

**INTERNATIONAL COMPETITIVENESS OF BRAZILIAN COMPANIES:
The much that can still be learned from Embraer**

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ABSTRACT

Several indicators show that the international competitiveness of Brazilian manufactured goods is low and diminishing. One national company, though, Embraer, a regional jet manufacturer, has been continually successful in the international competition. Many studies have suggested explanations for this, yet they tend to offer fragmented, restricted answers. This paper does an in depth case analysis of the Embraer's trajectory and maintains sustains that two fundamental causes explain Embraer's success. The first is continued investment in the development of advanced specialized production factors. The second is that once it achieved national notoriety and a character of national priority, Embraer become able to circumvent important barriers. The theoretical implication is that part of Michael Porter 1990's international competitive theory shows itself more valid today than when first published. The managerial implication is that companies can become competitive internationally against several odds if they develop advanced, specialized production factors.

Keywords: *International business, international strategy; exports; global value chains; aeronautic industry; Embraer; Brazil.*

1. INTRODUCTION

Evidences of lack of international competitiveness by Brazilian companies are multiple and expressive. According to the World Economic Forum (Schwab, 2014) Brazil ranks in the 57th position in this criteria. The report highlights, among other problems of the country, the persistent weakness of transport infrastructure, the noticeable deterioration in the functioning of institutions and the education system deficiencies. In those sub-criteria, Brazil occupies positions 77, 104 and 126.

But the World Economic Forum is not the only international institution that points out, year after year, the low international competitiveness of Brazilian companies and how unfavorable the national environment is in this regard. The latest report by the World Bank on the regulations that affect the private sector highlighted a number of progresses in Brazil has made in recent periods. However, the country still figured at position 116 among the 189 countries that were analyzed (World Bank, 2014).

Therefore, it is not surprising that the participation of manufactured products in total exports fell from 52.1% in 2005 to 33.8% in 2012. And that the participation of exports of manufactured goods and services have represented between 11 and 13% of the Brazilian Gross National Product, less than half of what is it for the other so called BRICS countries - Brazil, Russia, India, China and South Africa (WTO, 2013). Neither is it surprising that the country's position in the ranking of international trade is the 22nd, and that in that among manufactured products exporters, its position has been falling year after year, being the 30th in 2012 (IEDI, 2013).

These positions strongly contrast with the size of the Brazilian economy, which was the world's 6th largest in 2012, and with the volume of international direct investment (IDE) that the country attracts and that was the 4th largest in that year. Canuto, Cavallari, & Reis (2013) in a study supported by an extensive database containing information on the export of 15 years from 45 countries concluded that the Brazilian participation in the world trade of products of high technological content in clearly declining.

Several Brazilian researchers sought to understand the barriers that Brazilian companies face when they try to compete in foreign markets through exports. The results coincide in pointing conditions external to the companies as the main barriers. Reis, Pignatelli, & Santos (2008) found that the five most critical barriers were high transport costs, high airport fees, high interest rates, low government efficiency and lack of incentive programs. Ribeiro,

Bernardes, & Borini, (2014), studying barriers to internationalization of new technology-based companies found that high capital costs, lack of government incentives, high costs of logistics, high incidence of taxes and unfavorable exchange rate were the factors most pointed out by entrepreneurs.

In a context in which the loss of international competitiveness of Brazilian manufactured goods, especially those of higher technology is evident, the exporting trajectory of the Brazilian regional jet manufacturer Embraer draws attention as a notable exception. Since the Bandeirantes, the 10 to 12 seats turboprop, their first product launched in the late 1960s to the recent KC-390 medium size military cargo transporter, which since its first appearance attracted significant interest of several air forces, almost all Embraer's products had been successful in the international market (Donald, 2010).

Several studies have sought to understand the reasons of long-term success of Embraer in the international market. Bernardes (1999) recalls the history of the aviation industry in Brazil since its primordium, with the construction of the first aircraft on a commercial scale during Getúlio Vargas' government to the period immediately following the privatization of Embraer and the launch of the ERJ 145 regional jet. He describes with details the process of the company's knowledge acquisition and the immediate implications of its privatization in 1994. Sull, Escobar, & Lopes, (2004) analyzes the company leadership style and organizational strategy. Fleury & Fleury (2009) explains the company's internationalization from the point of view of its skills acquisition. As we will try to demonstrate in section 3, these and other works, although contributing to explain important aspects of the history of Embraer, do not render the company export success, for more than four decades, completely understandable. Putting forward an encompassing and cohesive explanation of Embraer's continuous international success is the aims of this paper.

Embraer's unique, among Brazilian companies, successful trajectory in international competition qualifies it as an exception, an outlier. Situations such as this, that contradict expectations constitute good research objects, through case studies, that often reveal causal relations difficult to be perceived by other methods (Bennett, 2006, p. 262). Siggelkow (2007) expresses the same idea when he says that the study of very special cases achieve insights that the study of other cases do not. Yin, 2014, p. 52) states that specific cases can be vivid and illuminating, especially if they are unusual and don't fit within theoretical standard or the occurrences of everyday life.

To accomplish its goal, the paper makes use of two theoretical perspectives: The classic and challenged Diamond (Porter, 1990) and the perspective of strategic choice (Child, 1972). Section 2 provides an overview of the concepts of these perspectives on what is relevant to the purpose of the paper.

In offering and encompassing and unified explanation of the reasons of Embraer's international success this paper makes two contributions: For managers of companies and policies formulators focused on promoting exports it indicates actions that were successful in the past and have the possibility of being so again. From a theoretical point of view, it contributes to the development of the two theoretical perspectives used.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Porter (1990) formulated a theory about the business environment that, according to him, was necessary for a country to develop a knowledge-intensive and globally competitive industry. The theory became known as The Diamond because the graphical diagram representative of it resembled this crystalline form.

The factors that a country needed in order to develop an internationally competitive industry were (Porter, 1990) essentially four: factors conditions, demand conditions, related and supporting industries and firm strategy, structure and rivalry.

The factor conditions are of two types: The basic factors, those natural to the country, with which it is endowed by nature and it has, at most, to make small investments to have them; and the advanced and specialized factors. These require large and continuing investments, are scarce and difficult to obtain. Because they are specialized, their application is restricted to a limited number of industries, and even to a single industry. The development of specialized factors often involves higher risks and requires the prior existence of a base of advanced resources. Demand conditions mean that the country must have sophisticated buyers, who anticipate global trends. This would force the country companies to innovate more than those of other countries, thus propelling the country industry to a leading position in the world competition.

Porter, consistent with his position that the geographical and cultural proximity between companies in the value chain facilitates innovation, argues that a condition for the industry to be globally competitive is to have suppliers

and related industries in the country that are international leaders in their respective fields. This is the related and supporting industries factor, the third one of the Diamond.

Porter also maintains that the successful companies compete vigorously in their countries of origin and this competition is what makes them innovate. Innovation, according to the author, is unnatural to companies. They resist doing it. To force companies to innovate it is necessary to have competition. This is the rivalry condition, the fourth pole of the Diamond.

In the two and a half decades that have passed by since the publication of Porter's Competitive Advantage of Nations, internationalization accelerated, global value chains became denser, the competition between companies established in different continents became more intense and many companies are already conceived and born with foreign markets in mind. Therefore, it is difficult to sustain today that the existence of a sophisticated domestic market, national suppliers globally competitive and national rivalry are necessary conditions for the development, by a country, of globally competitive industries.

However, the hypothesis formulated by Porter that, in order to develop a globally competitive industry, the country need to have advanced and specialized factors, which require large and sustained investment to be developed, is perfectly consistent with the growing recognition that knowledge is a key production factor in the contemporary economy (Teece, Pisano, & Shuen, 1997) (Teece, 2014). Porter's hypothesis about this seems more significant today than 20 years ago. Therefore, the first proposition that this paper put forwards is that what most and above all explains of Embraer's success in the international competition is that it was benefitted by continued and significant investment in advanced and specialized production factors. This proposition is consistent with Porter's hypothesis about advanced production factors.

The nature of the relationship between companies and their environment is one of the most studied themes in organizational strategy. In the 1950s, the General Systems Theory had already drawn attention to the importance of the environment for organizations (Boulding, 1956). In this debate, the dominant theories have seen organizations as determined by their environment. Key among these perspectives are the Structure, Conduct, Performance (SCP) paradigm (Porter, 1980) and the Structural Contingency perspectives in organizational theory (Burns & Stalker, 1961) (Donaldson, 1987). For these perspectives, either management creates a fit between the organization's structure and its environment or the organization will suffer and eventually disappear. Environmental variables are external and uncontrollable by companies.

However, a second group of perspective about the relationship between organizations and environmental advocates that companies and management have more leeway to act and agency possibility than what is assumed by SCP and the Structural Contingency perspectives. According to these perspectives, it is possible for managers to act proactively and modify their environment to a significant extent. Among the proponents of this perspectives are the Systemic Theory (Ackoff, 1974); (Bertalanffy, 1968), Strategic Choice (Child, 1972; (Whittington, 1989) and the resource dependence (Pfeffer & Salancik, 1978; (Salancik & Pfeffer, 1974). These perspectives claim that, in many circumstances, markets are not as competitive and unforgiving to inefficiencies as the Contingency Theory assumes and that managers can maintain the organization's structure or strategy and change the contingencies. The term "Strategic Choice" was coined by Child (1972) to designate this possibility.

For the advocates of Strategic Choice, contingencies influence organizations, but those have a considerable degree of freedom and choice. A powerful organization can absorb performance decreases due to misfit with the environment without significant reduction of its profitability. Even more relevant to the purpose of this paper, when a misalignment is no longer tolerable and the fit has to be restored, this can be done by changing the contingency (Donaldson, 1996).

This perspective leads us to proposition two: After reaching a position of notoriety and national prestige Embraer could adapt the contingencies to its needs. Therefore, the barriers to exports and international competitiveness that limit the possibility of Brazilian companies to perform well in international competition were circumvented, to a large extent by Embraer.

3. THE LIMITS OF EXISTING EXPLANATIONS OF EMBRAER'S SUCCESS

Frischtak (1994), analyzing Embraer's initial success points out that the company initial success was made possible to a large extent due to structural changes industry was going through at the time Embraer was entering the market. These changes faced the market leaders with challenges and opened up opportunities for new incumbents. The author attributes the success of the Bandeirantes and Embraer's next family product, the Brasilia, to the competence of the company in exploring niches but also to these changes.

Bernardes (1999) is a detailed study of the Embraer development process. Written shortly after the privatization of the company that occurred in 1994, the author shows concern with the risk that the adoption of a strategy oriented mainly by financial and market logic could be disastrous for the future of the company. Among the most immediate threats he points out is the possibility that, due to the partnership model adopted in the development of the ERJ 145 program, the company could transfer technology to partners that would compete directly with Embraer afterwards, using this technology.

To argue his points, the author historicize with details the acquisition process of technology and marketing skills by the company from its foundation to its privatization. He lists the knowledge contents that were incorporated by Embraer with each new program and the offset processes sponsored by the Brazilian government that benefited the company. He describe with details the huge support granted to the company by the government.

Bernardes (1999) is certainly the most complete and well-structured source of information available on the process of knowledge accumulation by Embraer in the first two decades of its existence. Nevertheless, the author does not discuss why the country developed globally competitive aviation industry while, at the same time, failing in attempts of developing other competitive industries, as in the case of the computer industry. Helena (1980), among others, shows the extent of the Brazilian government's efforts in the period 1972-1979 to develop a national computer industry. This effort went through not only investing significant amounts of money in it as in protecting the national market for the local companies over at least five years. Yet, this attempt has not legate to the country results that even remotely resemble those obtained by the regional aviation sector in terms of creating a internationally competitive industry.

Sull et al. (2004) is another tentative of explaining Embraer's success. It attributes it to the company strategic skills. The company, like other Brazilian ones, have had, according to the authors, superior skills in dealing with turbulent environments. The company had successfully responded to the sudden death threats, taking advantage of excellent opportunities and pursued a policy of active standby during periods of relative calm (Sull et al., 2004). For active standby, the author understands "using periods of calm to prepare actively and anticipate threats and future opportunities."

Sull et al. (2004) do not explain how the capacities that according to them explain Embraer's success originated or why some Brazilian companies had developed those skills and others have not. Nor do they explain why the capacities they highlight and not others, the management of innovation and technology for instance, are the ones that better to explain the success of the company. Although they have the merit of drawing attention to capacities that other studies have not identified, this work also cannot be seen as explaining the fundamental reasons of Embraer's success.

Goldstein (2002) is the work that has objectives most similar to ours: Understanding the causes that allowed Embraer a prolonged success in a "brutally competitive environment" (p. 111). The author attributes the initial ascension of the company to capacities acquired through cooperation and licensing agreements, which enabled it to develop core competencies. He agrees with Frischtak (1994) about the importance for the company initial successes of its capacity to explore niches. Also, he draws attention to the fact that the company was located in the technological and industrial area of Sao Jose dos Campos, the most organized and developed technological clusters in the country.

Analyzing the company success after privatization, the author highlights the importance of organizational changes, such as the flattening of the hierarchical pyramid and the introduction of administrative practices, such as strategic planning and total quality control. It also highlights initiatives aimed at promoting the learning process, the review and continuous improvement of operational processes and human resources development. Goldstein (2002) also emphasizes the importance, at that stage, of the development by the company of international partnership programs and the governmental support.

The work of Goldstein has the merit of listing several factors that contributed to the success of the company. Yet, for the purpose of explaining the permanence of Embraer's success all along its trajectory, the fact that he attributes these to a number of reasons whose relationship and cause and effect sequence is not apparent is a problem. It is not logic to suppose that Embraer's success is due to several different disconnected causes. There must be a basic, unifying reason that explains why different factors occurred. And this reason is absent from the author's work.

Fleury & Fleury, (2011) consider that Embraer could already be seen as an internationalized when they wrote the book, despite the fact that it did not have factories abroad. That is because it led a complex international supply

chain, coordinated by three international offices and logistics centers. They consider that Embraer's successful internationalization was only possible due to the "turnaround" of the company after its privatization, which resulted in a new culture and new organizational skills. With this turnaround, Embraer became a competent company, customer oriented and efficient in financial matters.

Fleury & Fleury, (2011) also consider that the business model based on risk sharing partnerships and the consolidating of a strong position as coordinator of a global network enabled Embraer to succeed in its internationalization process. The technical and production competencies that the company held before the crisis, although advanced, would not have been sufficient to prevent the crisis in the first half of the 1990s and enabled it to succeed in the international competition, had it not been privatized .

Although it is undeniable that Fleury & Fleury (2011) are right to attach great importance to the business model and culture that Embraer developed after its privatization, their explanation is incomplete on two points: First, it does not recognize that the company was successful in the international competition prior to the turnaround with several products: The Bandeirantes, the Brasilia and the Tucano, for example. Secondly, the reasons that made possible the emergence of the culture and successful business model after privatization are not explained.

4. THE TWO REASONS FOR THE CONTINUED SUCCESS OF EMBRAER

The success of Embraer can be best explained by two reasons, and the second one follows directly from the first: The aeronautical industry is the only case of continued investment in advanced and specialized knowledge in Brazil in modern times. This investment allowed Embraer to acquired influence and became a national priority, which in turn, made it possible for the company to obtain concessions from the government that cancel or at least compensate for the barriers to national competitiveness that other Brazilian companies face.

Advanced factors are the ones that require large and continuing investments. They are scarce and difficult to obtain. Specialized are the ones that have restricted application possibilities, they are limited to a small number of industries and even to a single industry (Porter, 1990). The development of specialized factors often involves high risks. These condition makes them scarcer than the advanced ones.

The history of Embraer goes back to 194, when the Ministry of Aeronautics was created and to 1950, when Brazil's Aeronautics Institute (ITA) was created. ITA is an aeronautic engineering school that up to these days is, arguably, the best Brazilian engineering school. Embraer was founded in 1969. Its first aircraft, a Bandeirante with capacity for 10 to 12 passengers was delivered in 1973. Therefore, 15 years, separate the Embraer foundation from the graduation of the first class of ITA's aeronautical engineers in 1954 and 20 years separate this graduation from the delivery of the first Embraer's product. During this period, the engineers and the knowledge they gained would have dispersed, was it not for the fact that as the groups graduated, research laboratories were created, originating the Aeronautics Technology Centre (CTA). The group of engineers who remained in San Jose Campos working in these laboratories had considerable influence in the creation of Embraer (Fleury & Fleury, 2011).

Avrichir (2002) reports a survey by the Association of Engineers (AEITA) that allows us to evaluate the importance of ITA to Embraer. In 2002, of the 393 engineers graduated by the ITA between 1997 and 2001, 29.5% were working in the aviation industry. Of the 186 engineers working at Embraer in the same year, 26% were ITA's ex-students. Of the 27 managers, 66% were also graduated from the Institute and from the 6 directors, four.

The importance of the ITA and CTA for the Brazilian aviation industry is a well-established matter. Not as well-known is how innovative they were in their models. Possibly, ITA is the university that had the biggest proportion of outstanding foreign professors in its foundation in Brazil in all times. In addition to Richard Smith, who had been the head of the aerodynamics department of the Massachusetts Institute of Technology (MIT) and participated intensely in the design of the new school, Forjaz (1969) lists seven American professors and three Germans who actively participated in the early years of the engineering school. Of these, at least two were leading authorities in their fields.

Botelho, 1994, p.145) draws attention to the fact that the founders of the ITA saw it as more than a new school of engineering; it should be unique experience, with a mission of modernizing the higher education and research of engineering in the country. Among the innovative features of ITA, Botelho enumerates the fact that it always held national entrance examinations. This, associated to the fact that it offered scholarships and allowance, enabled it to attract young talented people from all around the country. ITA got rid of the cathedra system and instituted the departmental organizational structure. This allowed flexibility in structuring curricula and annual review of disciplines. Professors were hired on a full-time basis. 10% of teaching time was dedicated to disciplines of

humanities. 40% of student time was dedicated to practical work. Students were required to have full-time dedication. Intense contact between students and professors was promoted by the fact that both lived in the same campus. Each student has an allocated professor as counselor. Concern with ethical values lead to a system known as conscious discipline. Finally, a highly diversified and academically qualified faculty (professors from 20 different nationalities and 20 Ph.Ds) and the highest ratio of professors per student in the country made of ITA a unique engineering school in Brazil in 1950's.

The development of advanced and continuous factors continued in the two decades ranging from Embraer foundation to privatization, mainly in the form of technology offsets. Offsets are compensation required by the buyer country from the supplier as a condition to purchase defense goods or services. It may involve technology outsourcing, licensing or transfer and joint ventures between the seller country and the buyer country ("Offset Definitions," n.d.).

Many offsets benefited Embraer. Just after its foundation Aermacchi transferred to it the technology required initially for assembling and testing the Xavantes aircraft purchased by the Ministry of Aeronautics and, later, for the manufacturing of parts of it by the company. At certain times, 600 Italian professionals lived in São José (Silva, 1999). They not only taught to Embraer's employees how to assemble and operate the Xavante aircraft acquired by the Brazilian Air Force (FAB), as they helped in the design and mass production of the Bandeirantes (Silva, 1999, p 227.). Sikorsky Aircraft, manufacturer of American helicopters transferred methods, techniques, processes and all the training necessary to apply chemical machining to the fuselage (Silva, 1999, p 442.).Piper transferred important knowledge in the area of marketing and technical assistance, etc.

Even in the period immediately after the crisis, when its financial situation was very difficult, the company continued to make significant investments in the development of knowledge. In the ERJ 135/145 family aircraft project, that began to be developed soon after privatization, 850 million dollars were invested in product and development (Maculan, 2013). After the release of this jets family, Embraer continued to invest in research and development a percentage of its net sales higher than the largest aerospace companies, which is in itself one of the sectors that most invest in R&D among all industrial sectors.

Table 1.

Prepared by the author

Source: (ITPS - Institute for Prospective Technological Studies, 2014)

Embraer's Specialization Program in Engineering (EPE) started in 2001 and has graduated more than one thousand professionals. After reducing its activities in 2009 due to the international crisis, it is now being expanded with new classes been taught by Embraer's professionals and ITA professors. According to Embraer, the investment in the program has increased considerably, from over US 1 million in 2010 to US\$ 2, 2 million in 2011. In February, a group of 57 recently graduated engineers started the program and in August there will be an exam to select another 60 students - the average per year will be around 100.

The second proposition that this study sustains is that Embraer, after reaching national notoriety could influence the environment and neutralize the barriers that hinder the international competitiveness of other companies.

An episode in which this phenomenon became very clear was the litigation that the company and its Canadian rival Bombardier maintained between 1996 and 2003 when they turned to the Dispute Settlement Body of the WTO for arbitration. Bombardier maintained that the Brazilian government granted subsidies to Embraer that went against WTO rules, as established by the Marrakesh Treaty. Embraer, on the other hand, accused Bombardier of using inappropriate marketing methods in commercializing its aircrafts (Vigevani & Fernandes de Oliveira, 2007).

In this episode, the Brazilian government vigorously supported the Embraer positions. In the peak of the dispute, even the usually moderate Brazilian President Fernando Henrique Cardoso spoke harsh words against the Canadian government. The president said. "If they want war, they will have it" (Dieguez, 2001).

More recently, the firm support of Brazilian diplomacy to Embraer was also made clear during the visits of former President Luis Inácio Lula da Silva and President Dilma Rousseff to China. During Lula's visit, the negotiating of the purchase of 50 ERJ 145 aircrafts was an important issue of the agenda (Varela, 2009). During President Dilma's visit to that country, the purchase of 50 Embraer 190 aircrafts and 25 ERJ 145 were also an important agenda item (Paraguassu, Rosa, & Godoy, 2011). In 2010, the Minister of Defense of Brazil, Nelson Jobim, made

a trip to Europe in which several partnership agreements involving the military freighter KC-390 were signed (Donald, 2010).

Embraer could also circumvent another major barrier that Brazilian exporters face - the scarcity and cost of money in Brazil. Soon after privatization, the new controllers of Embraer received funding of \$ 126 million from the Brazilian Development Bank - BNDES. The funds were used mainly for the development of the ERJ-145 in the period 1995-1998 (Fonseca, 2012). "In terms of net sales, BNDES was responsible for funding more than 50% of the aircrafts sold between 1999 and 2006" (Fonseca, 2012 p. 52). The difficulties posed by the cost of money to Brazilian exporters and the importance of BNDES financing are highlighted by an episode narrated by the same author. He reports that in 1996, Embraer lost the bid of 150 50 seats aircrafts to ASA and Comer, despite having the best technical and price conditions. Embraer lost it because the competitor offered better financing conditions to the client.

As far as logistics goes, Embraer also gets conditions that allow the company not to be submitted, at least not fully submitted, to the difficulties that reduce the competitiveness of other Brazilian companies. Let take the case of the Special Customs Regime of Industrial Warehouse under Computerized Control (Recof) for instance. It is one of the few possibilities that exist for an integrated approach and cost reduction and speeding up of customs procedures. Due to requirements that are made for accessing the program, from the 33 certified companies, Embraer is the only Brazilian company that is not a subsidiary of a multinational (Sturgeon, Gereffi, Guinn, & Zylberberg, 2013). To qualify for the program, suppliers of goods and services have to prove that at least 70% of their revenue is derived from exports or sales for the Ministry of Defence (Silveira, 2012).

Accessing or not the program has multiple implications for the exporter: Under the scheme, exports and imports are checked and processed within six hours. Companies are exempted of import duties and the tax on industrialized imported goods (Moreli, Oliveira, & Porto, 2010).

5. FINAL CONSIDERATIONS

In this article we sustain that the reasons which allowed Embraer to succeed in the international competition, despite the adverse conditions that the Brazilian economy and institutions pose, are basically two: First, the continued investment in advanced and specialized production factors and second, the fact that when it reached notoriety and became a national priority, it became capable to influence the environment to its advantage.

The propositions sustained by this paper have theoretical and empirical implications. From a theoretical point of view, the statement made by Porter (1990) in the challenged Competitive Advantage of Nations about the criticality of the continued investment in advanced and specialized production factors are made to look even more valid than two decades ago, when they were first formulated. And the Strategic Choice perspective (Child, 1972) is shown to have relevance in explaining international competitiveness.

From the practical, managerial perspective the paper suggests that it is possible for Brazilian companies, and from other countries where environmental conditions are adverse to be successful in international competition of products of high technological content. This is possible if companies can maintain continued investment in advanced and specialized factors. After acquiring notoriety and a status of national priority, they can successfully to influence the environment to their advantage.

A limitation to the possibility of generalization of these conclusions is that they are based on the analysis of the trajectory of one company, Embraer, a very peculiar firm. Embraer represents on its own 80% of the Brazilian aviation industry sector, a condition not normally shared by other companies. Yet, this does not invalidate the argument put forward by this paper. Companies from emerging economies have been able to achieve remarkable things when they work together, through their formal or informal associations. The possibility of acting together to develop advanced and specialized production factors should not be ruled out a priori. And if the position sustained in this paper is true, once they achieved a position of national notoriety it becomes possible for them to influence decisively the conditions that limit their international competitiveness.

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