Corporate Internationalization: The effects of the exchange rate on Brazilian outward foreign direct investment

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ABSTRACT: This paper presents a quantitative analysis of corporate internationalization in Brazil and tests the hypothesis that the country's strengthening currency prompted companies to expand abroad. We start with a review of the literature on the main international business approaches and theories, aiming to present the drivers behind the behavior of firms that have followed an internationalization path. We worked with the variables Exchange Rate (FX) and Brazilian Foreign Direct Investment (BFDI). We carried out Granger causality tests using the mentioned variables and found no evidence of the importance of the FX factor as a driver of corporate internationalization in Brazil. We also performed a regression analysis, which showed low significance of the FX variable’s coefficient in explaining BFDI as well. Thus, although the strong exchange rate in Brazil is often blamed for forcing companies to look abroad for investment opportunities, the evidence found in the aggregate data does not validate the initial hypothesis.

Keywords: international business; Brazilian foreign direct investment; exchange rate; corporate internationalization.

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1. INTRODUCTION

The internationalization of Brazilian companies began in the 1970s, in very limited and timid form. At that time a small number of Brazilian banks and other firms made foreign investments. These companies mainly were looking to serve their export markets, while the banks sought access to the capital market in developed countries and tax havens. This process continued in the 1980s, with construction companies and some industrial firms investing in foreign operations, but still mainly related to their presence in export markets. However, the internationalization process intensified and became more varied starting in the 1990s.

In the 1980s Brazil was largely insulated from foreign direct investment (FDI) flows. At the end of the decade, investment flows in the world corresponded to 2.7% of global gross domestic product (GDP), while Brazil only received 0.4% of its GDP in productive direct investments from abroad. However, in the 1990s (particularly after the currency stabilization under the Real Plan in 1994, after decades of high inflation, and the start of the federal privatization program) the pattern started to change, with increasing FDI flows entering the country, above the global average. At the start of the present decade, Brazil was already receiving over 5% of its GDP in FDI, a rate that is at the world average and near the level of developed countries. This is evidence of the opening of the Brazilian economy, brought on by the currency stabilization and lowering of tariff barriers, accompanying the globalization process under way since the 1990s.

As a consequence, in the 90s, Brazil consolidated its position as an important destination for foreign direct investment. On the other hand, in various segments homegrown Brazilian companies have become global leaders. Graph 1 shows the evolution of inward and outward Brazilian FDI between 1970 and 2007. The lack of synchrony between the two cycles can be noted. FDI in Brazil started to grow in the middle of the last decade, while Brazilian direct investment abroad has only become a significant phenomenon in the present decade.
Note that in 2006, Brazilian investment abroad for the first time in history exceeded the amount of foreign investment in the country. The total outward FDI that year was US$ 27.3 billion. Part of this is represented by a single deal, the acquisition of Canadian mining company Inco by Companhia Vale do Rio Doce, worth US$ 13.2 billion. The US$ 9.47 billion refers to outward, not inward, FDI. The largest inward amount seems to occur in 2007.

The relevant factors for insertion in the internationalization process go beyond the influence of a single macroeconomic variable. But in light of the increase in outward Brazilian foreign investment in recent years along with the strengthening exchange rate, the hypothesis analyzed in this paper is that the exchange rate is a variable with important influence in determining this investment flow, among other possible vectors.

2. METHODOLOGY

The methodology was based on consultation of the main international business approaches and theories, seeking to understand the factors that explain the behavior of firms inserted in the internationalization process. We used econometric tools to clarify possible relations between Brazilian direct investment abroad and the exchange rate factor. Among these was the Granger causality test, by which it is said that one variable “Granger causes” another variable when its variations precede the other’s in time. This does not necessarily imply “causality” in the strict sense of the word, i.e., that variations in one imply variations in the other.
3. REVIEW OF THE LITERATURE ON INTERNATIONALIZATION

This section presents a summary of the main approaches of international business, an essential foundation for discussion of Brazilian firms’ internationalization alternatives.

3.1 Eclectic Paradigm

The eclectic paradigm, proposed by John Dunning (1977), emerged from the finding that the subsidiaries of American companies in the United Kingdom were more productive than similar firms in the US, even though America’s industrial productivity was five times that in the UK.

According to Hymer (1976), the existence of imperfections in the international trade market drives the actions of multinational companies, and the desire to escape import duties influences the entrance of multinationals. It is said that internationalization spurs the development of the receiving countries, allowing them to be more than mere exporters of raw materials. According to authors such as Rugman (1981), Teece (1982), Caves (1982) and Casson (1983), the great benefits brought by multinationals are intangibles and nonfinancial resources, such as know-how and technology, along with a series of cultural transformations, both in the firm and host country.

Dunning (1999) explains that the insertion of multinationals that compete in the domestic market can be viewed according to three theoretical currents:

a) the industrial economics line focuses on obtaining and sustaining competitive advantages in relation to rivals; b) the theory of the firm explains the way companies deal with these advantages; and c) the location theory explains where firms decide to allocate their activities.

The specific advantages of the company are derived from its ownership and/or nationality. These can be structural, where the firm has exclusive possession of or access to resources that create assets; or transactional, involving the capacity to take advantage of market failures and to forge strategic alliances.

Dunning and Rugman (1985) state that the internationalization process brings advantages to the firm, even with the existence of structural and transactional imperfections in each market. The imperfections must be viewed as opportunities by multinationals to win new markets. The structural imperfections come from the level of concentration and structure of the market, while the transactional ones refer to the transaction costs and externalities.

The specific location advantages involve the destination countries of subsidiaries. They must be analyzed in the structural ambit (cultural, political and economic questions that interfere in the firm’s actions) or the transactional ambit (administrative competence for diversification of activities in other countries). The market potential in the target country, price and quality of its productive factors, availability of financial resources and logistics conditions are examples of advantages obtained from firms’ location choices. Dunning (1977) mentions the strategy of setting up subsidiaries in countries that are members of trade blocks. To a certain extent, the local exchange rate can be seen as a current of this vector.

Among the specific advantages of internalization, transaction costs are mentioned. Among them are exchange rate questions and local market information (correlated with legal, political and economic practices), all of which are important for the company to exploit these specific advantages.

The establishment of subsidiaries of multinationals in foreign countries generates advantages for the receiving countries, because the company will contribute to the economic development of the local market. The entrance of multinationals creates jobs and enhances
competition in the host country, bringing benefits both for local consumers and the government.

Dunning (1977 and 1979) reports that the decision process of multinationals must come from the parent company, to prevent conflicts within the organization and avoid problems that can denigrate its international image.

A criticism of the eclectic paradigm is its lack of originality, since it is really a summary of contributions of industrial economics, transaction costs (Coase) and international location (spatial) factors. Other authors criticize this theory for its focus on microeconomic factors (Kojima 1978). Rugman (1981) says that the eclectic paradigm fails to consider factors such as the formation of joint ventures, licensing agreements and exports, while Vernon (1985) points out that the eclectic paradigm fails to address the activities of firms in countries with oligopolistic markets. There are also authors who criticize it for being overly general.

3.2 The Uppsala School

This model, formulated by researchers at the University of Uppsala in Sweden, arose from the study of the idiosyncrasies of Swedish firms’ internationalization. The model is based on the fact that a firm decides to internationalize due to uncertainties about the profitability of its home market. The internationalization phenomenon arises because of the firm’s growth (Carlson, 1975), as it seeks new markets abroad as a response to limits on vertical expansion.

For Johanson and Vahlne (1977, 1990), the lack of information about new markets makes firms seek similar markets to their own. Johanson and Wiedersheim-Paul (1975) point out that the process is begun through strategies to study the prospective new market in advance through exports, and later through the establishment of subsidiaries, but only after a long period of export maturation.

The concept of psychic distance is essential to the model. Its adherents note that Swedish companies gradually seek to invest in other markets as they gain more experience in them. Among the relevant factors for investment are social indicators, cultural factors and ties between the parent country (in this case Sweden) and the receiving country.

The model is criticized by various authors for its simplistic approach and for being based only on economic factors. According to this reasoning, the model does not describe internationalization in generalized form. Instead, it is restricted to only some types of companies.

The study of Arenius (2005) defends the importance of psychic distance in the speed of a firm’s the internationalization process. Transactions can be carried out with neighboring markets in virtue of the greater capacity to convince consumers of a particular product’s quality. Because of this greater ease of winning consumer trust, more proximate markets can be exploited faster, due to the existence of references from domestic consumers.

The Uppsala model originated the Nordic School of international business thinking. The main impact of this line of thinking was the inclusion of analysis from the perspective of the organizational behavior theory, the consequence of which is criticism of relevant points in the original model, based on the specific characteristics of companies. The main critique is that the Uppsala model is focused on large firms with competitive advantages, so it does not apply to smaller firms.
The concern of the Nordic School is that the internationalization process is discontinuous rather than gradual. Firms can speed up the process or even jump steps in efforts to expand and mature internationally.

The concept of psychic distance loses significant importance in the Nordic School, because the latter is based on the creation of relationship networks, of both a professional and personal nature, which reduce the uncertainties about new markets.

The Nordic School also adopts the accumulation of knowledge as a key mechanism in the internationalization process, whether through the firm’s own experience or through exchange of information. The firm does not need to acquire experience in a specific market. Instead, it can rely on the general international experience acquired, together with its own strategic planning.

3.3 Three Different Views: RBV, KBV and RDT

The resource-based view (RBV), proposed by Penrose (1959), sees the firm as “a set of productive resources.” The RBV explains how companies manage to obtain sustainable competitive advantage, analyzing their internal resources to correct their weaknesses and develop their potentials. The existence of assets – tangible or intangible – is related to the firm’s capacity to expand and stand out from its competitors. Among the tangible assets are economies of scale or patents, while the intangible assets include the firm’s brands and reputation.

The organization and development of these assets ensures a competitive advantage, so the organization of these resources must be better than that of competitors for a firm to reach its strategic objective.

In the 1980s the knowledge-based view (KBV) emerged. This view presents knowledge as the most important strategic resource of the firm. The different ways firms act and their performance are fruits of the knowledge base of each firm. (Bierly and Chakrabarty, 1996).

Eisenhardt and Santos (2002) explain that the knowledge base of each company is responsible for its sustained competitive advantage and as such is an important factor differentiating it from rivals.

This theory emphasizes the risk of communication failures, due to the distance between subsidiaries and problems of integrating specific knowledge because of the location of individuals within the organization. Even though it is difficult to acquire, tacit knowledge is fundamental under this optic, i.e., the experience built up from situations experienced is the competitive differential between companies, because it makes imitation impossible.

An example of this theoretical current is applied by Heinrich von Pierer, in his case study of Siemens, published in The Economist magazine (June 2001). This example indicates the need to exploit the knowledge within each company, through creation of an internal system to share it (sharenet) covering the whole company, independent of the location of a particular branch.

The resource dependence theory (RDT), originally presented by Pfeffer and Salancik (1978), focuses on firms’ need to establish relationships with other firms to obtain indispensable resources for their operation. By this line of reasoning, a successful company must reduce its own dependence on outside resources and maximize other firms’ dependence on its resources.

Pfeffer (1981) proposes that the dependence on resources can be managed in two ways: by cutting back on or stockpiling resources for a limited period (buffering strategies) or


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by strengthening relations with suppliers to reduce the risk of an interruption in resources (bridging strategies).

Within internationalization, the growth of subsidiaries from their own capacities can be mentioned. According to Shan and Song (1997), this process can be independent of the association with the parent company. The development of local capacities leads to creation of new advantages for the firm.

3.4 Transaction Costs

The theory of transaction costs traces its roots to Coase in 1937, and later to Williamson (1981). This theory looks at the costs not directly related to the productive activity itself, but rather to contracts and economic negotiations. According to Coase, the greater the cost of obtaining information, the lower will be the problems related to closing contracts. Kupfer (2002) presents a set of hypotheses within the transaction cost theory. Among them are bounded rationality, complexity and uncertainty, opportunism and specificity of assets. From these hypotheses, there are no complete contracts, because there can be information failures for both parties. The party holding the most information can exploit this advantage to its own benefit. This uncertainty of transactions generates moral hazard.

3.5 Tropical Drivers

This point refers to the influential factors (drivers) of the behavior of Brazilian direct investment abroad. The concept of “tropicalization” analyzes the factors behind direct investment from emerging countries. Among the drivers that can lead to the internationalization of firms from emerging countries are changes in the tax burden, and as asserted by Trevisan (2006), changes in the exchange rate.

In the Brazilian case, the tax burden has risen in recent years (see Graph 2), a trend that may have contributed to the internationalization movement, since it acts as a vector to “expel” companies. However, in this work we analyze only the effect of the exchange rate. 

Graph 2 – Evolution of the Tax Burden in Brazil 1968-2006

Source: Ipeadata.
Trevisan (2006) places great importance on the exchange rate as a driver of internationalization of the Brazilian bus builder Marcopolo. Lima and Corrêa (2007) also mention the exchange rate factor as a reason for internationalization, as a way to escape exchange rate risk.

Besides the exchange rate factor, Lima and Corrêa (2007) point to other factors behind the decision to branch out internationally, among them logistical and legal questions. Indeed, business performance goes beyond exchange rate factors, and includes the firm’s knowledge and need to expand its productive activities because of the search for new markets, as well as tax considerations.

Graph 3 presents the variations between Brazilian outward foreign direct investment and the exchange rate factor (FX) between 1998 and 2006. The variable FX is expressed as the real exchange rate, calculated by FUNCEX. An increase in this value indicates depreciation of the Real against the Dollar. Brazilian foreign direct investment (BFDI) is calculated by the sum of equity investments (exit of resources from Brazil, including the assets of resident investors and the holdings of subsidiaries abroad) and inter-company loans (loans from the parent company in Brazil to subsidiaries abroad or from these to the parent company in Brazil).

**Graph 3 – Evolution of the Exchange Rate and Brazilian Direct Investment Abroad**

![Graph 3](image)

Source: Ipeadata.

Visual inspection offers a first analysis of the independence of the variables: apparently the flow of Brazilian direct investment abroad is not tied to exchange rate variations. Also through a descriptive analysis of the data, Table 1 shows the results of a simple correlation of the same variables, performed in four periods for the Brazilian economy. The results indicate there is a weak correlation between exchange rate factors and outward direct investment, regardless of the period in question.
Table 1 –BFDI X FX Correlation Coefficient

<table>
<thead>
<tr>
<th>Correlation coefficient (BFDI X FX)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-2007 Period</td>
<td>-0.00677</td>
</tr>
<tr>
<td>1990-2007 Period</td>
<td>-0.01904</td>
</tr>
<tr>
<td>Real Plan 1994-2007</td>
<td>0.00723</td>
</tr>
<tr>
<td>2000 Decade</td>
<td>0.25669</td>
</tr>
</tbody>
</table>

Source: Ipeadata.

Trevisan (2006) presents the performance of Marcopolo as a result of the devaluation of the Real against the Dollar in 2004. The company sought to enhance its performance by shifting some operations abroad in view of the exchange rate pressure faced. The internationalization process, started in 1990, is explained as a reaction by the company because of its concern with the change in the exchange rate in 2004, which directly influenced the company’s revenues.

Based on the factors analyzed here, it can be seen that the decision for internationalization is reached in view of the company’s need for insertion in the global market. With this insertion, the company can increase its international competitiveness and reduce possible hindrances from local macroeconomic factors, such as the exchange rate.

The entrance of Brazilian firms in outside markets makes them more competitive, because besides expanding the reach of their goods and services, it provides the possibility of negotiating better terms with suppliers and gaining access to technological and financial resources (Alem and Cavalcanti, 2005; cited by Lima and Corrêa, 2007). These factors mean less interference in companies’ profit margins from the vicissitudes of the exchange rate.

4. EXCHANGE RATE AND INTERNATIONALIZATION

This section addresses the effects of the exchange rate on Brazilian direct investment abroad, through econometric tests and arguments about the effects of the exchange rate question on the internationalization process.

4.1 Effects of the exchange rate on companies

The exchange rate is one of the strategic factors for the performance of companies inserted in the internationalization process. This question particularly affects exporters of goods, because the exchange rate can either increase or decrease their revenues in local currency. Besides the revenue side, the exchange rate also affects the cost of inputs, because their prices often are influenced by exchange rate variations.

Among the factors affected by the exchange rate is the price of products. The revenues of exporting companies are tied to the local exchange rate. When the Real is weak against the American Dollar, the price of Brazilian products is lower in the international market, which brings higher profit margins and stimulates exports and national production. However, when the Real strengthens against the Dollar, these Brazilian products become more expensive, discouraging exports but encouraging imports, as domestic production is substituted by imported products. Local companies tend to lose competitiveness against foreign products and productivity as well.

On the other hand, a stronger exchange rate can benefit companies’ investments. A strong currency facilitates acquisition of imported machinery and equipment, enhancing competitiveness through modernization. It also makes it easier to repay foreign debts. But the
increase of imports because of the exchange rate factor tends to dampen domestic output because of the entrance of foreign products. Many authors argue that this can be a factor leading companies to internationalize.

Aggregate demand can be affected by the exchange rate factor. IEDI (2007) points to the high domestic interest rates as a factor that hurts exports, because these are inhibited with the effect on the financial and capital account. The combination of a strong exchange rate and high interest rates undermines industrial activity, because it strongly affects investment and exports. High domestic interest rates attract speculative capital, appreciating the exchange rate and impairing exports. The diminished industrial activity tends to slow economic growth.

The internal costs (taxes, logistics, infrastructure and transactional costs) work against exporting companies. Exporters call for policies to devalue the exchange rate to offset the high internal costs (Moreira, 2006). According to this author, even a weaker exchange rate, causing higher prices in local currency, cannot make up for the growth of those costs.

According to IEDI (2007), the appreciating exchange rate has been reducing the cost of intermediate products in industrial sectors facing deindustrialization. This reveals that the expansion of activities depends more on the level of investment than on the exchange rate factor itself.

4.2 Quantitative analysis of the relation between the exchange rate and Brazilian outward direct investment

In this topic we present the results of the econometric tests relating the exchange rate (FX) and Brazilian foreign direct investment (BFDI). First we show the results of the Granger causality test, applied by the E-views software.

The Granger test is an econometric tool that shows whether one variable causes changes in another. The concept of Granger causality, cited in Thurman and Fisher (1988), is defined by the fact that variable x causes variable y, such that changes in x should cause changes in y. For this to happen, two conditions must be met: x should help predict y, where:

\[
y_t = \alpha_0 + \phi_{11}(B)x_{t-1} + \phi_{12}(B)x_{t-2} + \varepsilon_{1t}\\
x_t = \beta_0 + \phi_{21}(B)y_{t-1} + \phi_{22}(B)y_{t-2} + \varepsilon_{2t}
\]

where \(y_t\) and \(x_t\) are the vectors of the entrance variables of the model for testing the Granger causality, \(\phi_{ij}\) are the coefficients of the estimated relation, and \(\varepsilon_{it}\) are the stochastic error terms of the process.

The hypotheses tested are:

\(H_0: X \text{ does not cause } Y \rightarrow FX \text{ does not cause BFDI.}\)

\(H_A: Y \text{ does not cause } X \rightarrow BFDI \text{ does not cause FX.}\)

The number of lags of the variables is an important entrance criterion of the Granger causality model. To choose the suitable number of lags for the test, we minimized the Bayesian information criterion (BIC) of Schwarz.
We used 77 observations in the test, which leads to loss of one degree of freedom. The procedure was carried out with one lag. Chart 1 presents the results, which show that no causality can be accepted in either of the directions, even at 10% significance. Note that the Granger causality term would be better evaluated as precedence statistical, as argued earlier.

**Chart 1 – Result of the Granger Test**

Pairwise Granger Causality Tests  
Sample: 1988:1 2007:4  
Lags: 1

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Obs</th>
<th>F-Statistic</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>BFDI does not Granger Cause FX</td>
<td>76</td>
<td>1.99064</td>
<td>0.16252</td>
</tr>
<tr>
<td>FX does not Granger Cause BFDI</td>
<td>0.09017</td>
<td>0.76482</td>
<td></td>
</tr>
</tbody>
</table>

Source: Estimates from the E-views software.

As an alternative procedure to verify the robustness of the results in relation to the model choice, we performed an econometric test based on simple regression. The results are shown in Chart 2. They indicate rejection of the contemporaneous FX variable as explaining BFDI, even at 10% significance. We also evaluated whether the model is sensitive to the sample, but with smaller samples (more recent periods), the results did not change significantly.

**Chart 2 – Results of the Simple Regression between FX and BFDI**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-602177.7</td>
<td>112826.5</td>
<td>0.533720</td>
<td>0.5951</td>
</tr>
<tr>
<td>FX</td>
<td>-0.605352</td>
<td>1.031960</td>
<td>0.058660</td>
<td>0.9534</td>
</tr>
</tbody>
</table>

R-squared 0.000046  Mean dependent var 666094.8  
Adjusted R-squared -0.013287  S.D. dependent var 2552364.  
S.E. of regression 2569265.  Akaike info criterion 3.238.177  
Sum squared resid 4.95E+14  Schwarz criterion 3.244.265  
Log likelihood -1.244.698  F-statistic 0.003441  
Durbin-Watson stat 1.906.381  Prob(F-statistic) 0.953379  

Source: Estimates from the E-views software.

The econometric analysis does not corroborate the position of some authors, such as Trevisan (2006), that the exchange rate is a relevant factor in Brazilian companies’ internationalization movement. The causes of this internationalization, then, must be sought in other elements of international business theory.
Note that we carried out simple regression tests, with a single explanatory variable. However, the conclusions reached are robust relative to the three different statistical/econometric procedures: measurement of the simple correlations, Granger causality test, and simple linear regression. Therefore, it can be affirmed that there is evidence that the relation is tenuous, as argued in this work.

4. DISCUSSION OF THE RESULTS AND FINAL OBSERVATIONS

The article made a quantitative evaluation of the internationalization process of Brazilian firms, specifically testing the proposal that the exchange rate influences internationalization movements. Unlike proposed by authors such as Trevisan (2006), we found that the exchange rate factor does not have any reflection on the measures of Brazilian direct investment abroad, a hypothesis demonstrated by the econometric tests. Possible effects on revenue generation of an appreciated exchange rate can be overcome by an increase of investment by the firm. This factor tends to improve not only the firm’s own performance, but the economic standard of the country’s economy as a whole.

It is important to stress that these results cannot be taken as definitive, since the econometric exercises carried out were based on a single explanatory variable: the exchange rate. We did not estimate a structural model with a set of possible explanatory factors of internationalization, which was outside the scope of this work. What we do offer, however, is evidence that the explanation indicated by Trevisan (2006) and other authors discussed here is not borne out by a quantitative/econometric approach. Moreover, we presented three alternative statistical/econometric procedures (simple correlation measurements, Granger causality test and simple linear regression) and their result converged, meaning the analysis can be characterized as robust.

The evidence found in this article can be compared with facts from other economies. A report in The Economist magazine (2008) discussed the fact that Southeast Asian economies that have traditionally used devalued currencies to obtain global competitive advantage do not seem able to generate world-class companies, while “other emerging economies are producing world-class companies by the dozen.” Southeast Asia was one of the fastest growing regions in the world in the last decade. It has a population of 570 million and its five biggest economies are Indonesia, Malaysia, Philippines, Singapore and Thailand. The report points out that Brazil alone today has 13 world-class companies, far more than Southeast Asia, which has only 5. The Asian leaders are China with 41 and India with 20 companies. Mexico has only 7, which shows that Brazil has outperformed its Latin American colleague. Therefore, the constant complaint that the strong currency prompts companies to shift production abroad cannot be seen as a generalized phenomenon, although it can help to explain the change in productive base of some individual companies that start to produce abroad.

Moreover, it must be noted that the decision on direct investments has a horizon that can exceed the typical cycles or currency appreciation and depreciation. Therefore, there is another “expulsion” factor that does not tend to undergo large fluctuations, specifically the tax burden relative to that in competing countries. In the Brazilian case, if the high tax burden were not already enough, the trajectory of public spending indicates a high probability of additional tax increases. This is something business leaders and decision makers clearly perceive, but a feeling apparently not shared by the federal, state and local governments. The tax burden has a powerfully distorting effect on the Brazilian economy. Hence, many companies, foreseeing worse to come, take a defensive stance by establishing foreign
operations, from where they can produce and export, including to Brazil, especially in countries that manage their public expenditures better and have a less voracious tax bite than Brazil. Therefore, even though the exchange rate is a factor prompting companies to internationalize, changes in the tax burden, which have been recurring and ascending in recent years, can have this same effect. This is an interesting topic for future research, which can be carried out using a similar methodology as that presented here.

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