# The Gerdau Group: The Creation of a Global Competitor

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**Abstract**

The Gerdau Group is today one of the largest Brazilian multinational corporations. The main objective of this study is to analyze the internationalization of this group. The hypothesis is that foreign direct investment (FDI) serves as a driver for potential business growth as well as for the diversification of activities, whose objectives include the search for markets, natural resources, efficiency, and strategic resources. The principal results confirm the hypothesis, demonstrating that new FDI and diversification were necessary when growth was limited and led to the positioning of the group as the 14th largest world steel manufacturer.

Keywords: Brazil, multinational enterprises, internationalization, direct investment, steel industry.

**Acronyms**

| | |
|---|---|
| EAF | Electric arc furnace |
| FDI | Foreign direct investment |
| GBS | Gerdau Business System |
| MMT | Million metric tons |
| MMTA | Million metric tons annually |

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| | |
|---|---|
| MRM | Manitoba Rolling Mill |
| MT | Millions of metric tons |
| MTA | Millions of metric tons annually |
| OLI | Owner, location and internalization |
| PCS | Pacific Coast Steel |
| SSS | Standard Steel Specialty |
| TSC | Thin slab casting |
| UFPR | Federal University of Parana (Universidade Federal do Paraná) |
| UFRGS | Federal University of Rio Grande do Sul (Universidade Federal do Rio Grande do Sul) |
| UFV | Federal University of Vicosa (Universidad Federal de Viçosa) |
| UNICAMP | State University of Campinas (Universidade Estatal de Campinas) |

## INTRODUCTION

When Curt Johannpeter was planning a strategy for expanding the River Plate steel works at the beginning of 1954 and considering the infrastructural obstacles facing the plant located in central Porto Alegre, I do not think that he suspected that a half century later his descendants would be running one of the largest steel companies in the world. At the time, the small steel plant, with a production capacity of just 11 MTA, used an EAF to produce liquid steel from scrap, necessary for drawing the wire, to produce the raw material needed for the production of nails, the principal product of the Companhia Fábrica de Pregos Pontas de Paris, the owner of the iron and steel works (Gerdau 2001, p. 24).[1]

Through a strategy of backward vertical integration as a response to raw material supply bottlenecks, the steel company gradually became the principal business of the Gerdau Johannpeter family. A decade after its first regional expansion, the Gerdau Metallurgical (Metalúrgica Gerdau) holding company began to plan its expansion nationally at a time when the center of the Brazilian economy, concentrated in the southeast of the country, was expanding rapidly as a result of the economic boom in the era of what was known as the **economic miracle**, between 1967 and 1973, seeking business opportunities in the dynamic center of the economy as well as on the national periphery. Two decades after the regional expansion, the holding company definitively entered the national market, expanding to the northeast and southeast of the country and consolidating its presence in the Brazilian steel industry by end of the 1970s as the Gerdau Group, with production of more than a million tons (Gerdau 2001, p. 263).

The first petroleum crisis led to an economic slowdown in Brazil. Meanwhile, the military government through its II National Development Plan was able to maintain a rhythm of growth at levels lower than those during the **economic miracle** until 1980, when the drying up of international financing hit Brazil. These developments were enough for the enterprise to grasp the situation, realizing that expansion within Brazil, despite the existence of opportunities on the national market, would be limited in the near future. A decade earlier, the Gerdau Group started to take measures to expand internationally. Its first experience in the management of a foreign branch took place in the neighborhood: the Uruguayan market.

1. The first investment in the industrial sector through the accumulation of commercial capital by the pioneering German immigrant Johann Gerdau was the Companhia Fábrica de Pregos Pontas de Paris. This company was purchased in 1901 and was the responsibility of the second generation of the family through the oldest son, Hugo Gerdau. After his death, his son-in-law Curt Johannpeter took charge of the management of the nail company and consolidated backward verticalization through the steel industry. His four sons, Germano, Jorge, Klaus, and Frederico were in charge of national and international expansion. The fifth generation, André and Cláudio Gerdau Johannpeter, are responsible for the firm's recent international expansion.

The 1980s were a lost decade for the Brazilian economy, with a "stop and go" rhythm, which lowered the growth rate. The opportunities that opened up during the first half of the decade increased the presence of the group on the national arena, augmenting its participation in markets in the northeast and southeast, especially in the state of Minas Gerais, the birthplace of the Brazilian iron and steel industry. In total, the group acquired seven factories and its volume of production of crude steel reached 2.4 MMT in 1989. It became part of a set of large international competitors when it almost doubled its production within a decade (Gerdau 2001: 173-194, 263; WSA [a]1990: 2).

During these years, the Gerdau Group not only took advantage of opportunities that opened up in Brazil but also devised strategies to penetrate the second largest market for steel in the world and the largest in the Americas at that time: the United States. The opportunity came on the border of this country – in 1989, in Canada.

In the 1990s, the Brazilian economy underwent restructuring, characterized by a new economic role for the state, economic opening, and stabilization of inflation. The withdrawal of the state from the productive sector was achieved through the implementation of a policy of privatization. In the steel sector, this was accomplished through the dismantling of Siderbrás. The Gerdau Group took advantage of this opportunity not only to acquire a larger share of the domestic market of long steel, with 47% of total production (Gerdau [d]2000: 17) but also to penetrate the special steels market. Internationally, the group began its expansion into the North and South American markets, with acquisitions in Chile, Canada, and, finally, the United States, reaching 7.1 MMT of crude steel in 2000, and a ranking of 25th in the world (WSA 2010: 11) when it tripled its production within a decade.

In the 21st century, the external expansion of the group has been more aggressive, with a set of acquisitions that marked its consolidation in the U.S. market, the penetration of markets in the Caribbean and Central America, diversification to special steels in Europe, and entry into the Asian market. In 2010, the group was already the tenth largest in the world, with a production of 18.7 MMT of crude steel (WSA 2010: 1), doubling its steel output from the previous decade. Since 1980, when it began its process of internationalization, the production of the group has grown by 14 times.

This is the historical narrative that this paper seeks to explain, utilizing the contributions of industrial organization theory, which are discussed in the next section. Then, the process of industrialization of the group is interpreted via DFI. The conclusions reflect on the solid success of an entity of valorization of hundred-year old capital.

## REFLECTING ON GROWTH AND INTERNATIONALIZATION

The bases of the process of growth through the diversification of activities were established by Penrose (1995: 104). Enterprises start from a particular technological base to serve various segments of the market. Continuous interaction with the market leads to the accumulation of knowledge regarding the conditions of supply and demand that lead an enterprise to innovate, generate sales strategies, and achieve profits – the essence of the process of valorization of capital. Continuous learning about the technological base through the merging of productive and administrative processes takes place based on routines that gradually create abilities, which then generate capacities that develop competencies that are established internally by the firm and permit the establishment of its area of productive and market specialization (Nelson and Winter 1982: 74; Ansoff 1977). These capacities developed internally through processes and products determine the singular advantages of the firm in the areas of technology, organization, management, marketing, and finance – the ownership-specific assets discussed by Dunning that permit the enterprise to exploit these advantages as it expands. The reference here is to productive and management services developed internally and which constitute reserves for expansion. This is precisely the area of specialization that constitutes the principal business of the enterprise, its core business, which gives it greater certitude when investing capital and, therefore, reveals the path to growth, which appears as a horizon of opportunity for accumulation. New technologies and new products and markets close to the area of specialization constitute the great majority of expansions, which, for this reason, are called concentric (Penrose 1995: 111; Dunning 1980: 10).

Guimarães proposes that growth in the area of specialization is conditioned by the disjuncture between the potential of a firm and the growth of the market. There is an absolute and relative limit in the expansion of the firm's current market once the sector of activity is more concentrated, which drives the firm in the direction of new markets, with the same technological base or a new one. When the limits are fixed by the gap between the expansion rate of the national market and the firm's growth potential, the world market appears as a natural "drain" for the investment potential of the enterprise, primarily as an exporter of merchandise and later as an exporter of capital (Guimarães 1986: 150). But if the internal market is sufficiently large, it is possible to increase productive specialization and enter market niches that involve optimal units of capital. One can expect to find this Smithian perspective primarily in the U.S. market and less so in peripheral markets due to size and productive diversification.

Dunning's contributions to the analysis of external expansion of enterprises was to emphasize the importance of possessing advantages, strategic objectives, and phases of

internationalization (Dunning 1980: 9-11; 2000: 163-165). The advantages described by his OLI paradigm (ownership, location, and internalization [specific assets, attractive localization, and internalization of activities]) constitute the determinants of expansion while strategies are restricted to four principal objectives: market seeking, resource seeking, efficiency seeking, and strategic asset seeking, which more recently has been intensively incorporated into the search for knowledge assets around the world and their institutional integration (Dunning 2000: 169).

The global acceleration of the flow of FDI in the last two decades of the 20th century was concentrated in mergers and acquisitions, whose objectives, in addition to market shares, was the expansion of strategic technological, managerial, and business assets (Dunning 2003: 280). The advantages of possessing specific assets is primarily linked to the management of technology, product and process innovation, their management, the capacity to access credit from third parties, the brand, intersectoral relations, the supply of raw materials, and the distribution of products. That is to say, these advantages are related to a whole set of competencies and capacities that would be increased with internationalization (Seppola 2002: 3), leading to a superior level of competencies but also the entrepreneurial capacity to spot businesses prospects on the horizon of opportunities.

The advantages of localization are not only related to the size of the market, its rate of growth, and its reserves of resources – whether natural or created by the productive apparatus – but also to the structure of demand and macroeconomic and political conditions.

Advantages of internalizing activities in the structure of the firm are more closely linked to the exploitation of the firm's own advantages, such as specific assets, which permit the enterprise to earn extraordinary profits due to its idiosyncratic character, whose capacities are still contained within the firm, justifying the permanence of the activity within its borders (Langlois and Robertson 1995: 41-42).

Objective advantages can be translated into cognitive management competencies that are provided by the productive services that human resources contribute to the firm and which largely constitute tacit competencies, so that all individual competencies, in order to also become competencies of the firm, should be mobilized and transferred to the firm at its various levels. Thus, the enterprise, as a collective system of levels of activity, can learn and generate its socially incorporated institutional competency (Lam 2000: 488). From the factory floor to central management, objective advantages are realized in the development of the organizational structure, with its different levels of authority, its lines of transmission of information and its data flow (Chandler 1972: 14).

On the other hand, FDI can be carried out by the enterprise itself or can be a joint activity with other capital through joint ventures or other cooperative endeavors – expansion strategies which have become more important since the last decade of the 20th century, i.e. FDI of developing countries in industrialized countries (Dunning 2003: 284). The logic of cooperation does not solely consist in access to new technological bases and to new markets with new products – a task that is less efficient when carried out only because of the absence of relative technical capacities – but also in reducing uncertainty and occupying spaces in the market, erecting barriers to entry (Kogut 1988: 231; Buckley and Casson 1988: 114). Cooperation and collaboration do not impede competition; on the contrary, they increase it, promoting innovations and new creative destructions; experiences in the steel industry are actually full of examples of "marriages" between cooperating firms (Dunning 1994; Possas 1999: 54-55; Mangum *et al.* 1996: 2).

When expansion resulting from a growth strategy takes place, the enterprise is forced to change its organizational structure. Vertical and horizontal growth not only requires productive competencies and the distribution of goods but also the management of all these activities, which puts the large enterprise in the position of having to allocate capital in what Chandler calls "three-pronged investment" or what Saes refers to as triply articulated investment. The change from a simple hierarchical structure to a multi-unit, multi-functional structure made up of a set of industrial and commercial units geographically dispersed around the word is a challenge that Chandler found in the case of the U.S. industrial development (Chandler 1978: 14, 1994: 8; Saes 1999).

The interpretive proposal consists in the explanation of the trajectory of the firm, taking into account all these theoretical contributions.

## THE INTERNATIONALIZATION OF THE GERDAU GROUP

Long before its possibilities of expansion on the Brazilian market were exhausted, Gerdau had established strategies for external expansion, starting at the end of the 1970s. Their fundamental objectives were to conquer the U.S. market. Based on limited international experience managing a mini mill plant in Uruguay for almost a decade, the group first aimed at the North American market for long steel, starting with Canada. Later, after a decade of experience in conditions that were radically different than those existing in Uruguay (the location of its first foreign venture), Gerdau entered the U.S. market. Entry into North America was complemented by other ventures in all of Latin America, from Chile and Argentina to Mexico and the Caribbean. The North American experience, like the Brazilian, demonstrated the strategic necessity to enter new markets such as Europe (with special steels) and Asia (with long steel and final structures of special steel) (Table 1).

**Table 1**
**Investments of the Gerdau Group in Steel Plants outside Brazil, 1980–2010**

| Year | Company | Unit or City | Country | Technological Roadmap | Investment (millions of US dollars) | Type of investment | Production Capacity (MT) | | | Products |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | A* | B | C | |
| 1980 | Laisa | Montevideo | Uruguay | EAF/L | - | A | 7 | 100 | 80 | MB/C |
| 1989 | Courtice | Cambridge | Canadá | EAF/L | 52.0 | A | 250 | 330 | 290 | MB/SQB/C |
| 1992 | Indac | Santiago | Chile | EAF/L | 3.0 | A | 18 | 490 | 470 | BB/C/DS |
| | Aza | Santiago | Chile | EAF/L | 7 | A | 25 | | | |
| 1995 | Manitoba Rolling Mill (MRM) | Selkirk | Canada | EAF/L | 92.5 | A | 300 | 430 | 360 | B/EGR/SPS |
| | Bradley Steel | Winnepeg | Canada | - | 1.5 | JV | - | - | - | MIB |
| 1997 | Sipsa | Villa Mercedes | Argentina | L | 10.0 | A | 75 | - | 250 | MB/C |
| 1998 | Sipar | Pérez | Argentina | L | - | P | 180 | - | | |
| 1999 | Ameristeel | Charlotte | United States | EAF/L | 262.0 | A | 1.800 | 417 | 318 | MB/C |
| | | Jacksonville | | EAF/L | | | | 581 | 581 | BR/C |
| | | Jackson | | EAF/L | | | | 608 | 544 | MB/C |
| | | Knoxville | | EAF/L | | | | 499 | 472 | C |
| 2000 | SSS/MRM | Steinbach | Canada | - | - | JV | - | - | - | EGA |
| 2001 | Birmingham | Cartersville | United States | EAF/L | 48.8 | A | 400 | 840 | 580 | MB |
| 2002 | Co-Steel | Whitby | Canada | EAF/L | _ | F | 2.415 | 900 | 730 | MB/C |
| | | Sayerville | United States | EAF/L | | | | 730 | 600 | MB/C |
| | | Perth Amboy | | EAF/L | | | | 816 | 726 | WR |
| | | Gallatin | | EAF/TSC | | JV | 700 | - | 1.800 | HRC |
| 2004 | North Star | Calvert City | United States | L | 308.0 | A | 300 | - | 295 | MB |
| | | Saint Paul | | EAF/L | | | | 520 | 420 | MB/SQB/C |
| | | Wilton | | EAF/L | | | | 320 | 320 | MB/C |
| 2005 | | Beaumont | | EAF/L | | | | 771 | 726 | C/WR |
| | Diaco | Tuta | Colombia | EAF/L | 75.2 | A | 300 | 710 | 850 | MB/SQB/C |
| | Sidelpa | Yumbo | Colombia | EAF/L | 10.6 | A | 50 | - | - | - |

| Year | Company | Unit or City | Country | Technological Roadmap | Investment (millions of US dollars) | Type of investment | Production Capacity (MT) | | | Products |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | A* | B | C | |
| 2006 | Sidenor | Basauri | Spain | EAF/L | 340.2 | A | 436 | 735 | 370 | SQB |
| | | Reinosa | | EAF/L | | | | 240 | 160 | SQB/FS/LC |
| | | Victoria | | L | | | | - | 200 | SQB/WR |
| | GSB | Azkoitia | Spain | EAF/L | 157.0 | A | 200 | 175 | 395 | SQB |
| | Sheffield | Sand Springs | United States | EAF/L | 187.0 | A | 600 | 540 | 470 | MB/C |
| | | Joliet | | L | | | | - | 70 | MB/HSS |
| | Pacific Coast Steel (PCS) | San Diego | United States | - | 104.0 | JV | 200 | - | - | C |
| | Bay Area | Napa | United States | - | | | | - | - | |
| | Siderperú | Chimbote | Peru | BF/BOF/EAF/L | 203.1 | A | 500 | 650 | 960 | PI/B/MB/C |
| 2007 | Chaparral | Midlothian | United States | EAF/L | 4.200.0 | A | 2,500 | 1.500 | 1.400 | MB/SQB/C |
| | | Petersburg | | EAF/L | | | | 1.000 | 1.000 | HSS |
| | Trefilados Urbina | Villareal | Spain | - | 26.2 | A | - | - | - | SDS |
| | Sizuca | Ciudad Ojeda | Venezuela | EAF/L | 92.5 | A | 300 | 300 | 200 | C |
| | INCA | Santo Domingo | República Dominicana | L | 156.8 | JV | 300 | - | - | WR/MB/SS/DS/ LC |
| | Sidertul | Ciudad de México | Mexico | BF/BOF/L | 258.8 | A | 350 | 500 | 450 | MB/C/SS |
| 2008 | SJK Steel | Tadipatri | India | BOF/L | 71.0 | JV | - | 250 | - | WR/B/SQB |
| | Corsa | Tlanelpantla | Mexico | EAF/L | 110.7 | A | 150 | 160 | 250 | SS |
| | Estructurales | Ciudad Sahagún | Mexico | EAF/L | 400.0 | JV/G | - | 1.000 | 700 | MB/C |
| | CCAA | Masagua | Guatemala | EAF/L | 180.0 | A | 500 | 500 | 700 | MB/C/EWM/T |
| | | Jackson | | EAF/L | | | | 300 | 280 | SQB |
| | MacSteel | Monroe | United States | EAF/L | 1.500.0 | A | 1.275 | 520 | 490 | SQB |
| | | Fort Smith | | EAF/L | | | - | 535 | 495 | SQB |
| | Rectificadora del Vallés | Polinyá | Spain | - | 101.0 | A | 100 | - | - | SQB |
| | Vicente Gabilondo | Eibar | Spain | - | 14.0 | A | 30 | - | - | SQB |
| 2010 | Tamco | Cucamonga | United States | HEA/L | 166.4 | A | 500 | 470 | 460 | C |

**Abbreviations**

**Techonological Roadmaps**
BF Blast furnace
BOF Basic oxygen furnace
EAF Electric arc furnace
L Lamination
TSC Thin slab caster

**Forms of Investment**
A Acquisition
F merger
G Greenfield
JV Joint venture
S Shareholding

**Production Capacity**
A* Crude Steel at time of investment
B Crude steel (2012)
C Laminated steel (2012)

**Product**
B Billets
C Corrugated products
DS Drawn steel
EGR Elevator guide rails
EWM Electro welded wire mesh
FS Forged steel parts
HRC Hot-rolled coils
HSS Heavy section steel
LC Lamination cylinders
MB Merchant bars
MIB Metal I-beams
PI Pig iron
SDS Special drawn steel
SPS Special profile steel for tools
SQB Special quality bars
SS Steel slabs
T Tubes
WR Wire rod

Sources: Gerdau (2001, [c]2001-2010, [d]2001-2010); compiled by author.

## THE BEGINNING OF EXPANSION: THE URUGUAYAN AND CANADIAN EXPERIENCES

In 1970, Gerdau more than doubled its production in three years thanks to the economic boom which resulted from the First National Development Plan. At the time, it was in a phase of regional expansion: in 1968, it acquired a large company in the northeast of Brazil, Açonorte, which was responsible for its productive growth during 1968-1970, and constructed a large steel plant in Río de Janeiro, Cosigua, which started production in 1973, doubling its total production once again. Gerdau's potential for expansion was larger than the growth rate of apparent demand. Thus, if in 1967, its participation in the production of crude steel in response to domestic demand was only 2.9%, in 1970 it was 3.8%, and in 1973, it was already 5.3% (raw data in Vieira 2007: 338-339). Nevertheless, the strong expansion in internal accumulation, with total assets growing eightfold in real terms from 1968 to 1973, contrasted with the conservative culture of the company (Gerdau [e]1969 and 1974). Its chief executive, Curt Johannpeter, stated in 1970: "Despite everything, prudence dictates that we should not get carried away with euphoria [...]. It is necessary to be careful and do so with technical precision, without mistakes, without defects"[2] (Gerdau 2001: 66-67). In other words, it was necessary to plan for the future, knowing that it was uncertain.

This perspective is important for our hypothesis. Johannpeter saw great opportunities in the steel industry in Brazil for a company which already operated in the three most dynamic Brazilian regions – the south, the southeast, and the northeast – but from his vantage point of two decades as the head of this growing family-owned group, he also was aware of the typical uncertainty that existed in this country which was undergoing industrial development. His was a strategic, long-term concern.

Thus, when the oil crisis occurred in 1973 and reduced the rate of growth of the Brazilian economy, Gerdau maintained its own high growth rate and, in 1980, its production of crude steel was equivalent to 9.2% of the total apparent demand (raw data in Vieira 2007: 338-339). While there was still room to expand on the internal market in Brazil, the company already saw a need to think about internationalization.

Gerdau had been exporting products since the 1960s. For example, the Siderúrgica Laisa in Montevideo was one of Gerdau's clients, purchasing steel billets for lamination. Germano Gerdau Johannpeter was then the family's executive in charge of commercial

2. Translation by *Apuntes*.

activities and was responsible for opening negotiations with Gerdau's first international acquisition (Johannpeter 2007: 140). It would not be true to say that this first FDI was simply tactical, intended to take advantage of the market,[3] since the size of the Uruguayan plant was very small: 0.5% of the production of the group.[4] The attitude most coherent with the conservative culture of the group was that suggested by its principal executives: internationalization as natural growth and diversification of risk. At the time, the first acquisitions were those that top management considered "necessary rehearsals for the self-evaluation of the group in relation to conditions for operating in a broader and more challenging context"[5] (Gerdau 2001: 164-165).

Siderúrgica Laisa was the first foreign learning experience. The Brazilian managers and engineers that went to manage it had to modernize its technology, which required technical reform projects for machinery and for improving the quality of the products. New production processes were created and their analysis increased administrative efficiency and created new strategies for the Uruguayan workforce. This led to labor conflicts to which Gerdau had to respond, and labor contracts were signed (Gerdau 2001: 157-158). This "rehearsal" consisting of a decade of strategy resulted in the creation of human resources trained to offer in-house the world-class internal business and productive services that would be necessary for expansion in future years.

By the end of the 1980s, Gerdau was already prepared to increase its international activities as well as its internal productive services and its capital. During this decade, the real assets of the company had tripled and constituted the basis for internal and external financing. The second international acquisition, the Courtice Steel factory in Canada, for US$ 52 million, was equivalent to 7% of the assets of the company (raw data in Gerdau [e]1980 a 1989; Table 1).

This new "rehearsal" was characterized by almost the same processes of adaptation that occurred in the Laisa case but with changes in learning by central management. The great novelty in the technological base of Courtice Steel was its workforce, with the differences in language and culture. Expansion in areas of specialization included new, more specialized market niches: light long steel and long laminated steel for the construction and mechanics industries, a line of products in which Gerdau already had experience. Before the acquisition, there were problems of out-of-phase technology and conflictive labor relations, which caused financial problems. Gerdau tried to use the same strategies

3. This is the hypothesis of Ferreira (2007: 95).
4. 7 MT acquired versus 1.3 MMT produced in 1980 (Gerdau 2001: 156, 263).
5. Translation by *Apuntes*.

as in Uruguay but kept the principal Canadian executives at their posts for the first time (Gerdau 2001: 159; Johannpeter 2007: 141), including the president. Gerdau put at least three executives from their family to work in the factory, two of which would take over from their parents two decades later, inaugurating management by the fifth generation of the family. The adjustment of the management system was gradual, with intensification in interchanges of human resources in a relatively slow process of intermixing organizational and operational cultures. During this period, training of productive and managerial services reached a more developed level in which the group could do without hierarchical concentration in management.

The acquisition of Courtice Steel thus fulfilled the concentric strategic goal: maintain learning experiences and conquer market shares with similar technological bases, but in new areas of the market. This increased, albeit to a small extent, the areas of specialization of the firm. The group was already in North America with an eye on penetrating the U.S. market.

The plants in Canada and Uruguay were the first experiences in operational management abroad and the group was now clearly ready to expand its operations in the United States. Although they were strategically seeking markets, the first steps internationally were intended to acquire strategic knowledge of business management. If Gerdau's FDI maintained its south-south pattern during the first expansion wave of multinationals from the developing countries,[6] which was led by construction and energy companies (Villela 1983: 231), its strategy had the special character of acquiring experience and not expanding market share or searching for national resources.

## EXPANSION IN LATIN AMERICA

Gerdau's expansion in Latin America began in the Southern Cone in the 1990s, first in Chile and Argentina and then along the Pacific Coast and the Caribbean in the first decade of the new century. The company entered those markets that had a demand for over 2 MMTA or a strategic competitive position, as was the case of the Dominican Republic and Guatemala. The principal markets were Mexico, Colombia, Peru, and Chile – the first for the volume of apparent demand and the rest for the market share that Gerdau acquired.

6. The literature about FDI flows from Latin American coined the concept of the "wave" of FDI abroad during different periods. ECLAC (2005: 64) and Chudnovsky et al. (1999: 32-34) analyze three waves: 1970-1982 (FDI south-south), 1982-1990 (the debt crisis and growth stagnation) and 1990-2002 (economic opening and commercial blocks). For Casanova (2011: 23), the first two periods constitute the first wave (1970-1990) while the years 1990-2002 were the second (Washington Consensus), and the third wave started in 2002 (emerging markets).

In general terms, Latin America, with the exception of Brazil, went through a period of stagnation of apparent demand after the oil crisis and until 1990, with an average consumption of crude steel of 16 MMT. From then on, consumption increased, reaching a high of 50 MMT in 2007, before the crisis. Production, on the other hand, increased from 1970 on but slowed to a lower rate starting in the 1990s. Because of this, the region became an importer of steel, with the exception of Argentina and Venezuela (WSA [a]1987-2010). It was under these conditions that Gerdau was basically interested in markets.

This was, on the one hand, concentric diversification, generally restricted to Gerdau's historical technological strategy, but also included new technological bases in the 2000s and gradual verticalization, seeking to gain control of raw materials and of distribution.

The case of Chile, in 1995, clearly constituted a search for markets, albeit not entirely. The industrial structure was concentrated, under hegemony of the CAP Acero company, the only integrated steel works in the country, so that Gerdau's possibility to compete with national and foreign enterprises was in economies of scale. After the acquisition of two small Chilean plants and their environmental problems, in 1999, Gerdau constructed a new, larger, and more modern plant, Aza Colina, with five times the production capacity of long steel for construction and the metallurgical industries, which in 2000 constituted 65% of production and 43% of the demand for long steel in Chile.[7] If it was clear that Gerdau was seeking a market, it was less clear that Aza Colina was an internal school of engineering for factory construction, with Gerdau's engineers planning the infrastructure and technological base within its original route and seeking to achieve economies of scale that would be sufficient to compete with imports, whose growth threatened profit margins (Sommer 2006). The Argentine experience was based on the gradual acquisition of mills between 1997 and 2005; they were assets that had not been acquired by the competition. By the end of the 1990s, the Argentine steel industry was strongly oligopolized as a result of a process of industrial concentration that had been underway since the 1980s and there were no more companies using the non-integrated route because these plants had been sold in the 1990s (Azpiazu *et al.* 2005: 53), in a process in which Gerdau did not participate. The remaining sector was lamination in which there were 21 enterprises at the beginning of the 1990s. This limitation meant the group's lamination capacity stagnated at around 250 MTA, equivalent to 18% of the average long laminates in Argentina since the acquisition (Gerdau 2001: 203).[8]

7. The new factory had the capacity to produce 360 MTA of crude steel versus Chilean production of 557 MT and apparent demand of 845 MT for long steel (raw data in Gerdau 2001: 201; WSA 2010: 41, 76).
8. See the data on lamination in: WSA ([a]2007: 50, 2010).

With a hiatus of a decade, since its investments were concentrated in the United States, Gerdau entered Colombia in 2005. It was like another move on an international chessboard, with the group advancing less aggressively than two important competitors, Votorantim Siderurgia and ArcelorMittal. The Colombian economy had always been a net importer of steel but accelerated growth in apparent demand starting in the 1990s resulted in imports increasingly surpassing internal production. On the one hand, flat steel was only being produced in one integrated plant, Acería Paz del Río; on the other, the production of long steel was more decentralized but carried out in plants with limited installed production capacity. Gerdau acquired the assets of the large Colombian steel works, centralized in the 1990s by the Holguín group under the Diaco brand, and turned to increasing the size of the plants, seeking economies of scale, concentrating production, and later distributing billets to regional rolling-machines and coming closer to final consumer products with sheet cutting and bending services, in addition to special strategies for provision of raw materials. At the same time, Gerdau concentrated in the Tuta and Tocancipá units, with a promised capacity of 425 MTA, in order to explore economies of scale and closing the other factories (Gerdau [c]2008: 1; *Portafolio* 2009). Although it operated concentrically using a non-integrated route, consuming electrical energy and scrap iron, Gerdau also invested in coking coal, a raw material for the plants that made up the group, especially those in Brazil (Gerdau [c]2008: 2, [d]2012: 16).

In 2006, Gerdau entered Peru with the acquisition of the historic state steel company, Siderperú. Like the Colombian economy, the Peruvian economy had undergone accelerated expansion of apparent demand for steel but with a better response from the productive sector since the country became a net importer at the end of the 2000s. In this case, it was not only a question of competing for a market with demand that was similar to Colombia's but also of accessing the nearest regional markets such as Ecuador and Bolivia, or those farther away, in Central America and the Caribbean, because of the convenient location of the port of Chimbote; in addition, Gerdau wanted to engage in commercial exchanges between plants in South America to achieve greater efficiency. It is worth underlining that in the Colombian market, half of the demand was fulfilled by imports but with a structure that was very different than in Peru, since in the latter country the sector was a duopoly and the route was integrated. This was an amplification of an external concentric diversification to flat steel. The technological base called the Complejo Siderúrgico del Siderperú was integrated and more complex than the traditional mini mill plants, that is, with an old blast furnace, basic oxygen furnace, EAF, and laminators. In this case, what was needed was not just scrap and electric energy but also minerals from iron, limestone, and coal, which would create synergy with the Colombian plant. Nevertheless, the technological backwardness of Siderperú led Gerdau to begin a process of modernizing

the blast furnace, even shutting down its operations during the 2008 crisis and in view of the increases in prices of essential raw materials (Lannes 2013).

Gerdau entered Mexico in 2007, following the competition, within a non-integrated route. It acquired a small quota, less than 2% of the internal market, when it bought shares in Sidertul and 49% of Aceros Corsa (Gerdau [c]2008: 5). A decade and a half earlier, other large competitors, such as Hoogovens and ArcelorMittal, had already established themselves in the internal market during the process of privatization (Soto Flores and Parellada 2001: 100). In addition to this, there was external competition in the form of imports, which made up one-fourth of apparent demand. In 2006, demand rose to a high of 25 MMT, with imports accounting for 32%. This is the key to Gerdau's motives. The group knew that competition with imports required economies of scale. Thus, Gerdau drew up plans for a greenfield plant of 1 MMTA production capacity of crude steel production in a joint venture with Corsa, a company that was stagnating as a result of the crisis (Gerdau [c]2008: 6).

Gerdau made smaller investments in Venezuela, Guatemala, and the Dominican Republic in a search for more markets.

Thus, Latin America was a space that contributed resources and markets, which, during periods of growth and crises, became a space to seek efficiency among the factories of the continent. With the crisis of 2008, for example, the increase in the production costs of the integrated route led to the closure of various factories around the world, including the Siderperú's blast furnace, although the steel complex was maintained with imports of billets from Brazilian factories (Lannes 2013).

## EXPANSION IN NORTH AMERICA

The third external acquisition, in 1995, was not the result of an expansion strategy, but rather of chance, and therefore had a special significance due to the autonomy of business management during the post-acquisition phase.

That year, the executives of Manitoba Rolling Mill (MRM) sought out Gerdau and presented the firm with the possibility of acquiring controlling shares. MRM had a line of special steel for the railroad industry and also for agricultural equipment and elevators, areas with which Gerdau was not familiar. While the company was financially solid, it was clear that MRM was in no condition to keep up with the process of concentration in the steel sector and to incorporate new technology – it needed inflow of capital. The acquisition of MRM was a watershed in the pattern of foreign acquisitions by Gerdau, which consisted in management by Brazilian executives who were familiar with the standard Gerdau Business

System (GBS).[9] In the case of MRM, the management continued in the hands of the same executives, without the presence of Brazilian managers, which provided Gerdau with an interchange of managerial know-how between the subsidiary and the parent company (Sommer 2006).

With this autonomy, Gerdau MRM established two joint ventures for market niches. The first, in 1995, was for the production of metal I-beams through 50%-50% ownership of shares in Buhler Industries, which became Bradley Steel Processors. The second was in 2000, for the production of elevator guide rails, also a 50%-50% joint venture, this time with Monteferro Italy, creating the firm SSS/MRM Guide Rail and the brand Monteferro America (Gerdau [d]2002: 49). With the effective acquisition of MRM in June and the purchase of 50% of the shares of Bradley in November, the joint venture demonstrates the relative autonomy of MRM executives in the establishment of specific forms of cooperation in market areas that were different than those in which Gerdau had historically participated. The same occurred with Monteferro for a very specialized market niche: the installation of elevators in buildings.

During this period, Gerdau was just a small participant in the Canadian market, with a production capacity equivalent to 4% of average steel production in that country during the first half of the 1990s.[10]

When it came to Gerdau's expansion into the United States, there was a drastic change. Gerdau increased its vertical structure from the provision of raw materials to their secondary transformation, and extended its line of products to special and flat steel. During the first five years, it expanded its steel capacity in long steels, although it diversified to flat steels and, starting from there, began its vertical diversification. In less than a decade, from 1999 to 2007, Gerdau acquired 11% of U.S. production capacity of long steels, establishing it as the second largest steel company in this industrial segment, just after Nucor, which had a 18% share of the U.S. market in 1996 (data in Hall 1997: 367-375). Expansion in the United States was the result of a merger with the third largest producer of long steels in Canada and three acquisitions from among the five biggest producers of this type of steel in the country.[11] The merger with Co-Steel and the acquisition of Ameristeel, North Star, and Chaparral constituted an 83% expansion in the production capacity of long steels in

9. For more details see the section on "Organizational Changes."
10. Its production capacity was 550 MTA while average Canadian production was 13,805 MT of crude steel between 1990 and 1995 (see Table 1; WSA [a]2000-2005).
11. In Canada, the annual production capacity of long steel in MMTA was: Sidbec-Dosco, 1.5; in Dofasco, 1.35; and in Co-Steel, 0.9; in the United States it was: Northwestern, 2.4; North-Star, 2.35; Nucor, 2.07; Florida Steel (later Ameristeel), 1.58; and Chaparral, 1.5 (Hall 1997: 351).

8.2 MMTA. Smaller acquisitions - Birmingham Southeast Steel, Sheffield Steel, and Tamco – topped off investments in long steels.

In 1999, Gerdau acquired Ameristeel from Kyoei Steel, a vertically integrated company with four factories that produced long steels and 18 factories that produced short and double steels. Gerdau acquired 75% of the social capital of the company through a favorable financial maneuver in which it used bank loans and loans from the seller to acquire steel assets, demonstrating the competencies and consistent financial advantages it had developed internally: Gerdau paid 12% with its own capital, 38% with five-year bank financing, and 50% with ten-year financing from Kyoei itself (Lannes 2005: 358).

Later in 2002, Gerdau started to develop a regional structure. The large Canadian steel company, Co-Steel, proposed a merger, which gave Gerdau a new technological base and new market areas. Co-Steel carried out a joint venture with Dofasco to produce flat steel using a non-integrated route with a new thin slab casting (TSC) technology for fine flat steels coupled with EAF technology. The Gallantin Steel company was created in 1995, which provided hot-rolled coils with various grades of alloys and according to the specifications of each client, a flexibility that the non-integrated route permitted. In addition, its market areas include the automobile industry and home appliances (white goods). Under Gerdau's management, the merger brought the volume of production of flat steel to 1.4 MMTA, shared 50%-50% in the joint venture. This inaugurated Gerdau's presence in the flat steel market in the United States and it has remained at this level, as an option for the future. At the same time, the merger resulted in Gerdau's increasing its quota of the market with a small level of investment, since it took majority control of the new company with an exchange of shares (Gerdau [d]2003: 7).[12] Two years later, Gerdau negotiated for the steel assets of North Star in the United States which, in addition to the steel factories, included three drawn steel units and a ball mill, bringing with it the novelty of a forging technology for products for the mining industry that, until then, had been outside Gerdau's areas of specialization. The group bought these factories with cash, without having to depend on the capital of others (Gerdau [d]2004: F-18). In 2007, the group took an even more significant step when it negotiated for the assets of the large non-integrated steel plant, Chaparral Steel, whose scale of production included a product line of 230 items. This was Gerdau's largest acquisition and the most expensive: 2.8 MMTA of installed capacity for an investment of 4.2 billion dollars, 93% of which

12. In Canada, in long steel, the production capacity grew from 8.2% to 21.4% of the total long steel sector; in the United States, the increase was from 3% to 5.8%, according to data in Hall (1997).

was financed through bank loans (Gerdau [d]2007: 94), once again demonstrating the advantages of access to sources of capital.

A year later, Gerdau expanded the production of special steels when it acquired a controlling share of MacSteel, whose assets were returned to the group's division of special steels in North America, in the market areas of the automotive and mechanical industries (equipment for agriculture, construction, and the energy and defense sectors). This acquisition came on the back of the acquisition of Sidenor in Spain. North America had become an important area of business that was more relevant to the group than Latin America, with the exception of Brazil.

With this industrial structure, Gerdau's production capacity in North America was 12.1 MMTA of crude steel and 11.3 MMTA of laminated steel, with 81% in long steels, 11% in special steels, and 8% in flat steels (Gerdau [d]2010: 42). Although it had diversified to other technological bases close to its original technology, with their respective market areas, most of its activities continued to be in the core business of the group: long steels.

The growth potential of the group was also aimed at other links in the productive chain: secondary transformation and the collection of scrap in order to assure a guaranteed market and lower production costs.

Gerdau took a large step in a positive direction with its joint venture with Pacific Coast Steel (PCS), which was the usual cut-and-bend company. PCS was established at the beginning of the 1990s in San Diego, California, producing metallic structures for construction on the tilt-up model and for small structures. By the end of the decade, it already had a large plant for the production of metallic structures which allowed it to enter the market niches of infrastructure such as bridges, reservoirs, water treatment plants, public buildings, schools, and other buildings. Its specialization of providing made-to-order metallic structures brought it closer to its direct clients, that is, construction companies, and, as a result, the company expanded into the markets of the southern Pacific coast of the United States, with an installed capacity of 200 MTA of metallic structures. The joint venture with Gerdau, which went into effect in November 2006 – with the group acquiring 55% of the shares – made it possible for PCS to expand to markets on the whole Pacific Coast of the United States, and so it did. With PCS, Gerdau acquired three companies that provide metallic structures in the western region, seeking to establish links with their consumers in the construction industry. Later, between 2004 and 2011, Gerdau increased its presence in secondary transformation with the acquisition of five cut-and-bend steel companies, which, when added to the steel units already acquired, totaled 48 transformation units (Gerdau [a]2011: 25).

Gerdau´s move into secondary transformation expanded its areas of specialization and allowed it to come into closer contact with construction companies, understand the characteristics of demand in the area of construction of infrastructure and housing, participate in construction projects, and create solutions in metallic structures. In this way, it obtained extraordinary value from the commodity of long steel.

If forward integration was strategic for the group, so was the reinforcement of the provision of scrap. Between 2006 and 2011, Gerdau acquired three scrap collection companies which, added to the units acquired earlier, brought the total to 22 units for the acquisition of approximately 10 MMTA of ferrous raw materials. (Gerdau [a]2011: 25).

Thus, the Gerdau Group was part of the wave of south-north DFI from South America, which grew rapidly in the decade of 2000 (Casanova 2011: 23-25).

**ENTRY INTO EUROPE AND ASIA**

The rapid expansion of Gerdau in North America – with the exception of Mexico – made it clear to the group that in this region too, there would be limits on expansion in the future. This made it necessary to look to other parts of the world with a perspective for long-term growth and the globalization of the group (Johannpeter 2007: 163). Europe was one of these regions, Asia the other.

The entry into Europe took place through diversification to other technological bases and market areas, in the search for new strategic assets: cast and forged special steels for the automotive industry as well as the tacit competencies linked to these products. In 2005, Gerdau came to an agreement to acquire a stake in the Sidenor company with the Santander group and Sidenor executives in Spain.

Although Europe was the principal objective, there was also an important secondary effect: the assets of Aços Villares in Brazil, a company that produced special steels with an installed capacity of 1 MMTA in three Brazilian plants. Sidenor owned 58% of the shares of this company (Gerdau [d]2010: 109).

Gerdau's plan was to expand in the markets for special steels, especially for the automotive industry, and particularly auto parts. The group entered these new markets a decade earlier, in 1992, with the acquisition of the steel company Aços Finos Piratini in Brazil, Gerdau's only plant in this industrial sector. Sidenor would be an extension of this area of specialization in Europe; the company serves three areas of business: first, special steels including various long special steels (billets, ingots, laminated tires, steel forged and turned bars, among

others), steel for tools and stainless steels for the mechanics industry and auto parts; second, cast and forged pieces for various types of industries such as naval construction, generation of electrical energy, the fabrication of cement and the preparation of minerals, etc.; and the third, forged steel for engraving (component parts for gearboxes, transmissions, ball bearings, and engines) for the automobile and auto parts industries (Gerdau 2014).

Thus, Gerdau established a unique position in Europe in a new area of specialization, whose technological bases were significantly different to the non-integrated route of production of common long steels, with technologies for forging, extrusion, and engraving, which were still not well known within the company.

The second step in the Gerdau's expansion outside of the Americas took place in India, one of the largest markets for steel in Asia (after China, Japan, and South Korea), with exponential growth both in the demand for steel and in internal production.

In mid-2007, Gerdau entered into a joint venture agreement with the Kalyani Group, creating Kalyani Gerdau Steel. Kalyani is an Indian conglomerate with five areas of specialization (Kalyani Group 2012) and the joint venture was based on 45%-45% of the assets, for the production of long steels in the SJK Steel plant in Tadipatri (Gerdau 2007). After six years, this association ended and Gerdau went on to acquire the rest of assets during the term of the joint venture. In 2013, with 98.4% of the assets, Gerdau changed the name to Gerdau Steel India (Gerdau [c]2013: 2).

In this recent period, the pattern of Gerdau's DFI was more diversified, expanding the south-south and south-north model prevailing during the period of global economic growth and increasing commodity prices (Casanova 2011: 23).

## ACCIDENTS ALONG THE LINE

However, the group has not always been successful in its endeavors. The crisis of 2008 led to a plunge in its global net interest rate exposure of 80% in 2009, which led foreign investments to fall even more, reaching zero in 2011 and 2012. Gerdau's indicators of profitability fell overall (Table 2), leading to a deterioration in the terms of trade between the sale price of final products and the prices of raw materials, which resulted in a fall of 10.4 percentage points in the gross profit margin.

**Table 2**
**Gerdau Group profitability indicators, 2006–2012 (in percentages)**

| Indicator | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Average 2006-2008 (a) | Average 2009-2012 (b) | Difference (b) – (a) |
|---|---|---|---|---|---|---|---|---|---|---|
| Gross Profit Margin | 26.4 | 24.4 | 25.5 | 16.0 | 17.6 | 14.4 | 12.5 | 25.5 | 15.1 | - 10.4 |
| Operating Profit Margin | 17.3 | 15.7 | 19.1 | 7.6 | 11.5 | 8.1 | 6.2 | 17.4 | 8.4 | - 9.0 |
| Net Profit Margin | 16.5 | 14.1 | 11.8 | 3.8 | 7.8 | 5.9 | 3.9 | 14.1 | 5.4 | - 8.7 |
| Return on Assets | 13.5 | 10.4 | 8.4 | 2.3 | 5.7 | 4.2 | 2.8 | 10.7 | 3.7 | - 7.0 |

Source: Gerdau ([d]2006-2012); compiled by author.

Under these conditions of a general decrease in profitability, Gerdau restructured its operations, closing two factories in the United States and the Siderperú blast furnace. The plants in Sand Springs and Perth Amboy have been closed since 2009; Perth Amboy, which was acquired at the time of the merger with Co-Steel, operated at a production capacity of 900 MTA until 2005, when the plant was limited to the production of steel laminates on an increased scale of 1 MMTA of laminates, then it completely ceased operations in 2009; Sand Springs, which was acquired from Sheffield Steel in 2006 and operated at a production capacity of 600 MTA for only four years, ceased its operations in 2009. As a result of the crisis, Gerdau reduced its production capacity of crude steel by 1.3 MMTA and laminated steel by 1.5 MMTA, which surprisingly was not explicitly reported in Gerdau's annual reports (Gerdau [d]2006-2010). Having taken these measures, the group awaited improvements in global profitability, at the cost of unemployment.

Nevertheless, this decrease in profitability did not result in a deterioration in its finances, given that one facet of the group's corporate culture was financial conservatism. Its overall indebtedness began to decrease after 2002, when Gerdau reached its highest level of short-term indebtedness at 37% of its total assets. From then on, Gerdau substituted long-term for short-term indebtedness and increased its own equity. Despite the 20% fall in its equity, from 2008 to 2010, its average capital structure was comprised of 46% equity, 12% current liabilities (short-term), and 42% non-current liabilities (long-term). The capacity to meet short-term financial commitments increased in the decade of the 2000s, reaching an average of 2.7% in the three-year period 2008-2010; that is, the quantity of short-term assets available was almost three times the quantity of short-term

obligations (raw data from Gerdau [c]2002-2010). The decline in profitability barely affected the group's retention of profits, which were a source of later growth. This was the cause of the stagnation in direct foreign investments.

## ORGANIZATIONAL CHANGES

The accelerated growth of the Gerdau Group required internal organizational change. The enterprise was gradually integrated vertically and horizontally, a strategy that required structural changes. The organizational structure that existed in the 1980s had already gone beyond a simple hierarchy – it was a decentralized divisional structure with a clear separation between strategic planning and corporate execution, with a management board and a board of directors, which included the executive managers. Below these were the manufacturing plants, which had their own departments of production, sales, finances and accounting, and personnel (Gerdau 2001: 95).

Diversification – geographically and of the product line (with the incursion into the special steels markets) – made it necessary to create a more complex organizational structure (even on the top level of management) that was multi-unit and multi-functional, mixing operational decentralization with a relative interconnection to general functional aspects. Thus, in 2005, Gerdau created three lines of support for the central administration: business operations, functional processes, and support committees (Gerdau [c]2005: 13).

Business operations were organized as a multi-functional structure and were created according to product diversifications and geographical areas. This organization underwent changes in 2000 and 2010. In the first structure, there were five business operations, three by type of product – long steels, special steels, and flat steels – and two by geographic areas – North America and South America. In 2007, the joint venture in India became the sixth business operation, apparently disproportionate in relation to the other areas. Two years later, Gerdau simplified the business areas, with just one operation defined by product line – special steel – which included the Indian unit and three operations according to geographical areas: Brazil, North America, and Latin America, to which operations in the southern United States were added (Gerdau [b]2012: 8).

The functional processes encompass all the general functions of the enterprise, from industrial operations to sales, grouped into four vice-presidencies that coordinate functional execution among the business areas in order to maintain a uniform global performance pattern, facilitating control processes.

Finally, the board has two support committees – one tasked with strategy and the other with excellence. The first is responsible for analyses and proposals for long-term strategies and the second, with the dissemination of best practices in all functional aspects.

Below these business areas, there are the manufacturing units which are legally constituted enterprises or a part of such enterprises. For this reason, some, such as Ameristeel, have their own administrative boards and boards of directors. This means they have a certain degree of autonomy. Coordination among all the units is carried out through a system of global uniformization of procedures, the GBS. This is an open system that "identifies, evaluates and incorporates new practices that have a significant effect on operations"[13] (Gerdau [b]2011: 16). This makes it possible to establish a global standard of procedures for the group as a whole and to integrate it through a socially constructed process of institutional parameters. Thus, from its headquarters in Porto Alegre, Gerdau controls the units of the group with a sense of autonomy within a system of functional parameters. This was the method that Gerdau employed to transform itself into a modern Chandlerian firm.

## FINAL CONSIDERATIONS

The general thesis regarding the expansion of Gerdau is that the internationalization of its productive activities took place when the potential for growth of the internal market became restricted and export of capital became "drainage" on this potential. At the end of the 1990s, post-privatization, with approximately half of the Brazilian market for long steels, there was no clear way for Gerdau to continue in this steel sector by way of new acquisitions, except through exports. Nevertheless, Gerdau had begun to rehearse for its internationalization two decades earlier, in the 1970s. Later, after a decade of large investments in North America (1990), Gerdau jumped from 4% to 16% of North American production capacity of long crude steel and from 3% to 14% in lamination of these steels. At the same time, there was space for horizontal growth, but Gerdau already saw the need to start to enter two more large markets – Europe and Asia.

International expansion initially was characterized by concentric diversification, using the same or similar technological bases to those that Gerdau was already employing. This was a period during which institutional learning, which led to the creation of operational and entrepreneurial capacities, was the firm's principal motivation, in addition to the search for markets. It should be noted that learning appears as a constant in Gerdau's trajectory: in its diverse functions and by various means; in the operation and modernization of a

13. Translation by *Apuntes*.

new type of factory; in the expansion of areas of specialization; and in the search for new sources of capital.

Gerdau already had operational advantages – in distribution, finance, and entrepreneurship – which had been developed in Brazil and which were a determining factor in the acquisition, especially the financial advantage, and even in the maintenance of foreign assets, when there was a convergence of basically operational and entrepreneurial advantages, the latter in order to maintain the integrity of the group. In the area of internationalization, lessons learned earlier were strengthened by a variety of acquired assets and their human resources. This led to improvements in the mastery of new technologies, the introduction of product and process innovation, the strengthening of inter-sectoral relations, and the provision of scrap to its final distribution point as well as – to a great degree – the capacity to access credit. Socially generated institutional knowledge and competencies were created, which are transmitted to all the units as process parameters.

Strategies to seek opportunities for valorization of capital were clearly motivated according to the type of destination country – whether it was an economy undergoing industrial development or an industrialized country. In the case of the former, Gerdau looked for opportunities to exploit resources and markets, later looking for efficiency and an increase in internal exchanges of raw materials. In the case of the latter, the group increased its search for strategic assets. The United States was the area of greatest experience; the size of its market permitted the diversification of market niches with an optimum scale of increased production, not only in the industrial sector but also in secondary transformation, approaching the final consumer. But this was always a process of concentric diversification, even when the company penetrated the market for flat and special steels, since this was concentrated in the non-integrated route. Only in this area was diversification more complex; this was not possible in other markets because of their insufficiencies. Even so, learning within a multi-unit structure with an wide range of products in the United States provided Gerdau with institutional knowledge for later investments in developing economies such as Mexico, Brazil, and India.

Once Gerdau was established in the external national market, generally through acquisitions, and when faced with excess global production capacity, its expansion strategy aimed at vertical and horizontal integration. Thus, the group further diversified, searching for new, heretofore unknown areas of the domestic market. This was accomplished through cooperation strategies, the most common of which was the joint venture. In addition, it began to export capital in search of new areas of the market within the principal technological base of the enterprise or with new technological bases in the same industrial sector, maintaining concentric diversification.

When the enterprise grew, it attained its triple form of investment articulated in production, distribution, and management, with an organizational restructuring which still continues to change in the direction of a multi-unit and multi-functional structure.

The 2008 crisis affected Gerdau's corporate profitability and the company stopped its investments in acquisitions and focused on overhauling factory operations; for example, by closing factories and shutting down obsolete technological bases. The decline in profitability must have lit up the horizon for the group, signaling the need to control the provision of raw materials and inputs that was even more intensive than the efforts made to acquire stores of scrap in 2004 and 2008.

In the final analysis, in its trajectory of capital accumulation, Gerdau has demonstrated a great capacity to maintain growth over time, although crises have sporadically interfered with its rhythm. Curt Johannpeter could not have imagined that Gerdau would reach its current status, though the cautious path it has followed is certainly his.

In this manner, the Gerdau Group has become a historical fact that confirms the normal science of the growth paradigm and internationalization of firms. The development of internal competencies originating in the interrelationship between the base technology and the current market created an area of specialization for the group – long steels – and gave it a horizon of opportunities for growth. The growth potential of the firm, which was superior to the capacity for expansion in the internal market, guided its foreign investments. This expansion was based on its own competitive advantages – localization and internationalization – reaffirming the OLI paradigm. The comparative advantages the company possessed created standards of management, based on accumulated experience, that allowed it to create efficient organizational structures, in a continuous process of change with growth, reaffirming the Chandlerian pattern. In its own way, with its particular trajectory, the Gerdau Group provides evidence that permits us to reaffirm with great assurance the traditional theoretical contributions regarding growth and internationalization.

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