section 4 analyzes the empirical results, and Section 5 concludes.

## 2. The literature

A number of hypotheses have been offered regarding the interaction of foreign investment and growth. Singer (1950) argued that FDI will "crowd out" domestic investment since foreign firms often have greater access, at better terms, to international capital markets and will use the cheaper credit to drive out otherwise productive firms. This makes the foreign firms superior to the domestic ones in financing large projects and in taking advantage of changes in comparative costs, consumers' tastes, and market conditions. Findlay (1978) models this channel explicitly using an augmented Solow model. Assuming that domestic technology is an increasing function of FDI, he finds that the growth effect of FDI is ambiguous; an increase in the technology level might be offset by an increase in the dependency on foreign capital.[4]

Romer (2001) looks at technology as a non-rival input and at foreign direct investment as a source of technological advance. In this case, the FDI effect is unequivocally positive. Balasubramanyam et al. (1996) on the other hand, suggests that the growth effects of FDI might be positive for export promoting (EP) countries but negative for import substituting (IS) ones; the reduction of foreign import goods

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[2] For a critical look at the fiscal revenue and spending policies targeting FDI inflows, see Hanson (2001) and Mooij and Ederveen (2003). Other government policies that may impact FDI inflows are discussed in De Mello (1997) and include property rights regime (including intellectual property), financial incentives (subsidized loans), bureaucratic regulations of foreign-owned firms, infrastructure provision, international trade and investment policies, the degree of openness of the capital account, and exchange rate policies.

[3] For a recent survey of the issue of inter- vs. intra-industry spillovers from FDI see Lipsey and Sjöholm (2005). Ericsson and Irandoust (2001), in their research on FDI in the Nordic countries, point to the differences in the sectoral composition of FDI inflows into these countries as a possible source for the differences in the causality structures they identify. They find, for example, that FDI 'causes' growth in Sweden and Norway, but fail to find a similar relationship for Denmark and Finland. They argue that the latter are mostly distribution centers (Denmark into the Nordic bloc and Finland into Russia and the Baltic countries), while for the former FDI concentrate more on manufacturing (Sweden) and energy and natural resources (Norway).

[4] A related channel is the 'creative destruction' hypothesis raised by Aghion and Howitt (1992). If the competition from the foreign investors results in the destruction of inefficient firms, the FDI effect will turn out to be positive.