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## CONTENTS

<b>Aníbal Pinto Santa Cruz</b> <i>Gert Rosenthal</i>	<b>7</b>
<b>Social policy paradigms in Latin America</b> <i>Rolando Franco</i>	<b>9</b>
<b>Virtues and limitations of census maps for identifying critical deficiencies</b> <i>Rubén Kaztman</i>	<b>25</b>
<b>Central America: inflation and stabilization in the crisis and post-crisis eras</b> <i>Hubert Escaith, Claudia Schatan</i>	<b>35</b>
<b>The State, business and the restoration of the neoclassical paradigm</b> <i>A. Barros de Castro</i>	<b>53</b>
<b>Globalization and loss of autonomy by the fiscal, banking and monetary authorities</b> <i>Juan Carlos Lerda</i>	<b>65</b>
<b>The macroeconomic context and investment: Latin America since 1980</b> <i>Graciela Mognillansky</i>	<b>79</b>
<b>Property rights and the rural land market in Latin America</b> <i>Frank Vogelgesang</i>	<b>95</b>
<b>Mexico: the plan and the current situation</b> <i>David Ibarra</i>	<b>115</b>
<b>Foreign trade and the environment: experiences in three Chilean export sectors</b> <i>Imme Scholz</i>	<b>129</b>
<b>The competitive challenge for Brazilian industry</b> <i>João Carlos Ferraz, David Kupfer and Lia Hagenauer</i>	<b>145</b>
<b>Indicators of fiscal policy: design and applications for Chile</b> <i>Ricardo Martner</i>	<b>175</b>
<b>ECLAC and the sociology of development</b> <i>Enzo Faletto</i>	<b>191</b>
<b>Guidelines for contributors to CEPAL Review</b>	<b>207</b>

# The competitive *challenge for* Brazilian industry

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This article defines the stages of development reached by industries that account for half of Brazil's total output and identifies the competitive challenges they face, including those associated with the country's industrial policy. Between 1980 and 1994, Brazilian industry experienced persistent macroeconomic instability as the country's trade liberalization efforts proceeded. By means of a series of adjustments, however, the sector did manage to adapt to this hostile environment; in fact, it not only survived but actually succeeded in maintaining its ability to help cover the existing deficit, meet domestic demand and aid the country in achieving balanced linkages with the external economy. Brazilian firms are striving to revitalize their competitive position and, to this end, are strengthening certain components of their "genetic code" by catering to the domestic market, building up their production capacity and internationalizing their trading activity and ownership structures. Today's new competitive environment calls for an industrial policy that will encourage efficiency and regulate unfair trading practices. This requires an active State which has trained human resources and appropriate policy-making capabilities at its disposal, all of which will pave the way for the negotiations involved in setting priorities and implementing measures designed to promote the country's competitive development.

# I

## Introduction

The manufacturing sector in Brazil, as in any other country, is not homogeneous. A number of its segments have already shown signs of being able to compete in the international marketplace, others need to overhaul their production structures, and still others are doomed to disappear. The preservation of efficient activities that create skilled jobs and help to raise national income requires not only the presence of suitable macroeconomic conditions but also appropriate corporate strategies and capacities, market development, cross-sectoral links, and regulatory and incentive systems for each industry.

This article will attempt to determine what stage of development has been reached by 25 different industries which account for one half of Brazil's total industrial output and to identify the competitive challenges they face, including those associated with the country's industrial policy. The ideas explored here are based on a study conducted by Ferraz, Kupfer and Haguenaue (1995) which, in its turn, draws upon research done by Coutinho and Ferraz (1994) in 1992 and 1993 as well as an evaluation of subsequent events undertaken by the authors of this article with the assistance of the Division of Development, Productivity and Management of ECLAC. The database that was used reflects the way in which business en-

terprises were perceived at the time the study was prepared, but the current analysis also incorporates the industrial outcomes observed in 1993 and 1994, when the sector underwent sweeping changes as a consequence of the implementation of the Real Plan. Following an examination of the pace of these changes, the discussion moves on to the unique opportunity which has presented itself to identify the probable future development path of Brazilian industry based on a schematic analysis of the sector.

The concepts of competitiveness and of patterns of competition are then examined and a framework for aggregating these 25 sectors into four industrial groups is outlined (section II). Next, the development of industry during the period 1980-1994 is considered in the light of a number of decisive macroeconomic factors (section III). The patterns of competition exhibited by the four groups are then used as a basis for evaluating the strategies, capacities and performance of these firms and for identifying the competitive challenges they face (section IV). Finally, a forward-looking assessment is presented as a means of exploring the question as to whether Brazilian industry's development process is changing course or continuing along its existing path and what implications this may have for industrial policy (section V).

# II

## Competitiveness and patterns of competition

A competitive business enterprise is capable of devising and implementing strategies for expanding or maintaining a sustainable market position. This type of market performance is the outcome of previous

capacity-building efforts which, in turn, are an outcome of strategies based on the firm's prevailing perceptions of competition as a process and of the economic environment. Thus, competitiveness is related to a series of factors that make for success in the market, or, in other words, to a pattern of competition which acts as the frame of reference for decision-making processes. This perspective differs from conventional approaches to the subject in that the process of competition is what serves as the point of reference for the analysis (Kupfer, 1991).

□ The title of this article alludes to a series of recently published studies which highlight the manufacturing sector's contribution to the development process. The authors are grateful for the comments made by Michael Mortimore, Jorge Katz and Joe Ramos, although full responsibility for the contents of this article rests with the authors.

In addition to firms' business practices, the pattern of competition is also influenced by the structural and behavioural features of the market or economic system that forms their environment. In the case of the market, the relevant factors stem from the interdependence existing among firms; in the case of the economic system, they include the supply of infrastructure and human resources, industrial policy and laws, and other systemic attributes related to the macroeconomic environment and to the institutional framework. In order to understand the development process within each branch of industry, the various determinants need to be weighted according to their importance in terms of inter-firm competition. Competitiveness is, in the final analysis, a phenomenon that arises within the industrial sector, i.e., among a group of firms and in a market which is not regarded merely as a segment of demand that a firm needs to win over or maintain but as an arena for competition and *locus* of the capitalist dynamic.

Competitiveness is a function of how well each firm fits the prevailing pattern of competition. The best-off firms will be those that consistently apply strategies which are geared to the predominant model of competition, with international models serving as their frame of reference. Extrapolating from the level of individual firms, we can say that a given branch of industry is competitive if competitive firms produce the bulk of its output.

These points of reference were used as a basis for the formulation of a level of aggregation which will be referred to here as "industrial groups". These groups are made up of branches of industry in which the firms are subject to the same types of influence from relevant determinants and thus develop similar strategies. Four such groups have been defined: commodity or intermediate-goods industries,<sup>1</sup> durable-goods industries and their suppliers, traditional industries, and industries that help to disseminate technical progress, or high-technology industries. These categories were delimited on the basis of a combination of the criteria traditionally used for industrial classifications. On the demand side of the equation, use-based categories

were employed (capital goods, intermediate goods, consumer durables and consumer non-durables). On the supply side, the groupings were based on Woodward's categories of technical production systems (1959) (unit or small-batch production, mass production, and continuous processes) and Pavitt's innovation generation and dissemination streams (1984, pp. 343-373) ("supplier-dominated firms", "scale-intensive firms", "specialized suppliers" and "science-based firms").

In order to provide a basis of comparison for the situation in Brazil, the best international practices for in-house factors, the market, industrial configurations and the system for promoting and regulating competition were defined for each group (see table 1).

This article analyses 25 of the 33 industries examined by Coutinho and Ferraz (1994); the groups to which these industries belong are shown in table 2. In 1992, these industries accounted for one half of the value of Brazil's industrial output. Their economic importance is even greater than this figure might suggest, however, because they include the Brazilian economy's major exporters, some of its main producers of equipment, and the industries having the greatest influence over final consumption.

A field study on a sample of the firms in these branches of industry was conducted between November 1992 and June 1993. The information gathered during this study dealt with determinants of success, strategies, capacity, and current and projected performance for the 1990s. Information on some research topics (e.g., capital sources) was gathered only for the larger firms. In all, 661 companies, including the leading firms in the sector, were interviewed, and 508 of those companies are analysed in this article. The selection of these firms was based on the consistency of their survey responses and on considerations of sectoral coverage. Their main features are outlined in table 3.

Although the information collected in the survey is not representative in a statistical sense, it does help to shed light on the main development trends to be observed in the industrial sector. In order to determine, in the case of a given branch of industry, whether or not "the bulk of its output" was produced by competitive firms, responses were weighted by invoiced sales. To this end, a three-step procedure was followed for each group.

<sup>1</sup> For the purposes of this article, the category of intermediate goods (which in Brazil are usually referred to as "commodities") also includes such other products as fruit juice, paper and vegetable oils because these industries have similar patterns of competition.

TABLE 1

**Patterns of competition, by industrial group:  
determinants of successful competition**

Groups	Intermediate goods	Durable goods	Traditional goods	High-technology goods
Sources of competitive advantages	Cost	Differentiation	Quality	Innovation
	Capital/output ratio	Product design and components	Management	R&D and design
Firms	State-of-the-art processes	Organization of production	Quality control	
		Flexibility	Productivity	Skill levels of human resources
	Standardization	Differentiation	Segmentation by income level and product type	Segmentation by technical requirements
Market	Price, technical conformity	Price, brand, technology content, technical service	Price, brand, delivery time, suitability for use	Fulfilment of customer specifications
	International trade	Regional and global trade	Local and international trade	Local and regional trade
	In-house economies of scale	Economies of scale and of scope	Economies of agglomeration	Economies of specialization
Configuration of the industry	Control over raw materials and transport logistics	Assembler-supplier linkages	Formation of horizontal and vertical networks	Interaction with users
	Specialized technical services	Accuracy, standardization Scientific and technological system	Accuracy, standardization, conformity, technological information	Scientific and technological system
	Exposure to international trade	Consumer credit	Protection from competition	Support for technological risk-taking
	Anti-dumping measures	Consumer protection	Consumer protection	Intellectual property
Regulatory and incentives regime <sup>a</sup>	Environmental protection	Fiscal incentives	Taxation	Selective protection
	Cost of capital Exchange rate Overland and port infrastructure		Anti-dumping measures	State purchasing power User and export credit

<sup>a</sup> The systemic factors having the most decisive impact on each industrial group's competitiveness are included under this heading.

TABLE 2  
Industrial groups and their component activities

Groups	Activities
Intermediate goods	Aluminium
	Wood pulp
	Fertilizers
	Iron ore
	Vegetable oils
	Paper
	Petroleum
	Petrochemicals
	Iron and steel
	Fruit juices
Durable goods and their suppliers	Motor vehicles
	Motor vehicle parts
	Consumer electronics <sup>a</sup>
Traditional goods	Slaughtering
	Leather footwear
	Dairy products
	Wooden furniture
	Textiles <sup>b</sup>
High-technology goods	Wearing apparel
	Automation
	Computers
	Telecommunications equipment
	Electrical power equipment
	Machine-tools
	Agricultural machinery

<sup>a</sup> Television sets, radios and sound systems.

<sup>b</sup> Cotton yarns and fabrics.

The initial step was to define the groups' patterns of competition. This involved selecting the relevant determinants of success based on three criteria: first, out of the possible response options ("very important", "important", "not important" or "not applicable"), only the first option was counted; second, only those questions for which the answers displayed a statistical differential, based on contingency tables having levels equal to or less than 0.05, were considered; and third, up to three factors were selected for specific subject areas in cases where the corresponding responses represented at least 50% of the group's total sales. These patterns of competition served as the framework for the steps detailed below.

The next step was to try to determine whether the strategies that were being used were geared to the prevailing patterns of competition. Two criteria were used in identifying the main strategies: first, only those questions were considered for which the responses differed statistically from group to group, using contingency tables at a level of 0.05 or less; and second, up to three strategies were chosen for each set of subjects provided that the responses represented at least 50% of the group's sales. These strategies were then compared against objective performance and capacity indicators. In addition to these indicators, documentation contained in the *Estudo da competitividade da indústria brasileira* (Coutinho

TABLE 3  
Characteristics of firms in the sample: nationality of ownership, level of exports and size

	Intermediate goods	Durable goods	Traditional goods	High-technology goods	Average
<b>Nationality of ownership</b>					
(No. of firms)	104	27	80	67	278
Brazilian	89.4	48.1	96.3	74.6	83.8
Foreign	10.6	51.9	3.8	25.4	16.2
<b>Exports</b>					
(No. of firms)	111	54	258	85	508
Percentage of sales:					
Under 5%	37.8	46.3	67.4	52.9	56.3
5%-20%	20.7	31.5	13.2	29.4	19.5
Over 20%	41.5	22.2	19.3	17.7	24.2
<b>Size</b>					
(No. of firms)	111	54	258	85	508
Capital:					
Under US\$ 10 million	10.8	24.1	57.0	51.8	42.5
US\$10 million - US\$100 million	36.9	50.0	34.9	37.6	37.4
Over US\$ 100 million	52.3	25.9	8.1	10.6	20.1

Source: Compiled by the authors based on the survey conducted for *Estudo da competitividade da indústria brasileira*, Coutinho and Ferraz (1994).

and Ferraz, 1994) was used as a basis for an exploration of market conditions, the industry's configuration, and the regulatory and incentive scheme, with emphasis in each case on the relevant competitive factors for each group.

The final step was to identify the challenges facing these industries. This was accomplished by rank-

ing the relevant obstacles and opportunities. Since a firm's competitiveness does not hinge entirely on how well it fits the prevailing pattern of competition but is instead primarily determined by its readiness to cope with change, a forward-looking assessment was also undertaken of existing strategies and capabilities in the light of projected changes.

### III

#### Industrial development from 1980 to 1994: instability *cum* liberalization and business practices

As shown in table 4, in the late 1980s exports were the only area in which the firms covered by the survey were performing well (with a growth rate of 29.1%); this was a result of entrepreneurs' efforts to avoid the uncertainties existing in the domestic market. In 1992, exports accounted for 33.4% of sales for producers of *intermediate goods*, as compared to 26.2% in 1987-1989. Business enterprises were using effective marketing schemes which allowed them to focus on either domestic or external markets, in line with the demand trends of the moment, thereby making use of a natural advantage for large countries. Exports were also helped along by trends in domestic and external prices and in the exchange rate, which have moved in exports' favour for the last 20 years. In 1994, for example, the overvaluation of the country's exchange rate was counterbalanced by the rise in external prices and the buoyancy of domestic demand. Nevertheless, only 42% of the firms in this group – as opposed to 60% of the total sample – thought that their exports for 1996-1998 would surpass their 1993-1995 levels. These expectations suggest that this group's exports may be reaching a saturation point, which would impair the country's ability to build up its reserves if Brazil's international trade strategy were to rely primarily on these branches of industry.

The situation with respect to *durable goods* showed virtually no improvement throughout the "lost decade", as price and performance indicators remained below best-practice levels. Firms cut their payrolls and froze production, but at levels that were

high enough to meet the demand generated by those consumers who were able to maintain their purchasing power despite the economy's instability. Thus, even though demand weakened, prices did not fall; on the contrary, since imports did not take up the slack created by the sluggishness of the Brazilian market, firms actually raised their prices to ensure a sufficient mark-up to finance their operations. As was to be expected, the producers of durable goods were among the larger firms, and by the end of the decade their performance levels were roughly on a par with the industry average. Between the end of the 1980s and 1992, exports jumped by 20.3%, employment fell by 13.7% and capacity use rates dropped 18%.

The firms in the *traditional-products* group are one-third the size of the average industrial enterprise but are none the less major employers; in fact, the group accounts for almost half of all the jobs provided by the companies in the survey (362 000); it should be noted, however, that small firms are over-represented in the study due to the sampling criteria used. Even so, these firms provided a total of 19.4 production jobs for every US\$ 1 000 in sales, as compared to an industry-wide average of 7.9 jobs. Indeed, this group is the largest source of direct job creation in the manufacturing sector, and its ability to respond to competitive challenges therefore has important social implications. In addition, these firms' sales mounted at a time when the domestic market was shrinking, and their superior performance in this respect may be associated,



TABLE 4

## Economic performance of industrial groups: trends in mean values

	Intermediate goods		Durable goods		Traditional goods		High-technology goods		All industries	
	1992	1992/ 1987-1989	1992	1992/ 1987-1989	1992	1992/ 1987-1989	1992	1992/ 1987-1989	1992	1992/ 1987-1989
Sales (millions of dollars)	185.5	-3.2	240.4	-2.1	31.4	5.3	52.6	21.2	90.9	-1.0
Exports/sales (%)	33.4	26.2	19.4	20.3	13.5	27.0	12.3	75.1	24.2	29.1
Use of capacity (%)	80.6	-2.5	64.6	-18.0	72.5	-8.0	61.6	-22.3	71.5	-10.5
Employment in production activities (No. of jobs)	1 036	-17.4	1 383	-13.7	626	-12.6	266	-26.7	736	-16.3

Source: Compiled by the authors based on the survey conducted for *Estudo da competitividade da indústria brasileira*, Coutinho and Ferraz (1994).

to a large extent, with the income-inelasticity of the goods they produce. Even so, their rate of expansion was not fast enough to absorb all of the sector's new workers, since the firms in this group, too, adjusted their production processes to some degree.

Meanwhile, the group of *high-technology firms* reported a 21.2% increase in sales between the end of the 1980s and 1992, which constituted an exception to the rule during these recession years. However, this upswing was concentrated in electronics (where sales averaged US\$ 86 million at the end of the 1980s and US\$ 124 million in 1992) and especially in computers, and was attributable to the demand generated by the country's modernization process, in which computers constitute the most functional and generic application. In fact, this segment's sales had been climbing sharply throughout the decade and at some points exceeded the growth rate recorded during the above-mentioned period.

This group also marked up a 75.1% growth rate for its exports, although they made up only 12.3% of its total sales. The expansion of external sales, which were concentrated in electrical machinery (with an average of US\$ 1.5 million in exports in the late 1980s and US\$ 4.6 million in 1992), was a response to the sharp downturn in local demand. Imports were just one-tenth of total sales, but were 36.6% higher than in 1987-1989, thus foreshadowing the strong growth trend seen in the 1990s. In all, 47 of the 58 responding companies expected both their exports and their imports to expand. Employment and capacity use rates were below the industry-wide average,

however, due to the insufficient level of investment in the country. In some branches of industry, the situation reached critical proportions. In 1992, idle capacity amounted to 52.7% in the machine-tool industry, 37% among manufacturers of electrical power generating equipment and 41.3% for farm machinery. The slump in employment was also quite steep throughout this group, with a 30% drop in the number of jobs in the manufacture of electrical equipment and a 25% reduction in engineering jobs.

This overview does not, however, provide a long-term picture that would help us to identify the characteristic traits of recent industrial development trends. Table 5 gives information on the sector's stages of development based on the major types of changes now under way. Each stage is associated with a number of general approaches which are first adopted by the leading firms and are then taken up with increasing alacrity by the rest; eventually, once it has been embraced by all the firms in an industry, each such approach is seen to have run its course and is abandoned for another. The duration of these stages varies and, at any given point in time, different companies may be developing at differing rates and following different approaches, even though the sector as a whole has basically followed the same development path.

In the early 1980s, Brazilian industry had a complex yet inefficient production matrix; this was the end result of a long period of growth based on a system of incentives for the nationalization of production and of anti-import regulatory provisions. Be-

TABLE 5

**Industrial trends, 1980-1994: Instability associated with liberalization and business practices**

Starting date	Type of adjustment	General orientation	Determinants
1981-1983	Financial	Debt reduction	Exchange crisis and recession
1987-1989	Production	Cost reduction through rationalization	Economic instability
1990-1992	Furtherance of adjustment in the production sector	Downsizing	Recession and trade liberalization
1993-1994	Expansionary	Optimization of installed capacity, increase in import content	Revitalization of demand and macroeconomic stability

*Source:* Prepared by the authors.

tween 1980 and 1994, business firms reacted defensively to a series of what were almost invariably adverse factors (Bielschowsky and Stumpo, 1994).

During the first stage, entrepreneurs focused their efforts on financial adjustments in an attempt to settle up previously-incurred debts and to ward off the effects of the exchange crisis which hit the country in the early 1980s. This was an asset-based adjustment which, once consolidated, enabled industrial enterprises to weather periods of flagging demand, inflation and high real interest rates. This approach gave rise to a preference for liquidity, or flexibility, according to Fanelli and Frenkel (1995), which over the years has become more and more deeply entrenched and which both fuels and is fuelled by inflation.

Persistent uncertainty prompted firms to try to rationalize their costs. The second stage, which began in the late 1980s, was marked by a series of reductions in employment, production cycle times and manufacturing-process waste. Then, during the third stage, which was influenced by the trade liberalization process, the adjustment of the production sector was broadened to include downsizing coupled with a shift in emphasis towards the services sector, the reversal of the move towards vertical integration and the specialization of production. These second- and third-stage adjustments were made viable by the appearance of widely available, low-cost generic innovations – industrial automation and, above all, new organizational techniques – which had already been tested out at the international level.

In 1993, business enterprises began to boost their production levels in an immediate response to signs of an upswing in demand that was sparked by the stabilization of the economy. In contrast to how they had behaved during the period leading up to the

“Brazilian miracle” of the late 1960s, however, this time businesses not only made use of their idle capacity but also expanded their production capacity without benefit of any large-scale investments. This optimization process is largely attributable to prior changes and to an increase in import coefficients that ushered in significant gains in productivity. This expansionary adjustment – a unique event in the country’s history – helped to dampen the first signs of investment demand and performed a functional role for firms that felt a great deal of uncertainty about the future course of the economy.

There is a close connection between a readiness to create additional production capacity and expectations of continuing economic stability and steadily rising demand. A number of expansion projects were begun in 1993, but only in isolated cases. Even as late as the end of 1994, firms representing a substantial share of sales in their respective sectors still had no specific investment plans in place. A continuing lack of confidence in the economy’s performance over the long term, as reflected in low investment rates, has proved to be one of the most harmful legacies of the country’s bout with stagflation. This problem has also turned out to be quite difficult to surmount, even under a regime designed to maintain price stability, as has been demonstrated by recent events in Mexico and Argentina. Indeed, overcoming this reluctance on the part of investors will be the chief task of public policy-makers in coming years.

In sum, between 1980 and 1994 industry was confronted with persistent macroeconomic instability and an increasingly liberalized trade regime. Despite Brazil’s position as one of the world’s 10 great industrial powers and even though its sectoral production structure is similar to those of its peers, Brazilian

industry has not kept pace with the shift taking place at the international level towards more technology-intensive products and processes. Nevertheless, although its expectations of maintaining growth rates on a par with those of the "Asian tigers" have been thwarted, the industrial sector did succeed in adapt-

ing to its hostile environment by means of a series of adjustments and not only has managed to survive but has actually been able to preserve its ability to reduce the existing deficit, satisfy domestic demand and further the country's efforts to establish a balanced position in the external economy.

## IV

### Analysis of the competitiveness of four industrial groups

#### 1. Intermediate goods: Product differentiation and corporate upsizing

##### a) *The pattern of competition*

Table 6 indicates that, to a great extent, a consensus of opinion exists as to the factors making for success and convergence in international practices.

Firms accounting for at least two thirds of total sales felt that the most important product features were price and technical conformity; the presence of these attributes, in turn, implies an ability to operate in large markets, the possession of an extensive production capacity and large-scale business operations. Furthermore, large-scale production requires inputs and equipment of a sort that will entail little operational waste. The subject on which these firms were most in agreement had to do with the rates charged for the use of port, shipping and overland transport infrastructures. The importance of such infrastructure is so great that the more competitive enterprises invest heavily in these facilities because such companies feel that they offer a natural vehicle for the expansion of their business operations.

The regulatory and promotional regime ties in with two different factors: the availability of investment credit and international market access. Prices are determined on international exchanges and fluctuate as dictated by the level of demand in the world's major economies and by world supply. Few firms manage to maintain large enough profit margins to fund their projects on their own, since such undertakings call for huge amounts of capital and have very long lead times. Since, on the whole, firms will be more competitive if they are able to anticipate the growth of demand, they are strongly affected by

TABLE 6  
**Pattern of competition in intermediate industries: most important determinants of success**  
(Share of total sales of respondent firms as a group)

Determinants of success	Intermediate goods	All industries
	(Percentage of sales)	
<b>Market</b>		
Technical conformity of product	79.0	60.7
Low product price	65.2	71.7
Large home market	52.4	39.7
<b>Configuration of industry</b>		
Size and integration of production		
Large production capacity	62.9	45.9
Large company	68.4	65.4
<b>Inter-industrial relationships</b>		
Technical conformity of inputs	70.4	76.2
Technical conformity of equipment	54.1	61.8
<b>Infrastructure</b>		
Low port charges	79.5	70.9
Low shipping costs (maritime)	78.3	68.0
Low road transport costs	74.2	72.6
<b>Regulatory and incentive system</b>		
Availability of long-term credit	80.8	60.8
Low tariffs in buyer market	55.0	65.0
<b>Sales (in billions of US\$)</b>	20	41

Source: Compiled by the authors based on the survey conducted for *Estudo da competitividade da indústria brasileira*, Coutinho and Ferraz (1994).

credit terms and conditions, while the degree of sensitivity to trade barriers depends on the protectionist practices of the main buyer countries.

TABLE 7

**Intermediate industries: direction of competitive strategies**  
(Share of total sales of respondent firms as a group)

	Intermediate industries		All industries	
	Sales percentage	Sales (billions of US\$)	Sales percentage	Sales (billions of US\$)
The company's business strategy emphasizes:				
<b>Market</b>				
Sales for domestic and external markets	84.1	20.6	84.2	44.7
Technical conformity of products	62.5	19.7	39.7	43.6
Technical conformity of exported products	74.7	18.2	52.8	38.8
<b>Production</b>				
Reduction of raw material use	65.6	17.2	58.7	42.7
Expansion of capacity of existing line	56.4	20.3	61.5	41.1
Increased process standardization	50.0	16.1	31.8	38.2
<b>Suppliers</b>				
Use of small number of suppliers	52.5	15.3	65.3	37.5
Technical conformity of inputs	52.6	20.6	58.1	46.1
Maintenance of long-term supplier relations	71.7	16.2	78.2	38.5
<b>Finance</b>				
Use of public-sector credit	60.7	20.6	39.7	46.0
Use of external private-sector credit	54.0	20.6	38.7	46.0

Source: Compiled by the authors based on the survey conducted for *Estudo da competitividade da indústria brasileira*, Coutinho and Ferraz (1994).

b) *Strategies, capacity-building and performance*

Table 7 indicates that the strategies outlined by intermediate-goods producers fit in with the existing pattern of competition. Conformity with technical product specifications is the attribute which is emphasized the most, and companies accounting for more than 80% of the group's sales are active in both the domestic and external markets, with their sales on the latter being directed primarily towards European countries.

These firms seek cost advantages via economies of scale, process standardization and reductions in the use of raw materials, and in order to accomplish this, it is important for them to maintain stable commercial relationships with a limited number of suppliers. They are not entirely in step with the prevailing pattern of competition, however, since although companies representing 49% of total sales ranked strong environmental laws as being very important, only a fraction of those firms (15% of total sales) stated that they were actually using strategies designed to minimize the environmental impact of their operations.

Finally, unlike the other groups, the firms in these branches of industry expressed interest in seeking out various sources of funding for their investments. This strategy actually represents an improvement upon past practices, when the main contribution made by the prevailing system of incentives was to subsidize the cost of capital. During the 1970s and 1980s, this industrial group benefited, through credit and fiscal instruments, from policies aimed at cutting fixed costs as well as, in many cases, the firms' largest variable costs. Thus, the rates of return on investment were surely above their equilibrium levels. These policies outlived their usefulness, however, and contributed to a narrowing of mark-ups, which may have lessened this group of companies' propensity to invest, even in the presence of favourable international prices.

These firms remain competitive, however, thanks to their ample supply of natural (mineral, forestry and agricultural) resources. They have exceptionally strong cost advantages over their competitors, and their long-term prospects are good. They do suffer from inefficiencies, but on a localized basis and mainly in the area of agricultural yields. Environmental issues have

TABLE 8

**Intermediate goods: intensiveness of microelectronic automation**  
(Share of total sales of respondent firms as a group)

	1987-1989	1992	1993-1995	1996-1998
<b>Percentage of operations controlled by microelectronic means</b>				
<b>Intermediate-goods industries</b>				
Sales (billions of US\$)	19.0	19.2	18.8	18.7
0%-10%	42.4	31.6	20.0	17.5
11%-50%	41.3	41.7	30.2	24.8
Over 50%	16.3	26.7	49.8	57.7
<b>All industries</b>				
Sales (billions of US\$)	35.4	42.0	38.3	37.5
0%-10%	52.6	36.1	15.9	12.7
11%-50%	37.0	46.9	51.9	44.4
Over 50%	10.4	17.0	32.2	42.9

Source: Compiled by the authors based on the survey conducted for *Estudo da competitividade da indústria brasileira*, Coutinho and Ferraz (1994).

not been economically significant, but their importance has been growing and is posing new challenges for these companies. In addition to their supply of raw materials, the better firms, as already noted, have always attributed special importance to investments in connection with the logistics of transporting inputs and products in such a way as to sidestep the inefficiencies associated with public-sector infrastructure. These investments have helped to hold down prices in destination markets and are in large part responsible for these enterprises' success.

Since the mid-1980s the firms in this group have been improving their technical efficiency thanks to price competition and to the continuous nature of the processes they use, in which the tolerances are small and production capacity must be utilized, regardless of the rate of increase in demand. As shown in table 8, intermediate-goods producers' degree of modernization is above the industry average. In fact, as of 1993-1995, firms accounting for nearly half of total sales anticipated using automation-intensive production processes.

In summary, a majority of intermediate goods in Brazil are produced by firms whose strategies, capabilities and operations are geared to the prevailing competitive pattern. Furthermore, it is a well-established fact that throughout its history the country has maintained an outstanding track record in commodity-related activities. Years of work went into building the foundations for this group's competitiveness based on participation in both the domestic and external markets within an environment marked

by rising demand and ready access to raw materials, together with a sufficient level of efficiency and investment in the logistics of transporting output from one location to another and in the configuration of these industries; at the same time, these firms were benefiting from the subsidization of capital costs made possible by the existing incentives scheme.

### c) Challenges

In the world of the future, business enterprises will no longer be able to rely on the same basic elements to maintain their positions as in the past. They will have to find a way to add value to their products and to open up new markets; to associate energy-source and environmental parameters with their use of natural resources; to strengthen size-related aspects of their businesses and internationalize their operations, and, finally, to re-engineer their financial structure through public/private ventures.

In terms of their production systems, Brazilian firms need to increase the currently small amount of value which they add to their products and overcome the increasing inefficiency that is to be observed as one moves further away from natural resources along the production chain. Efforts to promote technological advancement have also been quite limited: in 1992, 43% of the 82 companies surveyed made no investments in research and development (R&D), and the amount spent on R&D by another 46% amounted to only between 0.01% and 1% of sales. Rectifying this shortcoming is basically up to private decision-makers, and some leading firms are now moving in this direction.

A supply of goods containing a greater amount of value added could come from at least three different production structures. The first possible source is an increase in imports or new firms that are attracted to the Brazilian market. A second means of accomplishing this would be by upgrading firms located far back in the production chain, with the driving force for such an improvement coming from suppliers of basic inputs; these suppliers' interest in upgrading their customer base is as yet quite limited, and few firms have the capabilities needed to coordinate initiatives of this sort, however. The third possibility is forward vertical integration on the part of the more competitive firms. Movement in this direction would require the development of marketing channels and products, which would entail radical changes in these entrepreneurs' business practices. Few companies are willing to take on all the risks and uncertainties entailed by this kind of initiative, even though they may offer larger profit margins. The search for new markets for these industrial configurations involves making overseas investments, and only rarely have any firms in this group adopted the "internationalist" stance that is necessary in order for them to do so. The internationalization of this group will probably come about as a result of competition that leads these firms to merge with companies in neighbouring countries which are also able to compete in these activities.

It has also become quite clear that the market will punish "eco-criminal" behaviour. Since negative externalities in this respect are common, the best way of dealing with them is for polluting firms to work with providers of technological solutions. Given existing capabilities, the environment represents a source of opportunities for Brazilian companies. The development of procedural standards and new technologies can give them medium- and long-term advantages that their competitors would have difficulty overcoming.

In the realm of public infrastructure, the lowering of legal barriers to private-sector participation opens up wide-ranging opportunities for intermediate-goods producers. Provided that they are functional in terms of their business activities, transport and energy infrastructures will probably be most attractive to firms that have not yet fully explored these cost-reduction options.

All these various growth paths can be travelled more swiftly if firms band together to form conglomerates.

In some sectors this process is fairly far advanced, while in others these structures are more unstable.

Technical efficiency, firm size and the degree of vertical integration of production activities are similar to those of the better international companies in the petroleum, iron-ore, steelworks, aluminium, orange juice and soybean industries. The future competitiveness of these industries will therefore hinge on their success in maintaining and strengthening these configurations.

However, in the petroleum and iron-ore industries, which are dominated by two world-class State enterprises, the ultimate international configuration will depend on the outcome of current deregulation and privatization efforts, which, because of the highly political nature of these processes, cannot be predicted. Pressure will be exerted in various directions, and the possible scenarios range from corporate upsizing, increased integration of production and greater freedom to grow in domestic and external markets, at one extreme, all the way to dismemberment and atomized privatization, at the other. In the first of these scenarios, the pressure that would be exerted would lead in the same direction as would the logic of competition. Firms having this type of profile have a better chance of growing and generating wealth, regardless of their ownership structure. In the second scenario, competitiveness is jeopardized by diseconomies of scale and of costs in the production chain.

In the paper and pulp and petrochemicals industries, ownership and production structures are less stable and may undergo modifications in the course of the decade. The extent of economic concentration in the paper and pulp industry will largely depend on how fast its markets grow. If firms in this industry seek to internationalize their operations or are faced with a downturn in demand, they will be more inclined to merge with other companies. The situation in the petrochemicals industry is similar except that, because of the fragility of its ownership structure, which is based on joint ventures, single-site facilities and single-product lines, mergers are more likely to occur, primarily in response to local demand trends. There has already been some –albeit hesitant– movement in this direction, and further efforts should take the path of least resistance by starting with companies that have similar product lines and moving on from there to firms offering technical or market-based complementarities.

## 2. Durable goods and their suppliers: Regionalization of production versus global sourcing

### a) *The pattern of competition*

Table 9 shows that the relevant consensual factors diverge from the industry average and approach international levels.

Corroborating a well-established fact, over 90% of total sales are accounted for by firms which feel that the size of the Brazilian market is a factor that contributes to their success. Whereas intermediate-goods producers used the local market as a springboard for their attempts to contest the external market, most of the leading firms in the durables group are outside firms that were attracted by the size and growth prospects of the Brazilian market, which is large enough to permit the use of economies of scale.

Under the heading of markets, the companies in the sample mentioned low product prices and the efficiency of technical servicing. In keeping with the above, under the heading of "configuration of industry", control over distribution channels was an element that was taken into consideration along with the above factors. The importance attributed to prices attests to these industries' sensitivity to the effects of the recent trade liberalization programme, while the presence of a network of reputable distributors and wholesalers in the country is one of the advantages which local firms can use to help them compete against imports from outside companies.

Companies representing 51.8% of total sales were still of the opinion that vertical integration was a relevant determinant of success. Advocates of this view believe that a preference exists for types of supplier-producer relationships other than the pyramid-based relationships that became widespread at the international level after their introduction by the Japanese. This difference of opinion points to a belief that local suppliers are incapable of producing their goods efficiently. In regard to labour resources, the quest for technical efficiency underscores the importance of having literate personnel along with a training infrastructure capable of producing a labour force that is skilled in the application of new production practices.

With regard to the regulatory system, the views of companies accounting for three fourths of total sales concerning the importance of the role played by the civil liability of producers bears a relationship to

TABLE 9  
**Pattern of competition in durable-goods  
industries: most important  
determinants of success**  
(Share of total sales of respondent firms as a group)

Determinants of success	Durable goods	All industries
	(Percentage of sales)	
<b>Market</b>		
Low product price	94.8	71.7
Highly efficient technical service	91.4	50.3
Large domestic market	90.8	68.1
<b>Configuration of industry</b>		
Size and integration of production		
Control over distribution system	69.2	43.3
Backward vertical integration	51.8	35.2
Company size	86.9	65.4
<b>Inter-industrial relationships</b>		
Speedy delivery of inputs	95.2	60.7
Durability of equipment	85.1	65.0
Access to overseas technologies	95.7	76.9
<b>Infrastructure</b>		
Reliable electrical power supply	93.0	68.7
Availability of training services	89.7	63.5
Availability of literate human resources	95.3	65.0
<b>Regulatory and incentive system</b>		
Recognition of civil liability	73.8	40.4
Recognition of industrial property rights	89.6	54.9
Fiscal incentives for fixed capital investment	88.5	63.8
<b>Sales (in billions of US\$)</b>	12	41

Source: Compiled by the authors based on the survey conducted for *Estudo da competitividade da indústria brasileira*, Coutinho and Ferraz (1994).

the significance they attribute to technical assistance and servicing; this perspective is mirrored in the country's legal code, which is considered to be highly advanced by international standards. The importance assigned to industrial property by firms representing 89.6% of total sales is the logical counterpart to the importance they attribute to the importation of technology, which plays a functional role in highly dynamic activities; these activities are, however, dominated by foreign enterprises.

In respect of financial matters, firms accounting for 88.5% of total sales felt that fiscal incentives

TABLE 10

**Durable-goods industries: direction of competitive strategies**  
(Share of total sales of respondent firms as a group)

	Durable-goods industries		All industries	
	Sales percentage	Sales (billions of US\$)	Sales percentage	Sales (billions of US\$)
<b>The company's business strategy emphasizes:</b>				
<b>Market</b>				
Sales for domestic and external markets	93.3	20.5	84.2	44.7
Low prices	66.6	12.9	30.3	43.6
Quality technical service	62.3	12.9	29.2	43.6
<b>Production</b>				
Concentric diversification	76.8	12.3	61.1	41.1
Reduction of inventory costs	81.0	20.5	54.9	44.7
Increased flexibility in production	83.8	12.3	66.3	38.1
<b>Suppliers</b>				
Technical conformity of inputs	75.8	12.9	58.1	46.1
Use of small number of suppliers	93.0	12.3	65.3	37.5
Use of reputable suppliers	97.1	12.3	64.8	38.5
<b>Training</b>				
Structured in-house programmes	98.1	12.9	87.4	46.1
Utilization of external institutions	62.8	12.9	56.7	46.1

Source: Compiled by the authors based on the survey conducted for *Estudo da competitividade da indústria brasileira*, Coutinho and Ferraz (1994).

were very important. Since most of these companies are world leaders and have, accordingly, always been financially self-sustaining, the State has not needed to provide them with the credit subsidies that have been of such key importance for intermediate-goods producers. However, in conjunction with the import barriers that have been in place ever since Brazil began to produce durable goods, fiscal instruments have been used in an extremely flexible manner and have been adapted to the economic needs of business enterprises. Thus, tax exemptions have been provided for investments during the start-up phase, for the siting of operations in new geographical areas as a means of promoting the decentralization of industrial production activities and, finally, for the opening up of new markets—for exports or for specific models of products—during times of slack local demand. There is nothing to suggest that this situation will change in the future, while the actual support needs of these types of firms have yet to be determined.

**b) Strategies, capacity-building and performance**

Table 10 indicates that the relevant strategies are consensual and fit the existing pattern of competition. These firms want to use prices and technical service

to penetrate the domestic and external markets, especially the Common Market of the South (MERCOSUR). Their concentric diversification reveals their intention to seek out economies of scope, which may be facilitated by flexible, low-inventory production processes. Should these strategies prove to be successful, supplier relationships and training modalities would be very different from those observed under the preceding system. This information indicates, first and foremost, that a majority of these enterprises have access to relevant data for their system of competition and know how to select the information they need. Firms' competitive positions will be more vulnerable, however, if their strategies are not aligned with their operations and capacity-building efforts.

Table 11 presents indicators of the extent to which these industries use automation, numerical process control and just-in-time supply systems. In the early 1990s, the modernization of production facilities and processes picked up speed, and a growing number of companies began to operate at efficiency levels similar to those of the world's most competitive production plants. The intensity of such changes varies sharply among these three branches of industry, however. The consumer electronics industry has



TABLE 11

**Durable goods: Innovation-intensiveness of production systems**  
*(Numbers given in parentheses indicate respondents' share of relevant industry's sales)*

Branch of industry	1987-1989		1992		1993-1995		1996-1998	
<b>Motor vehicles</b>								
Percentage of automated operations	Low <sup>a</sup>	(100)	Low	(100)	Medium <sup>b</sup>	(76)	Medium	(76)
Percentage of operators with NPC <sup>c</sup>	Low	(100)	Low	(65.1)	Low	(65.1)	Low	(65.1)
Percentage of suppliers using JIT <sup>d</sup>	Low	(100)	Low	(65.1)	Low	(65.1)	Low	(65.1)
<b>Motor vehicle parts</b>								
Percentage of automated operations	Low	(69.5)	Medium	(54.9)	Medium	(55.1)	High <sup>e</sup>	(60.7)
Percentage of operators with NPC	Low	(56.1)	Medium	(49.6)	High	(70.2)	High	(91.1)
Percentage of suppliers using JIT	Low	(84.6)	Low	(63.1)	Medium	(47.0)	High	(55.7)
<b>Consumer electronics</b>								
Percentage of automated operations	Medium	(97.9)	High	(57.4)	High	(57.4)	High	(63.7)
Percentage of operators with NPC	Low	(50.2)	Medium	(68.1)	High	(58.5)	High	(92.0)
Percentage of suppliers using JIT	Low	(98.3)	Low	(81.6)	Medium	(63.7)	High	(51.9)

Source: Compiled by the authors based on the survey conducted for *Estudo da competitividade da indústria brasileira*, Coutinho and Ferraz (1994).

<sup>a</sup> Low level of intensiveness: 10% or less.

<sup>b</sup> Medium level of intensiveness: 11%-50%.

<sup>c</sup> Numerical process control.

<sup>d</sup> Just-in-time systems.

<sup>e</sup> High level of intensiveness: over 50%.

forged ahead at the fastest pace, with the motor vehicle parts industry following close upon its heels. The motor vehicle assembly industry has been slower to act.

In 1988, when tariff reforms entered into effect, imports of consumer electronics were the first to start climbing. External producers offering a wider range of more technologically sophisticated products began to stake out positions in the Brazilian market. Consequently, the level of idle capacity began to mount. In the consumer electronics industry, the capacity use rate tumbled from 80% to 54% between the end of the 1980s and 1992. Brazilian firms responded by revamping their products and increasing their level of specialization by investing in automation, importing product components, cutting payrolls—employment was reduced by 50% between 1992 and 1994—and lowering prices.<sup>2</sup> Even though the volume of output has registered a 100% increase during the same period due to the wealth effect of the Real Plan, productivity has risen so much that a return to pre-1992 employment levels is highly unlikely.

<sup>2</sup> As a result of automation, production processes are currently undergoing a number of modifications which include the elimination of certain stages.

In the motor vehicle parts industry, efficiency levels still vary sharply despite the industry's efforts to modernize, because the firms in this sector are structurally more heterogeneous. Since the mid-1980s, the economic crisis has caused marginal firms to drop out of the market while those companies having a greater response capacity have sought out external markets. In the 1990s, their survival will depend on the global sourcing and training policies developed by each firm, especially if assembly industries pressure them to lower their prices. The most probable scenario is that the existing trend towards the elimination of the weaker enterprises will continue.

Between late 1989 and early 1990, the motor vehicle industry was the only one that succeeded in averting any adjustment in employment levels, thanks to the agreements reached by labour, management and the Government within the framework of a sectoral association which serves as a forum for the negotiation of tax rates, wages and profit margins that safeguard production and employment levels. When imports began to pose a threat, these firms' first reaction was to revamp the models in their product line; the second was to start importing on their own. Firms also strove to put their operations on a footing comparable to those of the other MERCOSUR

countries as their Governments moved to promote economic integration. This segment is lagging behind the others in terms of output, but the production adjustment process must follow a certain sequence. For now, firms are approaching the limits of production-capacity optimization, and during the second half of the decade they will have to decide whether or not to invest in new plants.

Cross-sectoral links are moving in two apparently contradictory directions, since closer ties are being formed with local suppliers at the same time as imports are on the rise. The consumer electronics industry has increased its imports more than it has its efforts to alter existing relationships with suppliers. Few component producers benefited from the growth trend of the early 1990s, with the most important exception being local producers of cathode-ray oscillographs. In the motor vehicle industry, it is more common to see a supplier-assembler integration process directed towards the joint development of components, just-in-time delivery systems, etc. This trend is just beginning to take shape, however, since initiatives of this sort are time-consuming, complicated and costly. The few companies that have made investments aiming in this direction have made major inroads, however, and this therefore provides some idea of the path that this industry will take in coming years.

This trend is countered, however, by the import capacity of firms in the industry, which gives them an advantage over competitors having a more limited import capacity or less influence with local suppliers. The level of purchasing in the country (or region) will probably bear a direct relationship to two parameters: the volume of demand and the relevant components' degree of specificity. The higher these parameters are, the better off local suppliers will be, since their proximity to assembly industries provides certain economic advantages to both.

### c) *Challenges*

A large contingent of the world's leading firms are active in Brazil, along with local companies capable of holding their own against international competition; they are accompanied by a vast group of small and medium-scale organizations that exist along the fringes of the production chain. For the remainder of the 1990s, the international outlook and the intentions of the leading firms indicate that the greatest challenges will be to build up ties with external markets and to boost technical efficiency levels.

So long as demand expands more swiftly than output, imports will not have a detrimental effect on installed capacity. If this situation changes or if the costs of bringing imports into the country approaches local production costs, however, then these narrower markets will be more hotly contested and the weaker firms will be crowded out, thus giving rise to a more highly concentrated industrial structure.

Competition from imports is mainly a threat for companies whose production capacity is wholly local. International companies have flexibility in deciding whether to produce locally or to import goods without affecting their aggregate economic performance or their market share. This is a positive factor from the standpoint of both the firms and consumers, but it is a negative one in terms of employment, activities with linkages to the production of inputs, tax revenues and the trade balance. This is not likely to result in either total de-industrialization or in a situation of complete self-reliance as regards supply; the firms in this branch of industry will have to use strategies that combine the regionalization of production with the importation of components and final products. Strategies of this sort are already in evidence in Argentina, even though its industrial sector is smaller (Kosacoff, 1994).

The major enterprises in this group have fairly ambitious investment plans and, during the next few years, will be deciding which investment projects they are actually going to pursue; this means that they will be engaging in complex negotiations with Brazilian authorities. In this respect, MERCOSUR has not only increased the size of these firms' potential market but has also augmented their bargaining power, since they can now choose from among a much larger number of locations willing to offer investment incentives. Given the region's investment shortfall, it is highly likely that these investments will be bitterly disputed, which will once again work to the benefit of this group of enterprises by enabling them to obtain significant reductions in start-up and operating costs.

## 3. *Traditional goods: An uneven adjustment of production*

### a) *The pattern of competition*

Table 12 shows that this group exhibits less of a consensus than the other groups and diverges further than they do from international practice.

TABLE 12

**Pattern of competition in traditional industries:  
most important determinants of success**  
(Share of total sales of respondent firms as a group)

Determinants of success	Traditional industries	All industries
	(Percentage of sales)	
Market		
Brand	72.3	42.7
Large domestic market	67.7	68.1
Delivery speed	61.5	48.0
Configuration of industry		
Inter-industrial relationships		
Low tariffs on imports of equipment	75.9	70.1
Long-term relationship with suppliers	75.4	71.1
Infrastructure		
Reliable transport services (trucking)	75.2	69.8
Availability of literate human resources	61.9	65.0
Inexpensive electrical power	59.3	55.5
Regulatory and incentive system		
Export credit	69.4	48.0
Fiscal incentives for investment	70.3	63.8
Consumer protection code	63.8	29.8
Sales (in billions of US\$)	5.5	41

Source: Compiled by the authors based on the survey conducted for *Estudo da competitividade da indústria brasileira*, Coutinho and Ferraz (1994).

Firms in this group do conform to international marketing practices to some extent, since they ranked brand names and delivery times as being the most important factors, but technical standardization, or meeting customer specifications, was regarded as important by firms representing only 39% of total sales. Thus, in Brazil, product differentiation is perceived as a way of boosting sales by developing a certain type of corporate image rather than as a process that necessarily entails developing products for market segments defined by customer specifications.

The saturation of consumer markets observed in industrialized countries is not evident in Brazil, however. On the contrary, the country's per capita consumption indexes for most kinds of products are extremely low. Accordingly, rising income levels open up opportunities for the expansion of these sectors. This may also be the reason why a core group of firms accounting for two thirds of total sales

considers the size of the Brazilian market to be an important factor.

This group's cross-sectoral relations are more in line with international practices, with companies that represent three fourths of total sales attributing importance to low customs duties on equipment imports and to long-term relationships with input suppliers, which facilitates the adoption of innovations originating in other sectors. Imports provide more choices as regards technological sophistication, price and payment terms, and induce firms to champion their suppliers' interests by advocating a liberal regulatory scheme for external trade. The desire to stabilize the supply of inputs probably reflects these firms' reaction to years of price instability, during which disputes arose all along the production chain.

The relevant infrastructures—rapid overland transport services, low electricity rates and a literate workforce—constitute generic externalities that are required by all industrial enterprises. There are also some unique aspects, however. The road system, for example, is the most suitable type of transport infrastructure for serving geographically scattered sales outlets, which is one of the characteristic features of this group's activities.

Finally, in connection with the regulatory and incentive regime, the importance assigned to consumer protection laws implies a great deal of sensitivity to sanctions against unfair competition. The emphasis on export credit and tax incentives for investment point to a heavy reliance on third-party resources for sales transactions and expansion projects. The leading firms in this group use sophisticated financial strategies which are on a par with the best practices in the country; these strategies are based on a mixture of public funds, external resources, equity issues and the firms' own funds.

#### b) *Strategies, capacity-building and performance*

As indicated in table 13, the importance placed on capital from outside sources implies the use of financial strategies which emphasize public credit at the expense of market-based solutions. Since there is usually no demand for complex, large-volume operations requiring long lead times, a preference for private sources was to be expected. Actually, the preference for public credit suggests a lack of confidence in the private financial system as well as reflecting the disadvantages faced by smaller firms that are unable to provide sufficient loan collateral.

TABLE 13

**Traditional industries: direction of competitive strategies**  
*(Share of total sales of respondent firms as a group)*

	Traditional industries		All industries	
	Sales percentage	Sales (billions of US\$)	Sales percentage	Sales (billions of US\$)
The company's business strategy emphasizes:				
<b>Market</b>				
Brand development	71.0	7.9	41.0	43.6
Sales to most desirable customers	50.0	2.5	41.2	3.5
<b>Production</b>				
Expansion of capacity of existing line	68.3	5.2	61.5	41.1
Concentric diversification	62.8	5.5	61.1	41.1
Increased flexibility in production	63.7	5.4	66.3	38.1
<b>Suppliers</b>				
Maintenance of long-term relationships	67.9	5.4	78.2	38.5
Purchase of lowest-cost inputs	67.6	8.1	69.3	46.1
<b>Finance</b>				
Use of public credit	50.0	8.1	39.7	46.0

Source: Compiled by the authors based on the survey conducted for *Estudo da competitividade da indústria brasileira*, Coutinho and Ferraz (1994).

Production strategies approach best-practice levels. The companies that make a majority of the industry's sales said they intended to expand the capacity of their existing lines by introducing more flexible production techniques that would also promote diversification in new segments. The preference for long-term relationships with suppliers is in keeping with the existing pattern of competition, but the level of consensus regarding this factor is below the industry average. In the other strategy, which stresses lower input prices, such factors as conformance to specifications or delivery speeds (which could increase the reliability of cross-sectoral relationships) are treated as no more than secondary considerations.

This partial fit with the prevailing pattern of competition is also evident in this group's product strategies. On the one hand, in keeping with this model, the majority of sales are made by companies that are striving to strengthen brand-name recognition among consumers. On the other hand, delivery times, which are regarded as playing an important role in terms of competitiveness, are not given the same emphasis in these strategies. Furthermore, only a minority (12% of sales) feel that technical conformity and meeting customer specifications are significant considerations, although these factors are closely associated with best practice. Companies accounting for one half of invoiced sales also depart from the prevailing competitive pattern in that they follow opportunistic sales strategies

that focus on whichever customers offer the greatest advantages at any given point in time. This dissociation is not an across-the-board phenomenon, however, since the leading firms in the various industries do exhibit customer loyalty. In 1994, for example, the firms in this minority group maintained their export contracts even though they lost money on them when domestic demand heated up and the currency appreciated.

These intra-group behavioural differences stand out clearly when the responses are broken down by firm size (see table 14). When this is done, it becomes evident that the larger the company, the greater the concentration of strategy preferences for a given attribute. For example, the preferred strategy among large enterprises is brand-name recognition. It is disquieting to note that fulfilment of technical specifications was mentioned more often only in the categories having over 100 employees. Among the smaller firms (1-20 employees), strategies varied widely and were spread out over prices, delivery times, brand names, durability and conformity to customer specifications.

Table 15, which deals with the production equipment possessed by these companies, also shows up the differences that exist between small and large firms. The largest enterprises have the most modern equipment, while many smaller companies were unable to evaluate how technologically up-to-date their equipment is.

TABLE 14

**Traditional goods: product strategies, by company size**  
(Percentages of respondent firms)

Company size <sup>a</sup>	1-20 employees	21-100 employees	101-500 employees	Over 500 employees	Group average
The company's business strategy emphasizes:					
Low price	22.2	46.0	28.7	26.6	31.5
Strong brand-name recognition	22.2	36.5	53.2	60.9	46.7
Short delivery times	25.0	15.9	27.7	35.9	26.5
Technical conformity	2.8	3.2	7.4	20.3	8.9
Durability	27.8	25.4	11.7	3.1	15.2
Meeting customer specifications	22.2	23.8	22.6	14.1	20.7
No explicit strategy	19.4	9.5	9.7	9.4	10.9
Number of companies	36	63	94	64	257

Source: Compiled by the authors based on the survey conducted for *Estudo da competitividade da indústria brasileira*, Coutinho and Ferraz (1994).

<sup>a</sup> Firms with 100 employees or less are under-represented due to the sampling techniques used.

TABLE 15

**Traditional industries: age of main equipment, by company size**  
(Percentages of respondent firms)

Company size	1-20 employees	21-100 employees	101-500 employees	Over 500 employees	Group average
Generation					
Latest	2.5	5.3	10.6	21.7	10.8
Next-to-latest	15.0	14.7	32.7	42.0	27.8
Prior	20.0	26.7	29.8	21.7	25.7
Undetermined	22.5	14.7	12.5	10.1	13.9
Do not know	40.0	38.7	14.4	4.3	21.9
Number of companies	40	75	104	69	288

Source: Compiled by the authors based on the survey conducted for *Estudo da competitividade da indústria brasileira*, Coutinho and Ferraz (1994).

Investment and the search for dynamic markets present more difficulties for small firms, and this sets up a vicious circle of competitive disadvantages. The pressure exerted by the largest companies and, increasingly, by imports, in combination with the absence of horizontal or vertical networks, hinders the dissemination of modern management practices among such firms and drives them to resort to uncompetitive survival strategies. During the early 1990s, informal economic activity increased, as did tax evasion, at the same time that working conditions deteriorated, and all these factors have an adverse effect on product quality. These predatory forms of competition discourage investment in product development, production processes and training, and therefore end up doing harm to the industrial sector as a whole.

Competitive success, as manifested in growth rates and product-differentiation capabilities, is largely a result of effective and efficient management. Most of the firms that have little managerial expertise and use strategies which diverge from the prevailing pattern of competition are small, domestic enterprises that do not export any of their output.

Thus, this group of industries reflects Brazilian industry's heterogeneity in terms of competitiveness; this may be accounted for by income disparities, since different levels of earnings are associated with differing levels of demand. Consequently, a wide range of variation is to be observed in the efficiency of production, prices and product complexity. A more detailed sectoral analysis would show that firms that are approaching the level of competitiveness attained by best-practice companies account for a large share

of the country's output of indigo, cotton fabric, household linens and knitted goods and of slaughterhouses for poultry and pork. Competitive firms are also found in the dairy industry and in the production of leather footwear, although their shares of these markets are smaller, while they also play a fairly limited role in such areas as the processing of beef and the production of wooden furniture and other textiles.

### c) *Challenges*

Uncompetitive firms will survive so long as there are sectors of the market with a low level of buying power in which product-rejection parameters are quite modest and so long as the authorities remain powerless to sanction businesses for misconduct. The truth of the matter is that these shortcomings can only be overcome in the long run through a combination of sustained economic growth and greater social equity, together with an effective system for regulating competition. This is because consumers tend to become more demanding at higher levels of economic and social development, thereby reducing marginal companies' chances of survival.

Aside from demand trends, these companies may also be crowded out by pressure from more efficient firms and from imports. First, many competitive firms want to win over new market positions and limit the growth of their counterparts. For example, in response to the trend towards greater consumer sophistication, in recent years some international food producers have launched expansion strategies based on the acquisition of local firms that possess some sort of competitive asset, such as a particular brand name or access to raw materials. The second source of pressure, which began to attract greater attention in 1994, is developing-country exports, particularly in the textile and footwear industries. Argentina's and Mexico's experiences with trade liberalization suggest that these activities were the last of all to feel the negative impact of imports and had the least response capacity.

Even though the level of imports is not yet significant in Brazil, some sectors' market positions in other countries have already been affected, as in the case of the footwear industry. Footwear exports from the southern region of the country, which had been successful in the past, lost ground in 1994 due to the entry of producers with lower costs and to the currency's overvaluation. These kinds of episodes have

pointed up two of the industry's weak points – the inefficiency of its production processes and its dependence on other makers' brand names – which have paved the way for substitution by other suppliers. The threat of competition from companies located in areas with overwhelming advantages in terms of labour costs had never been encountered before in the country, but will now be a factor in coming years.

There are, however, three basic determinants that will continue to work to the benefit of local producers: first, the segmentation of demand is conducive to supplier diversity; second, local conditions are such that they require consumer-producer proximity; and third, the fragmentation of distribution networks facilitates the participation of domestic firms.

The prospects are better, however, for firms that have already developed dynamic capabilities. Just as the intermediate-goods industries have had to cope with new challenges, in the coming years the core group of traditional industries will also be confronted with threats and opportunities associated with these firms' dual market affiliation. Drawing on the advantages they have already acquired through the use of economies of scale and/or scope, these firms should maintain their current market positions while at the same time moving into segments that incorporate more value added.

Movement in two types of directions can be expected within these industrial configurations: a search for new markets and corporate mergers.

The most likely courses of action involve taking over market positions currently occupied by informal enterprises and expanding into MERCOSUR markets. The more competitive firms in neighbouring countries will also be moving into the Brazilian market, thereby adding to the competition. In order to cover this regional demand fully, production bases in other countries will be needed, and in order to form them, companies will have to take the lead in introducing more sophisticated financing arrangements, adapting to new management practices, developing input-supply logistics, making an effort to adapt products and packaging to new needs, marketing, etc.

The mode of concentration differs depending on a company's nationality. As noted earlier, foreign firms tend to acquire local companies, whereas Brazilian enterprises tend to merge or mount joint ventures with local competitors or to form partnerships with companies that have not yet set up operations in the country. Mergers increase the relevant firms'

market share and make them large enough to contest positions in external markets, while partnerships with foreign firms reduce the cost of gaining access to new segments in which the amount of value added is generally greater. Such partners give local firms access to new products and well-known brand names. For foreign firms, the advantages of such arrangements are lower fixed and distribution costs. If the existing trend towards corporate mergers persists, the degree of concentration of most of the country's traditional industries will increase.

#### 4. The dissemination of technical progress: Import substitution

##### a) *The pattern of competition*

As shown in table 16, *high-technology* industries in Brazil diverge from international practices and exhibit a pattern of competition similar to the pattern that prevails in the group of durable-goods industries as a consequence of their weak propensity to invest and the increasing liberalization of trade. The data suggest that the majority of companies in this group, in terms of sales, share an orientation towards the maintenance of production capacity and place little emphasis on technological capacity-building.

Of the three product features about which the respondents were most in agreement—technical service, technical conformity and low prices—two have to do with reliability and with increasing the lifespan of equipment, both of which enable users to postpone investments, thus serving a useful function in Brazil's uncertainty-ridden business environment. The importance attributed to price levels reflects the increasing degree to which businesses are vying for clients in a shrinking market whose import barriers have been lowered. In contrast, the companies that ranked the type of technological sophistication associated with high product-performance standards as important represented only 38% of this group's sales. In view of the sustained downturn in investment observed between 1980 and 1993, it is somewhat surprising that some enterprises are still aware of the importance of this more advanced form of competition.

Given this pattern of competition, tie-ins with scientific and technological infrastructure are of fundamental importance, but there is no consensus regarding this point in Brazil. None the less, this group's rating of this factor is conspicuously higher than the industry average, with the reliability of re-

search services being rated as important by firms accounting for 43.1% of sales, versus an industry-wide figure of 17%. When this finding is considered in conjunction with the importance placed on access to overseas technology (86.8%), however, it provides an indication of just how interested such firms are in reducing investments in local technological capacity to a minimum. In reviewing this evaluation, the fact should be borne in mind that Brazil is in step with international trends and that access to innovations developed in other countries is crucial, although this does not preclude a certain minimum of local adaptation. At the same time, the limited size and instability of the Brazilian economy may not justify investment in technology, and firms may instead opt for the safer route of using production equipment based on proven technologies.

TABLE 16

**Pattern of competition in high-technology industries:  
most important determinants of success**  
(Share of total sales of respondent firms as a group)

Determinants of success	High- technology industries	All industries
	(Percentage of sales)	
<b>Market</b>		
Low product prices	55.3	71.7
Highly efficient technical service	65.2	50.3
Technical conformity of products	52.8	60.7
<b>Configuration of industry</b>		
Size and integration of production		
Advanced stage of de-verticalization	50.0	33.3
<b>Inter-industrial relationships</b>		
Conformity with input specifications	80.1	76.2
Technical sophistication of equipment	62.5	42.2
Access to overseas technologies	86.8	76.9
<b>Infrastructure</b>		
Availability of literate human resources	58.0	65.0
Availability of training services	63.5	63.5
Reliable telecommunications services	71.3	59.8
<b>Regulatory and incentive system</b>		
Availability of long-term credit	76.6	60.8
Recognition of industrial property rights	57.2	54.9
<b>Sales (in billions of US\$)</b>	3.0	41.2

Source: Compiled by the authors based on the survey conducted for *Estudo da competitividade da indústria brasileira*, Coutinho and Ferraz (1994).

Within this industrial configuration, the importance placed on the reversal of vertical integration by companies accounting for half of total sales attests to their concern about one of the most serious weaknesses of high-technology industries. Until recently, the country's industrial network was incapable of providing equipment manufacturers with suitable inputs, but there were also institutional barriers to imports of such components. These constraints led companies to produce their inputs themselves, which put them at a cost disadvantage *vis-à-vis* their competitors. This view of the situation was confirmed by companies representing 87.1% of total sales, which mentioned the importance of the technical conformity of components acquired from outside suppliers. On the other hand, the emphasis placed on the technical conformity of products accounts for the degree of importance attributed to technologically sophisticated equipment.

The relevant infrastructure –literate human resources, training capabilities and reliable telecommunications services– is also functional for firms striving to maintain their production capacity. A supply of the more highly skilled personnel required for R&D work was regarded as being less important than having personnel with a basic education, provided that such education was then supplemented by vocational or technical training. The priority assigned to reliable telecommunications services is attributable to the information-intensive nature of these activities.

Finally, in keeping with the prevailing pattern of competition, two elements of regulatory and incentive schemes were underscored by the respondents: investment credit and recognition of industrial property rights.

Most of the firms stressed credit terms and conditions for two reasons. The first is that the terms and conditions of investment credit directly influence demand; indeed, local products are often passed over in favour of equipment that can be imported on more advantageous terms. The second reason is that these firms' production processes require expensive, high-technology equipment, and this fact, coupled with their long production cycles, makes it more difficult for them to fund their investments with their own resources. It is enlightening to note, however, that these firms did not assign importance to assistance in covering technology-related risk or to the availability of credit for high-risk loans, since this attests to their low propensity for investments involving a high degree of uncertainty.

In relation to regulatory matters, the recognition of industrial property rights is also a functional element for a technology-dependent structure. In the 1970s, the belief was that Brazilian companies preferred to have a legal code which withheld recognition from industrial property rights and thereby provided easy access to product and process technologies and proprietary rights thereto. The acquisition of technology continues to be a fundamental factor in the 1990s, but there is now an explicit interest in guaranteeing the appropriation of the benefits to be derived from innovations. This position may be viewed as a defense of market-based solutions that do not block access to relevant technologies regardless of how much or how little bargaining power is held by the parties concerned. The general orientation of the country's new industrial property code reflects, in large measure, the demands of Brazilian firms.

b) *Strategies, capacity-building and performance*

The strategies used by manufacturers of electronic goods and electrical machinery are outlined in table 17.

Two market-related factors are of interest here: the realm in which companies operate, and product features.

First, the companies' responses cited the complementarity of the domestic and external markets as a factor and reflected a strong preference for Latin America as a destination for their exports. Thus, these firms regard the entire continent –rather than MERCOSUR only, as is the case with durable goods industries– as their sphere of activity. In addition to the similarities that exist in terms of the level of sophistication of demand, these firms' interest in Latin America as a trading area is associated with the trade liberalization processes under way in the region, which have prompted many firms, especially the multinationals, to centralize their Latin American operations at a single location in the region.

Second, the product features which play an important role in the pattern of competition differ from those emphasized in the firms' strategies. The quest for technological sophistication emerges as the main component of such strategies, whereas technical service –an important element in the pattern of competition– is mentioned only by companies accounting for a mere 10% of sales. Another two features regarded as being important –price and technical conformity– appear only in these companies' export strategies.



TABLE 17

**High-technology industries: direction of competitive strategies**  
*(Share of total sales of respondent firms as a group)*

	High-technology industries		All industries	
	Sales percentage	Sales (billions of US\$)	Sales percentage	Sales (billions of US\$)
<b>The company's business strategy emphasizes:</b>				
<b>Market</b>				
Sales to Latin America	75.1	2.7	33.8	38.8
Technological sophistication	51.6	3.1	22.4	43.6
Low export prices	51.5	2.7	33.0	38.8
Technical conformity of exported products	51.3	2.7	52.8	38.8
<b>Production</b>				
Increased flexibility in production	80.1	4.3	66.3	38.1
De-verticalization	76.4	4.3	35.2	41.9
Reduction of inventory costs	77.2	4.4	54.9	44.7
<b>Suppliers</b>				
Cooperation in product development	82.2	4.4	64.8	38.5
Purchase from reputable suppliers	82.6	4.4	64.8	38.5
Purchase of lowest-cost inputs	89.7	4.5	69.3	46.1
<b>Training</b>				
Structured in-house programmes	86.2	4.5	87.4	46.1

Source: Compiled by the authors based on the survey conducted for *Estudo da competitividade da indústria brasileira*, Coutinho and Ferraz (1994).

For domestic sales, these features are only included in the strategies of enterprises responsible for one third of total sales. These dichotomies are partly accounted for by sectoral differences within this group. Given the downward trend of the prices of electronic equipment on international markets and the deregulation of Brazilian industry, keeping prices low was an objective for firms generating 48.2% of this segment's sales, but was a goal for only 12.7% of the equipment producers. Furthermore, technical service was not listed as a priority by any of the electronics firms.

The firms' strategies regarding production and their dealings with suppliers showed a stronger correlation with determinants of success. High-technology firms displayed an above-average degree of consensus regarding the importance of streamlining production processes, reversing vertical integration and reducing inventory costs. The implementation of these strategies would build up the firms' assembly capacity—an advisable step given the prevailing pattern of competition, the existing level of uncertainty and the mounting threat posed by the entry of imports. In order to make it feasible to roll back their level of vertical integration, these firms' stated strategies also include the establishment of closer

links with suppliers. The vast majority prefer inexpensive inputs, but they also want them to be produced by firms having comparable quality standards; in addition, their plans call for them to mount cooperative input-development efforts with a very limited number of suppliers. Their strategies also provide for in-house training services; this suggests that these firms are not fully confident in the effectiveness of training institutions, which are identified as playing a very important role in the pattern of competition.

With regard to capacity-building and performance, the country's industrial legacy is one of both strength and weakness. Strength, because manufacturers have managed to survive 15 years of flagging demand while maintaining some level of value-added capacity in the country; weakness, because these firms' competitiveness is not founded upon the key determinant of success for this group, i.e., the development of the capacity to generate and disseminate innovations for their customers.

The fact that so few companies disappeared during this period is accounted for by the nature of their product and production strategies and the institutional environment of the time. In the face of unstable demand and barriers to imports, most firms

opted for vertical integration as a means of locking in their supply of inputs and diversified their product line in order to broaden their sales opportunities. This course of action was of the greatest benefit to companies that were linked either by ownership or technology (or both) with foreign firms having a proven level of efficiency. The expansion of their activities ensured that their production capacity would be used, but it also diluted the technological efforts necessary to sustain their competitive position over the long term. Hence, the very strategies which ensured these firms' survival in the past are now cutting into their growth potential and making their future performance dependent upon their ability to continue to access the necessary innovations.

The differences between the electronics and machinery segments of this group require greater clarification.

For Brazil, the worldwide dissemination of microelectronics during the 1980s had the effect of generating sufficient demand to permit the establishment and expansion of manufacturing activities despite (or thanks to) the conditions created by the effort to stake out the information technologies market and by the purchasing policies applied in the telecommunications industry. For these industries, aside from the difficulty of importing equipment that was not to be found in the country, rigid conditions were imposed and legal obstacles were erected against the operation of companies in which a majority interest was held by foreigners. As time went by, the performance/price ratio of Brazilian equipment began to improve, but at a slower pace than in the case of equipment produced by other countries. This performance level proved inadequate, and the pressure brought to bear by local users and external producers, with the support of their Governments, ultimately resulted in the failure of the effort to create a core group of locally-owned enterprises in technologically dynamic segments of the market. The decision to block entry into the information technologies market was Brazil's most sophisticated and radical import-substitution measure, and its abandonment in the early 1990s marked the end of this industrialization strategy for Brazil.

Restrictions on the establishment of foreign companies in the electrical machinery industry were less rigorous because a number of leading international firms had already been operating in the country for several decades, and some leeway existed for im-

ports if it could be shown that they were not similar to locally-produced items. Nevertheless, the slump in demand during the 1980s was much more severe than in any other branch of industry. Uncertainty in the local market spurred exports, primarily to Latin America, of product lines for which demand in Brazil had been strong enough to permit the formation of a core group of manufacturers having a very substantial production capacity.

Even so, in both the electronics and electrical machinery industries, the removal of entry barriers led to the substitution of imports for Brazilian goods, thereby making it more difficult for companies to maintain diversified product lines and high levels of vertical integration. In response, most of these firms established closer external links and took steps that were diametrically opposed to their earlier course of action, rolling back the vertical integration of their production processes, increasing the specialization of the range of equipment assembled in the country and boosting their imports of components and final products. Given the electronics industry's weak response capacity in relation to the liberalization process, partnerships with foreign firms were inevitable, and the industry's ownership structure rapidly became de-nationalized.

Companies also tried to hold down their capacity-building activities to the minimum necessary for survival. Between the late 1980s and 1992, the electronics industry cut its budgets for R&D, training and technical service while raising its outlays for engineering services by 26.5% to the equivalent of 4.3% of total sales. Companies in the electrical machinery industry, meanwhile, focused on technical service (a 25% increase), froze spending on engineering services at 2.4% and made a small increase in their R&D expenditures. For the electronics industry, the growth of investment in engineering services is in keeping with the effort to rationalize production, while the electrical machinery industry's increased spending on technical service is necessary in order to ensure customer loyalty and thereby reinforce the advantages afforded by its proximity to users.

The adjustment of employment levels in R&D and engineering services was disproportionately large, however. In the group of high-technology industries, R&D staffing dropped 35% and employment in engineering services plummeted by nearly 60%, which was far steeper than the decrease in production (27%). The negative correlation between

spending and employment may be a sign of far-reaching changes in business strategies that entail the abandonment of efforts to devise local adaptations and to copy imported designs, together with the establishment of closer links with external technology providers. If this is the case, the firms in this industry may be reaffirming their desire to use their resources to acquire technology while at the same time demobilizing their technical teams.

In point of fact, the group of high-technology industries exhibits an above-average propensity to purchase foreign technologies. As shown in table 18, firms representing 38.1% of sales turned to overseas markets for the acquisition of basic product designs and 42.2% did so for detail engineering. In contrast, firms purchasing basic blueprints in the country accounted for a mere 2.9% of sales, while firms seeking conformity certification services represented 48.8% of sales. Thus, the less sophisticated the service in question, the greater the role played by local suppliers.

#### c) Challenges

These firms modified their product and supply strategies in order to protect the cost advantages they hold over outside competitors, thereby improving their products' price/performance ratios. However, in order to do this it was necessary to cut back on the industrial and technological activities conducted in the country. As a result, the substitution of imports for local products has become a hallmark of this group.

Specialization strategies will probably bring about major changes in the range and intensity of technological investments as well as altering the profile of R&D teams. In the past, manufacturers secured licenses for the use of given technologies (or,

in the case of subsidiaries, obtained them from the parent company) and then adapted them to domestic demand and locally available components. Consequently, technical teams were oriented towards product and process adaptation and imitation; the progressive liberalization of imports made this approach obsolete, however. Nevertheless, even though these firms have maintained close relations with their foreign partners, building up their capacity for innovation will continue to be a decisive factor. In order to be competitive, companies will have to invest in product development, and in order to do so, they will have to reactivate their R&D teams, although it may well be that their efforts should be focused on a limited number of core capabilities.

The opportunities for developing a competitive position are greater in segments with a potential domestic demand and a background of technological capacity-building in which customer-proximity advantages are significant. Expanding market segments and users requiring special types of equipment hold out the best prospects for local supply. Using state-of-the-art technologies, manufacturers of automatic bank teller machines, industrial process automation equipment, electrical power generators, equipment for combatting industrial pollution and agricultural machinery, among others, will probably play a significant role in covering domestic and even regional demand. In the other segments, however, reverse import substitution will be the mainstream tendency during the next few years. Accordingly, it is very likely that, as a group, high-technology industries will move towards more internationalized and specialized ownership and production structures in the future.

TABLE 18

#### High-technology industries: acquisition of technology, 1992 (Share of total sales of respondent firms as a group)

Type of technology	High-technology industries		All industries	
	Domestic	Foreign	Domestic	Foreign
Basic plans	2.9	38.1	27.8	30.1
Detail plans	5.5	42.2	28.3	26.7
Tests and trials	18.8	36.1	48.1	30.8
Conformity certification	48.8	33.4	35.0	26.0
Sales (billions of US\$)	4.5	4.5	46.2	46.2

Source: Compiled by the authors based on the survey conducted for *Estudo da competitividade da indústria brasileira*, Coutinho and Ferraz (1994).

# V

## Prospects

### 1. Industrial development: Will it change direction or hold to its present course?

The changes taking place in Brazil's industrial sector raise a very basic question: Are these changes laying the foundations for a new style of industrial development or do they represent an additional component that reinforces the pre-existing structure?

As we have seen in this article, all the different categories of industrial enterprises are beginning to make changes as they search within themselves for the elements that will allow them to survive in a more competitive environment. Their present actions do not represent a change in course but rather an intensification of a trend that had been cut short by the macroeconomic crisis, and their movement in this direction is bolstering and increasing the visibility of certain "rationalities" –to use the term employed by A. Hirschman– which were already present in their "genetic code": the tradition of catering to the domestic market, a build-up of production capacity and the internationalization of commercial activity and ownership structures. If applied, these rationalities may play a functional role in meeting competitive challenges by opening up spheres of activity for Brazilian firms in the international economy and opportunities for sustainable growth in the future.

There are two special considerations in this regard. First, as the country continues to experience problems associated with the politically-influenced management of public assets, State enterprises are beginning to disappear from the scene.<sup>3</sup> It should be noted that, as of late 1994, the majority of privatized firms belonged to the group of intermediate-goods industries and had been acquired by local companies. In the past, one of the arguments that was frequently advanced as a justification for public investment in

this group was precisely that the Brazilian business community lacked the necessary interest and ability to mobilize enough capital for such investment projects. During the 1990s, the situation has apparently been just the opposite: the State has exhausted its resources while the national business community has shown itself able, so far, to respond to offers for the transfer of ownership. It remains to be seen whether this fund-raising ability will stand up to the effects of an expansion process.

Second, from the standpoint of business practices, an effort has clearly been made to increase the efficiency of corporate production systems through downsizing, total quality management and the use of just-in-time systems. The modernization process is further advanced in export companies, which are bigger and have linkages with producers of intermediate goods and durables and, to a lesser degree, with high-technology companies. In companies serving the domestic market, which tend to be smaller traditional industries, this process has only just begun. The dissemination of this process is more intense in the case of simple techniques, but has run into greater difficulties in the case of more sophisticated techniques or ones that affect a larger number of partners. The modernization process may as yet be neither extensive nor intensive, but the important point is that new behavioural parameters have been introduced into the Brazilian economy. There is an enormous difference between being concerned about nationalization indexes and being concerned about profit-and-loss indexes, and it is to be hoped that the economy continues to move in this direction.

It is, however, disquieting that there has not been the slightest sign of any willingness on the part of Brazilian firms to develop new products and processes, which could herald the beginning of a genuine transformation of the foundations underpinning their competitive positions. This more advanced stage of industrial activity –or, more accurately, of some sectors of industrial activity– has not yet even appeared on Brazil's horizon. On the contrary, the available information indicates that Brazilian indus-

<sup>3</sup> If the extent to which these firms' senior executives have stayed on in their posts after privatization provides any indication of management quality, then the technical/entrepreneurial aspects of the way in which State enterprises have been managed has not been a problem.

try is specializing in products that fit a set pattern, has cut expenditure on R&D and, even more alarmingly, has sharply downsized its research teams and facilities. The manufacturing sector is therefore being dragged down by a great deal of inertia in terms of investment in technology which will surely hinder its progress towards greater competitiveness.

From a sectoral viewpoint, there has been no change in the ranking of the various groups of industries in Brazil in terms of their ability to compete; producers of intermediate and of durable goods are still stronger than traditional industries and high-technology sectors.<sup>4</sup> The main structural traits of these industries stand out more clearly than before, however.

*Intermediate goods.* Brazil has always been successful in these areas of activity. During the 1990s, these industries have sought to increase their vertical integration and to form stronger linkages within the international trade matrix. This is not a new venture, however, but rather a step forward along a well-established development path. What would, on the other hand, represent an actual change in course would be for these industries to diversify towards higher unit values and to internationalize their production capital, rather than simply offering stock on foreign exchanges. Apparently, few companies are going to take advantage of these opportunities, however.

*Durable goods.* The global strategies of the transnational corporations in this group are of fundamental importance. These industries were the standard-bearer for import substitution and will probably continue to occupy centre-stage when a different industrial development strategy takes hold in the country. In the past, sectors such as the automotive industry were regarded as the engines of economic growth because of the direct and indirect effects they had on other economic activities. In the 1990s, durable-goods industries will continue to drive the rest of the economy forward for the reasons discussed earlier and because these enterprises' actions plot out directions of growth and investment opportunities for

an economy that is lacking in long-term confidence. The most recent developments –the regionalization of production and the expansion of imports– cannot be regarded as actual changes in course, since all they are actually doing is prompting Brazilian subsidiaries to reinforce practices that are already routine procedures for transnational corporations.

*Traditional industries.* The changes under way in this group of industries are of a more comprehensive nature because they have to do with corporate ownership and production structures. In the food industry, increasing consumer sophistication will lead to more imports as well as prompting a disproportionate expansion of foreign enterprises' market shares in Brazil through continued purchases of local assets or the formation of partnerships between local companies and new market entrants. In the rest of the country's traditional industries, local market leaders are expanding into external markets via joint ventures or independent investments while, for the first time ever, Brazil's imports from developing countries are also on the rise.

Finally, in the case of *high-technology industries*, the significance of Brazilian industry's specialization and its reversal of vertical integration initiatives notwithstanding, these processes are deepening rather than changing the country's basic structural dependence on imports of equipment, technology or both. It is likely that the diversity of this sector's local manufactures may narrow while its import levels, which have always been quite high, will rise even further.

## 2. Industrial policy

If the above trends are firmly entrenched and are being manifested in the virtual absence of explicit public-sector intervention, then why do we need an industrial policy?

The analysis undertaken in this article shows up the flawed assumptions underlying the question as to whether an active industrial policy is needed or whether the Government should confine its attention to the issue of how to achieve macroeconomic management with greater social equity. Any action affecting the socio-economic environment will inevitably affect the competitive position and growth rate of the country's business enterprises. At the same time, the country's industrial development process may or may

<sup>4</sup> This hierarchy is mirrored to some extent in recent events in other Latin American countries (Katz, 1994). The identification of production-based and technological externalities in intermediate-goods industries thus constitutes an important topic of research.

not create favourable macroeconomic conditions, especially as regards stabilization programmes, and may either smooth out or heighten social inequalities.

Above and beyond the more general sorts of political or economic considerations which also underlie industrial policies in the main member countries of the Organization for Economic Cooperation and Development (OECD, 1994), this article demonstrates that the approach taken to competition also influences government action, even when it is focused on certain corporate sectors or groups. If we define a competitive firm as one that implements strategies, works to build up its capabilities and acts in accordance with the requirements for success in its market, then its performance will also hinge upon the effectiveness of the regulatory and incentive scheme, which is specific to each individual pattern of competition. Thus, a country's industrial policy requires sectoral orientations so that the objectives of incentive programmes, the types of instruments and the intensiveness of their use will be feasible and will generate more and better products and jobs.

The stages of development and the challenges characterizing the various groups of industry in Brazil clearly illustrate how, within a context of macroeconomic stability, policy objectives and tools may differ depending on the pattern of competition in effect.

*Intermediate goods.* Given the mature stage of competitiveness already reached by these industries, they no longer need the types of incentives that were provided in the past (i.e., the subsidization of capital costs). Projects coordinated by public agencies and the private (primarily international) financial system will probably be seen more frequently. Investment plans and operations increasingly require sophisticated financial engineering services, and this will reduce the relative importance of credit from government banking agencies such as the National Economic and Social Development Bank (BNDES) in cofinancing arrangements, loan guarantees, securitization operations, etc. In terms of the regulatory system, the probable increase in economic concentration will make it necessary for the Government to use policy tools in the areas of competition, environmental issues, consumer affairs and foreign trade in order to ensure that firms will employ competitive strategies.

*Durable goods.* The competitive challenges faced by these industries are to differentiate their pro-

ducts and increase their production scales so that they can compete with imports, including those coming from the parent companies of Brazilian subsidiaries. Since trade liberalization is expected to result in greater economic efficiency, the success of the firms in this group will not be measured in terms of profits and losses but rather by their rate of capital-deepening investment and by the regionalization—read MERCOSUR—of their products. Industrial promotion policies—regulations affecting imports of inputs and final products, conditions for the entry of new producers, and fiscal incentives for investment, production and exports—will help to shape the profile of the durable-goods group. At the same time, decisions regarding the siting of corporate enterprises are likely to be the subject of heated disputes, since their investments are a very attractive lure for host regions.

*Traditional products.* Only a small number of firms within this group of industries are competitive, and these enterprises, most of which are quite large, will be the main beneficiaries of any increase in demand. The same recommendations as were made for intermediate-goods industries apply to these firms as well. For the rest of the companies in this group, the challenge will be to boost their level of competitiveness, and in order to do so they will have to outpace the leading traditional enterprises. This will by no means be an easy task, given the latter's formidable response capacity. It will be up to government agencies to backstop this effort while deterring any activities that fall below a certain minimum in terms of quality and/or efficiency. Measures designed to foster competition should draw upon market forces to set the bounds of acceptable corporate behaviour and should include tax reforms, consumer protection measures, safety and environmental standards, trademark registration, measures aimed at curtailing tax evasion and improvements in oversight systems. Exposing local producers to international competition will also help to make the domestic market more open and thus curb abusive practices in the areas of pricing and product quality. If this is to be done, however, special care must be taken to prevent foreign companies from engaging in non-competitive practices, and the State will therefore need to be armed with very strong regulatory powers over foreign trade operations.

By breaking away from past adaptive and imitative practices and beginning to move in the direction of increased imports and specialization, *high-*

*technology industries* are giving rise to new challenges in the realm of government action. An examination of international practices reveals a number of approaches that could be emulated, including easy credit terms for users, support mechanisms for innovation, credit insurance, the equalization of interest rates for export activity, and tax breaks for capital goods. Another mechanism upon which all the developed countries rely quite heavily is the use of the State's purchasing power to promote quality and innovation. In addition, an important regulatory means of facilitating access to innovations is to protect property rights associated with investments in technology. In order to expand local supply capacity, an effort should be made to attract new firms and to streamline the administrative procedures involved in their establishment.

Government agencies have been quite timid in their attempts to deal with the competitive challenges confronting the various branches of Brazil's manufacturing sector. Now, however, instead of trying to foster local ownership by staking out the market for national enterprises, they are gradually fashioning a system designed to encourage efficiency and regulate deviations from competitive forms of behaviour.

This new incentive scheme should use the same principal policy tools as the old system—credit and tax incentives—but should alter their orientation and form of implementation. From the standpoint of the reciprocity which business enterprises should offer, the focus is shifting towards international price levels, quality standards and technological modernity and away from the local ownership of production capacity.

In the area of regulation, increased competitive pressure should crowd out the weaker firms, thereby leading to more concentrated industrial structures. Accordingly, in the relations among the various agents—including consumers and the State—the ability to define and implement rules of conduct will become differentiated. This will generate greater pressure for the establishment of a regulatory system that minimizes direct forms of intervention in corporate decision-making and maximizes the sanctions imposed on non-competitive practices. The ability to regulate competition as it relates, *inter alia*, to foreign trade, consumer affairs, environmental issues and industrial property stands out as the major challenge facing the Brazilian State in the 1990s.

In conclusion, the main challenge for Brazilian firms will be to consolidate and revitalize their ability to compete. Within the framework of a new system for promoting and regulating competition, the pillars of this revitalization will be the regionalization of demand, competition with imports, the internationalization of production and ownership structures, the enhancement of technical efficiency and investment in technological capacity. In order to ensure that Brazilian firms will be competitive, the State will have to play an active role (Ramos, 1993) and this, in turn, calls for the development of new policy-making capabilities. The availability of a skilled team of technical experts serving in agencies equipped with suitable mechanisms and instruments would surely smooth the way for the political negotiations which are inevitably involved in setting priorities and implementing measures to promote a competitive form of development.

(Original: Portuguese)

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