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## The growth and internationalization of Gerdau Group

### *Abstract*

Gerdau Group is a Brazilian enterprise that has undergone steady growth since its first acquisition in 1948 of Riograndense steel mill. It has achieved a global position that is internationally recognized. This paper's proposition of five hypotheses to explain the growth of the Gerdau Group is based on Penrose's concept of growth and diversification, Guimarães' concept of the internal restriction of growth, Chandler's concept of strategy-structure, Dunning's competitive advantages relative to the OLI paradigm and the Resource Base View model. The main results found were that the group is a capital unit in the process of growth. This growth is achieved mainly by means of horizontal integration. It also occurs by means of vertical integration. Most of the integration takes place within the original specialization area, the manufacturing of long steel products. The company recently started a process of diversification, expanded towards new markets, and new technological bases. Domestic growth occurred at a higher level than the domestic apparent demand, creating a bottleneck for future growth; thus, exports and FDI appeared as an outlet for the potential growth of the group. As a response to the strategy of growth, the group promoted structural changes, shifting from being a functional organization into becoming a multidivisional one, with increased decentralization but a global system of control developed internally was also present. The growth process was based on resources advantages that were internally created; mainly operational and financial processes constituted the ownership specific asset advantage. Such engendered sustainable advantages were due to its rare resource conditions and the challenge of any imitation. Foreign growth was mainly the result of market seeking, although it also occurred, to a lesser degree, by natural resources seeking, specific assets seeking and productive efficiency seeking, along with support and escape strategies.

**Keywords:** Micro-Business History; Latin America; Business Economics; Firm Organization; Firm Performance

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Received 25 January 2018 - Accepted 24 April 2018

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## Introduction

It was a hot summer month in February 1948 when Waldomiro Schapke became manager of Riograndense steel mill, in Porto Alegre, Brazil. Schapke expected that the steel company would be instrumental in solving the wire rod supply problem that a nail factory he had been managing was having (Oliveira 1999).

The Nail Factory Hugo Gerdau was then and still today one of the largest nail producers in the southern region (Baer 1970, 90). It was a metallurgical unit dependent on basic raw material: the wire rod that was transformed into nails by deafening machines blasting their syncopated pings and twangs. In the 1930s and 40s the wire rod domestic market had only two sources: the input purchases from Belgo Mineira, and imports (Gerdau 2001, 14). Under normal circumstances, provided no external accidents occurred, the Nail Factory was able to meet their supply utilizing either one of those two sources and maintain their cost structure under control. During difficult times, though, when WWI and WWII cut the international commercial lines, the enterprise was left with two options: either reduce production drastically, as it had done during WWI (Lannes 2006, 135), or acquire the wire rod from Belgo Mineira, the locus of more than a half the national steel production during the WWII (Baer 1970, 114). Schapke had experienced in both situations, first as factory employee and the second as a shareholder and manager. The Siderúrgica Riograndense economic deterioration came in handy, opening an opportunity horizon, the steel market, that was not restricted to tapping into the raw material supply by vertical integration.

Neither Waldomiro Schapke nor Kurt Johannpeter, the Gerdau family representative in the nail factory, had ever imagined that the core business of the family enterprise would shift from the nail to the steel business, or that the Nail Factory Hugo Gerdau would eventually become the

Gerdau Group, today a steel conglomerate and the 18<sup>th</sup> greatest steel producer worldwide (World Steel Association 2017). It is their entrepreneurial history that shall be told and analyzed here. The first section is about theory and postulates five basic hypothesis of growth and internationalization; the second is a short methodological note; the third deals with the firm's growth in the national market and the creation of the familiar group; the fourth deals with the process of the group's internationalization; and the fifth brings the author's final comments on the entrepreneurial experience presented.

### **Theory and hypotheses**

Edith Penrose (2009, 104) established their theory of the growth of the firm through the diversification of activities, arguing that each firm has a particular technological base to serve different market areas, which is its current market. If the firm's main objective is to grow, it must expand its sales revenue so that it can expand its productive capacity - which requires investment. The main important source of investment financing is profit reinvestment (Wood 1975, 4). In modern capitalist models, profit is represented by the return on investment, which is the result of the difference between sales revenue and total costs, divided by net equity (Dunning 1993, 54). Hence, return on investment is positively related to sales revenue and negatively to costs.

The continuous interaction of the technological base with current market leads to the accumulation of knowledge concerning the conditions of its supply vis-à-vis response to demand. The discrepancies between supply and demand lead the enterprise to innovate, generating a pool of cost and competitive strategies (Possas 1999, 69), so that the return on investment could, at least, not decrease. As strategy advantages are acquired, the firm can achieve profits - the essence of the process of valorization of capital (Macedo e Silva 1999, 45).

Thus, the firm in a capitalist economy is a unit of capital valorization, which grows in expanded reproduction. To do so, it requires two attributes: a general office with exclusive competencies to determine the firm's organizational structure and its competitive and expansion strategies, and a level of profits that could lead to investment decision (Guimarães 1987, 14).

Once established, the firm creates productive and administrative processes based on routines that gradually create skills and abilities, developing internally-generated capacities and competencies (Nelson and Winter 1982, 74). Such competencies, in turn, could result not only in an ownership-specific advantage (Dunning 1988, 43) or a firm-specific advantage (Verbeke 2011, 4), but also a sustainable and differential advantage (Barney 1991, 102; Prahalad and Hamel 1990, 4). Such strategies regarding the firm are designed for its technological base and its current market, together comprising the area of specialization of the firm, its core business. The area of specialization in turn affords the firm confidence to invest and, furthermore, shows the route to expansion, (Penrose 2009, 111). As the accumulation of capital is derived from investment and its return after acceptance of the firm's strategies by the market, those characteristics of capital valorization reveal that the limits of growth derive from the limits of capital and market, as expressed as the capacity of the firm "to finance the required investment for its expansion and the existence of the market for its growing production" (Guimarães 1987, 14).

The growth in a particular area of specialization is restricted by the difference between two rates, the potential of growth of the firm and of the market. When the former is bigger than the latter, the firm must find other market areas in which to expand, with the same technological base or with a new one. When the national market is restricted for expansion, the world market

become a natural outlet for the potential growth of the firm, such as exporting products or capital (Guimarães 1987, 150).

As the firm grows because of its competitive, sustainable and differential advantages, the organizational structure must follow such growth, as well as the family culture embedded in such a changing environment. Growing by vertical and horizontal integration and by creating distribution channels requires the management of all these activities; thus, the firm is forced to make the “three-pronged investment” in production, selling and management (Chandler 1972, 14; 1994, 8). On the other hand, to compete successfully the firm acquires the idiosyncratic ability to recombine internal and external resources as a result of the interaction among family members and the business; during a transgenerational family process, family members acquire a deep level of firm-specific tacit knowledge when working in the business and living among the family from an early age (Chirico and Nordqvist 2010, 4), which contributes to generate stronger institutional values, according to the interrelations between firm, property rights and management (Esparza Aguilar, Pérez de Lema and Gómez Guillamón 2010, 14).

To invest abroad, the firm must have some advantages, such as the Dunning’s OLI (ownership, location, and internalization) or Verbeke’s definition of firm-specific advantage (FSA), internationally transferable or non-transferable (Verbeke 2011, 4). It is further important to have some strategic objectives (market, resource, efficiency and strategic asset seeking, escape, support and passive investment)<sup>1</sup>, and phases of internationalization (from export to direct foreign investment), which characterizes the path of growth in foreign markets (Dunning 1980,

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<sup>1</sup> Even though Cuervo-Cazurra, Narula, and Un (2015, 25-35) proposed another set of motives – sell more, buy better, upgrade and escape –, the author maintain the original Dunning’s motives, because if we have to change ideas due the change in the world and consolidate all the Dunning’s motives into four kinds of motives we can consolidate them into only two motives, derived from the essential equation Dunning recalled as the main reason of entrepreneurs’ decisions, that is, to augment the rate of return. The Dunning’s proposition (1993, 56-63) helps us in disaggregating the firm pool of strategies to analyzed them.

9-11; 1993, 56-63; 2000, 163-165). The growth process can be done by construction of new productive units, or acquisition of an existing enterprise, or merger with a competitor or a joint-venture with a partner in specific markets or with a specific purpose (Penrose 2009, 143; Mangum, Kim, and Tallman 1996, 16).

When abroad, with all acquisitions as subsidiaries, the headquarters could ensure, for each foreign unit, a good deal of freedom to take strategic decision. This is a subsidiary mandate that guarantees (or not) initiatives from the subsidiaries (Birkinshaw 1996, 471; 1997, 207).

Since the firm-specific advantages, motives, phases, form and subsidiary governance are not predicted, we only can observe them *ex post*, because of the uncertainty economic dynamic and the existence of randomly events.

From such extant theories, we have constructed five hypotheses:

*Hypothesis 1:* growth of the firm derives mainly from its area of specialization due to the interaction between its technological base and its current market;

*Hypothesis 2:* growth of the firm occurs in foreign markets when the firm's growth rate is higher than the growth rate of the domestic market;

*Hypothesis 3:* growth of the firm changes its organizational structure and its values;

*Hypothesis 4:* internationalization based on barely differentiable product is the result of operational advantages internally created;

*Hypothesis 5:* internationalization based on barely differentiable product is mainly market seeking.

### **Business history and sources**

This paper is a historical microanalysis of a capitalist enterprise in its social economic context (Kula 1974, 139), that is, a business history of an individual firm (Barbero 2003, 318) with a

limited scope based on the theoretical approach discussed in the previous section. It is based on Gerdau's institutional history (Gerdau 2001), from which it is possible to extract relevant data about several aspects of Gerdau's temporal evolution.

We have selected the following unit of analysis (and its variables): technological base (productive technologies), the current market (pool of market areas), the growth process by horizontal and vertical integration (acquisition, merger, backward and forward integration), financial strategy (borrowing, stock market, relations with bankers), organizational restructuring process (organization structure) and subsidiaries mandates (mandate gain, mandate development, mandate loss), institutional values (family creeds), innovative and quality strategies (product specification, durability, line of products, brand, commercial channels), and the relation between the firm and state-owned institutions (fund searching).

The recent temporal evolution is based on the published reports, especially the Annual Report and the U.S. Securities and Exchange Commission's Form 20-F. Specific historical aspects, such as the evolution of financial strategy, national expansion and internationalization, are documented by means of two interviews conducted with key employees. Three other interviews available in the company's Documentation Center, were also utilized. The balance sheets submitted since 1969 to the Security and Exchange Commission of Brazil, in Rio de Janeiro were used as a source for the financial and production data. Finally, some data for the enterprise were collected from monographs by graduate programs in Brazil.

### **The growth of Gerdau Group in the Brazilian domestic market**

The Riograndense steel mill in Porto Alegre, one of the smallest steel factories in Brazil in the forties (Baer 1970, 90), was a minimill<sup>2</sup>. Its technological base in that period was composed of a electric furnace for scrap fusion and a conventional casting and rolling system. Both systems were operated manually. Its technological dependency was related to the geographic location of scrap. The location of raw material supplies determined where the factory would be located. Riograndense Steel Mill's current market was thus the mechanical, construction and farming industries. These markets were the targets of its main products, such as bars, rebars and wires. The Nail Factory Hugo Gerdau acquired the steel mill in 1948, with funds from the enterprise, the Gerdau family itself and from loans (Gerdau 2001, 14). After the acquisition, one of the first measures taken was to adjust the factory to build a profitable cost structure (Oliveira 1999). The factory operated at a technological lag. The steel mill processed 3 tons per charge from the electric furnace, 11 thousand tons of raw steel/year using a 3-megawatts electric transformer (Gerdau 2001, 19) when furnaces and electric transformers with fivefold capacity had been available since the beginning of the twentieth century (Madias 2014, 271). Conventional casting, with liquid steel pouring into molds and subsequently demolded, and the rolling system, followed the technological parameters of this period. However, the main problem of the steel mill was the operational process, which was resolved by closing the factory for six months (Oliveira 1999). The need for wire rod supply for the manufacturing of nail had to wait for a medium-term solution - the installation of a drawing mill - in the early fifties. The technical

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<sup>2</sup> Technology of steel production based on electric furnace, using mainly scrap as raw material; it is differentiated from the integrated steelmaking, with a larger productive scale, dependent on iron ore and situated near mineral deposits, while the minimill, with smaller productive scale, can be localized in several regions of the territory where water, electric energy and scrap are available.

improvement, however, created two new bottlenecks for the enterprise that led to an unbalanced growth cycle: on the one hand, the electrical infrastructure did not support modernization and factory growth; on the other hand, the rolling mill capacity was greater than the steel mill, creating unbalanced input flow and machinery idleness. The solution was the construction of a steel greenhouse (Gerdau 2001, 23).

Between 1955 and 1957, Riograndense 2nd was build. It stood 30km from Riograndense 1st in the city of Sapucaia do Sul. For six years, it was possible to construct a minimill with a more modern steel mill, a continuous casting and a much more modern rolling mill (Gerdau 2001, 24-6). The electric furnace was capable of producing five tons per charge, producing 18 thousand tons annually. Despite that, it was not able to exploit the scale economy already existing in the industry capable of producing twice that capacity (Walden and Marincek 1957, 56). The rolling mill was a tandem type, which meant that it had a continuous cold rolling. The gains in productivity and quality were only achieved, however, by substituting the continuous casting with the conventional one. This was considered an early adoption of this technical progress, since the fact that back in the sixties, this system only accounted for three percent of the global rolling process (Palacio Reparaz and Arana Bilbao 2002, 118). This new mill created an unprecedented experience of a greenhouse steel mill construction, that embedded a singular characteristic of the group central board: the implementation of the best technologies and methods. This factory mill would still receive the investment capable of five times the steel production that, added to the Farrapos mill production, favored the enterprise to overcome the level of 100 thousand tons produced in 1967 (Vieira 2007, 339).

After one and a half decades of steel mill operation under new management, the enterprise advanced its expertise in the area of specialization of long steel with state of art technology in

Sapucaia mill and in the obsolete factory in Farrapos. This approach characterized technological heterogeneity for which the company would develop an adequate management system in the future.

The growth of the Riograndense mill that took place over the course of a decade and a half under the control of the Gerdau family was concentrated regionally in the southern part of the country, although the firm possessed distribution centers in the northern, northeastern and southeastern regions of the country (Rosenfeld 1999). The second half of the fifties was the period that saw a national growth spurt in infrastructure and industrialization due to Brazilian president Kubitschek's "Target Plan", which concentrated the national economic dynamics in the southeastern region of the country (Lessa 1982, 27; Cano 1983, 227). At the same time, the economy in the Southern state of Rio Grande do Sul saw a reduction in growth with the end of capital accumulation based on small enterprise under the new framework of integration of the national market (Herrlein Jr 2002, 653). For the company, the strategy of growth meant the achievement of productive units in larger markets, be it by greenhouse or acquisition. The business opportunity in these markets appeared randomly.

The mini-mill technology base was instrumental in accessing local markets employing small productive units and utilizing the local supply of scrap. This approach allowed for the reduction of production costs related to a large-scale production unit by utilizing local scrap collection as opposed to transporting scrap from all around the country.

From 1967 on, the Brazilian economy grew rapidly, following the global trend, with the aid of the development plans of the civil-military dictatorship. This cycle extended until the early seventies, when the oil crisis exacerbated the domestic crisis (Bresser Pereira 1984, 219). The 2<sup>nd</sup> National Development Plan announced in 1974 would maintain the national economy in

“forced march” (Castro 2004, 30). Major infrastructure works were in process, such as the hydroelectric power plant of Itaipu (1975-1982), São Paulo subway system (1968-1975), the first line), the Rio-Niteroi bridge (1969-1975), among others. This would expand the market for long steel in the Brazilian economic center (Vargas 1994, 178). In this context, in five years, the company acquired three industrial mills in smaller regional markets in the northeastern and in the southern areas of the country. A larger scale steel mill, the Guanabara steel company (Cosigua), capable of producing 250 thousand tons annually was built between 1971 and 1974, in the national economic center of the time, Rio de Janeiro. That was ten times the output of the Sapucaia factory. The first successful attempt at establishing a joint enterprise for the business was achieved with an association with the German Thyssen, who brought the credit for financing the project. During this expansion period towards the Brazilian economic center, the fourth generation of Gerdau-Johannpeter family fully entered the steel business; construction of the greenhouse of Cosigua was a formative learning experience for the four brothers that would be at the helm of the enterprise growth until the end of the century. By then, the company had already become a group, the Gerdau Group (Gerdau 2001, 42-66).

During the eighties, when the Brazilian economy stagnated, the privatization of the national steel industry followed the international trend of privatizations. This opened opportunities of growth for the group that extended for the nighties. The group faced great competitors, such as Nippon Steel and Arcelor (Paula 1997, 94; Crosseti and Fernandes 2005, 157n). It took advantage of privatization, enlarging its horizontal integration to consolidate its regional market share in the northeast and south, expanding its market share in the southeast. Gerdau’s current market was still increased within its area of specialization, long steel products, achieving the production level of two million tons by the late eighties (Gerdau 2001, 171-187). The great shift

arrived with technological diversification: when Gerdau entered the market of special and flat steel.

The acquisition of Piratini Fine Steel, in 1992, in the southern region, marked the company's entry into the reduced market of special steel (Gerdau 2001, 188). Such a steel factory was somewhat technologically different, due to the inclusion of ladle refining in the steel mill. This difference determined the dependency on new inputs, such as metal alloys, and a more specific workforce with experience in ladle metallurgy. But the great jump was Gerdau's entry into the flat steel market, with the long and laborious acquisition of Açominas. This process lasted six years. In 2003 Açominas was finally integrated into the group (Gerdau 2001, 176; Gerdau 2003c, 10). However, in this case, the technological diversification was total, due to the shift to other steel productive routes, the integrated steel mill, with a blast furnace, basic oxygen furnace, casting and rolling slabs and rolled coil. Such technology determined new dependencies on inputs, such as iron ore, coke and limestone (Palacio Raparaz and Arana Bilbao 2002, 39).

In the late nineties, after achieving the global production level of five million tons of crude steel (Vieira 2007, 339), the Group's growth in the national market was almost none, with the exception of the acquisition of Villares Steel, and the horizontal and vertical integration in the integrated steel sector. Villares was a major special steel producer in Brazil. It was indirectly acquired when its owner, the Spanish Sidenor, was purchased (Lannes 2013, 19). In 2000, Gerdau Group was responsible for half the national production of long steel, its core business. It was about to monopolize the domestic special steel market and it started to take on the competition in the national flat steel market, which was 70% bigger than the long steel market (Gerdau 2000b, 17; WSA 2002, 54-55). Because of such a great amount of market share,

Gerdau started to face legal impediments to growth issued by the Administrative Council for Economic Defense (CADE) in 1995 (Pinho 1995, 28), leading the group to escape investment related to long steel market areas domestically.

With such growth achieved by horizontal integration, the Group felt the pressure of low cash-flow and gradually higher costs. From 1967 to 1970, when the national economy grew 10% per year, the Group's steel production grew at the annual rate of 30% and its current assets at a yearly rate of 13% (PIB, Gerdau 1969-1970), thus creating the need for a larger amount of working capital and current liquidity; for this reason and in order to meet the increased demand due to the "economic miracle" euphoria, guaranteed sales were needed. The Group then created its merchant channel, Commercial Gerdau, a distribution network gradually dispersed across the larger regional center where steel consumers were concentrated. In the beginning, it also served the role of scrap buyer. In the eighties, with more mills in operation, the Group invested in downstream operation of construction products ready for use, adding value to the main product, but compensated to the client for the productivity gains in construction. In 1989, the Group created the Steel Cutting and Folding Service Centers (Armafer) (Gerdau 2001, 80, 255), a new market area by reinforcing forward integration.

On the other hand, the enterprise's national accelerated growth during the seventies, when its production grew by a factor of six (Vieira 2007, 339), made it vital to think about cost, mainly goods direct costs, including the cost of electric energy and raw materials. In the early seventies, the Brazilian energy matrix had only 18% of electricity, while wood and vegetable coal accounted for 32%, and 38% by oil (Pinto 1990, 77). Foreseeing the possibility of energy shortage, the group created a reforestation enterprise, in 1971. In the next decade they began to produce wood. The scrap was the fundamental raw material of its technological base and was

already scarce in the southern region of the country, when the group decided to accelerate its growth in the seventies. At the end of this decade, such scarcity caused the enterprise to have to be supplied with pig iron, a dearer raw material (Vieira 2007, 91). It was necessary to seek out other regional scrap sources, so, in 1980, the group created Scrap Gerdau to collect and process scrap, replacing Commercial Gerdau's outsourcing. This processing is a fundamental requisite for liquid steel quality. When Açominas was acquired, the group decided to acquire in the 2000's a pig iron producer in the northeast of the country, since its technological base required the iron ore and pig iron as raw material. Gerdau went on to purchase iron ore reserves in the southeast, whose exploration in the 2010 exceeded the firm's necessity. Gerdau then began to sell the surplus on the marketplace (Gerdau 2003c, 2; 2007c, 5; 2009c, 6; 2011c, 5). The vertical integration caused the group to conglomerate, enlarging the technological heterogeneity and imposed more quantity of financial resources.

The group could rely on the financial expertise of its president, the entrepreneur and original member of the Gerdau group, Kurt Johannpeter, also a former auditor of Deutsch Überseeische Bank in Latin America, from the 1920s through the 1940s. He took over the family business, by way of marrying Helda Gerdau – the third-generation member of Gerdau family and owner of one third of the nail factory – and by the bank closure after the World War II. The acquisition of Riograndense steel and the greenhouse construction of Sapucaia factory required a considerable amount of financial resources drawn from their own funds and loans at market interest rate. To reduce financial cost, the group decided to participate in the stock market in the early sixties, when it launched its IPO (Gerdau 2001, 85). At the same time, the group prepared to access international resources, and to achieve this it gathered the best minds available on the market. This is the Gerdau way of innovating. From 1977 to 1981, as financial

director, and from 1982 to 1990, as financial advisor, the group hired a financial executive with extensive experience in the financial area. He served as president of two development banks: BRDE and Badesul. He was also a former Central Bank director, whose job inside Gerdau was to introduce the group to international financial centers, in Europe and United States (Burguer 2006; CRP 2012). The group conglomeration went into the financial market in the nineties, with the creation of Gerdau Bank. It served the purpose of centralizing the group's current assets financial operations – credit to customers in trade accounts receivable – and current liabilities – credit from outsourcers in trade accounts payable. With its internationalization, the search for cheaper resources to finance its foreign growth brought the group to the New York Stock Exchange in 1999, and to Europe, via Madrid Stock Exchange in 2002 (Gerdau 2001, 209; 2002c, 6).

The growth strategy that propelled a single steel mill in Porto Alegre to become a vertical integrated steel conglomerate required a structural change. For two and half decades, the group possessed a centralized management structure, run by executive committee where the Gerdau-Johannpeter family members and hired executives participated. During the 1970s expansion, new legislation concerning stock corporations was passed – Law 6404, of December 15, 1976, which made it obligatory for the company to have a management committee with deliberative attributions. It also imposed the separation of the strategic management and the executive management. These, growth and law, pushed for a more decentralized organization, more regionalized and more concentrated on the productive apparatus. To that end, the group established several boards: a) the administrative board for the strategy functions and pertinent deliberations, b) the board of directors that would perform operational work and be responsible for the three regional centers – south, southeast and northeast – and c) the management of

factory and commercial units, each unit possessing its own management structure: production, commercial, finance-accountability-control, Human Resources. Each of these units had its own intermediate-level manager (Gerdau 2001, 96). Such structure was later kept maintained only at higher-level management: the administrative board and the board of directors. The organization structure below this level changed over time as a result of growth dynamics.

**Table 1.** Gerdau assets steel plants and other units from 1901 to 2010

Year	Company	Region	Form of investmet
1901	Fábrica de Pregos Ponta de Paris	South	A
1948	Siderúrgica Riograndense	South	A
1957	Usina Riograndense II	South	G
1969	Siderúrgica Açonorte	Northeast	A
1971	Comercial Gerdau	Southeast	G
	Siderúrgica Cosigua	Southeast	JV - A
1972	Laminação Guaíra	South	A - D
1974	Siderúrgica Alagoas	Northeast	A
1981	Metálicos	Southeast	G
	Siderúrgica Cearense	Northeast	G
1983	Usina Guaíra	South	G
1985	Siderúrgica Hime	Southeast	A
1986	Usina Siderúrgica Paraense	Southeast	A
1986	Cia. Brasileira de Ferro	Southeast	A
1988	Siderúrgica Barão de Cocais	Southeast	A
1989	Siderúrgica Usiba	Northeast	A
1991	Cosinor	Northeast	A
1992	Aços Finos Piratini	South	A
1994	Siderúrgica Pains	Southeast	A
	Laminadora São José dos Campos	Southeast	A
1997-2001	Açominas	Southeast	A
2003	Maranhão Gusa S.A.	Northeast	A
	Reservas minerais	Southeast	A
2005-2006	Usina São Paulo	Southeast	G
2009	Maco Metalúrgica	Southeast	A

Abbreviations:

Forms of investment: A-Acquisition; G-Greenfield; JV-Joint venture; M-Merger

Sources: Gerdau 2001, 2001a-2010a; compiled by the author

The conglomeration enlargement in the eighties changed the management organization; the emphasis on the productive units, that is, in the operational processes, was modified by an emphasis on the market, that is, focusing on sales channels, because of the group's capacity to

segment its customers. Business units were created for each of eight commercialization areas: construction, industry, farming, nails, metallurgical products, special steel, export and distribution (Pinho 1995, 32). The business units in this period constituted the main source of the capital valorization process by direct contact with the demand in each market area. The market would signal to the productive and support units what, how much, and when each type of product must be produced.

The group made a 180-degree change in its competition strategy during the 1980s. This approach was the result of a slow innovative process, originally planned in product and finally in processes, acquiring the best available knowledge in the market. In the sixties, when the group started to expand nationally, the technological heterogeneity of factory units brought operational problems that led the group to create an internal section of operational engineering to search for solutions for technological and processes problems, from the intermediate management level to the productive floor. The first knowhow import was the hire of retired North-American engineers specialized in the steel mill to resolve operational problems. From this interaction, a training program was created in the seventies, the Gerdau Engineering Section (SEG). Its goal was to analyze manufacturing problems and develop its own technological knowledge and diffuse it among the productive units. The next knowhow import was the association with Japanese steel enterprises – Funabashi Steel and Nippon Steel – specialized in minimill technology; from such partnership arose the concern about productive and process quality. This culminated in the consequent inner implementation, although slowly, of the PDCA methodology, which encompassed even the factory floor, creating service cells (Santos 2001; Sommer 2006). Over three decades, the group developed its own operational management capacity, which constituted an ownership asset advantage or a transferable FSA (Lannes 2008,

387). This series of techniques allowed the group to manage the technological and process diversity of its production units. At each horizontal expansion by acquisition, the group internalized yet another management system inherited from each steel mill it had acquired. It was out of necessity for a uniformity pattern and the need for the continuity of quality management that the group created the management process, from which emerged a more unified management system in years 2000: the Gerdau Business System (GBS), which “capture, consolidate, and diffuse the enterprise best practices in its processes” (Gerdau 2013a, 13). For the foreign units, the headquarters were able to ensure some growing degree of liberty in the subsidiary mandate, as the GBS provide the parameters to be reached by such units.

During the group growth, the family members that were part of management instilled values that led the firm strategies; such values were established by the chief executive, Kurt Johannpeter, over the three and half decades of his term at the company’s helm. In 1986, after his death, the values Johannpeter handed down were institutionalized as Gerdau Creeds: “sincerity and plain dealing with everybody, profit as the measure of performance, secure growth on a sound basis, and people as the basis for business efficiency”. In 1998, new values were added: “outstanding quality products and services; satisfied customers; and self-fulfillment” (Gerdau 2001, 234). This company culture brought both advantages and disadvantages to the group. Safety and soundness were a hallmark of the group’s financial performance, causing it to become more indebted during the period of high expansion, returning to its original level of 40%, when expansion was decelerated (Gerdau 1969-2010a). On the other hand, the nature of company’s relationship with the workforce was mediated by its concept of people: the value of profit as the measure of performance is the result of people’s efficiency, the group inner public, who rely on improved working conditions, stimulus and

support to their families. This support requires the company to supply services and assistance to employees and their families in areas such as health, housing, food, transport, education, sport, and leisure (Gerdau 2001, 88). In order to achieve higher efficiency on their employees' part, the company, inspired by its own values, took it upon itself to provide them with public services. These employees are not seen as mere members of their workforce, but as collaborators. As a result, the struggle between capital and labor does not exist in these institutional values. Therefore, it has been difficult for the Group to understand the Trade Union, the claim that capital and labor do not cooperate, that the union has to monitor labor practices and their remuneration, which includes the existence of union organization inside factories. The clash between company and union cultures led to the outbreak of a workers' movement inside several factories that culminated in the creation of a global workers association, originally called Workers of the Gerdau Group, in 1998, which ultimately became the Gerdau Workers' World Council, created in Porto Alegre in 2006 (Gray 2009, 85, 124). Such national growth was bolstered in part by support by the State. Whether creating demand, or by supplying credit, the Federal government has always directly influenced the steel industry as a whole and the group in particular. The two great jumps in growth, which involved not the acquisition of rival companies, but the greenhouse construction of new factories, was partially funded by National Bank for Economic Development, the public long-term investment bank created in 1952, during President Getúlio Vargas term (Gerdau 2001, 26, 47). Investment in Brazilian infrastructure, derived mainly from the 2<sup>nd</sup> National Development Plan (II PND), was heavily invested in hydroelectric power (Batista 1987, 70). This policy secured effective demand for the steel industry, from which the group was benefited, supplying steel not only for

the Itaipu power plant, but also for the construction of São Paulo subway system and the construction of the Rio-Niteroi bridge.

### **The internationalization of Gerdau Group**

Before exhausting the possibility of expansion in the national market, the group started seeking markets abroad, for overcome to operate with overcapacity. In the seventies, it started to export goods, the first step in internationalization. The second step would be export capital in the form of foreign direct investment (FDI). Since it was a completely new territory for the firm it would require a previous knowledge, so that the group could acquire the capacity to conquer another dynamic center, the United States' economy, the second major steel demand in that moment (World Steel Association 1982, 36). The predominant form of FDI in foreign factories accounts for 37 acquisitions, and eight joint-ventures, one of which by greenhouse construction, three by merger and one as shareholder (Table 2; Lannes 2014, 148-149).

Such foreign expansion was broken down into three phases. The learning phase, which lasted for a decade, lasted from the beginning of the eighties to the beginning of nineties, when the group acquired assets in Uruguay and Canada. The second phase comprised the start and consolidation of the entry in the American markets, which peaked with the entry into both the United States' steel market, and the Latin American markets. The third phase was the recent expansion outside America continent, impaired by the 2008 economic crisis.

The group had the perspective of its own capital internationalization since the beginning of its own goods' exports, with the Uruguay being one foreign market for its ingots. In 1980, when the commercial branch learned of a client's intention to sell its factory, Laisa Steel, they acquired it. It proved to be an asset that came in handy. Being located in Uruguay, this factory was closer to the company's headquarters in Porto Alegre than it was to the Brazilian economic

center. It fully fit in the group's plan to experiment on how to act in foreign environments, because of idiom, customs, labour relations, and so on; simply put, due to the broader conditions that the foreign world presented (Gerdau 2001, 164-165).

Since the group needed to learn, the management of the acquired firm was completely controlled by the headquarters, a center-controlled mandate. It was a micro steel factory, with a seven thousand tons of steel production capacity, run annually by an obsolete technology. The former capacities acquired by the group: technical reforms, technological modernization and goods improved were transferred to this first FDI, seeking for the results with this experiment, characterizing internationally transferable FSAs that would create another FSA that would also be transferable later. This highly educational experience shaped the executives who would be involved in the acquisition of a Canadian steel factory, an entry gate for the North American market<sup>3</sup>.

The second FDI was the acquisition of Courtice Steel, in 1989, almost a decade since the Uruguayan experience (Gerdau 2001, 159). The group advanced its own learning process, since it would operate a workforce with a different language and culture from their headquarters in Brazil. From there they would deal with the correction of operational management and control labour conflicts derived from union pressure. The group started a shift in the governance pattern, maintaining the original executives in their management places, including the former CEO, who would share the management with Brazilian executives who had trained in Uruguay and new executives who would start their own learning experience in a new context. Among such beginners were fifth generation members of the Gerdau family, which would eventually run the group. A major mandate liberty was secured by the parent firm.

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<sup>3</sup> So, this FDI had not a market seeking objective, since the Uruguayan market was already supplied by Gerdau's export, as expressed by Barbosa (2004, 98).

I characterize such a phase as a learning phase, since it was during this period that Brazilian executives learned different styles of management of the already known technological base and established a relationship with distinct workforce, managing cultural and union conflicts, more than merely seeking market; it is more appropriately characterized as strategic-asset seeking, especially in Canada, sharing capabilities with native employees<sup>4</sup>.

When the Group acquires assets in South America and Canada in the early nineties, Gerdau had a great steel market at its disposal. The apparent use of crude steel in America in 1990 was 143 million tons and it was estimated that nearly 37% was the long steel demand. Gerdau would reach a production level of 2.4 million tons that year (WSA 1993, 54; 1998, 78-79; Vieira 2007, 339). The long steel market in North America was seventeen times of the company's production; South America's was five times bigger. By the end of the century, the group would expand strongly into these two geographical areas, focusing its expansion in the United States' economy, since its biggest market in the Americas would allow for a greater diversity in the forms of growth.

The Latin American expansion coincided with the strong growth of the regional apparent steel demand since the late eighties. The demand jumped from 15 million tons in 1989 to 35.7 million tons in 2000 (WSA 1991, 41; 2001, 85), more than doubling in size in one decade. The group succeeded in entering in three South American economies with a market share above 15% before its great global competitors: Chile, Colombia and Peru. In the other economies, Argentina, México and Venezuela, that had an apparent annual steel demand level above three million tons, the entry was marginal. The market share in those markets did not surpass five

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<sup>4</sup> As opposed in part to Barbosa (2004, 99), which emphasized only the market seeking objective.

percent, since its global competitors came in early into these markets (Azpiazu, Basualdo, and Kufas 2005, 100; Soto Flores and Solé Parrellada 2001, 100; Giacalone 2008, 14).

When seeking markets in Latin America, the group took the same mini-mill technological route, that is, to produce long steel, maintaining its growth inside its historical specialization area. Such condition would change with the entry in the United States steel market. Because of the size of its market, the possibility of diversification to other technological bases and other market areas became reality.

Before this event, a fortuitous experience caused the group to ingress in a new market area and bring to the company a totally new system of governance, characterizing this FDI as specific-asset investment, not sought. Manitoba Rolling Mills (MRM) was a Canadian mini-mill in a market niche of long steel for the rail industry, agricultural machinery and elevator guides. The group was unaware of the existence of MRM up to this point. It was a medium scale factory, modern, with good financial indicators. Despite that, its executives did not see how competition could be faced without the support of a great steel group; thus, in 1995 MRM executives reached out to Gerdau with a proposal that their assets be acquired by the group. Gerdau incorporated yet one more management system and, since MRM produced such positive outcomes, the group granted plain mandatory to local managers. The group would deal simply with the human resources interchange for the system integration with the headquarters system (Gerdau 2001, 201; Sommer, 2006). With this plain mandate, Gerdau MRM was established in 1995 and in 2000 entered into two joint ventures for market niches, the trailer I rebar and guide elevators (Gerdau 2002b, 49)<sup>5</sup>.

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<sup>5</sup> Again, it is opposed to that quoted by Barbosa (2004, 100) because, rather than a merely market seeking, MRM was a learning school for new form of governance, which, consequently, brought a new market niche.

In 1999, the group finally entered the United States steel market, with the acquisition of the third biggest long steel producer, Ameristeel, which consisted of four steel factories and eighteen service centers for cutting and bending bars. This acquisition put to the test the group's expertise in financing its own acquisition: 88% of loans in a medium term (Lannes 2005, 358). Three years later, another fortuitous fact: the fourth biggest Canadian steel producer and the first in mini-mill route, Co-Steel, proposed a merger to the group, which increased its Canadian steel market share two and a half times, from 8,2% to 21,4%, only with stock exchange (Gerdau 2003b, 7; Lannes 2014, 157). From this point on, the group grew in the United States, acquiring two of the three biggest long steel producers, North Star in 2004 and Chaparral Steel in 2007 in addition to other smaller steel producers, consolidating itself as the second biggest long steel producer in this country<sup>6</sup>. Chaparral's acquisition showed the Gerdau's financial expertise, another internationally transferable FSA: 7% of this investment was cash (Susin 2009, 56). In 2007, the Group acquired the second biggest special steel producer, excluding stainless steel, the MacSteel. From 2004 to 2008, it expanded its secondary steel processing in the center of the United States by acquiring six services centers. In the same period, it reinforced its scrap supply by acquiring two recycling units in United States and one in Canada. As the group acquired new factories in long and special steel production, it extended itself vertically to unsure enough demand and raw material supply, a support investment. The conquest of the western market was achieved by means of the acquisition of Pacific Coast Steel, a supplier of steel structures for infrastructure constructors (Gerdau 2014a, 19; Lannes 2014, 158). Over the span of one decade, the Gerdau Group established itself in the United States steel industry, with a strong presence in the long and special steel markets, by horizontal and vertical integration.

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<sup>6</sup> With 15% of the raw steel capacity in the long steel industry sector, Nucor accounted 20% in 1996, according to Hall (1997, 367-375) data.

North American operations reached the maximum group total production level of 46% in 2005, the year when all foreign operations reached half of group total production. Out of the 29 million tons of long steel total produced in North America in this year, the group was responsible for a fifth of that: 6 million tons. The Gerdau Group became then one of the most internationalized enterprise in Brazil (WSA 2008, 42; Gerdau 2005c, 1; KPMG 2008, 12).

**Table 2.** Gerdau main FDI in steel plants and other units from 1980 to 2016

Year	Company	Country	Technological route	Form of investment
1980	Laisa	Uruguay	EAF/R	A
1989	Courtice	Canada	EAF/R	A
1992	Indac/Aza	Chile	EAF/R	A
1995	Manitoba Rolling Mill	Canada	EAF/R	A
	Bradley Steel	Canada	-	JV
1997	Sipsa	Argentina	R	A
1998	Sipar	Argentina	R	P
1999	Ameristeel	United States	EAF/R	A
2000	SSS/MRM	Canada	-	JV
2001	Birmingham	United States	EAF/R	A
2002	Co-Steel	Canada/US	EAF/R/TSC	M/JV
2004	North Star	United States	EAF/R	A
2005	Diaco	Colombia	EAF/R	A
	Sidenor	Spain	EAF/R	A
	GSB	Spain	EAF/R	A
2006	Sheffield	United States	EAF/R	A
	PCS/Bay Area	United States	EAF	JV/A
	Siderperú	Peru	BF/BOF/EAFR	A
2007	Chaparral	United States	EAF/R	A
	Sizuca	Venezuela	EAF/RL	A
	INCA	Dominican Republic	R	JV
2008	Sidertul	Mexico	BF/BOF/R	A
	SJK Steel	India	BOF/R	JV
	Corsa	Mexico	EAF/R	A
	Estructurales	Mexico	EAF/R	JV/G
	CCAA	Guatemala	EAF/R	A
2010	MacSteel	United States	EAF/R	A
	Tamco	United States	EAF/R	A

Abbreviations:

Technological route: BF-Blast furnace; BOF-Basic oxygen furnace; EAF-Electric arc furnace; R-Rolling; TSC-Thin slab caster Forms of investment: A-Acquisition; G-Greenfield; JV-Joint venture; M-Merger.

Sources: Gerdau 2001, 2001a-2010a, 2001b-2010b; compiled by the author

After a half decade of rapid growth in North America, the group started to seek other continents and other markets. In 2006, it gradually acquired the biggest special steel producer in Spain,

Sidenor, enabling its entry into the European market. The Group dominated the special steel market share in Brazil by acquiring Sidenor's assets. In 2007, the group started operating in India, through a joint venture process (Lannes 2014, 158).

The 2008 global economic crisis put a brake on the group's expansion, when the group were the 13<sup>th</sup> largest steel enterprise in the world (Table 3). The reduction in sales revenues and the reduction in the return on investment would lead not only to a reduction in investment, but also an increase in disinvestment.

**Table 3.** The biggest world steel producers, in million metric tons, 2008

ArcelorMittal	Nippon Steel	Baosteel	Posco	Hebei Steel	JFE	Wuhan Steel
103.3	37.5	35.4	34.7	33.3	33.0	27.7
Tata Steel	Jiangsu Shangang	U.S. Steel	Shandong Steel	Nucor	Gerdau	Severstal
24.4	23.3	23.2	21.8	20.4	20.4	19.2

Source: (World Steel Association 2017)

In nearly three decades of internationalization by FDI, its production grew seventeen times over, reaching the level of 19 million tons in 2008. (It has stagnated ever since). In 2009, the net sales decreased 37%, at current prices, and only would resume its former level a half decade later. It would do so by a decelerating rate, so that the sales would decrease again in 2016. Meanwhile, direct sales costs increased more than sales values, decreasing the profit gross margin, thus threatening the group performance. With values above 25% from 2000 to 2008, such margin decreased quickly since the crisis, reaching 9.2% in 2016, pushing down the net profit margin to nearly zero. Net profit margins went from 10% in 2000-2008 to 0.1% in 2016, not accounting for the cost of impairment of assets, since it put a consolidated loss to the group in 2015 and 2016. The return on investment, measured by the return on equity, dropped from 40.1% in 2006 to 4.6% three years later and -19.1% in 2015. Steady growth was threatened by this new economic scenario and in 2015 the group announced the 2022 Gerdau Project, whose main objectives were to simplify internal processes and structures, to modernize the group's

culture, to reevaluate the performance of all its assets and to develop new business opportunities. This was the remedy against the crisis, whose cycle was not over yet. By reevaluating its assets, in 2016 the group began a process of equity reduction, selling Sidenor in Spain, corporate interests in Guatemala and Honduras, mineral coals operations and deposits, in addition to one steel factory in Colombia and some mill factories in United States (Gerdau 2000a-2016a; 2015c, 9; 2016c, 37).

In 2017, the group announced the separation between capital property and management (Gerdau 2017). The fifth familiar generation would retire from the executive tasks on the board of directors, concentrating its effort on the administrative board. The new executives of the board of directors were coached in-house, who were trained within the group entrepreneurial culture, which allowed and would allow the appearance of inner management services necessary to grow.

### **Final comments**

Despite the recent crisis, the Gerdau steel group has had a history of the growth since the acquisition of the first factory in February 1948. The production of long steel was the company's specialization area and its core business. It grew by horizontal integration for three decades, based on acquisitions, after which vertical integration started, when it needed new raw materials and markets.

After five decades of growing at a yearly rate of 11% when the local market grew at only three percent, the potential for growth resided in exporting to foreign markets and FDI (*Hypothesis 2*). The Group's internationalization effort accelerated in the first decade of the XXI century after nearly two decades of gathering know-how through foreign acquisitions. This endeavor was rewarded with increased market shares in both the United States and Latin America. Even

though the Group has merged and engaged in joint ventures a number of times, most of its growth is mainly attributed to acquisitions, revealing the importance given by this family group to maintaining total control of its capital management. Since the nineties, the group has added special steel and flat steel to its specialization area. The former has enabled them to ingress the international market and the latter the domestic market. Whereas the technological base was little impacted by the implementation of special steel production, it was the flat steel production that completely changed the productive base. It was the implementation of integral steel production that would increase its verticalization. Despite its accelerated diversification to other specialization areas, the original area still maintained 70% of the group productive capacity (Gerdau 2016b, 49) (*Hypothesis 1*).

To each step in the growth strategy corresponded a necessary change in the administrative structure and values. The company shifted from functional to multidivisional structure, exercising a global system of control that would allow more decentralized decision making, resulting recently in the family decision to depart from positions in direct management. The group strategy to incorporate distinct management systems from acquired firms contributed to the separation of capital property and management which allowed distinct mandatory grades to subsidiaries, monitored by the global system of control. Furthermore, the firm's values were upgraded, despite the fact of contradictions with workforce (*Hypothesis 3*).

The group expansion into the global steel market was possible because of internal cumulative competitive advantage created in the process. Some of these advantages seemed to be the source of operational and financial management competitiveness. The first allowed for the creation of operational know-how expertise in the original steel specialization area, mainly in process procedure. The latter allowed for access to alternative sources of funds, that is, the group went

from utilizing the financial system to being in the stock exchange market. Such advantages are idiosyncratically built, rare and imperfectly replicated, the ownership specific asset and externally transferable FSA (*Hypothesis 4*).

Since long steel is a product with low possibilities of differentiation, the firm sought markets to increase production scale. In some situations, it did seek natural resources, withdrawing from those markets when the expected results were not produced. Colombia was one of those markets. In United States, it sought support and specific assets. Spain included seeking specific assets, but it was later discarded. Some assets located in Peru and in Argentina helped improve operational efficiency however these weren't predominant factors in their acquisition (*Hypothesis 5*).

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