

INTERNALISATION THEORY AND THE INTERNATIONALISATION DECISION BY BRAZILIAN FIRMS

TEORIA DA INTERNALIZAÇÃO E A DECISÃO DE INTERNACIONALIZAÇÃO DE EMPRESAS
BRASILEIRAS

TEORÍA DE LA INTERNALIZACIÓN Y LA DECISIÓN DE INTERNACIONALIZACIÓN DE EMPRESAS
BRASILEÑAS

Ronald de Oliveira Concer

PhD candidate
EAESP – Fundação Getúlio Vargas
ronald.concer@gmail.br

Frederico Araujo Turolla

PhD
Escola Superior de Propaganda e Marketing
fturolla@espm.br

Submitted on: 02/23/2012

Approved on: 05/30/2012

RESUMO

Este artigo avalia a aplicabilidade da teoria de internalização da empresa multinacional, baseada na Economia dos Custos de Transação (WILLIAMSON, 1985) e na abordagem de Buckley e Casson (1976), na explicação da internacionalização das empresas brasileiras. O material utilizado compreende duas listas de transações, quais sejam, a lista dos dez principais produtos exportados pelo Brasil e a lista dos produtos das dez principais transnacionais brasileiras. São definidas três dimensões relacionadas aos custos de transação: frequência das transações, incerteza e especificidade de ativos. Os resultados apontam para um índice levemente mais elevado de custos de transação para as transações que são sujeitas ao investimento direto, relativamente à média das exportações, dando assim suporte às predições da teoria.

PALAVRAS-CHAVE: Negócios Internacionais. Internalização. Investimentos Diretos.

ABSTRACT

This paper assesses the applicability of internalisation theory of multinational enterprises, based on Transaction Cost Economics (Williamson, 1985) and the approach employed by Buckley and Casson to explain internationalisation of Brazilian enterprises. The material is composed of two transaction lists: the top ten exported products in Brazil and the list of products produced by the top ten Brazilian TNCs. Three dimensions relating to transaction costs were defined: frequency of transaction, uncertainty, and asset specificity. The results indicate a slightly higher level of transaction cost for those transactions that are subject to FDI, compared with average export costs, supporting the predictions of the theory.

KEYWORDS: International Business. Internalisation. Direct Investments.

Este artículo evalúa la aplicabilidad de la teoría de la internalización de la empresa multinacional, basada en la Economía de los Costos de Transacción (WILLIAMSON, 1985) y en el abordaje de Buckley y Casson (1976), en la explicación de la internacionalización de las empresas brasileñas. El material utilizado comprende dos listas de transacciones, a saber: la lista de los diez principales productos exportados por Brasil y la lista de los productos de las diez principales transnacionales brasileñas. Se definen tres dimensiones relacionadas a los costos de transacción: frecuencia de las transacciones, incertidumbre y especificidad de activos. Los resultados apuntan hacia un índice ligeramente más elevado de costos de transacción para las transacciones que están sujetas a la inversión directa en relación al promedio de las exportaciones, dando así soporte a las predicciones de la teoría.

PALABRAS CLAVE: Negocios Internacionales. Internalización. Inversiones Directas.

INTRODUCTION

The theory of Internalisation of multinational enterprises is a literature stream initiated by Buckley and Casson (1976 and 2003), with contributions from other authors such as Lundgren (1977), Swedenborg (1979), Hennart (1977, 1982) and Dunning (1988, 2001, 2007). This theory was reviewed and updated by Buckley and Casson (2009), hereafter referred to as B&C. The methodological basis of the theory rests on the analysis of the conditions underlying transactions - a microanalytic approach that is rooted in the field of Transaction Cost Economics. This paper examines internationalisation theory, and its importance for the analysis of the internationalisation of Brazilian enterprises.

The decision concerning whether to export or invest is discussed in international business literature from a perspective of the risk and return dilemma. Exporting requires fewer resources and less commitment to foreign markets, and therefore brings a relatively lower return with higher risk. Accordingly, a company has less control over the market in which it operates. Direct foreign investment, however, enables greater control of operations but higher rates of risk and return (Agarwal and Ramaswami, 1992). Brainard, (1997) argues that companies must invest abroad when market access advantages outweigh production economies of scale.

Based on the theory of internationalisation, the relevant dimensions of transactions, according to Williamson (1985), are as follows: a) the frequency with which they occur; b) the uncertainty factor; and c) asset specificity. These three dimensions are relevant to the internationalisation of firms. We therefore developed a procedure to test the implications of the theory for Brazil, by studying outward direct foreign investment and comparing it to the country's exports.

We compared two transaction lists: the top ten export products, and the list of products that are produced abroad by the top ten Brazilian transnational corporations. The comparison is relevant within the context of ongoing efforts towards a "tropicalisation" of the main theoretical approaches in the international business tradition.

This paper consists of six sections. The first section presents the theory of internalisation of the multinational enterprise in more detail. The second section discusses the transaction as the relevant unit of analysis, and presents the main research hypotheses. The third section presents a historical background of Brazilian exports and outward foreign direct investment, seeking to identify idiosyncratic factors that may influence the result. The fourth section describes the research procedure that we used to compare the two lists, to garner support for the B&C theory among Brazilian firms. The fifth section presents the results, and a final section discusses the weaknesses of the methodology and proposes directions for further research.

APPROACHES TO INTERNATIONAL PRODUCTION

International Business (IB) theory dates back to the 1960s, when the Heckscher-Ohlin theory of International Economics foresaw that international trade would only occur where differences in relative factor endowments prevailed. As trade theory advanced, it became logical to assume that capital would flow from low return to high return locations (Buckley and Casson, 2010), encouraging direct investment by developed nations in less developed countries. However, only portfolio flows (according to the definition of the Balance of Payments, portfolio flows are considered to be financial in nature, whereas direct investments are considered to be productive in nature) actually showed this pattern; the theory did not correspond with the actual facts of foreign direct investment. At the time, massive and seemingly unlikely investment flows were seen between the United States and the United Kingdom.

Hymer, given these empirical challenges, (1960) inaugurated a new International Business tradition in which the explanations of transnational activity by firms were to be found outside the established framework of International Economics (IE). Note that IB and IE diverged significantly from that time on and only converged when IE reintroduced the firm as an important factor in the analysis. A call for papers by the Review of World Economics (2012) attempted to identify studies that would help to bridge the gap between the two fields:

With the advent of new trade theory (Helpman and Krugman, 1987), the firm was re-introduced as the object of interest in international economics. The recent advancement of the heterogeneous firm in formal models of ("new new") international trade (Melitz, 2003) has further spawned an unprecedented amount of theoretical and empirical microeconomic research in international economics (Greenaway and Kneller, 2007). Hence, after fifty years of co-existence, the potential for spill overs between IE and IB has increased significantly. (REVIEW OF WORLD ECONOMICS, 2012).

Several competing explanations in the tradition of IB have recently been offered with respect to foreign direct investment and its different forms. The main explanations include the Uppsala model, the eclectic paradigm, and internalisation theory; all three are summarised below.

Johanson and Vahlne (1977) proposed the establishment of a chain for internationalisation of firms, based on their empirical observations of international subsidiaries of Swedish firms. They found that this chain was established according to the psychic distance (*factors that make it difficult to understand foreign environments*) in a dynamic but non-deterministic process that evolves over time, with learning and incremental commitment building under a bounded rationality assumption. The same authors proposed an update to their theory that was recently presented in Johanson and Vahlne (2009). As Eden (2009) states, "outsidership relative to the relevant network, rather than psychic distance, is the root cause of uncertainty and precipitates the internationalisation process" (Eden, 2009, p. 1409). In the original theory, *liability of foreignness* was a key concept whereas, in the new version, a relevant concept becomes the liability of outsidership in relation to a relevant network.

John Dunning (1977) and his eclectic paradigm of international production emerged from the finding that American subsidiaries in the United Kingdom were more productive than similar firms in the US, even though America's industrial productivity was much higher than that of the UK. The Dunning paradigm is based on three components, ownership (O), location (L) and internalisation (I); therefore, it can be named "OLI". The ownership component is related to firm-specific availability of resources and is related to the Resource Based View (RBV) of the organisation, which was proposed by Penrose, who saw the firm as "a set of productive resources". RBV explains how companies manage to obtain sustainable competitive advantage by analysing their internal resources to correct their weaknesses and develop their potential. The existence of assets – tangible or intangible – is related to a firm's capacity to expand and differentiate itself from its competitors. Among the tangible assets are economies of scale or patents, while intangible assets include a firm's brand and reputation. Dunning's eclectic approach is criticised on the grounds of being too general, and was recently updated in Dunning and Lundan (2007).

The theory of internalisation of the multinational enterprise is based on the Coasian nature of the firm in which imperfect markets can be internalised into a firm's internal non-market "transactions". This approach leads to a discussion with respect to the boundaries of a firm, which "are set at the margin where the benefits of further internalisation of markets are offset by the costs" (B&C, 2009,

p. 1564). Additionally, firms seek the least-cost location for each activity, considering relevant linkages, and there is a relevant role for R&D with respect to a firm's profitability and growth (B&C, 2009). Firms have two alternatives: they can produce in their home country for export ("export"), or they can expand their boundaries by investing in production abroad ("invest"). This is the most relevant distinction with respect to the comparison conducted in this paper.

However, elements of the Dunning paradigm coincide with the theories presented in this paper. For example, Buckley and Casson (2009) propose that internationalisation occurs as a result of the interaction between internalisation and location effects, which can be linked to Dunning's components L and I, because these have influenced the development of the OLI paradigm.

The "I" component reflects an opinion that firm boundaries should be broad because firms have transaction costs. Ronald Coase (1937) proposed that transaction costs are important with respect to the way in which a market is organised, a perspective that was subsequently expanded by authors such as Williamson (1985), who further developed the idea of firm boundaries in the presence of important market imperfections. The B&C approach to internationalisation is largely based on the internationalisation component of this perspective.

Johanson and Vahlne (2009) also argue that there may be some convergence between the dominant international business approaches, and the authors urge researchers to look for "similarities between internalization theory/the OLI paradigm and their own network-based internationalization process model" (Eden, 2009, p. 1409). Johanson and Vahlne (2009) propose that the firm should be viewed as an exchange unit rather than a production unit (Eden, 2009), and the authors' perspectives converge into an approach that is rooted in Coase or Williamson. Thus, while there are competing international business theories, we anticipate that this ongoing process of convergence will lead to a more unified explanation that has a high probability of succeeding given the existing interfaces.

There are arguments in the literature that point to the need for a "tropicalisation" of existing International Business theories that will enable the explanation of new phenomena that are appearing in emerging markets (or in developing nations - these terms are used interchangeably in this paper). Research on the field of emerging markets has increased significantly since 2000. For example, Ramamurti (2004) presented a research agenda that focuses on the negative and positive effects of MNE in home and host developing countries, and the impact of home contexts and policies on MNE behaviour and other issues such as diaspora investment. However, this study concentrates on the explanation of foreign direct investment by a home country that is considered an emerging market, namely Brazil. Meyer (2004) initiated a key discussion on multinational enterprises in emerging economies that addresses specific issues, such as positive and negative spillover from foreign direct investment (FDI) in emerging economy societies - which also leads to discussion concerning the role of local stakeholders in foreign direct investments and transnational activity in developing nations.

Transnational corporations from developing countries have also been the subject of increasing attention in specialised literature since 1970, and this literature has broadened in scope in recent decades (Ogasavara and Masiero, 2009). The distinction between early movers from developed countries and late movers from the developing world is an appropriate one. Some scepticism is evident, e.g., Bartlett and Ghosal (2000), who foresee that liabilities of origin may tie newcomers to commodities or low value added markets where a company position can be weak and vulnerable to a changing competitive landscape (Fleury and Fleury, 2011). However, it is difficult to prove whether a sceptical view will prove to be correct, given the strong demand for basic materials from China and high commodity prices that exist in the current global economic environment.

MICROANALYTICS AT THE TRANSACTION LEVEL

The occurrence of transactional-related costs, as defined by Oliver Williamson (1985), is explained by the existence of costs relating to the elaboration and negotiation of contracts, the measuring and supervision of property rights, the organisation of activities, the monitoring of performance, and adaption costs. Williamson (1985, p. 19) states that "transaction costs are the economic equivalent of friction in physical systems". He also quotes the definition given by Kenneth Arrow, who refers to the "costs of running the economic system" (WILLIAMSON, 1985, p. 18).

Williamson (1985) explains that there are two types of costs inherent in a transaction; ex ante and ex post. Ex ante costs arise from the preparation, negotiation and safeguarding of an agreement. These costs are related to the collection of information before the contract is signed, as well as the efforts made to guarantee its purposes. Ex post costs are linked to maladaptation of contract conditions, such as delays, omissions, errors, inadequacy, non-fulfilment of established contract clauses, and unexpected changes that affect the contract conditions.

An analysis of conditions that underlie transactions is therefore warranted; a microanalytic approach is supported by Transaction Cost Economics, and this approach is incorporated into the internalisation theory of the firm. The costs proposed by Williamson (1979) reveal the transaction variables and then provide information concerning the governance structure adopted by a firm. The relevant dimensions of transactions are the following: a) the frequency with which they occur; b) the uncertainty factor; and c) asset specificity (WILLIAMSON, 1985, pp. 52-61).

The first dimension observes the frequency of transactions, or the level of recurrence of a transaction. In a high frequency situation, there will presumably be a corresponding reduction in fixed costs, particularly those related to the gathering of information and the elaboration of contracts. Recurrent transactions typically lead to enhanced commitment among the components of a transaction, thus restricting opportunistic behaviour by the participating agents. A higher transaction frequency tends to provide the parties with relevant information concerning their counterpart, and thereby increases mutual reliance.

The second dimension is the uncertainty factor, which is a condition in which the parties involved in a transaction have limited knowledge with respect to the outcome. In this context, opportunistic behaviour may create room for moral hazard, a behaviour that changes opportunistically after the contract has been signed.

Williamson (1985) stresses the importance of the asset specificity factor. The higher the asset specificity, the higher the losses will be if opportunistic behaviour occurs. Moreover, when monitoring efforts are high, transaction costs will be high because the risk of loss in the investment will be greater.

The asset specificity condition is only relevant when it is linked to the assumptions of Transaction Cost Economics, namely bounded rationality and opportunism, and the presence of uncertainty (Williamson, 1985). Accordingly, if no degree of specificity exists in the asset involved in the transaction, costs will be non-existent and there will be no need for control.

The same theory can describe many aspects of company internationalisation and the phenomena of foreign direct investment. Williamson (1985) notes that, although after World War II there was inhospitality in the spread of multinational corporations, Buckley and Casson (1976) were an important exception because they did not neglect transaction cost and organisational issues, as was the case with the majority of authors. Recent literature has clarified that transaction costs are an important element in the decision by a corporation to engage in international production.

We formulated the following hypotheses to be tested by the data set that we have collected:

Hypothesis 1. The top ten products exported from Brazil are sold rather than produced abroad because the underlying transactions mostly reflect relatively lower transaction costs.

Hypothesis 2. The top ten Brazilian MNEs chose to invest instead of exporting because their transactions reflect relatively higher transaction costs.

BRAZIL'S EXPORTS AND INTERNATIONALISATION

Both export transactions and the transactions carried out by Brazilian firms in foreign markets, through FDI, are not only determined by transaction costs but may also be related to other factors. Global factors that influence trade and investment may determine certain observed data. The balance of internal, idiosyncratic factors pushing FDI from and to developing economies is a relevant issue that is not explored in this paper. This section addresses possible Brazilian idiosyncrasies that may be important in the determination of the observed data.

During the 1980s, Brazil was relatively insular with respect to foreign direct investment flows (FDI). By the end of the decade, global foreign direct investment accounted for approximately 2.7% of the world's Gross Domestic Product, whereas FDI inflows into Brazil amounted to just 0.4% of GDP, according to official data from the Central Bank of Brazil data collected in 2012. Additionally, following years of government intervention, price controls, and limited exposure to global competition by firms, most Brazilian industrial firms were inefficient and uncompetitive.

During the 1990s, the country witnessed a widespread but incomplete reversal of the formerly adopted import substitution strategy. Early in the decade, the Collor administration promoted a major trade liberalisation effort that increased the exposure of firms to competition, albeit in a disorderly form (however, as a practically unilateral nation, Brazil missed a historic opportunity to secure access to many foreign markets). This effort resulted in higher levels of internal competition. The devices of the Mercosur (Common Market of the South), implemented in 1994, contributed to increasing access to the Brazilian market.

By the 1990s, Brazil had narrowed the gap by attracting increasing FDI flows. By the late 1990s, Brazil was receiving the equivalent of more than 5% of its GDP in FDI¹, keeping pace with other developed countries. This finding is evidence of the greater insertion of the Brazilian economy, which, through widespread productive integration, has accompanied a globalisation process that has been continuing since the 1990s. Over the past decade, Brazil has consequently consolidated its position as an important recipient of foreign direct investment and has become, in various segments, an important source of direct competition among the world's top corporate names. Brazil has also recently become an important direct global investor.

Trade liberalisation efforts, currency valorisation, and broad structural reforms conducted during the 1990s are aspects of the Brazilian environment that have helped to promote a significant increase in inward foreign direct investment during the second half of the 1990s and outward FDI flows since the 1990s. These are the main Brazilian idiosyncratic factors that explain the FDI boom – nonetheless, there are certain global factors that should also be considered because most developing economies experienced similar increases in inward and outward FDI during the same period, although generally to a lesser extent.

The valorisation of Real, from the mid-1990s to 1999 was relevant, not only with regard to the containment of prices but because it represents fierce competitive pressure on domestic producers. Many firms that were producing in Brazil most likely experienced, during the period from 1994 to 1998, a difficult competitive period. Facing competitive pressure due to the commercial opening up of the markets, and unfavourable foreign exchange rates, Brazilian firms were faced with three alternatives: (1) to cease trading; (2) to sell their companies to international groups that could operate with the same capital but more productively; or (3) to make cost adjustments and face the competition head on.

The firms with greater resistance were capable of modernising and employing new strategies that eventually led to international production. The winning strategy in this Darwinian-style process of natural selection was to make harsh adjustments, and firms benefited from the strong Real and smaller import barriers in the modernisation of their production equipment, reallocation of plants, and review of products and processes. The strong Real contributed to machinery and equipment imports that created unprecedented conditions for the incorporation of new, modern equipment shortly after implementation of the Plano Real.

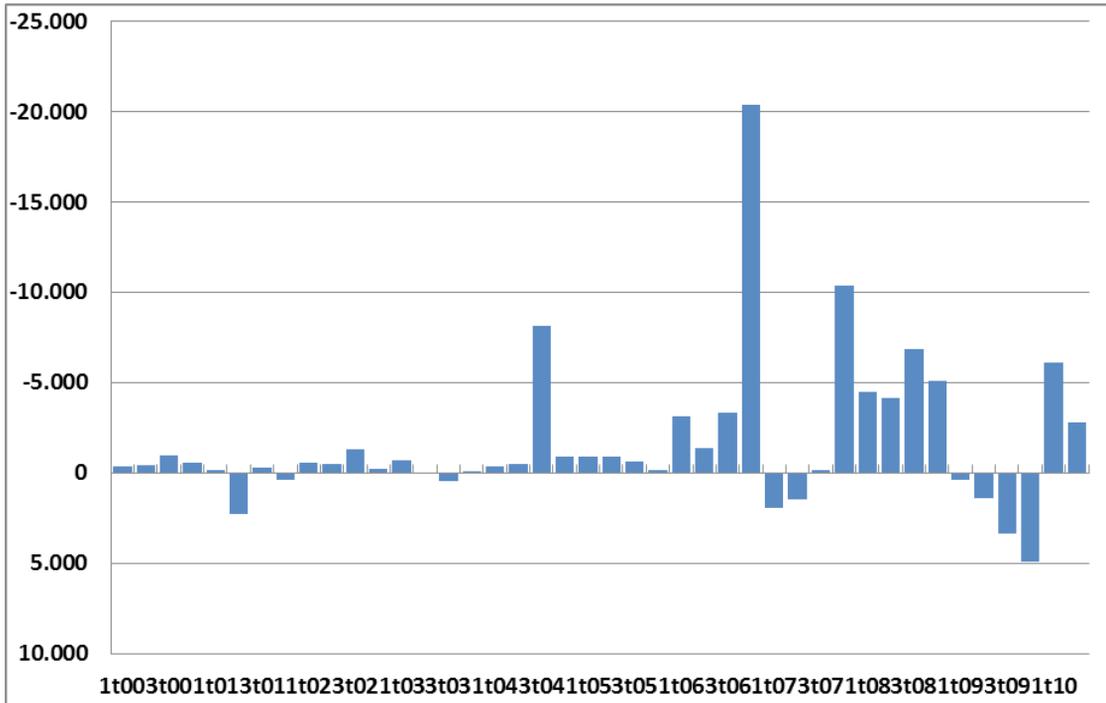
The external impulse of Brazilian firms was initially intensified with exports. After intense competition, the devaluation of the Brazilian Real in early 1999 offered a degree of freedom in the domestic market and also brought relief for export activity. There has been a significant increase in export levels since then, which increased further from 2004 to 2008 because of favourable prices. Positive behaviour was enhanced by public policy towards the agribusiness sector that had been created during the previous decade, and that put the country back in a position as a potential agribusiness exporter.

Initially, recipients of Brazilian direct investment were related to similar conditions that existed in other developing economies and that continued throughout the 1990s. For instance, UNCTAD

1 Data for GDP in FDI from the Central Bank of Brazil. The ratio was calculated by the authors.

(2007) highlights the increase in foreign direct investment flows in the South-South direction, i.e., between developing countries. However, significant recent investment by developing countries in developed markets suggests that this South-South investment trend may be changing. Among these operations are the merger of Ambev and Interbrew, the recent acquisition of Inco by Vale, and the buyout of Swift by Friboi. The latter buyout led to Grupo JBS becoming the world’s largest meat processor. The chart below shows outward foreign direct investment by Brazilian firms, on a quarterly basis.

Brazilian outward foreign direct investment, US\$ million



Source: Central Bank of Brazil, public data series #2637. The vertical axis was inverted because negative values refer to outward net investment.

The amount exported is significantly larger than the amount of outward foreign direct investment by Brazilian firms. Additionally, export growth and the related penetration in external markets through exports are generally more established than that of direct presence. Despite the difference in the two “portfolios” (of export and investment), we can compare the two with respect to the literature on internalisation.

RESEARCH PROCEDURE

Research was carried out to validate the theory using empirical data and observation of relevant facts. First, we collected data on the top ten products exported by Brazil in 2008 and summarised the major trade flows related to the first type of decision: export. Information concerning transactions was obtained from the respective corporate websites or from secondary sources as indicated. The “export list” of the key exported products from Brazil is shown in Table 1: iron ore (USD 16.5 billion), crude oil (13.6 bn), soy beans (10.9 bn), chicken (5.8 bn), aircraft (5.5 bn), automobiles (4.9 bn), soy meal (4.3 bn), coffee beans (4.1 bn), beef (4 bn) and steel/iron products (4 bn).

Table 1: Top ten Brazilian export products

Ranking	Product	Brazilian Exports
1 st	Iron ore	USD 16.5 bn

2 nd	Crude oil	USD 13.6 bn
3 rd	Soy beans	USD 10.9 bn
4 th	Chicken	USD 5.8 bn
5 th	Aircraft	USD 5.5 bn
6 th	Automobiles	USD 4.9 bn
7 th	Soy meal	USD 4.3 bn
8 th	Coffee beans	USD 4.1 bn
9 th	Beef	USD 4.0 bn
10 th	Steel/iron products	USD 4.0 bn

Source: Ministry of Development.

We gathered data on products sold as a result of the “investment” strategy. We chose key Brazilian transnational corporations listed in the Dom Cabral survey (FDC, 2009) and used data from the ten firms with the highest foreign to total sales revenue. The selected companies, with their ratio of foreign sales to total sales in parenthesis, were Aracruz (0.89) and Suzano (0.73), both in the pulp and paper industry; Gerdau (0.58), in the steel/iron industry; Marfrig (0.46), in the beef industry; Metalfrío (0.42), in the metalworks industry; Sabó (0.4), in the autoparts industry; Vale (0.39), in the mining industry; Odebrecht (0.32), in the construction industry; TAM (0.3), in the airline industry; and Itautec (0.27), in the IT services and software industry. These data are shown in Table 2.

Table 2: Key Brazilian TNCs

Importance	Company / sector	Index (sales to revenue)
1 st	ARACRUZ: pulp and paper	0.89
2 nd	SUZANO: pulp and paper	0.73
3 rd	GERDAU: steel	0.58
4 th	MARFRIG: meat	0.46
5 th	METALFRIO: metalworks	0.42
6 th	SABÓ: autoparts	0.40
7 th	VALE: iron ore	0.39
8 th	ODEBRECHT: engineering services	0.32
9 th	TAM: airlines	0.30
10 th	ITAUTEC: IT services and software	0.27

Source: Dom Cabral data, 2009.

Data were collected from several sources. Primary data came from the Brazilian government (Ministry of Development) and also from information published by the companies. We also obtained information from published works and made estimates that combined several pieces of information.

The comparison between the “export list” and the “investment list” provides insight into the suitability of B&C internalisation theory with regard to multinational enterprises. The first empirical observation is that the export list is concentrated around the agribusiness (grains, meat), steel and ore, and metal-mechanical (autos and planes) sectors. Sectors with the highest investments are pulp and paper, beef, iron and steel, services, autoparts, and mining. Items that appear on both lists include beef and mining.

B&C proposed that internationalisation occurs as a result of the interaction between internalisation and location effects, and that the effects of both can be identified in the differences and overlap

between our two “lists”. The location effect may contribute to overlap, such as in the case of beef, as well as other static but dynamic effects that are not observed in our two lists. A number of other questions related to the B&C perspective become evident from a comparison of the lists, while also allowing room for a “multilevel analysis” as proposed by B&C (2009).

RESULTS AND DISCUSSION

The transactions were ranked according to the three transaction dimensions proposed by Williamson (1985): frequency, uncertainty and asset specificity.

Exports

Table 3 summarises the export results on using a scale of 1 to 3 for the relative level of strength of each relevant dimension of the underlying transaction, where 1 indicates a low level, 2 indicates a medium level, and 3 indicates a high level. We defined frequency as the inverse, “infrequency”, because we want our scale to denote a high transaction cost for higher values. The values assigned were based on the researchers’ own judgment.

Table 3: Intensity of attributes in the top ten Brazilian export products

Importance	Product	Export from Brazil	Infrequency	Uncertainty	Asset specificity
1 st	Iron ore	USD 16.5 bn	2	1	1
2 nd	Crude oil	USD 13.6 bn	2	1	1
3 rd	Soy beans	USD 10.9 bn	1	1	1
4 th	Chicken	USD 5.8 bn	1	1	2
5 th	Planes	USD 5.5 bn	3	2	3
6 th	Automobile	USD 4.9 bn	2	2	2
7 th	Soy meal	USD 4.3 bn	1	1	1
8 th	Coffee beans	USD 4.1 bn	1	1	1
9 th	Beef	USD 4.0 bn	1	1	2
10 th	Steel/iron products	USD 4.0 bn	1	1	1
Average			1.5 (out of 3)	1.2 (out of 3)	1.5 (out of 3)

Source: created by the author.

The measurement of transaction attributes was based on the following assumptions, which are detailed for each relevant transaction.

a) Infrequency

1. Iron ore: iron ore transactions are typically carried out between large mining corporations (such as Vale, Rio Tinto, BHP) and large steel makers. Negotiations are on an annual basis and have long negotiation periods. However, this situation is changing, and the creation of a spot market has been recently announced.

2. Crude oil: although oil is a commodity, there are relevant costs with respect to the negotiation process, mainly due to the logistics involved in reaching a specific market with a high volume of product, and the existence of possible geopolitical issues such as trade arrangements that can lead to medium- to long-term supply contracts.

3. Soy beans: this is a commodity that is traded in organised exchanges, and the frequency is therefore high.

4. Chicken: chicken transactions are frequent and exhibit high volumes.
5. Aircraft: this is an infrequent transaction because it is based upon fleet renewal decisions that occur sporadically.
6. Automobiles: foreign trade of automobiles occurs mostly in the form of a transaction between firms that involve medium- to long-term supply contracts, but transactions between firms that belong to different groups may also involve significant transaction costs.
7. Soy meal: soy meal exhibits a high frequency because it is a standardised product.
8. Coffee beans: this is a commodity that is traded in organised exchanges, and the frequency is therefore high.
9. Beef: meat exports are sold frequently.
10. Steel/iron products: transactions are relatively frequent.

b) Uncertainty

1. Iron ore: There is a low level of uncertainty involved in this transaction because the specified nature of the product provides relatively high control over the technical aspects of specification.
2. Crude oil: There is a low level of uncertainty involved in this transaction because the specified nature of the product provides relatively high control over the technical aspects of specification.
3. Soy beans: soy is traded in organised exchanges, and most soy transactions fit into previously set standards; thus, the level of uncertainty for soy beans is low.
4. Chicken: there is a low level of uncertainty in international trade because the risk of disease is controlled nationally in most global markets.
5. Aircraft: there is a medium level of uncertainty as to the actual quality of the goods being supplied because most of the relevant attributes are unobservable. For example, the probability of a need for recall cannot be assessed at the time of transaction.
6. Automobiles: as for aircraft, quality and other attributes cannot be adequately assessed at the time the contract is signed.
7. Soy meal: there are low levels of uncertainty with soy meal because it is a standardised product.
8. Coffee beans: as for soy beans, transactions show low levels of uncertainty.
9. Beef: there is a low level of uncertainty in international trade because the probability of disease is nationally controlled in most global markets.
10. Steel/iron products: there is a low level of uncertainty involved in this transaction because the specified nature of the product provides relatively high control over the technical aspects of specification.

c) For asset specificity

1. Iron ore: the assets are specific, but when deployed, they serve a large number of transactions. For some of these transactions, there are organised second-hand markets.
2. Crude oil: the assets are specific, but when deployed, they serve a large number of transactions. For some of these transactions, there are organised second-hand markets.
3. Soy beans: transactions can be carried out from a distance; therefore, asset specificity can be said to be low.
4. Chicken: there are many certifications and quality requirements in international trade that may lead to an adaptation of the transaction setting to national standards. However, there are economies of scale in meeting several different national standards, which results in a medium level of asset specificity.

5. Aircraft: every aircraft transaction is ordered for a specific operating environment (e.g., flight lengths, stage, density, and load factor) and a specific use (e.g., regional flights, major carriers, and military), which requires significant effort in the customisation of the aircraft, resulting in very high asset specificity for both entities involved in the transaction.

6. Automobiles: most transactions are intercompany, namely within economic groups. Buses made by Marcopolo, for example, are not intercompany transactions but show even heavier specificity – but cars predominate. Thus, we can assign a medium level to this attribute.

7. Soy meal: transactions can be carried out from a distance; therefore, asset specificity can be said to be low.

8. Coffee beans: similar to soy beans and meal, coffee beans exhibit low asset specificity.

9. Beef: there are many certifications and quality requirements in international trade that may lead to an adaptation of the transaction setting to national standards. However, there are economies of scale in meeting several different national standards, resulting in a medium level of asset specificity.

10. Steel/iron products: there is low asset specificity. Plants are specific and require complex time-consuming turn-on/turn-off procedures; a flow of orders can produce a smooth, continuous supply process, leading to low asset specificity.

Foreign direct investment

For FDI transactions, we have assessed the attributes presented in Table 4, using the same scale adopted earlier.

Table 4: Intensity of attributes in the top ten TNCs

Importance	Product	FDC index	Infrequency	Uncertainty	Asset specificity
1 st	ARACRUZ: pulp and paper	0.89	1	1	1
2 nd	SUZANO: pulp and paper	0.73	1	1	1
3 rd	GERDAU: steel	0.58	1	1	1
4 th	MARFRIG: meat	0.46	1	1	1
5 th	METALFRIO: metalworks	0.42	2	2	2
6 th	SABÓ: autoparts	0.40	2	3	3
7 th	VALE: iron ore	0.39	2	1	1
8 th	ODEBRECHT: engineering services	0.32	3	3	2
9 th	TAM: airlines	0.30	1	1	3
10 th	ITAUTEC: IT services and software	0.27	2	3	3
Average			1.6 (out of 3)	1.7 (out of 3)	1.8 (out of 3)

Source: created by the author.

The results show that, as expected, the portfolio of foreign investment has a higher average index for the three dimensions relating to transaction costs. The difference, however, is not significant, and there are many overlaps between the two “lists”.

a) Infrequency

1. ARACRUZ: pulp may be traded quite often, and the types of paper are also often traded, but certain types of paper require less frequent transactions. We can assign a general level of 1 to these transactions.

2. SUZANO: the same applies as for Aracruz.

3. GERDAU: transactions are carried out on a relatively frequent basis.

4. MARFRIG: There is a difference between meat transactions in foreign subsidiaries and exports.

5. METALFRIO: transactions are not spot market, but they are also frequent.

6. SABÓ: this is an infrequent transaction because autoparts supply involves joint effort in design and production.

7. VALE: The same analysis for exports applies to these transactions.

8. ODEBRECHT: Engineering services are infrequent transactions because every project requires long negotiations, careful design, and assessment of physical aspects.

9. TAM: this is a high frequency of spot market transactions.

10. ITAUTEC: similar to autoparts, this is an infrequent transaction because supplying parts involves joint effort in design and production, but the degree to which this happens is less than is the case with autoparts, and there are consumer goods sold that exhibit higher frequency.

b) Uncertainty

1. ARACRUZ: there is a low level of uncertainty.

2. SUZANO: there is a low level of uncertainty.

3. GERDAU: there is a low level of uncertainty surrounding the purchase of such a product.

4. MARFRIG: There is a difference between meat transactions in foreign subsidiaries and exports.

5. METALFRIO: there is a medium level of uncertainty.

6. SABÓ: there is a high level of uncertainty involved, and this may lead to costly recalls that can affect the value of the purchaser's intangible assets.

7. VALE: The same analysis that applies to exports applies to these transactions.

8. ODEBRECHT: Engineering services are subject to high levels of uncertainty, which is a typical feature of construction and infrastructure service transactions.

9. TAM: uncertainty is related more to information asymmetries that occur as a result of maintenance levels, quality of on-board meals, etc., but this reasoning affects the consumer aspect more than company transactions.

10. ITAUTEC: many relevant attributes of the product or component, such as duration, are costly to assess, and IT services are even harder to assess.

c) Asset specificity

1. ARACRUZ: there is a low level of asset specificity related to this transaction.

2. SUZANO: there is a low level of asset specificity related to this transaction.

3. GERDAU: there is a low level of asset specificity related to this transaction.

4. MARFRIG: There is a difference between meat transactions in foreign subsidiaries and exports.

5. METALFRIO: there is a medium level of asset specificity with respect to compressors.
6. SABÓ: autoparts suppliers have to make highly specific investments, very often making transactions within the client's website.
7. VALE: the same analysis applies because transactions are the same in both exporting and invested plants.
8. ODEBRECHT: every project involves a substantial level of procurement by the purchaser with regard to design, negotiation, negotiations, and other related activities. These are major sources of asset specificity.
9. TAM: there is a high level of asset specificity because the company has to invest in assets physically located at the target international airports, and has to adapt its operations to the characteristics of the route (e.g., a Brazil to Germany route may require different service levels than a Brazil to China route).
10. ITAUTEC: equipment/services are designed according to specific settings and contracts.

FINAL REMARKS

This paper assesses internalisation theory in light of the Brazilian case, focusing specifically on the Transaction Cost Economics approach, using a data set built for this purpose. We have found that the data fits the predictions of internalisation theory, validating the Transaction Cost approach for the Brazilian case. However, the paper has some perceived weaknesses that we acknowledge. First, the grade levels assigned to each transaction were based on the researcher's own judgment, given the absence of a more objective form. This aspect could be significantly improved, but we believe that the relevant attributes are well captured by the researcher's judgment, even when more obvious alternatives are considered, such as sample firm manager judgment, which may suffer from business-specific and other forms of bias, or the construction of other types of proxies based on objective data, which may suffer from a lack of observability of relevant attributes.

Second, important dynamic effects may be contributing factors and might have been misrepresented in our analysis. We spent only one year observing an emerging country that may be experiencing an ongoing, dynamic process of internationalisation, and it is possible that this relatively static approach caused us to miss an important part of the process. In section 2, we address certain relevant issues related to this possible dynamic process, but the dynamic effect could not be incorporated into the present methodology and analysis.

The differential in the growth rate between national and international operations with respect to the top twenty Brazilian transnationals supports the possible presence of dynamic effects. Their revenues, assets and headcount in domestic operations grew by 19.6%, 14.8% and 6.7%, respectively, while growth rates for international operations were 27.3%, 32.1% and 40.9%. Brazilian GDP grew by 5.1% in 2008, while global GDP grew by only 3%, and the GDP of the United States grew by only 0.4%. Domestic revenues would therefore be expected to perform better than foreign markets. However, the most remarkable figures are related to assets and headcount, which grew at a much stronger pace abroad.

This marked relative growth in assets and headcount implies further internationalisation activity by these leading Brazilian firms. This growth could be accounted for using the Uppsala approach reported by Johanson and Vahlne (2009). It would be valuable to use a broader data set and to examine evolution over a longer period. This is an area that would benefit from future research. Given that the data set collected for this paper is static, and that the dynamic effects could not, therefore, be accounted for, we propose the study of growth in assets and headcount over time, and the use of a broader data set for future research. We also propose the use of a stronger data set, and the building of more objective weights/grades. We propose a hypothesis for further research effort.

Hypothesis 3. There is a dynamic effect whereby exports that show high transaction costs are gradually being replaced by direct sales in external markets that are gradually tapped through foreign direct investment.

We consider that despite its weaknesses, this paper contributes to the evaluation of the applicability of internalisation theory to a “tropical” setting such as the Brazilian environment, by specifically tackling the investment or export decision that firms face in their international expansion. With this paper, we believe that we have proposed a means of testing the applicability of a dominant approach, using a developing country data set.

REFERENCES

- AGARWAL, S., RAMASWAMI, S.N. Choice of foreign market entry mode: impact of ownership, location and internalisation factors. **Journal of International Business studies**, first quarter, pp.1-27, 1992.
- BARTLETT, C. A.; GHOSHAL, S. Going global: lessons from late movers. **Harvard Business Review**, v.78, 2000.
- BRAINARD, S.L. An empirical assessment of the proximity concentration tradeoff between multinational sales and trade. **American Economic Review**, v.87, n.4, p.520-544, 1997.
- BUCKLEY, P. J.; CASSON, M. C. **The Multinational Enterprise Revisited: The Essential Buckley and Casson**. Palgrave Macmillan, 2010.
- BUCKLEY, P. J.; CASSON, M. C. The internalization theory of the multinational enterprise: A review of the progress of a research agenda after 30 years. **Journal of International Business Studies**, v.40, p.1563-1580, 2009.
- BUCKLEY, P. J.; CASSON, M. C. The future of the multinational enterprise in retrospect and in prospect. **Journal of International Business Studies**, v.34, n.2, p.219-222, 2003.
- BUCKLEY, P. J. CASSON, M. C. **The future of the multinational enterprise**. London: Macmillan, 1976.
- COASE, R. H. The nature of the firm. **Economica**, v.4, p.386-405, 1937.
- DUNNING, J. H. LUNDAN, S. **Multinational Enterprises and the Global Economy**. Cheltenham: Edward Elgar, 2007.
- DUNNING, J. H. The Key Literature on IB Activities: 1960 – 2000. *In*: Rugman, A. M.; Brewer, T. L. (Eds). **The Oxford Handbook of International Business**. Oxford University Press, 2001.
- DUNNING, J. H. The eclectic paradigm of international production: a restatement and some possible extensions. **Journal of International Business Studies**, v.19, n.1, p.1-31, 1988.
- DUNNING, J. H. Trade, location of economic activity and the MNE: A search for an eclectic approach. *In*: OHLIN, B; HESSELBORN, P. O.; WIJMAN, P. M. (Eds). **The International Allocation of Economic Activity** London: Macmillan, 1977. p.395-418.
- Eden, L. Letter from the Editor-in-Chief: The JIBS40/AIB50 Anniversary Issue: Innovations in international business theory. **Journal of International Business Studies**, v.40, p.1407-1410, 2009.
- FDC – Fundação Dom Cabral. Ranking Transnacionais Brasileiras 2009. Belo Horizonte, 2009.
- FLEURY, A.; FLEURY, M. T. L. **Brazilian Multinationals: Competences for Internationalization**. Cambridge University Press, 2011.
- GREENAWAY, D.; KNELLER, R. Firm heterogeneity, exporting, and Foreign Direct Investment. **The Economic Journal**, v.117, n.517, p.F134-F161, 2007.
- HELPMAN, E.; KRUGMAN, P. R. **Market Structure and Foreign Trade**. MIT Press, Cambridge, MA, 1987.
- HENNART, J.-F. **A Theory of Foreign Direct Investment**. University of Maryland, PhD Dissertation, 1977.
- HENNART, J.-F. **A Theory of Multinational Enterprise**. Ann Arbor: University of Michigan Press, 1982.
- HYMER, S. **The International Operations of National Firms: a Study of Direct Investment**. PhD thesis, MIT, 1960.

JOHANSON, J.; VAHLNE, J. The internationalization process of the firm: a model of knowledge development and increasing market commitment. **Journal of International Business Studies**, v.8, p.23-32, 1977.

JOHANSON, J.; VAHLNE, J.-E. The Uppsala internationalization process model revisited: From liability of foreignness to liability of outsidership. **Journal of International Business Studies**, v.40, p.1411-1431, 2009.

LUNDGREN, N. Comment (on a chapter by John Dunning). *In*: OHLIN B., HESSELBORN, P.-O.; WIJKMAN, P. M. (Eds.). **The international allocation of economic activity**. London: Macmillan, 1977.

MELITZ, M. The impact of trade on intra-industry reallocations and aggregate industry productivity. **Econometrica**, v.71, n.6, p.1695-1725, 2003.

MEYER, K. Perspectives on multinational enterprises in emerging economies. **Journal of International Business Studies**, v.35, n.4, p.259-276, 2004.

OGASAVARA, M. H.; MASIERO, G. Reviewing Recent Developments on Research of Internationalization of Brazilian Firms. *In*: ENCONTRO DA ASSOCIAÇÃO NACIONAL DE PÓS-GRADUAÇÃO E PESQUISA EM ADMINISTRAÇÃO, 23., 2009, São Paulo. **Anais...** São Paulo: ANPAD, 2009. 1 CD-ROM.

RAMAMURTI, R. Developing Countries and MNEs: Extending and enriching the research agenda. **Journal of International Business Studies**, v.35, p.277-283, 2004.

REVIEW OF WORLD ECONOMICS. Call for Papers: "Firm Heterogeneity, Trade and FDI: Bridging international economics and international business". Springer, 2012.

SWEDENBORG, B. **The multinational operations of Swedish firms: an analysis of determinants and effects**. Stockholm: Industriens Utredningsinstitut, 1979.

UNCTAD. World Investment Report 2007. Available at <<http://www.unctad.org>>.

WILLIAMSON, O. E. Transaction Cost Economics: The Governance of Contractual Relations. **Journal of Law and Economics**, v.22, 1979.

WILLIAMSON, O. E. **The economic institutions of capitalism: firms, markets, relational contracting**. New York: The Free Press, 1985.