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Foreign Direct Investment Strategies Effects on the Brazil's Trade Balance: A Causality Analysis

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Foreign Direct Investment Strategies Effects on the Brazil's Trade Balance: A Causality Analysis

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Efectos de las estrategias de inversión directa extranjeras sobre la balanza comercial de Brasil: Un análisis de causalidad

Efeitos das estratégias de investimento direto estrangeiro sobre a balança comercial brasileira: Um estudo de causalidade

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This study investigated if there were evidences that foreign direct investment (FDI) growth improved the Brazilian trade balance through an expansion in exports and import and if there was a predictable relationship between FDI strategies and trade balances. Results show that FDI promotes an increase in exports and also show an increase in the level of imports, especially for those companies engaged in market-seeking strategy. It also shows that FDI cause exports in the short and long-run and would cause imports in the short-run, but not in the long-run. The Granger causality test for the exports equation showed that FDI inflows in Brazil, lagged of three years, stimulated the export activity indicating that FDI strategies do not automatically lead to positive externalities on trade balance.

Este estudio tuvo como objetivo investigar si los crecientes flujos de inversión extranjera directa (IED) es capaz de influir en la balanza comercial brasileña a través de la expansión de las exportaciones y las importaciones, y si existe una relación predecible entre las estrategias de inversión extranjera directa y los excedentes comerciales. Los resultados evidencian que la IED promueve un aumento de las exportaciones y las importaciones, especialmente para las empresas que participan en la estrategia de market-seeking. Los resultados muestran que la IED promueve un aumento de las exportaciones en el corto y largo plazo y promueve un aumento de las importaciones sólo en el corto plazo. La prueba de causalidad de Granger mostró para las exportaciones que los flujos de IED, retrasado tres años, estimularon la actividad de exportación que indica que las estrategias de inversión extranjera directa no conducen automáticamente a las externalidades positivas en la balanza comercial. La evidencia indica la necesidad de mayores esfuerzos para comprender cómo las estrategias de IED interactuan con la balanza comercial de las economías receptoras y de los beneficios que se pueden lograr a través de política pública.

Este estudo teve como objetivo investigar se o crescimento dos fluxos de investimento estrangeiro direto (IDE) é capaz de influenciar a balança comercial brasileira por meio da expansão das exportações e importações e se há uma relação previsível entre as estratégias de IDE e saldos comerciais. Os resultados ividenciam que o IDE promove um aumento das exportações e importações, especialmente para as empresas envolvidas na estratégia market-seeking. Os resultados evidenciam que o IDE promove um aumento nas exportações no curto e longo prazo e aumento das importações apenas no curto prazo. O teste de causalidade de Granger para a equação de exportações mostrou que os fluxos de IDE, defasados de três anos, estimulou a atividade exportadora indicando que as estratégias de IED não conduzem automaticamente a externalidades positivas sobre a balança comercial. Evidências indicam a necessidade de maiores esforços para compreender como as estratégias de IDE interagem com a balança comercial das economias receptoras e os benefícios que podem ser alcançados por meio de políticas públicas.

1. Introduction

Foreign direct investment (IDE) and international trade are focus of researchers, public policy managers and entrepreneurs around the world due to the enormous influence of these phenomena on the overall economy of any nation (Rahman, 2011). Although the attitudes towards the impacts of FDI strategies have been not conclusive, governments in many countries still offer significant incentives to attract IDE motivated by the expectation of obtaining benefits from externalities arising from the presence of transnational corporations (TNCs) (Gorg and Greenaway, 2004).

Most countries now consider FDI as an important source of development (Tabassum et al., 2012). Hailu (2010) arguments that FDI is considered a potent instrument of economic development, especially for the less developed countries, since it enables countries to build up physical capital, create employment opportunities, develop productive capacity, develop skills of local labour through transfer of technology and managerial know-how. Furthermore, it helps countries in integrating the local economy with the global economy, affecting the Balance of Payment of the host economies.

Especially in developing countries (DCs), FDI is nowadays regarded as a primary and explicit means by which growth can be promoted. Those countries expect for example, that over the long term, the presence of TNCs may strengthen their international trade position. Actually, most DCs expect to have negative trade balances because a DC's exports are unlike to be sufficient to pay for the importation of those raw materials and capitals goods vitals for growth, while official reserves are generally too small to finance a series of deficits (Donnelly, 1987).

The 1970s was characterized by a large FDI inflow in the Brazilian economy. The main determinants on the abundance on FDI supply were related to economic growth orientation and a non-discriminatory foreign capital police consolidation. During the 1980s, there was a reversal on capital flows, given, mainly, to the lack of credibility due to the non-accomplishment of external obligations, economic instability and the increased uncertainty associated with anti-inflationary plans. From the 1990s there was an extraordinary recovery of FDI growth, reflecting the financial globalization effects, the mergers and acquisitions possibilities due to the Brazilian economy opening and privatization (Fernandes and Campos, 2008).

The intensive growth of FDI in the 1990s yielded, on the one hand, optimistic expectations that FDI could act as an engine of the new growth stage and as a Brazilian business structure modernizer. On the other hand, FDI limited endogenously growth feeding capacity raised doubts regarding the feasibility of attracting increasingly amounts of FDI to finance the current account deficits (Sarti and Laplane, 2003).

Thus, the foreign participation increasing in the economy also increased the concern about the received investment quality. Specifically in Brazil, the questions are related, in most of the cases, due to the globalization impacts on the Brazilian economy, mainly those concerning the denationalization acceleration and the current transactions balance fragility (Fernandes and Campos, 2008).

Hailu (2010) adds that FDI has an important role in determining the surplus or deficit of the trade balance. According to the author, it is expected that the initial impact of FDI on trade balance is positive but, the medium term direct effect could become either positive or negative as investors increase their export output or imports of intermediate goods and services and begin to repatriate profits. Futhermore, FDI is supposed to have different effect on trade depending on the motivations of such investment (Tabassum et al., 2012). Thus, FDI effects are almost impossible to either forecast or measure with exactness. For that matter, the real effects of IDE on trade balance can be questionable (Hailu, 2010, p. 122).

This study aims to contribute to this debate examining if there are evidences for trade benefits from FDI in Brazil. Specifically, we analyzed if there were evidences that foreign presence growth in the Brazilian economy improved the Brazilian trade balance in the longer term through an expansion in exports and if there is a predictable relationship between the FDI strategies that firms select and trade balances. Furthermore, we verified if there was a significant and positive Granger causal relationship running from FDI to exports and from FDI to imports.

2. Main theoretical approaches on FDI

Studies on a specific theory of international capital movement were done only after 1960. However, it was only after the studies of Corden (1974) and Hirsch (1976) that the International trade theory developed approaches that effectively sought to explain FDI. International Trade economists were the first ones to consider international production as a substitute to exports.

Corden (1974) analyzed the company's internationalizing decision based on the Heckcher-Ohlin-Samuelson (HOS). HOS model explained FDI in an international trade neoclassical perspective based on Heckscher-Ohlin (HO) basic model, which identifies the differences in factor donation as a cause of international trade and suggests that each country will export the goods that use more intensively the most internally abundant productive factors. According to this approach, inter-sector reallocation resources determined the equilibrium to welfare in international commerce.

Hirsch (1976) evaluate a company's specific advantages also from the HOS perspective. However, he demonstrated the inconsistency of HOS model with the company's internationalizing decisions by answering to two main questions: when and in which circumstances a company takes the decision to serve international markets? His main contribution to HOS model expansion is to consider comparative analysis on different internationalizing strategies as an essential requirement to international investment theory and to consider specific competing advantages to the company as well production, communications and transaction costs.

Although demonstrating an evolution to Corden's study (1974), the study fails to explain the IDE flux movements. Other theoretical approaches have emerged after Corden (1974) and Hirsch (1976) aiming to explain determinant factors on companies internationalizing decisions, such as Vernon's Product Cycle Theory, the Industrial Organization, Dunning's Eclectical Paradigm and Institution Approach ones.

Vernon (1966) developed the Product Cycle Theory to explain FDI decisions as one of the possible strategies to accomplish external markets. The author explains that the product has a life cycle that may be classified into three stages: innovation, maturity and obsolescence. According to him, technological leadership means the product cycle core in international markets and technological innovations are the main determinant factors of international trade structure and product allocation in different countries.

New investigation lines, as the Industrial Organization (IO) emerged less focused in determining the optimal capital stocking. IO theory represented a paradigm shift related to FDI determinant approach as it aimed to build a theoretical framework evaluating the conditions under which some markets are dominated by foreign subsidiaries and are not supplied by their own local companies or by importation. IO introduces empirical studies on market and company structures and their interactions in a deeper approach on company behavior and performance (Carlton and Perloff, 2000).

Hymer's model and the Internationalizing Theory is considered the main IO's theory current. Hymer (1976) introduced FDI to IO context in his thesis published in 1976. According to him, transnational corporation is seen as an institution more devoted to international production than to international commerce. He noted that to compete with local companies, transnational corporations should have some advantages, which could offset disadvantages of operating in a foreign environment. Furthermore, local companies take advantage of local market transnational corporations due to the best local environmental knowledge.

After Hymer's theory, Internationalizing Theory raised and represented an evolution in FDI theory. The earlier contributions to Internationalizing Theory came from Buckley and Casson (1976), which saw the enterprise as an amount of resources that can be allocated into product groups and into markets. According to the authors, expansions through internalization of markets occur when firms use FDI to replace imperfect external markets and intermediate products and knowledge in order to appropriate the profits from so doing (Buckley, & Lessard, 2010, P.83). Thus, market imperfections were exogenous to transnational corporations at the beginning and internationalizing was a kind of reaction to these market imperfections so that the company could internationalize a specific advantage whose aim was to establish a new market where previously there was a domestic one.

The mainstream as encapsulated in Dunning's (1997; 2000; 2008) Eclectic Paradigm (Buclkey & Lessard, 2010) departs on the assumption that there are some market failures, which could lead the company to use FDI instead of licensing or exportation as way to enter the external market. This transnational corporation model analysis of activity determinants is based on three factors: ownership, location and internalization.

Dunning's model departs on the assumption that there are some market failures, which could lead the company to use FDI instead of licensing or exportation as way to enter the external market. This transnational corporation model of analysis on the determinants of FDI is based on three factors: (i) *ownership* advantages involve competitive possibilities to be engaged in international activity that may have either a structural or transactional nature. Structural nature advantages derive from specific assets ownership such as patents, technological and management abilities, scale economy, human resources and so on; (ii) *location* advantages involve an assembly of

complementary assets of some counties or regions, such as natural resources, infrastructure, market shape and structure, advantages related to governmental policy and institutional, politic, juridical and cultural environment, which stimulate transnational corporations to be engaged in direct investment processes; and (iii) *internalization* sub paradigm shows a structure to evaluate alternative forms by which the companies may organize creation and exploitation of their main competences. Considering local attractions of different countries or regions, it assesses the tendency of companies that hold particular advantages of combining them with external assets of the host country by means of FDI (Dunning, 2000).

In order to better understand the reasons that lead the company to decide to produce in international markets, Dunning (1997, 2000) extended the eclectic paradigm application and analyzed FDI investment strategies. Dunning called *factor-seeking strategy* those that would be seeking specific resources not available in the original market, such as natural resources, materials, and cheap labor force, among others. Strategies targeted to accomplish internal market demands of FDI host countries were named as *market-seeking strategies*. According to Dunning (2000), companies classified under this kind of strategy invest in a country with the aim of offering goods and services to that market. The possibility of market improvement is one of the main reasons for this kind of investment. *Strategy-seeking strategy* refers to those investments made by companies that can sell their goods around the entire world and are seeking places where production costs are reduced. This enterprise strategy is based on productive efficiency, in wich investors seek to rationalize and specialize their activities in order to get profits from the presence of scale economies as well as scope and risk diversification of geographically dispersed production activities. *Strategic-asset-seeking strategy* has, as a main characteristic, to acquire resources and assets which investor companies believe are able to support or to improve their competiveness in local and global markets. Companies classified in this kind of strategy generally get assets from external corporations in order to support or to improve their competiveness in external market and/or to weaken competitors.

Each type of FDI appears to have a different impact on the balance of trade of the host country (Brouthers, Werner and Wilkinson, 1996). While market-seeking investment appears to lead to trade deficits, factor-seeking FDI strategies appears to be related to trade to trade surpluses, since raw material seeking investment is used to produce natural resource products lacking in the home country and increases export from the host nation to the home country and the other countries. Furthermore, low cost production-seeking investment takes advantage of low cost factor as part of an overall global sourcing strategy and leads to an ability to export products from emerging nations. In this instance, the host country is able to Increase exports and improve its trade balance.

However, the behavior of firms with respect to FDI in developing countries is changing and, unlike the 1980s, most investments now are part of an integrated network of activities. This means that the decisions of MNCs of what to produce, where to source its inputs from and who to sell its output to, are based not only on the location attractions of that country compared to other countries, but on what is perceived to advance best the global interests of the corporation, rather than the interest of one of its foreign affiliates, or group of affiliates (Dunning, 1997).

## 3. Foreign direct investment inflows to the Brazilian economy

FDI inflows to the Brazilian economy started during the period of 1955 – 1960, when specific governmental programs were created to attracted foreign capital as strategy to industrial development through import-substitution industrialization. The 1970's were marked by excessive optimism and high rates of economic growth financed by foreign capital, mainly associated with the consolidation of a political regime supporter of foreign capital. Until the 1980s there were mechanisms that stimulated reinvestment and discouraged the exit of foreign capital already invested in the country.

However, there was a reversal of this flow starting in the 1980s due to the downturn in economic activity, lack of credibility, excessive instability and uncertainty due to the successive anti-inflationary plans. During the 1980 crisis that lasted until the early 1990s, the degree of uncertainty in the economy meant that the level of foreign and domestic investment were greatly reduced. In 1988, with the new Constitution, the state was given the power to regulate the entry of foreign capital. Until the 1990s, the setting of Brazilian industry was marked by strong tariff protection to the domestic industry, severe financial crises and a significant delay compared to developed countries.

The decline of FDI until the 1980's was interrupted in the early 1990s (1994 and 1995) and a sharp spurt in 1999 – 2000. In half of the decade (1994 and 1995), started in Brazil a broad process of economic liberalization, marked by the adoption of liberal trade policies and reduced regulation of IDE. In that first period, Brazil was the main pole of attraction of FDI in Latin America, surpassing the leaders of the first half of the decade, Mexico and Argentina. The industrial sector was the major recipient of investment during this period, being replaced by the service sector in 1996 due to government privatization programs.

FDI record to the Brazilian economy was in 2000 and, after this period, FDI to the Brazilian economy decreased, following the world's FDI behavior, but also reflecting the inexpressive Brazilian economy growth and the end of privatizations phase that marked the 90s. In 2004, there was a reaction on FDI inflows and, according to the United Nations Agency for Trade and Development (UNCTAD, 2007), FDI to the Brazilian economy had the highest increase rate in the world in 2007 (from U.S.$ 18.8 billion in 2006 to $ 37.4 billion, representing an increase of 99.3%). The new record surpassed 2000, when FDI inflows reached U.S. $ 32.8 billion, and 22% of the total amount of FDI inflows were related to the privatization operations. The new record occurred even without the occurrence privatization operations, reinforcing the significance of the record reached in 2007 (Figure 1).

Figure 1. FDI inflows to the Brazilian economy from January 1995 to July 2007 (in billions of dollars)
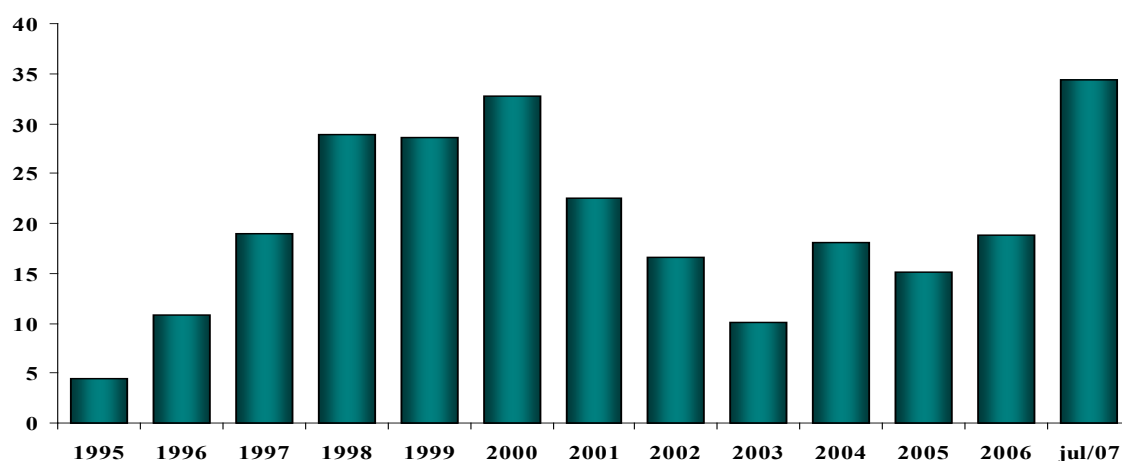
Source: Central Bank of Brazil (2008).

The upward movement of FDI in the Brazilian economy in the recent years and Real appreciation occurred simultaneously. What is observed is that the Real appreciation didn't affect FDI inflows as one might imagine. In fact, Real appreciation on recent years is not result from passing situational factors, but the sustained improvement the Brazilian fundamentals that fosters predictability in the longer-term horizon (Sobeet, 2007).

4. Methodology, data and estimation procedure

In this work, we estimate the behavior relationship between FDI and exports and FDI and imports in Brazil during the period of 1980 – 2000. Gujarati (2006) comments that although regression analysis deals with the dependence of one variable on other variables, it does not necessarily imply causation. Then, the Granger causality test, proposed by Granger (1969) is one way to address this question.

To test the impact of FDI in the trade balance in the Granger sense we use two equations: one of Exports and another of Imports. The data definitions and statistical sources used in this study are presented in Table 1.

Table 1. Descriptions of the data and the statistical sources

Variables	Description of Data	Source
Dependent		
LogExp	Quantum of exports by sector in the log form	Development, Industry and Foreign Trade Ministry
LogImp	Quantum of imports by sector in the log form	
Independent		
LogFDI	Flows of foreign direct investment by sector in the log form	Central Bank of Brazil
LogGDP	Gross domestic product by sector in the log form	Applied Research Institute (IPEA)
LogExch	Exchange rate in the log form (Brazilian real-dollar)	
SECT	Dummy variable: 0 if the strategy is market seeking and 1 if it is resource seeking.	

Because most macroeconomic variables that exhibit strong trends, such as GDP, consumption, or the price level, are not stationary; i.e. they are variables which mean and variance change over the time, we need first in regressions involving the level of such data test for stationarity. Engle and Granger (1987) defined a nonstationary time series to be integrated of order d if it achieves stationarity after being differentiated d times. This can be done by using the Augmented Dickey-Fuller (ADF) test for the presence of unit root under the alternative hypothesis that the time series in question is stationary around a fixed time trend. Some times, Greene (2000) comments, that the stationarity can be achieved by simple differencing or some other transformation.

To ensure the standard properties of the causality test, we employ a procedure robust to the integration and cointegration features of the process. Granger (1969) showed that if time series are cointegrated, then standard Granger and Sims tests are invalid and conclusion drawn from estimates are misleading. Then, Error-Correction Modeling (ECM) should be used to test for causality. Therefore, the proper procedure for a causality test should first involve tests of stationarity and cointegration.

If series are cointegrated, the simple Granger's causality test becomes inappropriate. According to the Granger representation theorem, the model needs to be modified with ECM by augmenting an error-correction term.

As it is well known, the results from these tests are highly sensitive to the order of lags in the autoregressive process. An inadequate choice of the lag length would lead to inconsistent model estimates, so that the inferences drawn from them would be likely to be misleading. Then, the minimum final prediction error (FPE) criterion proposed by Akaike (1971) was adopted to determine the optimal lags of the model.

Finally, we employed a series of linear regression in the exports and imports equation to determine if our results are really sensitive to the time period. We performed a regression using a length lag of three for both equations.

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5. Results and Discussion

In both equations (Export and Import) we first test each variable for unit roots. Augmented Dickey-Fuller (ADF) tests show that all the variables are nonstationary in their level data. However, the stationarity property is found in the first-differencing level of all the variables. Table 2 presents the ADF test statistic for the variables in level and differenced.

According to the test results, the null hypothesis of presence of unit root was rejected and the all the variables are stationary in the first difference.

Table 2. Test of unit root for all variables using ADF test

Variables	Level	First Differential
Log Exp	- 1.28 (3)	- 12.75 (2)***
Log FDI	- 1.94 (3)*	- 12.34 (3)***
Log GDP	- 0.20 (3)***	- 12.84 (2)***

a n = 78; * p < 0,05; ** p < 0,01; *** p < 0,001.

Next, we perform cointegration analysis for these variables. We follow the descriptions in the Statistical Analysis Software (SAS) routine elaborated by Margarido and Anefalos (2001). The Dickey-Fuller test to the residuals from the regression of the variables in the level was performed and its results (Table 3) shows that the residual are stationary, what means that the variables used in the regression are cointegrated; i.e. they have a relationship in the long run, suggesting a kind of FDI-led export growth linkage and also a directional running from FDI to import. So far, it is not detected the level of the long-run relationship, if it is positive or negative.

Table 3. Test of unit root for the residual using ADF test

Type	τ	Prob < τ
Zero Mean	- 6.72 (3)	0.0001
Single Mean	- 6.66 (3)	0.0001
Trend	- 6.70 (3)	0.0001

Then, to capture the short run relationship, we estimated the regression using all the variables differenced in the first order and the residuals lagged by one period (Table 4).

The regression model was highly significant ($p< 0.001$) and the set of independent variables explained 92,11% of the variance in the export variable.

Our findings indicate that the amount of FDI (DLogFDI) is highly significant and positively related to the export, confirming results of studies that the inward FDI in the country improves the amount of export. The coefficient estimated for the variable LOGFDI differenced in the first order is 0.90470 and can be interpreted as the increase in the unit of the flows of FDI in Brazil increases the quantum of exports in 25.55%.

Theory on FDI shows that the inward FDI is expected to improve the local trade balance since, after setting up capital machineries, the FDI-financed companies begin to export their products as most of these companies are export-oriented (Hailu, 2010). According to the author, FDI-financed firms may tend to export more than their local counterparts as these firms usually have advantages in international markets, efficiency of distribution channels and ability to adjust to the changing dynamics of international markets. Blomstrom, Kokko and Zejan (2000), comment that because those foreign firms often possess strong competitive advantages in entering world market, such as experience and knowledge of international marketing, established international distribution networks, and lobbing power in their home countries, they may pave the way for local firms to enter the same exports markets, either because they create transport infrastructure or because they disseminate information about foreign markets that can also be used by local firms.

If FDI strategy is primarily factor-seeking, trade surpluses may result for the developing country since raw material is used to produce natural resource products lacking in the home country and increases export from the host nation to the home country and the other countries (Brouthers, Werner and Wilkinson, 1996).

We also found a direct relationship between GDP an export variables, indicating that an increase in the GDP variable also explain an increase in the exports. An argument for this result is present by Chen (2009) and Jayachandran and Seilan (2010) with the argument that empirical evidence on the relationships between FDI investment and trade is equally contradictory, with results ranging from unidirectional causality, bidirectional causality or even no causality between FDI and trade. Mehrara and Firouzjaee (2011) identified that the relationship between export and economic growth can occur: (i) from export to economic growth which expressed as export-led-growth (ELG); (ii) from economic growth to export growth expressed as growth-led-export (GLE); (iii) a feedback relationship between export and economic growth; and (iv) no relationship between these two variables.

Table 4. Regression of export model with the differenced variables and the ECM

Variables	DF	Parameter	St. Error	Prob.>/t/
DLogFDI	1	0.90470	0.03919	< 0.0001
DLogGDP	1	1.11057	0.05293	< 0.0001
RESexp	1	0.93662	0.14062	< 0.0001
R-Sq. 0.9253	Adj R-Sq 0.9211	F Value 218.98	Pr > F <0.0001	

Ghartey (1993) study analyzed the economic data of United States, Japan and Taiwan and found that American GDP promoted its export but, in Taiwan occurred quite the opposite and there was a two-way causal relationship between the two in Japan. Sharma and Dhakal (1994) studied 30 developing countries over the period from 1960 to 1988. The study concluded that 6 countries fail to reject export-led-growth (ELG) hypothesis, 8 countries support growth-led exports (GLE) hypothesis, 5 countries find bilateral relationship, and 11 countries reject ELG hypothesis. Mehrara and Firouzjaee (2011) analysed 73 developing countries during the period 1970-2007 and found that a bidirectional long-run causality between export and GDP growth for both groups of Countries (oil dependent countries and nonoil developing countries) and bidirectional short-run causality between export and GDP growth for nonoil developing countries, however, for oil countries, there is no short run causality relationship between the variables, in any of the two models.

The statistic for the error-correction terms (the residuals) lagged by one period (RESexp) is significantly negative, implying that, without correction for the long-run relationship between variables, the traditional Granger's causality test will be inappropriate. The variable shows that in Brazil the disequilibrium between the past period and the actual is corrected with the velocity of 93.66% and indicate that the amount of increasing in exports because of the increase in FDI is corrected in 93.66%.

Aiming to confirm the relationship between FDI and imports we employed a linear regression to determine if our results are sensitive to the time period (Table 5). We performed a regression using a length lag of three.

The import equation was significant ($p< 0.001$) and the set of independent variables explained 30.36% of the variance in the import variable. In the import equation, we found that FDI variable (DLogFDI) contributed to an increase in imports and the strategy adopted for the entry companies (*market-seeking*) was related to this increase. The beliefs is that entry companies may have to import because they don't have their own resource to produce in the home country and/or because in the host country there is no domestic firms with capacity to produce what those companies need.

Table 5. Regression of import model with the differenced variables and the ECM

Variables	DF	Parameter	St. Error	Prob.>/t/
DLogFDI	1	0.2847	0.0726	< 0.0005
DLogExch	1	-6.7545	0.0258	< 0.0026
DSect	1	0.2776	0.1104	< 0.0014
RESimp	1	-0.9011	0.2035	< 0.0001
R-Sq. 0.3366	Adj R-Sq 0.3036	F Value 9.26	Pr > F <0.0001	

Furthermore, subsidiaries of these companies may have strategies that are characterized by high propensity to import. For the period analyzed, may have prevailed import-oriented *market-seeking* strategies, characterized by the presence of subsidiaries highly dependent on imported inputs. Examples are the sectors of mechanical, textile, chemical, petrochemical, pharmaceutical, technology and telecommunications.

These results confirm results found by Hailu (2010) when analyzing the relationship between FDI and trade balance of African countries for the period 1980 to 2007. The author found out that ETNs are involved in import of inputs of production. He argue that less developed countries, like Africa countries, lag behind in terms of human capital and technological progress generating dependence on imported inputs of production by ETNs.

Results indicate that the exchange rate (DlogExch) is significant and negatively related to imports, indicating that an increase in the exchange rate (exchange devaluation) causes a reduction in imports, since exchange devaluation makes imports more expensive. So, an increase in the exchange rate variable can also explain the decrease in imports.

Residual value (RESimp) is 90.11% indicating that for imports the disequilibrium is corrected slowly than for the exports. This result can explain the existence of an increase in imports after the increase in FDI founded in other studies. It is necessary to verify if the reduction in imports will happen in the long run.

After those analyses, the Granger causality test with the presence of the ECM correction was performed. We conduct the F test and the asymptotically equivalent test. The results for the exports equation show that with the length lag of three in the regressions the both statistic tests are significant at the 5% level (Test 1=6.8206857, P=0.0005681; Test 2=23.326745, P=0.0000345). Thus, it would seem that the FDI inflows in Brazil, lagged of three years, stimulate the export activity.

The result can be justified by the fact that FDI strategies do not automatically lead to positive externalities. Regarding trade, studies show that an increase in the use of imported products in the domestic market, such as components, did not give rise to a proportional increase in the share of local production destined to foreign markets. Furthermore, because transferring ownership of existing facilities does not add directly to an industry's productive capacity, FDI through acquisitions is not likely to lead to an immediate and significant displacement of imports or an expansion of exports (Brouthers, Werner and Wilkinson, 1996; Laplane, 2003).

In the other hand, the Granger causality test results with a length lag of three for the import equation are not statistically significant (Test 1=1.60477, P=0.207756; Test 2=3.42938, P=o.1800193). Then, we cannot say that FDI in Brazil have a positive causal relationship with imports in the long run. The result can be justified with the argument presented by Hailu (2010) suggesting that ETNs, at the initial investment phase, import equipments, machineries, installation facilities and experts that contribute to an increase on the imports but, in the later phases, input and nature, productivity spill-over and the type of relationship with other role players in the industry determine the effect of FDI on imports. Thus, if FDI relies on imported inputs (for example raw material, human skill, and intangibles assets), it affects import positively but, if it uses local inputs of production, it may not have significant adverse effect on import.

6. Final Considerations

In this paper we aimed to show the impact of FDI has in the trade balance. The proposal was to create a support for the export-oriented theory where the policies are oriented towards export-led-growth and increased cross-border specialization and competition.

Results show that FDI promotes an increase in exports and also show an increase in the level of imports, especially for those companies engaged in market-seeking strategy. It also shows that FDI cause exports in the short and long-run and would cause imports in the short-run, but not in the long-run.

The Granger causality test for the exports equation showed that FDI inflows in Brazil, lagged of three years, stimulated the export activity indicating that FDI strategies do not automatically lead to positive externalities on trade balance. The outcomes confirmed the existence of a positive causal relationship going from FDI to exports and provide further insight into the role played by FDI in the effectiveness of the export-oriented policy followed by this country. Granger causality test results with a length lag of three for the import equation were not statistically significant suggesting that we cannot say that FDI in Brazil have a positive causal relationship with imports in the long run.

Evidences found in this study indicate the need for greater efforts to understand how FDI strategies interact with the trade balance of host economies and what benefits can be achieved through public policies. This information will be important for public and private managers understand how the host economy can obtain benefits from the presence of FDI. Policy makers can influence the inflows of FDI developing economic, social and political instruments that contribute to the promotion of export oriented ETNs and controlling import oriented ETNs (Hailu, 2010). Trade and investment policies are needed to take advantage of FDI through accumulation of positive effects of such investments (Rahman, 2011).

The improvement and enhancement of studies in this field could support policy decisions related to control or incentives for FDI in in Brazil. Actors involved in public policies formulation need information that provide institutional instruments subsidies related to foreign capital regulation.

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