OUTWARD FDI AND SUSTAINABLE TRADE BALANCE PATH: EVIDENCE FROM PORTUGUESE ECONOMY, 1996-2011

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Abstract

In the last two decades the internationalisation of the Portuguese economy increased, particularly through outward FDI on the Portuguese-speaking countries. Different studies in economic literature conclude for the existence of a complementary relationship between foreign production and trade in traditional outward investing economies, contributing to the long term sustainable path of the country’s trade balance. In our paper we discuss if this hypothesis holds for a new outward investor like Portugal, with reference to the period 1996-2011. We use a panel data analysis within a framework of gravity models for exports and imports, with a sample composed by EU-15, U.S.A., Brazil, Angola, Spain, Japan and China.

Our main conclusion is that the Portuguese outward FDI seems to be negatively related to exports, suggesting a substitution effect, and thus a negative trade balance effect, for the majority of countries in our sample. The exception to this tendency seems to be Spain, confirming and reinforcing a former study for the period 1996-2007. Angola also reveals a positive effect on exports but, in this case, the effect on imports outweighs that on exports, contradicting the results obtained in that same former study.

The results we achieved now suggest that the expected positive impact on home country’s trade of the increased internationalisation of the Portuguese economy as an exporter of capital, on the last fifteen years, is not evident and continue to be not predicable with certainty relying on empirical evidence.

Keywords Foreign Direct Investment, Trade, Gravity Model, Portugal, Portuguese-speaking countries

Jel Classification Numbers F21, C23, F14
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1. INTRODUCTION

The main objective of this paper is to analyse the effect emanating from Portuguese outward Foreign Direct Investment (FDI) on exports and imports with its main economic partners, in the period between 1996 and 2011.

This study seemed relevant to us for two reasons. Firstly, we want to participate on the debate that emerged in the last decade about what happens in home country when national firms become increasingly multinational. Before, the discussion on the effects of multinational firms tended to be focused on host countries, i.e. the countries where they operate.

Secondly, we want to evaluate if the complementary relationship between foreign production and trade, shown in most studies for traditionally outward investor economies (large developed nations) also holds for a country like Portugal, where outward FDI is a more recent phenomenon and foreign trade faces a long term unbalanced path.

The paper is structured as follows: section 2 presents the theoretical background of our research and section 3 briefly reviews the previous empirical studies regarding the question in analysis. Section 4 contains the description of data and econometric methodology, jointly with the presentation of main empirical results, and finally section 5 presents the conclusions and further research questions.

2. OUTWARD FDI EFFECTS ON TRADE – THEORETICAL BACKGROUND

Traditionally, there has been a divergence in terms of the theories on FDI and international trade: the latter try to explain why countries trade with each other and the former try to account for why firms produce and invest outside its borders.

In the neoclassical approach of trade theory, Mundell (1957) was the first to focus on the relationship between capital movements and trade of goods, demonstrating that FDI and exports become substitutes for each other. Upon the assumptions of the Heckscher-Ohlin-Samuelson (HOS) general equilibrium model, the flows of FDI depend on the differences in factor price and factor endowment between countries. So, he showed that the international movement of capital driven by FDI displaces the movement of those goods produced in a capital-intensive manner, leading to an equilibrium in which factor prices and product prices have the same characteristics as in the free trade equilibrium.

We can say that the substitution effect plays a prominent role in theory, like in the product cycle model developed by Vernon (1966), in which he considered that FDI affiliates’ production and sales in foreign market replace trade in the same market.
Additionally, the theory of internalization (Williamson 1975; Markusen 1984) suggested that FDI substitutes for exports when there are sufficient costs to external transactions such as exporting or licensing. Moreover, the eclectic theory or OLI paradigm introduced by Dunning (1981), whose basic assumption is that a firm will engage in international production (i.e. become multinational) instead of exporting when it possesses at the same time ownership, location and internalization advantages, also considered trade and FDI as alternative strategies.

Over the last two decades, some models were developed in order to incorporate the concept of the multinational enterprise (MNE) into the standard theory of international trade. They show that the results on the relationship between capital movements and trade depend on whether the foreign operations are in goods industries or in services, are in developed or developing countries, and specially if the foreign operations´ relation to home operations is “horizontal” or “vertical”.

In the first case, the MNE produces the same goods and services in their home country and in multiple plants located in the host countries, and so the same (horizontal) stage of the production process is duplicated. This is the most common type of FDI and refers to bilateral investments between developed countries, and is also known as market-seeking FDI, because is driven by market considerations. The models based on horizontal FDI, such as Markusen (1984), Hortsman and Markusen (1992), Markusen and Venables (1995, 1998, 2000), Brainard (1997) and Egger and Pfaffermayer (2002) consider that the choice of MNEs is determined by factors such as the firm specific advantages (activities of research and development, marketing, managerial know-how, etc.), the firm´s scale economies, plant scale economies and transaction costs – transport plus barriers to trade and investment. The firm faces the dilemma of exporting or producing abroad, as a mean to avoid those costs that discourage exports, and naturally the substitutability between such foreign investments and trade tends to prevail.

In the case of vertical FDI, the firms fragments the production process geographically and locates specific stages of the value chain in host countries in order to explore factor-price differences. This type of FDI is motivated by cost considerations and it is also known as efficiency-seeking FDI, where complementary between outward FDI and trade is normally found. In this context, the theoretical contributions of Helpman (1984), Helpman and Krugman (1985) and Grossman and Helpman (1991) are particularly useful to explain FDI from developed into developing countries, and show that it generates complementary trade flows of final goods from foreign affiliates to parent firms or to the home country and intra-firm transfers of intangible headquarter services from parent firms to foreign affiliates. Lipsey and Weiss (1984) argue that one way by which complementarity occurs is when a firm’s production presence in a foreign market with one product may increase total demand for the whole line of products.

Finally, studies like Carr et al. (1998) attempted to combine both horizontal and vertical motives for FDI. They basically imply that horizontal FDI is more prevalent with countries that are similar in market size, relative factor endowments and technical
efficiency and vertical FDI arises when countries differ substantially in terms of factor endowments. Accordingly to them, there are solutions that admit both complementary as well as substitution between FDI and trade.

Thus, as both substitution and complementary effects can occur, the main conclusion of the theoretical literature is that the impact of outward FDI on home country’s trade is not predictable \textit{a priori} by any economic theory, but it is mainly an empirical question

3. EMPIRICAL STUDIES

The question regarding the impact of outward foreign investment on domestic exports has been addressed all over the years in several countries by two different ways, with a consequently variation in methodology and generality of results: the business-oriented analyses have attempted to examine what would have happened in specific cases if investment abroad had not been possible, and the econometric studies have tried to detect the overall relationship between FDI and home country exports in larger samples of firms or industries.

In what refers the business-oriented analyses, we can highlight the earliest contributions of Stobaught et al. (1972), who studied nine U.S. firms, and Jordan and Vahlne (1981) whose study aims to compare the domestic effects of foreign direct investment with alternative ways (like exports, licensing, and minority joint ventures) to exploit the competitive advantages of a sample of Swedish firms. The overall conclusion they reached is that foreign direct investment has positive effects on home country exports and employment, particularly for low-technology products with high transportation costs, because the establishment of foreign affiliates resulted in large increases in the foreign market shares and in exports of intermediate products to affiliates. However, these results were based on very specific assumptions about export survival rates, i.e. the fractions of the affiliates’ market share that could have been served by home exports, which were very low, concluding that most of the foreign markets have been lost in the absence of FDI.

The discussion about what is the appropriate counterfactual remains one of the core questions in this kind of studies, and it is likely that this debate will continue, probably with mixed results depending on assumed survival rates.

This problem of assessing survival rates and counterfactuals does not usually come up in the other type of studies about the relationship that we are analyzing. Indeed, the econometric studies usually employ regression analysis to determine the relation between exports and various firm, industry, and country characteristics. Controlling for as many other determinants as possible, the focus is on the partial effect of FDI — a negative coefficient implies that foreign production substitutes for exports, whereas a
positive sign suggests that the opposite effect of complementarity, i.e. the stimulus to home exports of intermediate and other related products, prevails in aggregate.

The most relevant econometric studies developed over the last three decades were about countries with large experience and high levels of outward investment, like U.S.A., Sweden, Japan and France, and the main conclusion about the impact of outward FDI on home-country exports is that positive correlations are more common, although there are some examples of the opposite effect. The most relevant explanations for diverging results is the level of aggregation used (country-level, i.e., based on bilateral trade data; industry-level, i.e., based on cross-section data by industry; firm-level data or product-level data, i.e., based on disaggregated export data) and, at the same time, we should also consider “the frequency of results indicating no association in either direction” (Lipsey 2002, p.12).

4. Our Study

4.1 Data and methodology

The main sources of this research were the Banco de Portugal Statistical Database and International Monetary Fund, for aggregate data on trade (exports and imports), outward FDI and GDP, both measured in Mio Euro. The data on population are provided by Eurostat and World Bank Database, while the absolute geographical distance between Lisbon and the other countries’ capitals come from www.globefeed.com.

Our study covers 16 years (1996-2011) and, being Portugal the home country, the sample is composed of 18 host countries – UE15 (considering Belgium and Luxembourg together), U.S.A., Angola, Brazil, China and Japan – that account for 79 percent of the Portuguese outward investment, 83 percent of Portuguese imports and 87 percent of Portuguese exports in that period.

The following table contain the descriptive statistics for the totality of sample.

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2 Country individual descriptive statistics are available from the authors upon request.
Table 1: Summary statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Error</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exports</td>
<td>288</td>
<td>1465672</td>
<td>2045745</td>
<td>17647</td>
<td>1.10e+07</td>
</tr>
<tr>
<td>Imports</td>
<td>288</td>
<td>2116441</td>
<td>3358403</td>
<td>5868</td>
<td>1.90e+07</td>
</tr>
<tr>
<td>Investment</td>
<td>257</td>
<td>336614.2</td>
<td>847464.8</td>
<td>2</td>
<td>9540291</td>
</tr>
<tr>
<td>GDP</td>
<td>288</td>
<td>1455387</td>
<td>2293983</td>
<td>4725.081</td>
<td>1.15e+07</td>
</tr>
<tr>
<td>Population</td>
<td>288</td>
<td>1.27e+08</td>
<td>2.92e+08</td>
<td>3620065</td>
<td>1.34e+09</td>
</tr>
<tr>
<td>Distance</td>
<td>288</td>
<td>3698.571</td>
<td>2924.116</td>
<td>516.05</td>
<td>11145.27</td>
</tr>
</tbody>
</table>

In this paper, we use random-effects panel data analysis within a framework of gravity equations for exports and imports.

On the one hand, gravity models have been strongly used in the empirical literature on the determinants of FDI and trade. They were formulated in analogy with Newton’s law of universal gravitation (two objects attract each other in direct proportion of their masses and in inverse proportion of their distance) to explain the volume of trade and capital flows among countries. Their basic assumption is that exports and imports between two countries are determined positively by each country’s GDP per capita and population, that can be interpreted in terms of effective demand and market size, respectively, and negatively by the distance between them, as a proxy for transaction costs (e.g., transport costs). Additionally to these standard variables, in the present study we use an FDI-augmented gravity model, including outward FDI as an explanatory variable, whose coefficient reflects the substitution or complementarity effect on trade.

On the other hand, panel data or longitudinal data is an increasingly popular technique of analysis, with several advantages over conventional cross-section or time-series models. The major one is that panel data endows regression with both a spatial and temporal dimension, and thus it follows the same cross-sectional units (countries, states, firms, households) over a particular time span. Furthermore, it gives the researcher a large number of observations, increasing the degrees of freedom and hence improving the efficiency of econometric estimates. In our study, we use random-effects panel data model because it allows for time-invariant variables (like distance) to be included among the regressors.
4.2 Results

Before interpreting the estimation results, presented in Table 2, we should refer that the economic variables are in the log form\(^3\), and \(\text{inv}^*\) represents the Portuguese direct investment in host country, with \(\text{ang}=\text{Angola}\), \(\text{bra}=\text{Brazil}\), \(\text{usa}=\text{U.S.A.}\), \(\text{jap}=\text{Japan}\), \(\text{chi}=\text{China}\), \(\text{spa}=\text{Spain}\) and \(\text{eu}=\text{EU15 without Spain}\).

### Table 2: Estimation results

<table>
<thead>
<tr>
<th></th>
<th>Exports</th>
<th>Imports</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GDP per capita</strong></td>
<td>0.6587379***</td>
<td>0.9561288***</td>
</tr>
<tr>
<td></td>
<td>(12.31)</td>
<td>(14.25)</td>
</tr>
<tr>
<td><strong>Population</strong></td>
<td>0.5744373***</td>
<td>0.9548476***</td>
</tr>
<tr>
<td></td>
<td>(6.12)</td>
<td>(10.07)</td>
</tr>
<tr>
<td><strong>Distance</strong></td>
<td>-1.184972***</td>
<td>-1.238268***</td>
</tr>
<tr>
<td></td>
<td>(-5.26)</td>
<td>(-5.15)</td>
</tr>
<tr>
<td><strong>Invang</strong></td>
<td>0.1289151***</td>
<td>0.1758726***</td>
</tr>
<tr>
<td></td>
<td>(4.76)</td>
<td>(5.50)</td>
</tr>
<tr>
<td><strong>Invbra</strong></td>
<td>0.0042966</td>
<td>0.0679518**</td>
</tr>
<tr>
<td></td>
<td>(0.16)</td>
<td>(2.11)</td>
</tr>
<tr>
<td><strong>Invusa</strong></td>
<td>0.0541638</td>
<td>-0.1228961**</td>
</tr>
<tr>
<td></td>
<td>(1.26)</td>
<td>(-2.59)</td>
</tr>
<tr>
<td><strong>Invjap</strong></td>
<td>0.0540788</td>
<td>-0.0361576</td>
</tr>
<tr>
<td></td>
<td>(1.60)</td>
<td>(-0.76)</td>
</tr>
<tr>
<td><strong>Invchi</strong></td>
<td>-0.1708794***</td>
<td>-0.0187061</td>
</tr>
<tr>
<td></td>
<td>(-4.55)</td>
<td>(-0.36)</td>
</tr>
<tr>
<td><strong>Invspa</strong></td>
<td>0.0862736**</td>
<td>0.0323084</td>
</tr>
<tr>
<td></td>
<td>(2.48)</td>
<td>(0.80)</td>
</tr>
<tr>
<td><strong>Inveu</strong></td>
<td>-0.0147864*</td>
<td>0.0114825</td>
</tr>
<tr>
<td></td>
<td>(-1.72)</td>
<td>(0.95)</td>
</tr>
</tbody>
</table>

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\(^3\) As a consequence, the coefficients are expressed in terms of elasticities, measuring the responsiveness of trade flows with regard to percentage changes in the independent variable.
Concerning the relationship between Portuguese outward FDI and exports, the results reported in Table 2 depend on the partner country. For Angola, we observe a positive and highly significant correlation (the respective coefficient shows that a 1% increase in Portuguese FDI in this country implies a 0.13% increase in exports) and there is also evidence of a complementarity effect for Spain (a 1% increase in Portuguese FDI in this country implies a 0.08% increase in exports), at 5% significance level. By other way, we find a very significant substitution effect for China (a 1% increase in Portuguese FDI in this economy is associated with a 0.17% decrease in exports), as well as for European Union countries without Spain (a 1% increase in Portuguese FDI implies a 0.15% decrease in exports), whereas in this case such negative relationship is significant at 10% level.

Similarly to exports, the impact of outward FDI on imports depends on the partner country. Thus, we detect a significant complementarity effect for Angola, as a 1% increase in Portuguese FDI implies a 0.18% growth of imports, and we found it to be bigger than for exports. A similar effect, at a 5% significance level, is also found for Brazil (a 1% increase in Portuguese FDI is associated with a 0.07% increase in imports), while the positive correlation observed for Spain is not statistically significant. We also find a very significant substitution effect for USA (a 1% increase in Portuguese FDI in this economy implies a 0.12% decrease in imports), at 5% significance level.

Finally, for the two models, we find that GDP per capita, population and distance are highly significant with the expected sign. So, both exports and imports are increasing in the partner country’s population as well as its per capita income, and decreasing in distance between Portugal and the trading partner country.
5. CONCLUSIONS

From our results we cannot find any definitive conclusion about the relationship between outward investment by Portuguese firms and exports. In our former study, for the 1996-2007 period, we found a negative relationship suggesting an export-replacing effect and thus a negative trade balance effect for the majority of the countries in the sample. The present study doesn ’ t contradict this main conclusion but is not so clear in terms of the sign of the relationship and therefore its impact on the Portuguese trade balance.

In this study, contrarily to most of the previous empirical works for traditional outward investor economies where the export-creating effect tends to prevail, we found that the Portuguese outward FDI is negatively related to exports for the European Union countries, as well as for China but in this case with a strong statistical significance.

In opposition, a significant complementary effect is found for the case of Angola and, in a lesser dimension, for Spain, reinforcing our previous results. However, in the case of Angola the effect on imports outweighs that on exports, contradicting the results obtained in that same former study, so that the direct investment from Portugal in its former colony has a negative contribution to the Portuguese trade balance.

The exception to this tendency seems to be Spain, where the complementary effect on exports, besides being statistically significant, is clearly stronger than the effect on imports, showing that the affiliates of Portuguese companies use home inputs for production in that country, contributing positively for the Portugal’s trade balance.

This finding seems to us particularly relevant, and may act as a stimulus to a stronger Government support to outward FDI, taking into account that Spain is Portugal’s top trading partner since the simultaneous integration of the two countries in the European Community, while Angola is a former colony which was the fourth destination of Portuguese investment overseas and the fifth most important client of Portuguese products since 2005.

Concerning the effects of Outward FDI on imports we need to refer Brazil where we found a significant positive sign, suggesting a complementary effect, though less important than that of Angola. There is also the case of the USA where we found a significant negative effect suggesting a substitution relationship that needs a more detailed investigation, while the other negative signs found in the estimates are not statistically significant.

Therefore, the results we achieved on this paper, for the 1996-2011 period, suggest that the impact in Portugal of its increased internationalisation in the last two decades, particularly through outward FDI on the EU partners and Portuguese-speaking countries (that transformed the country into a net exporter of capital in seven years of the period in analysis), is not predicable with certainty and must rely on empirical evidence. So, our
results seem not give immediate support to the optimistic view of the effects on home country trade of the outward FDI.

To conclude, we can say that the present study surely deserves further research with more disaggregated data that would allow us to evaluate how outward FDI affected trade within the manufacturing sector, as well as to apply a more sophisticated model than the gravity model we have used. Unfortunately those industry-level data are not yet available, so that this constraint could be overcome by case studies on major Portuguese outward firms.
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