Title

Inward FDI and Regional Performance in Europe after the Crisis

Authors

Riccardo Crescenzi* and Roberto Ganau°*

Affiliations

* Department of Geography and Environment, London School of Economics and Political Science, London, United Kingdom

° Department of Economics and Management "Marco Fanno", University of Padova, Padova, Italy

Extended Abstract

In the last decades, foreign direct investment (FDI) has played an increasing role in shaping the globalisation process. For example, inward FDI has globally increased by 416% from 1995 to 2015, i.e. about three times the world Gross Domestic Product (GDP).[1]

This stylised fact helps to explain why, starting from the 1990s, the economics literature has theoretically identified several channels through which inward FDI may favour the host economy and its domestic firms (Markusen and Venables, 1999), thus providing an economic justification for the development of *ad hoc* policies aimed at attracting and, then, subsidising multinational firms (Mutti and Grubert, 2004).

Multinational firms are widely regarded as knowledge- and technology-embedded actors which tend to outperform less productive domestic counterparts in the host economy (Castellani and Zanfei, 2006). However, inward FDI represents both a channel through which the host economy can increase its financial and physical capital endowment, and an externality-generator which pushes up the productivity of domestic firms (Javorcik, 2004). Theoretical contributions have identified two main interaction mechanisms between foreign- and domestic-owned firms for spillovers to materialise: externalities through intra-industry linkages arise from demonstration effects, competition effects and labour mobility; on the contrary, externalities through inter-industry interactions arise from backward and forward linkages among vertically integrated multinational and domestic firms. Therefore, inward FDI is supposed to stimulate aggregate productivity (Aitken and Harrison, 1999) and, consequently, economic growth both directly − i.e. through the higher productivity of multinational firms − and indirectly − i.e. through spillovers benefitting domestic firms.

As a consequence, several scholars have deeply investigated the effects of inward FDI on the economic performance of host countries and their domestic firms, although reaching opposing and,

[1] Authors' elaboration on United Nations Conference on Trade and Development's (UNCTAD) data accessible at http://unctadstat.unctad.org/EN/.

somehow, inconclusive results (Barba Navaretti and Venables, 2004).

More recently, the regional dimension of inward FDI has received greater attention, in the light of an increasing interest economic geography has put on the local determinants of economic performance. This research strand has also highlighted the spatially-embedded nature of FDI-driven spillovers, thus identifying a potential source of bias characterising previous studies at the national level. Studies on the regional dimension of FDI extend to foreign-owned firms' spillovers the general idea that knowledge flows and technology transfer are maximised at the local level (Audretsch and Feldman, 1996). In fact, the geographic proximity among actors facilitates interactions, thus amplifying externalities. However, only few contributions have empirically investigated the regional effects of inward FDI, and mainly focusing on single-country case studies.

This paper tries to contribute to this research strand by empirically analysing whether and how inward FDI affects the short-run regional labour productivity growth in the European Union (EU) after the Great Recession. Specifically, it proposes to analyse the effect of inward FDI from a dual perspective: i.e. it investigates the effect of both the presence of foreign-owned firms in the host region and the sectoral structure of inward FDI. The first dimension aims at evaluating whether and how inward FDI − i.e. the presence of foreign capital − has some effects on the host regional economy *per se*. The second dimension, on the contrary, aims at analysing whether host regions benefit more from highly sectoral diversified or concentrated investments. Although previous work has focused on the intra- and inter-industry dimensions of FDI-driven externalities, this is the first attempt to investigate whether the sectoral diversification (or concentration) of FDI matters.

The rationale underlying this dual approach is that FDI may represent a channel for the reconfiguration of the host region's position in value chains. A region can redefine and upgrade its sectoral structure by promoting the entry of sectors which are more (or less) "compatible" with the already existing local economic environment. This process can be particularly relevant in a short-run post-crisis period, during which regions have to strengthen their resilience capacity. In this respect, the presence of foreign affiliates, and their sectoral diversification (or concentration), can have a triple role. First, it may contribute to and improve the local process of inter-firm knowledge exchange: on the one hand, an increase in the absolute number of foreign-owned firms can lead to a larger amount of knowledge and technology available in the host region, thus magnifying non-pecuniary externalities among firms and, consequently, promoting productivity growth; on the other hand, knowledge flows and technology transfer can be optimised by the sectoral structure of inward FDI. This last effect is difficult to identify a priori: in fact, either a "cluster effect" driven by sectoral concentration or an effect driven by sectoral diversification of inward FDI may matter. Second, it may magnify the portfolio effect based on industrial diversification which protects a region from external shocks. In this case, FDI − in particular, brand new greenfield investments − represents a source of new resources for a region *per se*, and the sectoral diversification of investments is expected to magnify the portfolio effect of a region. Third, it is likely to push the value chain reconfiguration process of the host region through the identification of the key sectoral dimensions promoting resilience and, consequently, favouring a positive short-run performance.

Therefore, two inter-related questions arise. Do host economies benefit from inward FDI? If this is the case, which sectoral structure of inward FDI really matters?

Two different heterogeneous sources are accounted for in answering these questions. The first one refers to the host region's level of sectoral diversification, which allows to identify whether a matching exists between FDI and host region in terms of sectoral structure. The second one captures the industrial dimension of FDI, and it is analysed by testing separately the effect of FDI in the production and services industries. Foreign-owned firms operating in the production industry are expected to be more vertically integrated with domestic firms than those operating in the services industry, thus representing a potential greater source of (inter-industry) externalities driven by the supply of intermediate inputs. However, services FDI tend to be more value-added, especially in knowledge-intensive sectors, as well as potentially connected with a greater variety of domestic activities, thus producing externalities in management, organisational, marketing and technological knowledge.

Other two novelties characterise the paper. First, unlike the majority of works, it analyses the regional dimension of FDI from a cross-country perspective. Second, it proposes an alternative strategy to identify the casual effect of FDI on regional performance.

The empirical analysis is performed on a sample of 159 regions covering all EU-28 countries for which data are available over the 2008-2014 period and characterised by a sub-national division, and it employs two main data sources: the Eurostat's (Statistical Office of the European Communities) *Regio* database, which provides general economic and demographic data on the EU regions, and the Financial Times' *fDi Markets* database, which provides information on brand new greenfield FDI projects.

The effect of brand new greenfield FDI on the short-run post-crisis economic performance of EU regions is tested by specifying a labour productivity growth equation, where the dependent variable captures the average yearly labour productivity growth defined over the 2008-2014 period. The explanatory variables of interest capture, respectively, the effect related to the amount of FDI received during the 2008-2014 period and the effect related to the sectoral structure of FDI, which is measured through the inverse of a Herfindahl-Hirschman Index defined on the cumulative number of investments set up during the 2008-2014 period. The regression equation includes also a set of region-specific controls defined at the beginning of the growth period − labour productivity, human capital, population density, sectoral structure − and a pre-crisis measure of regional FDI attractiveness, besides a set of country dummies.

An instrumental variable approach is employed in order to identify the causal effect of FDI on regional labour productivity growth, as the Ordinary Least Squares estimation of the FDI-related coefficients is likely to be biased due to potential endogeneity − e.g. reverse causality, unobserved regional shocks. The identification strategy exploits information available for 174 out of the 179 Economic Areas (EA) identified by the United States' Bureau of Economic Analysis which received greenfield FDI over the period analysed. The instruments have been constructed by matching each EU region in the sample with the sample of EAs on the basis of a series of pre-crisis characteristics.

These characteristics are defined in terms of both structural factors usually identified as location determinants of multinational firms (innovation, wealth, unemployment rate, human capital, population density), and inward FDI dynamics (investments set up, sectoral structure of FDI, share of FDI received). In particular, this second set of variables exploits a break in inward FDI which has characterised Europe and United States. Both areas presented an increasing pattern of inward greenfield FDI over the 2003-2007 period, while the year 2008 has represented a break-point in this trend: while the number of FDI in Europe has started to decrease, it has significantly increased in the United States. Then, the instruments are constructed for each EU region as the mean value of the corresponding EAs' FDI-related variables weighted by the inverse of the distance calculated on the vector of pre-crisis characteristics between each EU region and each EA.

The validity of the identification strategy relies on the presence of correlation between multinational firms' location choice determinants and inward FDIs in both Europe and US, and the absence of correlation between idiosyncratic patterns characterising the inward FDI dynamics in Europe and US in the post-crisis period.

Overall, the results suggest that inward FDI has a positive effect on labour productivity growth, and that regional performance benefits from the sectoral concentration of FDI. In particular, the sectoral structure of investments has an effect which is triple the absolute size effect of FDI. This suggests that it is not the amount of investments received *per se* which really matters, but their sectoral concentration. The results suggest that FDI influences the economic performance of sectoral concentrated regions only. Moreover, it emerges that FDI in the services industry not only plays a greater role than FDI in the production industry, but also matters for regions characterised by a high level of services endowment only.

The empirical analysis highlights some interesting points. First, it clearly emerges that the effect of inward FDI should be analysed by accounting for its sectoral structure. Second, it emerges that an "optimal" match between FDI and host region exists: i.e. sectoral concentrated regions benefit from sectoral concentrated FDI. Finally, industrial differences in inward FDI seem to matter.

These results have interesting policy implications, in the light of the attention (regional) governments have in attracting multinational firms. Attraction policies should be region-specific, and they should target inward FDI with specific characteristics in order to produce positive effects on the regional economy.

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