

“Brazilian Outward FDI: The Role of Technology in the Expansion of Emerging Multinationals”

(first draft version)

The present paper investigates the role that technology, as a competitive asset of Brazilian firms, plays on the internationalization and on the destination of foreign investments. Emerging markets' outward investments (FDI) is a much debated topic these days. Special attention is given to the special features that distance those investments from traditional theory of international business, leading scholars to question the validity of former theories to explain such a new trend and try to formulate new ones. We use data from a recent survey on Brazilian firms, the Global Players Survey, carried out by *Fundação Dom Cabral* in 2007. We apply a logit and probit model to seek for the relationship and its probabilities between FDI location and technological determinants, as well as with the mode of entry and the existing capabilities of firms from the sample. Results show that, even though having significant investments in developed markets, Brazilian firms are not motivated by the search of technology, but still rely on their accumulated capabilities to compete, even in more developed locations.

Keywords: outward FDI, emerging economies, technology, technological capability.

1. INTRODUCTION

The process of internationalization of firms from emerging markets have become recently a widely-studied topic, with several important publications giving special emphasis on this subject (see for example JIBS 2007, JIM 13, 2007; IJTG 4, 2008, including recent books (Matthews, 2002; Sauvart, 2008; Ramamurti, 2008; Goldstein,2007). Many of these studies focus on firms emerging from Asian countries – with China by and large being the most studied case. The reason for such a rise of interests in the subject is the growing dimension of the phenomenon of emerging FDI, which has increased from US 144 billion to US 2.288 billion in the period 1990-2007 (UNCTAD, 2008). In addition, the speed with which firms from emerging economies are spreading worldwide is unprecedented, and unpredicted by any of the early theories of internationalization.

There are two distinct moments in the history of FDI from emerging economies: a first flourish of investments in the early 1980s and a more recent acceleration of the process in the late 1990s and early 2000s. Despite their newness, these two moments present quite distinctive features and have been assessed and debated by scholars for some time (Dunning, 2008; Dunning *et. al.*, 1996; Narula, 1996; Tolentino, 1993).

In the first moment, FDI from emerging countries had specific features that remounted to the countries peculiar environment – distinct political and economic circumstances, reflecting on distinct ways of firms to compete, innovate and succeed. Firms going abroad, at this moment, were regarded to use successfully the competitive mechanisms of emerging environments, and for this reason could do better in similar destinations.

The second and more recent phase of emerging investments have as its main feature an increasing speed with which firms have ventured abroad, at much earlier phases than their developed countries' counterparts. The intensification of the globalization process and the facilitation of communication trans-frontiers prompted by new technologies are the main reasons. In the absence of key competitive (specially technological) assets, firms internationalize with the purpose to acquire such assets.

An interesting aspect that has caught the attention of scholars in the study of emerging countries outward investments (OFDI) is the growing role of strategic asset-seeking investments as a main determinant for the internationalization of firms from this group (Makino *et al.*, 2002; Luo and Tung, 2007). For instance, the new industrializing countries from Asia (Korea and Taiwan in a first moment, followed by India and China) have based their internationalization strategies on the search for competitive assets not yet possessed or fully leveraged (Dunning *et al.*, 1997; Matthews, 2002).

This specific feature has changed completely the traditional (or expected) timing for firms to become multinationals, prompting some scholars to claim the need of a new strand of theory to explain emerging FDI (Matthews, 2002, 2006; Child and Rodrigues, 2005). In special, this new dynamics of emerging investments has brought about the rise of multinationals at much earlier stages of economic development of their respective countries of origin, and with less Ownership advantages than foresaw by the early internationalization theory. Several authors claim that emerging multinationals follow a unique rationale, have specific strengths and weaknesses which demand special attention from those who want to deeply understand the phenomenon (Luo and Tung, 2007; Matthews, 2002, 2006; Child and Rodrigues, 2005).

Brazil was leading a first movement of outward FDI from the emerging world in the 1980s, when such flows had still a small significance in comparison to total levels of FDI. Over time, the level of outward stocks of investments from Brazil has stagnated to around 3% of the world total levels since 1990, with rare outstanding performances (case of the 2006 levels of outward flows from the country) (UNCTAD, 2007). Currently, Brazil has outward flows of FDI that amount to US\$ 7.067 million (much lower than the 2006 extraordinary levels that totaled US\$ 28.202 millions), and its level of outward investment stocks has reached US\$ 129.840 millions (UNCTAD, 2007).

The central purpose of this paper is to provide an in-depth understanding of the determinants of Brazilian foreign investments, in order to explain the current levels that the country presents, as well as to place them in the most recent trend of investments from the emerging world. This task encompasses a deeper understanding of the competitive advantages that Brazilian firms possess that enables the outward venture.

We investigate the role that technology - in particular technology-seeking motivations - plays in the internationalization strategies of Brazilian firms: do they have a supporting role in internationalization, as their main competitive assets, or are they the main asset that these firms are seeking abroad? In other words, are Brazilian firms following the Eastern Asian trend to invest abroad in order to leverage strategic assets and then become more competitive? It also investigates whether the possession of innovative capabilities influence the probability of foreign activities, in special the productive and higher value-adding (such as R&D).

The remainder of the paper is divided in five sections, including this introduction. The second section places the recent debate on the eventual need of a new theory strand to explain emerging FDI. Section 3 discusses the role of technology and technology-seeking investments

in the development process of catching-up countries. Section 4 describes the data, the hypotheses and the empirical analysis that will answer the questions proposed in the paper. Section 5 highlights the results. A final session presents the main conclusions.

2. FDI FROM EMERGING ECONOMIES: DRIVEN BY DIFFERENT PURSUITS?

The emergence of FDI from less developed economies, already in the early 1980s, has brought about an extensive academic discussion on the peculiarities of such investments, and how they differed from the traditional FDI from advanced nations (Lall, 1983; Wells, 1982; Narula, 1996; Dunning *et al.*, 1997). This debate has given rise to a set of theories explaining the distinguishing remarks of the “third world FDI”, of which two have stood out.

The first refers to the reliance of emerging multinationals (then called *Third World MNEs*) on localized technological change, adapted technologies, the advantage of firms (esp. managerial) in similar, less developed markets, their competitiveness relying mostly at the end of the product life cycle, in mature products (Lall, 1983; Wells, 1982).

A second strand acknowledged that countries would be expected to have a certain amount of FDI, both inward and outward, that would correspond to their stage of development, and hence move forward as the economy advances and country (and firm’s) capabilities evolve (Dunning, 1981, 2001; Tolentino, 1993; Narula, 1996). The *Investment Development Path*, as it was called, regarded the role of inward FDI as a competitive builder, directly influencing firm’s capabilities and therefore their propensity to invest abroad.

The specific nature of firm's advantages, as well as their lack of international experience, also influenced the destination of emerging investments in a first moment, which targeted mostly similar, developing economies in which a cultural proximity also had an influence (Dunning *et al.*, 1997; Tolentino, 1993). Only when emerging firms have accumulated a certain amount of capabilities, they would endure into FDI to more advanced destinations.

More recently, a new range of FDI from the emerging world has gained impulse, following distinct features than those formerly addressed as the "third world FDI". Asian countries, such as Korea, Taiwan, and more recently China, have advanced in their foreign investments faster than their development stage would have predicted, and before some competitive edge was attained, bringing forth a renewed debate on the idiosyncrasies of emerging FDI.

Emerging investments from this recent trend have been claimed to follow a different rationale, leading some authors to search for alternative theories or paradigms in order to capture all the specificities of these countries' FDI (Matthews, 2002, 2006; Child and Rodrigues, 2005). The fact that many of these emerging multinationals engage into international operations without relying on significant resources, skills and knowledge, points to a new trend of FDI from this group of countries, one in which the pursuit of strategic assets play a central role.

Strategic asset-seeking investments are by no means new, and its importance, specially for late industrializing countries, have been highlighted by earlier studies (Dunning *et al.*, 1997); indeed, the search for strategic assets has been always addressed as one of the main drivers of internationalization (Dunning, 1993 and 1998; Narula, 1996; Li, 2007; UNCTAD,

2005). However, the asset-seeking FDI from emerging countries is somewhat of a different sort of investments (Moon and Roehl, 2001). Moreover, the novelty in the present days is the speed and strength with which firms have been resorting to this type of investment, at much earlier stages than has been predicted by the seminal International Business theory (Dunning and Narula, 1006; Narula, 1996; Tolentino, 1993), hence breaking a new ground in this theory and putting in question the traditional ones.

The growth of outward FDI from emerging countries in the last 25 years points out that more countries are starting to invest at earlier stages of development, therefore with less or weaker Ownership (O) advantages. Asset-seeking investments reshape the O-advantages of firms, formerly given mostly by characteristics of the country of origin. The search for strategic assets responds to a large share of investments from the group of emerging countries.

The most immediate consequence of the rise of asset-seeking investments in this new moment of emerging investments is the rise of developed countries as their main destination, since more advanced economies have more to offer in terms of technologies, capabilities and managerial skills (Dunning *et al.*, 1996). Complementary, the most favorable way to have access to such capabilities would be to take over or merge with existing firms in the targeted sector.

The role of technological accumulation and innovation for the expansion of emerging multinationals has received since long special attention from scholars.

This had as a consequence a shift in the direction of the discussion on the theories explaining emerging FDI (Cantwell and Tolentino, 1990). Firms from emerging countries can, indeed, go

beyond the simple standardization of products and go through innovative production with local flavors.

Different from most emerging countries, Brazilian investments have a historical inclination to move to developed markets since its early times (Villela, 1983; UNCTAD, 2006). In the early 1980s, North America was already the most important destination, along with other American countries - the main explanation for that being the geographic proximity of these countries. However, it was seldom the case that those investments were looking for technological assets rather than expanding frontiers and markets, usually also overcoming export barriers.

The Brazilian case presents itself as having different drivers to the internationalization of firms – much of which can possibly be explained by the competitive advantages that the country owns in natural resources, but also due to its industrialization trajectory (inward looking, import substituting) and also a diverging mode to open up the economy in the 1990s (Narula, 2002). What remains to be investigated is whether firms in this country are going beyond their historical competitive advantages and searching for other competitive assets that will increase their performance both domestically and internationally. By doing such assessment we seek to place Brazilian investments along the wave of emerging markets FDI, pointing out their differences and similarities, as well contributing to the warmhearted discussion about whether emerging FDI differs from traditional investments (Matthews, 2006; Dunning, 2006; Narula, 2006).

Next section discusses the role of technology in the internationalization strategies of emerging firms, focusing on the catching up process undertaken by several countries in the recent years.

3. CONCEPTUAL FRAMEWORK AND HYPOTHESES

The International Business Literature has an extensive list of works on the determinants of foreign production of firms. The works of John Dunning have attempted to put a bit of each together in a framework that, hence, considered both macroeconomic and firm-level aspects of such decisions. When possessing a set of advantages called by this author as Ownership, Location and Internalization advantages (the OLI paradigm of foreign investments), firms therefore decide what and where to internationalize (Dunning, 1993; Dunning, 2001). Having the necessary conditions to succeed abroad, firms also have a set of objectives to accomplish with this goal – the drivers of foreign investments: the search for *markets*, the search for *resources*, the search for *strategic assets*, the search for *efficiency* (Dunning, 1993).

The ownership of technological advantages has always been considered the key determinant for firm growth and the main reason for the expansion of its activities throughout the world. Developed country firms have resorted to this specific asset to spread their production facilities and compete with advantages in the most remote locations. Recently, however, firms from less developed economies, with much lesser technological capabilities as competitive assets, are gaining ground in overseas markets. This has brought back the discussion of technology-seeking as a motivator for internationalization, in special in the context of firms from emerging markets.

The trend is not novel; in fact, several newly industrialized countries from East Asia have taken advantage of the imitative industrialization as a source of fast paced catching up (Matthews, 2006). The Japanese industrialization was a good example of a late industrialized country which succeeded to take advantage of the backwardness as a way to leap forward. The same occurred with Korea, whose firms invested in developed markets with the deliberate intent to source advanced technologies not available at their home markets (Sachwald, 2001); the trend is being followed recently by other East Asian countries (Matthews, 2002; Athreye and Goldwin, 2008). Much of the inward investments that are directed to the US economy have strategic asset-seeking purposes, reaffirming the importance of advanced economies as source of capability development for firms from less developed locations (Makino *et al.*, 2002).

Backwardness becomes a motivation for investing abroad, and gains strength recently as a catching-up strategy of firms. As posed by Dunning *et al.* (1996: 17), “*Precisely this insufficiency of O-advantages needed to become global competitors in medium to high-technology intensive industries form another motivation to invest in economically advanced regions*”. In this sense, foreign investments from emerging economies are the strategic response of these countries to the evolution of globalized capitalism.

This author also posits that the nature of motivations leading to strategic asset-seeking FDI is changing as the world economy evolves. Besides the search for accessing knowledge-intensive assets, firms are also engaged in such investments in order to enhance their learning experiences, which have to do with knowing foreign markets and their consumer specificities better (Dunning, 1998).

The existence of technological spillovers, already thoroughly stated in the literature of innovation and firm behavior, are the drivers for technology-seeking investments. In close contact to technologies and technological capabilities, latecomer firms enhance the possibilities to learn and to absorb the knowledge available in that environment. The interaction with established agents (sometimes the generators of the knowledge/technology) enhances the learning possibilities, hence making developed destinations an attractive location for setting up facilities when looking for increased knowledge and fast absorption. The boom of investments in the Silicon Valley is a strong example of both the attractiveness of a technological intensive location due to the existence of technological spillovers.

In the most recent wave of emerging FDI, mergers and acquisitions (M&A) of firms from developed economies, as well as several types of alliances with local firms from the target markets have been used as key strategies for emerging multinationals to succeed in foreign markets, especially the most developed ones (Dunning, 1998; UNCTAD, 2007). While acquisitions quickly prompt firms with the aimed assets, partnerships with host firms, in their various sorts, are ways to minimize risks and reach global scale faster (Matthews, 2002). Additionally, acquisitions also solve the usual problem faced by emerging markets firms of having unknown brands.

Other sorts of linkages with firms more technologically advanced also favors the learning process from emerging firms. According to Matthews (2002; 2006) the new features of the global economy – the shrinkage of distances and widening of knowledge flows due, mostly, to the development of technologies - have enabled a greater connection between economic actors, facilitating linkages. Alliances and associations between firms from emerging countries have been tools to have easier, and sometimes cheaper and faster, access

to external knowledge; several firms have relied on this strategy to succeed in foreign markets, as is the case of many Indian pharmaceuticals, Taiwanese Acer and Hong Kong Lenovo.

Moreover, firms from emerging markets that succeeded in internationalization have relied on different kinds of innovation – in special, organizational and managerial innovations rather than the expected technological innovation. This is the case of Taiwanese Lenovo, Brazilian Embraer and Mexican Cemex (Matthews, 2002; van Agtmael, 2007; Goldstein, 2007). This highlights the fact that firms already embedded in technological efforts, those who accumulated a significant set of previous capabilities, have a stronger chance to succeed, whether locally or internationally (Barnard, 2008). The accumulation of previous capabilities is also crucial to make technological and learning spillovers more effective, since absorptive capacities and complementary capabilities have proved to be determinants in successful catching up processes, having been extensively explored in studies in the field (Steinmuller, 2001, cited in Athreye and Godley, 2008).

Hypotheses

Departing from the main theoretical guidelines described in the previous section, we draw the assumption that strategic asset-seeking investments tend to go to more developed destinations than to developing countries – for developed countries tend to produce more knowledge and technology than developing or emerging economies. We then extend the general hypothesis to the specific case of Brazilian firms.

The next three hypotheses regard the possession of some advantages that impact on the firm's knowledge array and therefore might influence the decision for a destination:

experience in foreign markets, the presence of qualified labor and the possession of technological capabilities (Soete, 1985; Lall, 1991). These characteristics can be labeled as accumulated capabilities or competitive strengths of the investing firms. It is common sense that firms with a certain set of previously accumulated capabilities have a stronger chance to undertake asset-seeking investments and successfully access the new knowledge. The accumulation of previous capabilities influence the absorptive capacity of the investing firm, therefore enhancing the learning experience presented when in close contact to new and advanced knowledge and technology.

<p style="text-align: center;">Hypothesis 1 (location)</p>	<p>Firms from emerging economies are more likely to invest in developed countries when their main motivation is to seek for technology assets in the host country</p>
<p style="text-align: center;">Hypothesis 2 (experience)</p>	<p>Firms from emerging economies are more likely to invest in developed countries when they have longer international experience</p>
<p style="text-align: center;">Hypothesis 3 (capability – labor)</p>	<p>Brazilian firms are more likely to invest in developed countries when they rely on highly qualified labor as a competitive</p>
<p style="text-align: center;">Hypothesis 4 (capability - innovation)</p>	<p>Brazilian firms are more likely to invest in developed countries when their rely on technological competitive advantages</p>

Next section presents data from a survey of Brazilian firms that will be used to test the hypotheses above presented.

4. DATA AND METHODOLOGY

Our data is based on the Global Players survey carried out in Brazil by *Fundação Dom Cabral* in 2007, entitled. The survey sample comprised 1.000 of the largest Brazilian firms in terms of sales. From the total target firms, 93 have replied to the questionnaire, from which 73 reported to have some kind of international operation. Their total revenues amount to over R\$ 2,4 billions (around US\$ 1,3 billions). A significant share of firms from the sample, 28%, is large, having more than 4 thousand employees. A small share of firms, 9% of the sample, has less than 500 employees. The bulk of Brazilian operations in foreign markets is still related to export activities, but manufacturing and higher end activities are also present in some sectors. Firms in the sample are from all sorts of industrial sectors. Table 1 describes the distribution of industrial sectors in the sample and the number of firms from each sector.

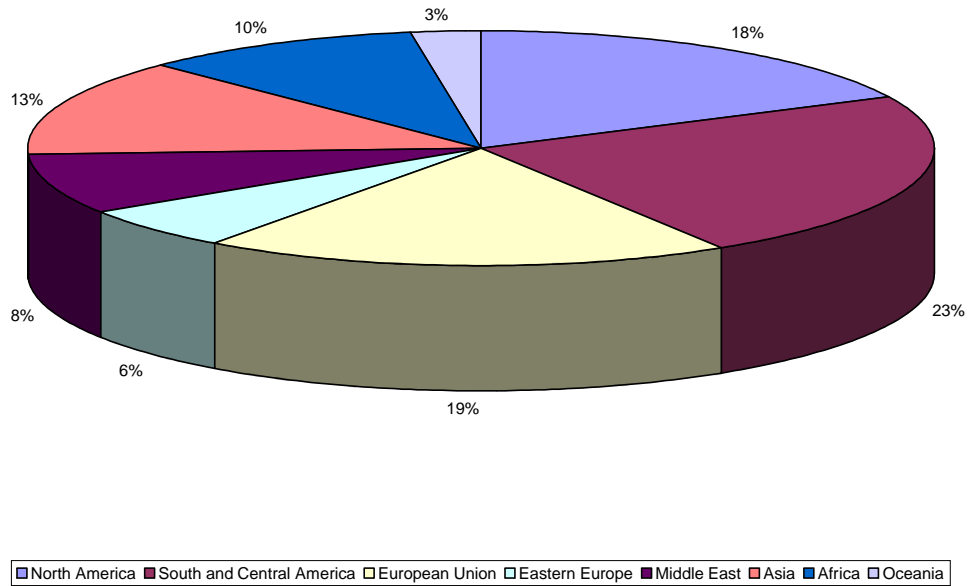
Table 1: Brazilian Investments by sector

DISTRIBUTION OF BRAZILIAN INVESTMENTS BY SECTOR	
Sectors	Number of businesses
Food, beverages and tobacco	10
Wholesale	3
Retail	5
Construction	9
Automotive and autoparts	4
Rubber and plastic	2
Construction materials	3
Pulp and paper	2
Textile, apparel and shoes	6
Electronic equipment	3
Pharmaceuticals, hygiene and cosmetics	2
Metalmechanics	1
Chemical and petrochemicals	6
Mining and extraction, oil and gas	2
Agroindustry	2
Communication services	2
Transport services	4
Financial services	2
Professional services	3
Metallurgy	5
Technology and computer sciences	1
Energy (electricity, ethanol, sugarcane)	6
Others	10

Source: elaborated by the author with data from the Global Players Survey, FDC, 2007.

The geographic dispersion of Brazilian investments is given by Picture 1 below. Developed destinations, represented by Europe and North America, respond for 37% of all investments. The remainder of America hosts 23% of investments, and Asia responds for 13% of Brazilian investments.

Picture 1: Geographic destination of Brazilian FDI



Source: elaborated by the author with data from the Global Players Survey, FDC, 2007.

Variables

The dependent variable used to test our main hypothesis (H1) LOCATION of foreign investments, where developed destinations assume the value 1 and less developed destinations are given 0. Firms were asked about the location of their foreign activities and the option given comprised regions: North America, European Union, Eastern Europe and Russia, Middle East, South and Central America, Asia, Africa- Oceania. The first two regions are the ones considered as a developed location.

As independent variables we use two sets of variables: motivation related and capability related. Among the set of motivation variables are: strategic asset-seeking (TECSEEK), market seeking (MKTSEEK) and technology exploiting (TECHEX)

motivations and resource-seeking (RESEEK). We create dummy variables for each of the motivations when firms indicates one motivation among the 4 groups, it gets 1 in this variable; otherwise it gets 0 for the related variable.

Firms were asked about how they evaluated the firm's competitive strength *vis-à-vis* their international competitors. Among the option were capabilities related to labor, technology, home market, price and efficiency. With such information we constructed variables related to the firm's capabilities. These are: the presence of skilled human resources (LABORCAP), the reliance on innovation or new technologies as a competitive advantage (INNOVATION), firm experience measured in number of years from the first international operation (EXPERIENCE).

We also name variables regarding the chosen mode of entry by the investing firm: alliances, JV, Greenfield, acquisition, merger, licensing, franchising. As a measure firm size we use the logarithm of the number of employees (LNEMPLOY).

A correlation matrix is drawn in order to preview the interrelations between developed destinations, some FDI determinants and also some firm competitive advantages. The correlation matrix can be found in the Appendix at the end of the paper.

We run three different logit estimations for the variables utilized in our study. The **first logit** regression analyses the relation between location and the determinants of investments, capabilities and two interaction variables, LABORCAP X TECHEX and EXPERIENCE X TECHEX.

5. RESULTS

The results of the analysis are presented on Table 2 next. Our hypothesis that developing countries chose developed destinations when they seek technological resources is not confirmed to the Brazilian case. We observed that LABORCAP and TECHEX had a positive influence of investments location. The interaction variable LABORCAP X TECHEX had a negative and significant effect on location choice. Interaction EXPERIENCE X TECHEX presented a negative effect on the dependent variable, but no statistical significance. The other variables showed no statistical significant results.

Regarding the mode of entry, we found a positive relationship between developed destinations and the mode “acquisition”. Other modes of entry had no statistically significant relationship with our dependent variable.

The third model was built to analyze the relationship between the firm’s capabilities and the choice of location. Again, only the variable “LABORCAP” showed positive and significant relationship. Other capability variables, technology and experience, though revealed a less strong but positive relationship with the variable location, showed no statistical significance in the model.

The hypothesis on the importance of skilled labor for investments in developed countries proved right for the Brazilian case; firms with skilled labor have stronger odds to invest in developed destinations. The relationship between foreign experience and investments in developed destinations, tested on hypothesis 3, proved to have no significance for the Brazilian case.

Table 2 - Results of Logistic Regression Analysis				
Dependent Variable: LOCATION (DC=1 and LDC=0)				
		Model 1	Model 2	Model 3
Determinant	TECSEEK	0.4634555		
Determinant	TECHEX	18.30799*		
Determinant	MKTSEEK	-15.582190		
Determinant	RESEEK	-0.2098664		
Capability	EXPER	0.3481744		0.304544
Capability	LABORCAP	20.77008*		3.323202*
Capability	INNOVATION	0.2552626		0.468524
Control	LNEMPLOY	0.733097		0.620127
Mode entry	GREEN		1.694671	
Mode entry	ACQ		3.123958 *	
Mode entry	MER		0.1224878	
Mode entry	LI		-1.651876	
Mode entry	JV		0.7078116	
Mode entry	FR		-1.811711	
Interaction	INNOV X TECHEX			
Interaction	LABORCAP X TECHEX	-18.75719 *		
Interaction	EXPER X TECHEX	-0.0217665		

* p< .01

7. CONCLUDING REMARKS

This study examined the role of capabilities and motivations of Brazilian foreign investments, and its relationship with developed destinations. The central hypothesis tested regarded the impact of both these factors on the choice of a location for foreign investments from Brazilian firms.

The recent movement of accelerated investments from emerging economies, specially those from East Asia, have reported an increasing role of technology-seeking FDI, which has taken place at much earlier stages of economic development of the home countries and with less accumulated capabilities of firms. This feature has lead several scholars to rethink the theory behind FDI from those countries.

We wanted to place Brazilian investments among this recent trend. The analysis of the Brazilian survey showed that firms from this country have a stronger chance to invest in developed destinations when they have technological assets already accumulated and that represents a competitive advantage of the firm. The strongest advantage factor that proved to influence investments to developed destinations is the presence of skilled labor. This means that the country is not in the same trend of East Asian investing countries and is not mainly motivated by the search of strategic assets when investing in developed countries.

What do the results tell about the overall status of Brazilian foreign investments? It also shows that, despite still concentrated in resource-rich, mature industries, as most FDI from the emerging world, Brazilian firms were able to tap benefits from their

accumulated technological efforts in their field. Since the 1980s, when Brazilian investments had an outstanding share among the developing world, they were concentrated on extractive industries, specially oil, engineering services and construction, a sector where Brazilian firms have acquired strong competitive advantages due to the very specific conditions of domestic markets, and also financial services, to service exporting firms that needed to sell outside what a stagnated economy could not absorb (Villela, 1993).

The most recent investments show that Brazilian firms have, yet shyly, moved towards more advanced markets and sectors. This signalizes that, even though Brazilian investments did not maintain its prominence among the emerging investors any longer, it might be on the way to make an upward shift and eventually catch up with other emerging countries that are leading the recent wave, having as a main determinant the search for technological assets (UNCTAD, 2008).

The results have shown the importance of accumulated technological capabilities as a competitive advantage of Brazilian firms to invest in more advanced countries. This signalizes positively to a promising future, even though the country still has few enterprise representatives in the world economy. Vale, Embraer, Petrobras, Gerdau and Sadia are some of the most prominent Brazilian multinationals, most of which based natural resources – an inheritance of the country's industrialization past.

Important aspects regarding the political environment and specific regulatory issues need further attention. A still conservative approach from the Government regarding outward FDI is still one of the main reasons for such limited investments from Brazilian firms. Among the several barriers to a broader foreign insertion, firms from the

sample cited the heavy tax burden in the home country, along with the high costs of capital to fund foreign ventures. Such difficulties could be much lessened with an active policy aimed at fostering the internationalization of domestic firms. In this regard, the difference is also comparable to Asian countries. The Chinese Government, for instance, has a very active engagement in influencing firms' decision to invest with its "Go Global" strategy. In fact, many authors question the very possibility of Chinese firms to become multinational without the Government support (Child and Rodrigues, 2005; Cai, 1999; Luo and Tung, 2007).

This study has its limitations. The main one stems from the small size of our sample, even though it is quite comprehensive of the universe of Brazilian multinationals, still very limited. This posed some challenges in the econometric tests and made difficult some further analyses.

What remains to be studied is the impact that more technologically intensive investments, and specially those driven by the pursuit of technological assets, have on the domestic economy. Studies on the field of absorptive capacities and technological spillovers would say that there is much gain in this type of foreign incursion. In this sense, there is much to be fostered in the Brazilian ambit, so that local firms, by investing abroad, can enhance their capabilities and improve the domestic range of competitive advantages.

Regarding the specificity of emerging investments, the case of Brazilian firms prove that, indeed, they have (as most emerging countries) a very peculiar range of characteristics that differ immensely from traditional FDI and even among the group of emerging countries. While comparative analyses can signalize to best practices and

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suggests some successful policies to foster foreign investments, only in-depth studies can reveal the true facets of each country's idiosyncrasies.

REFERENCES

Van Agtmael, A. (2007), **The Emerging Market Century: How a New Breed of World-Class Companies Is Overtaking the World**. New York, Free Press.

Athreye, S. and Godley, A. (2008), Internationalising to create Firm Specific Advantages: Leapfrogging strategies of U.S. Pharmaceutical firms in the 1930s and 1940s & Indian Pharmaceutical firms in the 1990s and 2000s. Maastricht, NL, UNU-MERIT Working Paper 2008-051.

Arbix, G., Salerno, M. S., De Negri, J. A. (2004), Inovação, via internacionalização, faz bem para as exportações brasileiras. **XVI Forum Nacional Economia do Conhecimento, Crescimento Sustentado e Inclusão Social**. Rio de Janeiro.

BASILE, R. GIUNTA, A.; NUGENT, J. B. (2003), Foreign Expansion by Italian Manufacturing Firms in the Nineties: an Ordered Probit Analysis. **Review of Industrial Organization**, v. 23, p. 1-24.

Cai, K.(1999), Outward Foreign Direct Investment: a novel dimension of China's into the Regional and Global Economy. **The China Quarterly**, 160: 856-880.

Cantwell, J. and Tolentino, P. (1990), **Technological Accumulation and Third World Multinationals**. University of Reading Discussion Paper in International Investment and Business Studies, n. 139.

Child, J. and Rodrigues, S., (2005) The Internationalization of Chinese Firms: A Case for Theoretical Extension? **Management and Organization Review** 1 (3), pp. 381–410.

Dunning, J.H. (1981). “Explaining the international direct investment position of countries: towards a dynamic or developmental approach,” **Weltwirtschaftliches Archiv**, 117, pp. 30-64.

Dunning, J.H. (1993). *Multinational Enterprises and the Global Economy* (Wokingham, England: Addison Wesley).

Dunning, J. H. (1998), Location and the Multinational Enterprise: a Neglected Factor? **Journal of International Business Studies** Vol 29 (1), pp. 45-66.

Dunning, J.H., R.Van Hoesel and R. Narula (1997). “Third World multinationals revisited: new developments and theoretical implications,” in John H. Dunning, ed., **Globalization, Trade and Foreign Direct Investment** (Oxford: Pergammon Press), pp. 255-286.

Dunning, J. and Narula, R. (1996), The Investment Development Path revisited – some emerging issues. In: Dunning and Narula (eds.), **Foreign Direct Investment and Governments: catalysts for economic change**. London, Routledge, pp. 1-41.

Dunning, J., Kim, C. and Park, D. (2008), Old Wine in New Bottles: a Comparison of Emerging Market TNCs Today and Developed Country TNCs Thirty Years Ago. In: Sauvant, K. (2008), **The Rise of Transnational Corporations from Emerging Markets: Threat or Opportunity?**

Goldstein, A. (2007), **Multinational Companies from Emerging Economies: composition, conceptualization and direction in the Global Economy**. Palgrave.

Li, P. P. (2007), Toward an integrated theory of multinational evolution: The evidence of Chinese multinational enterprises as latecomers. **Journal of International Management** 13, pp. 296-318.

Lall, S. (1983). **The New Multinationals: The Spread of Third World Enterprises**. Chichester: John Wiley & Sons.

Luo and Tung (2007), International expansion of emerging market enterprises: a springboard perspective, **Journal of International Business Studies**, 38(4), 481-498.

Mathews, J.A. (2006). "Dragon multinationals: new players in 21st century globalization," **Asia Pacific Journal of Management**, 23, pp. 5-27.

Matthews, J. (2006), Dragon Multinationals: new players in 21st century globalization. **Asia Pacific J. Management** 23: 5-27.

Makino, S., Lau, C., Yeh, R.. (2002), Asset-Exploitation versus Asset-Seeking: Implications for Location Choice of Foreign Direct Investment from Newly Industrialized Economies. **Journal of International Business Studies** 33 (3), pp. 403-421.

Narula, R. (1996), **Multinational Investment and Economic Structure**. 1996, London, Routledge.

Narula, R., 2002, Switching from Import Substitution to the "New Economic Model" in Latin America: A case of not learning from Asia. **LAEBA Working Papers** Nr.4.

UNCTAD (2006), **World Investment Report 2006 - FDI from developing and transition economies**.

Ramamurti, 2008

Sauvant, K.(ed.), 2008, **The Rise of Transnational Corporations from Emerging Markets: Threat or Opportunity?** Edwar Elgar, forthcoming.

Tolentino, P.E. (1993). **Technological Innovation and Third World Multinationals** (London: Routledge).

Villela, A. (1983), Multinationals from Brazil. In: Lall, S. (1982), *op. cit.*.

APPENDIX

Correlation matrixes

Matrix 1

```
. correlate location techex tecseek mktseek reseek laborcap innovati on exper
(obs=51)
```

	location	techex	tecseek	mktseek	reseek	laborcap	innova-n	experi -e
location	1.0000							
techex	0.1562	1.0000						
tecseek	0.1278	0.3652	1.0000					
mktseek	-0.0047	0.3524	0.4526	1.0000				
reseek	0.0313	0.4132	0.6567	0.4132	1.0000			
laborcap	0.5058	0.2393	0.2339	0.1425	0.2590	1.0000		
innovati on	0.2679	0.3896	0.3188	0.2892	0.2439	0.4615	1.0000	
experi ence	0.1836	-0.0012	0.1334	0.1447	0.0383	0.0620	0.2414	1.0000

Matrix 2

```
. correlate location acq JV fr mer li green al l nemploy
(obs=50)
```

	location	acq	JV	fr	mer	li	green	al	l nemploy
location	1.0000								
acq	0.4467	1.0000							
JV	0.1585	0.2562	1.0000						
fr	-0.1263	0.1375	-0.1342	1.0000					
mer	-0.0331	0.2500	-0.1084	0.3782	1.0000				
li	-0.1216	0.1361	-0.0161	0.1965	0.2722	1.0000			
green	0.2611	-0.0496	-0.1350	-0.1263	-0.2399	0.0135	1.0000		
al	-0.0852	0.1178	0.0816	0.1492	0.2607	0.0137	-0.5026	1.0000	
l nemploy	0.2763	0.4410	0.2151	0.0738	0.0413	0.2038	0.0845	0.1090	1.0000

```
. probit location laborcap experience innovation tecseek mktseek techex reseek lnemploy
```

```
Iteration 0: log likelihood = -32.895082
Iteration 1: log likelihood = -23.396507
Iteration 2: log likelihood = -22.688634
Iteration 3: log likelihood = -22.661822
Iteration 4: log likelihood = -22.661734
```

```
Probit regression              Number of obs   =      48
                              LR chi2(8)        =      20.47
                              Prob > chi2         =      0.0087
                              Pseudo R2          =      0.3111
Log likelihood = -22.661734
```

Location	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
laborcap	2.052362	.6882712	2.98	0.003	.7033751 3.401349
experience	.1591297	.3201467	0.50	0.619	-.4683462 .7866056
innovation	.3921985	.6709583	0.58	0.559	-.9228556 1.707253
tecseek	.3700059	.717547	0.52	0.606	-1.03636 1.776372
mktseek	-.075558	.5505045	-0.14	0.891	-1.154527 1.003411
techex	-.2757913	.6245598	-0.44	0.659	-1.499906 .9483234
reseek	-.4258986	.8063157	-0.53	0.597	-2.006248 1.154451
lnemploy	.3832764	.2360432	1.62	0.104	-.0793597 .8459125
_cons	-4.985517	1.888874	-2.64	0.008	-8.687642 -1.283391

```
. probit location laborcap experience innovation tecseek mktseek techex reseek
```

```
Iteration 0: log likelihood = -34.868594
Iteration 1: log likelihood = -26.2288
Iteration 2: log likelihood = -25.694135
Iteration 3: log likelihood = -25.673779
Iteration 4: log likelihood = -25.673717
```

```
Probit regression              Number of obs   =      51
                              LR chi2(7)        =      18.39
                              Prob > chi2         =      0.0103
                              Pseudo R2          =      0.2637
Log likelihood = -25.673717
```

Location	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
laborcap	1.971654	.6390155	3.09	0.002	.7192066 3.224101
experience	.3551864	.2657382	1.34	0.181	-.1665609 .8760238
innovation	.1669938	.6592344	0.25	0.800	-1.125082 1.459069
tecseek	.4619358	.644486	0.72	0.474	-.8012335 1.725105
mktseek	-.439993	.5151442	-0.85	0.393	-1.449657 .569671
techex	.4728409	.4909569	0.96	0.335	-.489417 1.435099
reseek	-.8075728	.7187844	-1.12	0.261	-2.216364 .6012187
_cons	-2.605656	1.101385	-2.37	0.018	-4.764331 -.4469805

```
. probit location green al li mer fr JV acq lnemploy
```

```
Iteration 0: log likelihood = -34.0146
Iteration 1: log likelihood = -24.223179
Iteration 2: log likelihood = -23.186351
Iteration 3: log likelihood = -23.093901
Iteration 4: log likelihood = -23.09276
Iteration 5: log likelihood = -23.092759
```

```
Probit regression              Number of obs   =      50
                              LR chi2(8)        =      21.84
                              Prob > chi2         =      0.0052
                              Pseudo R2          =      0.3211
Log likelihood = -23.092759
```

Location	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
green	1.089818	.5471636	1.99	0.046	.0173972 2.162239
al	-.0454472	.5301456	-0.09	0.932	-1.084514 .9936192
li	-1.214123	.7600488	-1.60	0.110	-2.703792 .275545
mer	.2483344	1.407371	0.18	0.860	-2.510062 3.006731
fr	-1.137681	1.244566	-0.91	0.361	-3.576985 1.301623
JV	.4678624	.6082004	0.77	0.442	-.7241885 1.659913
acq	1.718881	.5960423	2.88	0.004	.5506592 2.887102
lnemploy	.2207581	.212947	1.04	0.300	-.1966104 .6381266
_cons	-2.523521	1.599192	-1.58	0.115	-5.657881 .6108382

. logit invprod laborcap innovation NRes emerging

note: NRes dropped because of collinearity
 Iteration 0: log likelihood = -35.548326
 Iteration 1: log likelihood = -34.790898
 Iteration 2: log likelihood = -34.716325
 Iteration 3: log likelihood = -34.694036
 Iteration 4: log likelihood = -34.686105
 Iteration 5: log likelihood = -34.683222
 Iteration 6: log likelihood = -34.682166
 Iteration 7: log likelihood = -34.681778
 Iteration 8: log likelihood = -34.681635
 Iteration 9: log likelihood = -34.681583
 Iteration 10: log likelihood = -34.681564
 Iteration 11: log likelihood = -34.681556
 Iteration 12: log likelihood = -34.681554
 Iteration 13: log likelihood = -34.681553
 Iteration 14: log likelihood = -34.681553
 Iteration 15: log likelihood = -34.681552
 Iteration 16: log likelihood = -34.681552
 Iteration 17: log likelihood = -34.681552

Logistic regression

Number of obs = 57
 LR chi2(3) = 1.73
 Prob > chi2 = 0.6295
 Pseudo R2 = 0.0244

Log likelihood = -34.681552

invprod	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
laborcap	-1.119196	1.33473	-0.84	0.402	-3.735218 1.496826
innovation	18.79741	1.216818	15.45	0.000	16.41249 21.18233
emerging	-17.77916
_cons	-.6177349	.9662641	-0.64	0.523	-2.511578 1.276108

Note: 1 failure and 0 successes completely determined.