



---

**E C L A C**

**Economic Commission for Latin America and the Caribbean**

High-level Symposium on the Contribution of Transnational  
Corporations to Growth and Development in Latin America  
and the Caribbean

Santiago, Chile, 19-21 October 1992

**TRANSNATIONAL CORPORATIONS AND THE MANUFACTURING SECTOR IN BRAZIL \***

Technological Backwardness in the Eighties and Signs of an  
Important Restructuring in the Nineties

\* This paper was prepared by Mr. Ricardo Bielschowsky of the ECLAC/Department of Economic and Social Development (DESD) for Transnational Corporations. The author is thankful to Mrs. Maria Helena Zockun, Mr. José Clemente de Oliveira, Mr. Joao Carlos Ferraz and Mr. José Mauro de Moraes for their important contribution as consultants for this study. He is also thankful to Mr. Jacy Mendonca and to the Grupo de Empresas Brasileiras de Capital Estrangeiro, of the Federacao das Industrias do Estado de Sao Paulo, for their helpful support. The views expressed herein are those of the author and do not necessarily reflect the views of the Organization.



## CONTENTS

	<u>Page</u>
I. INTRODUCTION .....	1
II. GENERAL TNC TRENDS IN THE BRAZILIAN ECONOMY AND IN ITS MANUFACTURING SECTOR IN THE 1980s .....	3
III. TNCs IN THE MANUFACTURING SECTOR IN THE 1980s: STRUCTURAL TRENDS IN A DECADE OF STAGNATED OUTPUT .....	9
IV. THE PERIOD 1990-1991 AND SIGNS OF SIGNIFICANT ADJUSTMENT IN MANUFACTURING TNCs .....	18
V. ECONOMIC POLICY AND INVESTMENT PROSPECTS FOR THE 1990s .....	23
VI. CONCLUSIONS .....	27
VII. BIBLIOGRAPHY .....	30
VIII. ANNEX: TABLES .....	33



## I. INTRODUCTION

This paper is a summary of the main findings of a study on TNCs and structural changes in the Brazilian manufacturing sector. It aims to contribute to an understanding of the actual and potential role of Brazilian subsidiaries of transnational corporations (TNCs) in the modernization of the Brazilian manufacturing sector, i.e., its capacity to adapt successfully to the world's "industrial revolution" and increased competition.

As is well known, TNCs played a central part in shaping the modern Brazilian industrial sector and led the formation of the most technology-intensive branches. In 1980 some 38% of all sales of Brazilian manufactures were made by TNCs —probably a record among the world's largest manufacturing countries. Moreover, as a by-product of their activities in the domestic market, they managed to strongly increase exports throughout the 1970s and 1980s. Will they continue to provide capital, and more importantly, will they continue to provide technology and access to foreign markets?

As Brazilian industry is already highly "transnationalized", the relevant issue here is not whether new enterprises will invest in the country, but what current investors are intending to do and what they are actually doing with their existing capital.

These questions are of enormous interest in Brazil, partly because the recession and low investments of the last decade are assumed to have led to technological backwardness and declining competitiveness, in both national and transnational enterprises, and partly because of widespread concern about the Brazilian economy's capacity to react positively to the overall liberalization process under way, which faces very difficult macroeconomic conditions. In addition, there is great concern about the steep decline in foreign direct investment (FDI) over the last decade, since decreasing interest in Brazil could weaken the industrial restructuring policy's chances of success.

The study is part of a project on TNCs and industrial restructuring in Latin America. This report therefore emphasizes structural issues, especially structural changes (output and export specialization, productivity, investment and technical progress). Sections II and III analyse the 1980s and sections IV and V concern the 1990s.

Section II presents figures on recent TNC trends in the Brazilian economy and in its manufacturing sector. Section III describes the evolution of **basic structural aspects** of the manufacturing sector and of TNCs. Section IV describes what may be the most important finding of the study, namely the clear signs of a major adjustment being made by large TNCs in the Brazilian manufacturing sector. Section V summarizes some of the results related to future investment prospects and to economic policy issues.

The study relied mainly on over 100 hours' worth of questionnaires and interviews, mostly with company presidents and directors, conducted in 55 of the 100 largest manufacturing TNCs in Brazil

(according to total sales).<sup>\*</sup> It also had the support of a statistical study on the export patterns of the 1,000 largest exporting firms in Brazil (of which some 370 are TNCs) and on the evolution of sales according to Revista Visão's "Quem é quem na Economia Brasileira" (which surveys the 3,500 largest enterprises in Brazil).

As the main part of this study was based on questionnaires and interviews that involved issues of a qualitative nature, which dealt with the **perception** the executives had of their businesses, it should be borne in mind that these findings lack objective evidence. Surveys of opinions and **expectations** of a qualitative nature necessarily involve methodological problems, such as the handling of information which does not necessarily correspond to the facts. This study has the particular difficulty of dealing with the perception of what seems to be the initial stage of a new trend in the manufacturing sector, which has yet to be confirmed in the rest of the 1990s —so that the real extent of the changes here described can only be determined in a few years' time.

It should also be recognized that, as the main part of the study covers a particular sample —leading TNCs— its results cannot be generalized to apply to all TNCs, and even less to all enterprises in Brazil. TNCs tend to exhibit higher operational standards than Brazilian enterprises in some important aspects, such as labour productivity, intensity of use of skilled labour, capital intensity and value added (see, for example, Willmore, 1985 and Braga and Matesco, 1986). There are nevertheless some signs that the current restructuring process is not exclusive to large TNCs, and tends to be general. If this turns out to be the case, it will confirm the results of a 1989 study on prospects for the use of technology by large TNCs and large domestic firms in the Brazilian manufacturing sector (Ferraz and Bielschowsky, 1990), which concluded that the prospects were very similar as to the future use of technology by the two groups of enterprises; that national enterprises, like TNCs, had a clear perception of their technological backwardness; and that they had a very favourable attitude towards future modernization, and gave clear indications that their strategic planning included as a central target the enhancement of efficiency and of international competitiveness.

---

<sup>\*</sup> The answers to the questionnaire are reported in the document "Transnational Corporations and Industrial Modernization in Brazil", Joint ECLAC/DESD Unit on Transnational Corporations, ECLAC, October 1992 (Conference Room Paper (DSC/7)).

## II. GENERAL TNC TRENDS IN THE BRAZILIAN ECONOMY AND IN ITS MANUFACTURING SECTOR IN THE 1980s

This section briefly outlines the evolution of foreign capital in the Brazilian economy in the 1980s, especially in the manufacturing sector. First, five sets of indicators are presented: a) country origin of the stock of foreign capital; b) sectoral distribution of the stock of foreign capital; c) composition of foreign capital in the manufacturing sector; d) share of TNCs in exports of the manufacturing sector; and e) share of TNCs in sales of the manufacturing sector. Data on the decline of the flow of FDI into the Brazilian economy are then supplied, followed by a comment on the executives' perception of this worrisome fact.

As shown in table 1, there were no important changes in the composition of FDI stock as to place of origin in the 1980s. In a breakdown which contrasts with that of most other Latin American countries, European TNCs hold some 50% of the total registered capital in Brazil, and North American TNCs hold around 33% (whereas in Mexico, for instance, two thirds of FDI comes from the United States and Canada).

*Table 1*

**BRAZIL: TNC STOCK COMPOSITION ACCORDING TO  
PLACE OF ORIGIN <sup>a</sup>**  
(Billions of current US\$ and % shares)

	1980		1990	
	Values	%	Values	%
Europe	8.3	47.4	18.4	49.6
United States-Canada	5.6	33.0	12.5	33.6
Japan	1.7	9.7	3.4	9.2
Other	1.9	10.9	2.8	7.6
Total	17.5	100.0	37.1	100.0

Source: A. Calderón, "Panorama regional" (DSC/1), *Inversión extranjera directa en América Latina y el Caribe, 1970-1990*, vol. 1, conference room paper, presented at the High-level Symposium on the Contribution of Transnational Corporations to Growth and Development in Latin America and the Caribbean, 19-21 October 1992, Santiago, Chile, ECLAC.

<sup>a</sup> Foreign firms are those in which non-residents hold 25% or more of the voting capital.

Table 2 shows that there was some sectoral diversification in FDI during the 1980s, towards services, in the total stock of foreign capital (industry's share declined from 74% to 69% of the total registered capital, and services' share increased from 22% to 28%). The current share of industrial capital in Brazil is still well above the average in the seven largest developed countries (less than 50%).

Table 2

*BRAZIL: SECTORAL COMPOSITION OF FDI STOCK IN BRAZIL, 1980 and 1990<sup>a</sup>*  
(Billions of current US\$ and % shares)

	1980		1990	
	Values	%	Values	%
Agriculture	0.7	3.7	1.1	2.9
Industry	13.5	74.4	25.7	69.2
Services	3.8	21.9	10.3	27.8
Total	17.5	100.0	37.1	100.0

Source: A. Calderón, "Panorama regional" (DSC/1), *Inversión extranjera directa en América Latina y el Caribe, 1970-1990*, vol. 1, conference room paper, presented at the High-level Symposium on the Contribution of Transnational Corporations to Growth and Development in Latin America and the Caribbean, 19-21 October 1992, Santiago, Chile, ECLAC.

<sup>a</sup> Foreign firms are those in which non-residents hold 25% or more of the voting capital.

As shown in table 3, the composition of the stock of foreign capital in the Brazilian manufacturing sector did not change much in the 1980s, with the exception of a decrease in the share of transport equipment (from 18% to 14.4%) and an increase in chemicals (from 27.2% to 29.6%). Such capital is concentrated in the metal-working (machinery, consumer durables and transport equipment) and chemical/petrochemical branches. This composition follows a pattern very similar to that of the United States' foreign direct investments in the manufacturing sector.

Brazilian industrial exports (manufactured and semimanufactured) showed a 3.2% average yearly increase in the 1980s. Excluding food, beverages and tobacco, the increase was 8.4%, a rate faster than that of world trade. TNCs performed better than national enterprises when food exports are included, and slightly worse when they are excluded (table 4). As a consequence, as shown in table 5, their share in total Brazilian industrial exports increased from 38% in 1980 to 44% in 1990 (see annex table 3 for details). It decreased slightly when food exports are excluded, remaining at a level close to half of all exports.



Table 3

**BRAZIL: PERCENTAGE COMPOSITION OF FOREIGN CAPITAL STOCK IN THE  
MANUFACTURING SECTOR, 1980 AND 1990 <sup>a</sup>**

	1980	1990
Food, Beverages and tobacco	7.7	8.2
Chemical and petroleum, rubber and plastic prod.	27.2	29.6
Basic metallurgy	10.7	11.8
Mechanical, electrical and electronic equipment	23.8	24.0
Transport equipment	18.0	14.4
Other	12.6	12.0
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

Source: A. Calderón, "Panorama regional" (DSC/1), *Inversión extranjera directa en América Latina y el Caribe, 1970-1990*, vol. 1, conference room paper, presented at the High-level Symposium on the Contribution of Transnational Corporations to Growth and Development in Latin America and the Caribbean, 19-21 October 1992, Santiago, Chile, ECLAC.

<sup>a</sup> Foreign Firms are those in which non-residents hold 25% or more of the voting capital.

Table 4

**AVERAGE ANNUAL PERCENTAGE GROWTH RATES OF EXPORTS  
OF MANUFACTURES, 1980-1989 <sup>a</sup>**

	Brazil	TNCs in Brazil	Developed economies	LDCs
Manufactures	3.2	5.0	4.0	5.3
Manufactures, excluding food, beverages & tobacco	8.4	7.3	4.2	7.4

Source: Based on ECLAC and OECD figures, and on data especially prepared by José Mauro de Moraes, consultant for the ECLAC/DESD study on industrial restructuring (on the basis of special tabulations supplied by CACEX; see table 7).

<sup>a</sup> 1989 figures deflated by United States wholesale prices.

Table 5

*BRAZIL: PERCENTAGE SHARE OF FOREIGN ENTERPRISES IN EXPORTS OF THE  
MANUFACTURING SECTOR. 1980 AND 1990*

	1980	1990
Total	38.2	44.1
Total, exclud. food, beverages and tobacco	48.7	47.0

Source: Data prepared by José Mauro de Moraes, consultant for the ECLAC/DESD study on industrial restructuring in Brazil, on the basis of information supplied at the special request of ECLAC by the Department of Foreign Trade of the Ministry of Economic Affairs, Finance and Planning-Brazil, CACEX; the information covers the 1,000 largest exporting enterprises in Brazil. "Foreign enterprise" is here defined as one in which TNCs have at least 25% of the voting capital.

Updated information on the share of TNCs in the total sales of the Brazilian manufacturing sector is difficult to obtain. The available source —Revista Visão's "Quem é Quem na Economia Brasileira"— provides data for 1980 and 1990 that are not fully comparable, since the sample in the 1980 edition is not precisely the same as in the 1990 edition.<sup>1</sup>

Based on this source alone, the recession of the 1980s appears to have affected TNCs more severely, since their output is shown to have decreased at a yearly average rate of 0.8% (as opposed to a positive 0.8% for the Brazilian manufacturing sector as a whole). As a consequence, the share of TNCs in the total sales of the manufacturing sector seems to have declined from 38% to 32.6% between 1980 and 1990. In nearly all branches where TNCs have a significant presence, the pattern appears to show a decline in their share of sales. Some examples are given in table 6 (see annex table 3 for details).

It is possible that the figures in table 6 overestimate the extent of the fall. Evidence based on fiscal data is needed for a more reliable appraisal of the situation. However, if the decline proved to be real, it would constitute a troubling sign of decreasing interest in the Brazilian economy.

Data on the flow of foreign direct investment (FDI) points in this direction. In opposition to the world trend —i.e., in opposition to the current process of "globalization"— FDI in Brazil sharply decreased in the 1980s (table 7). At a time of capital shortages in Brazil, of rapid worldwide technological changes and of increased international competition, these figures can only cause concern about the prospects for the future contribution of TNCs to Brazilian economic development.

<sup>1</sup> The Quem é Quem sample in 1980 consisted of 3,867 firms, of which 677 were TNCs (17.5%), and the 1990 sample consisted of 3,310 firms, of which 496 were TNCs (15%).

Table 6

**BRAZIL: PERCENTAGE SHARE OF FOREIGN ENTERPRISES IN SALES OF THE  
MANUFACTURING SECTOR, SELECTED BRANCHES AND TOTAL, 1980 AND 1990**

	1980	1990
Total	38.0	32.6
Mechanical equipment	50.1	42.1
Electr. & electron. equip. (incl. consum. goods)	58.0	48.9
Transport equipment	74.0	67.1
Basic chemicals	55.1	47.8

Source: Data prepared by José Mauro de Moraes, consultant for the ECLAC/DESD study on industrial restructuring in Brazil, on the basis of *Quem é Quem na Economia Brasileira*, ed. 1981 and 1991, and *Guia Interinvest*, ed. 1986. "Foreign enterprise" is defined as one in which TNCs have at least 25% of the voting capital.

Table 7

**FOREIGN DIRECT INVESTMENT FLOWS: WORLD AND BRAZIL, 1971-1990**  
(Indexes, 1976-80=100 and % shares)  
Constant 1980 prices <sup>a</sup>

	1971- 1975	1976- 1980	1981- 1985	1986- 1990
World	82.5	100.0	106.0	299.6
Brazil	81.8	100.0	73.6	46.8
Brazil as a % of world	5.9	6.1	4.2	1.1
Brazil as a % of Latin America	50.1	48.8	39.6	22.9

Source: Based on International Monetary Fund (IMF), Balance of Payments Statistics and International Finance Statistics, Washington, D.C., various issues.

<sup>a</sup> Deflated by United States wholesale prices.

The situation appears more disturbing in light of the fact that FDI is increasingly concentrated in the three largest world markets and in their close geographical neighbours, namely the United States/Mexico, Japan/Southeast Asia, and Europe —Eastern Europe being a probable future "neighbour" for Europe— (the "triad thesis", UNCTC, 1991). A possible interpretation for this pattern of globalization might be that its rationale consists of a reaction by TNCs to regionalization, i.e., the need for TNCs to have a foot in each of the three largest markets, and, whenever possible, to reap the benefits of low wages in neighbouring countries and rich resource endowments. Where does Brazil stand?

The information gathered for this study contradicts the conclusions suggested by the above data. If the executives' perception is correct, it seems that if the triad hypothesis holds in the future, Brazil will probably be an exception to it. The reason FDI fell in the 1980s will prove to have been recession and growing instability (see annex tables 1 and 2 on economic patterns in the 1980s). The executives say their enterprises will invest when stability and growth recover, firstly because of the factor that has been attracting TNCs to Brazil since the 1950s, namely the large existing and potential market; and secondly because of the simple fact that, willingly or not, they already have huge assets in Brazil which, if sold under the current circumstances, would lead to heavy losses. Their argument is that sunk costs make it imperative for TNCs to keep investing in the future, so as to preserve or increase their shares in local markets.<sup>2</sup>

---

<sup>2</sup> It seems that specialists on TNCs have not yet given adequate analytical importance to the relative size of the existing stock of foreign capital in an economy as a factor determining the inflow of FDI. Based on the Brazilian case study, I suggest that the following hypothesis be tested: in similar conditions (similar macroeconomic conditions, geographical situations, degree of economic development, etc.), the minimum and maximum yearly flows of FDI —relative to the size of the domestic market— to different countries depend on the existing stock of FDI. The minimum flow is directly proportional to the existing stock (owing to reinvestments aimed at maintaining market shares), and the maximum flow is inversely proportional to the existing stock (investment per unit of additional output by established companies is lower than the rate for new entrants in the country, owing to the entry cost).

### III. TNCs IN THE MANUFACTURING SECTOR IN THE 1980s: STRUCTURAL TRENDS IN A DECADE OF STAGNATED OUTPUT

#### 1. Introduction

This section presents some basic indicators related to the role of TNCs in the main structural trends in the Brazilian manufacturing sector during the 1980s. No general "label" perfectly characterizes these structural trends. Within a recessive context, output, investments, productivity and technical progress performed poorly, while at the same time, very positive gains were made in export-related areas. TNCs contributed to all these trends —positive and negative— and can be said to have been important protagonists of them.

For purposes of clarity, a reference to the "investment cycle" in intermediate goods that occurred between the mid-1970s and the mid-1980s is a necessary introduction to the subject.

The Brazilian authorities reacted to the 1973 oil crisis with a "growth-cum-debt" strategy of adjusting to the disequilibrium in the balance of payments (the Second National Development Plan, or PND II) by means of heavy investments in energy, capital goods and intermediate goods (chemicals/petrochemicals, steel, aluminium, and pulp and paper), which aimed at both import substitution and export growth (Castro and Souza, 1985, and Batista, 1987).<sup>3</sup> The policy had already produced very positive results by the beginning of the 1980s, as shown by the figures in table 8.

In the first half of the 1980s, as the figures in table 9 show, the intermediate branches were a clear exception to the overall decline in manufacturing investments (unfortunately, data exist only up to 1984). It can therefore be said that the changes in the composition of the Brazilian manufacturing sector's output capacity arose in part in the 1980s, though within a process inherited from the 1970s.

Unfortunately, no figures are available to illustrate the changes in the composition of the manufacturing sector's **output capacity** in the 1980s. A comparison between the 1980 and 1989 **output compositions** is presented in table 10. It is, nevertheless, not a good indicator of changes in output capacity because domestic recession in 1989 was a determining factor in that year's output composition figures. A large amount of capacity is hidden behind Brazil's 1989 output figures. Once the economy recovers, at least part of the idle capacity should still be apt for use. Changes in output composition were certainly related to the radically different ways in which the domestic recession affected the various

---

<sup>3</sup> The Brazilian "industrial restructuring", in the usual policy-oriented meaning of the term —i.e., that of adjusting the economy to the balance-of-payments difficulties— can therefore be said to have immediately followed the first oil shock. In contrast to most "restructuring" processes in Latin America, based on liberalization schemes, it was developed in a context of increasing economic closure. The institutional and normative framework for economic policy inherited from the 1970s was left largely untouched during most of the 1980s.

Table 8

**BRAZIL: IMPORT AND EXPORT COEFFICIENTS FOR SELECTED INTERMEDIATE  
AND CAPITAL GOODS, 1974 AND 1983**

	Import coefficients			Export coefficients		
	1974	1978	1983	1974	1978	1983
Steel	39.1	5.7	1.0	2.2	5.4	37.8
Ferro-alloys	7.5	1.2	0.2	20.1	36.5	60.4
Aluminium	50.4	26.3	2.3	1.6	2.0	40.0
Basic petrochemicals	14.0	11.0	0.6	0.0	0.0	12.3
Intermediate petroch.	41.0	22.0	2.0	1.9	4.9	12.2
Paper	20.4	9.8	7.8 <sup>a</sup>	1.7	4.0	10.6 <sup>a</sup>
Cellulose	16.6	4.4	1.0 <sup>a</sup>	11.8	14.8 <sup>a</sup>	31.1 <sup>a</sup>
Capit. goods (on order)	39.8	37.9	37.1 <sup>b</sup>	3.0	8.9	15.9 <sup>a</sup>
Cap. goods (in series)	27.0	20.5	24.9	7.0	14.3	23.1 <sup>a</sup>

**Source:** J.C. Batista (1987), *Brazil's Second Development Plan, and its Growth-cum-debt Strategy*, Texto para discussão series, No. 93, Rio de Janeiro, Instituto de Estudos Internacionais (IEI)/Federal University of Rio de Janeiro (UFRJ), November, unpublished.

<sup>a</sup> 1981.

<sup>b</sup> 1980.

Table 9

**BRAZIL: INVESTMENTS IN SELECTED BRANCHES OF THE MANUFACTURING SECTOR,  
1975-1979 AND 1980-1984  
(Constant 1980 prices)<sup>a</sup>**

	Indexes (1972-1974=100)		As a % of GDP (%)		Composition	
	1975/ 1979	1980/ 1984	1975/ 1979	1980/ 1984	1975/ 1979	1980/ 1984
Chemicals, basic metallurgy and pulp & paper	121	143	1.6	1.6	33	48
Mechanical, electr. and transport equipment	123	67	1.1	0.5	23	15
Other	115	75	2.1	1.2	44	37
Total	116	94	4.7	3.3	100	100

**Source:** Brazil, Brazilian Geographical and Statistical Institute (IBGE), *Estatísticas Históricas do Brasil*, Rio de Janeiro.

<sup>a</sup> Investment figures were deflated by the "deflator implícito de formação bruta de capital fixo" (IBGE).

Table 10

*COMPOSITION OF MANUFACTURING VALUE ADDED IN 1980 and 1989: BRAZIL, TNCs  
IN BRAZIL, DEVELOPED ECONOMIES AND LDCs  
(Percentage shares)*

	<u>TNCs in Brazil</u>		<u>Brazil</u>		<u>Developed economies</u>		<u>LDCs</u>	
	1980	1989	1980	1989	1980	1989	1980	1989
Metal-working	43.9	40.9	29.8	25.9	41.0	43.4	21.6	23.1
Chemicals, basic metallurgy and pulp & paper	36.0	38.9	30.3	37.7	25.2	24.7	27.8	29.3
Other	21.1	21.0	39.9	36.4	33.8	31.9	51.6	47.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Based on data from UNIDO and the Joint ECLAC/DESD Unit on Transnational Corporations.

branches, specifically the different degrees of income elasticity of domestic consumer demand and the pro-cyclical drop in investment (more than proportionally affecting, for instance, consumer durables and the capital goods branches). Available data indicate significant unused capacity in most metal-working branches in Brazil during most of the 1980s. Therefore, the figures in table 11 should be viewed with care.

The main changes in output composition in the 1980s were a decline in the share of the metal-working branches (mechanical, electrical and transport equipment) and an increase in the share of the group of intermediate branches largely responsible for import substitution and export increases. They occurred in both the Brazilian manufacturing sector as a whole and the TNCs located in Brazil. These changes contrasted sharply with the global trend, since the world's output share of metal-working goods increased (especially the share of electronic goods) while its output share of chemical/basic metallurgy/pulp and paper goods declined in the developed economies (as a result of a decline in basic metallurgy) and increased much more modestly in LDCs.

In sum, although the overall picture will not become clear until Brazil's economy recovers, it can be said that some specialization towards intermediate goods took place. The output capacity that was developed in these sectors under the PND II investments in intermediate goods greatly surpassed domestic demand in the 1980s, and showed consistent international competitiveness through increasing exports.

Table 11

**EXPORT COEFFICIENTS IN THE MANUFACTURING SECTOR: 1970/1980/1988**  
(Percentages)

	BRAZIL			TNCs IN BRAZIL		
	1970	1980	1988	1970	1980	1988
Total export coef.	4.7	9.9	12.6	n.a.	9.9	17.0
Export coeff. exclud. food	3.0	6.1	12.4	n.a.	9.2	16.8

Source: Joint ECLAC/UNIDO Industry and Technology Division, statistical data, and *Dinámica industrial y competitividad 1970, 1980 y 1988* (LC/R.1109), Santiago, Chile, December 1991; and data prepared by José Mauro de Moraes, consultant for the ECLAC/DESD study on industrial restructuring in Brazil.

## 2. Export-related changes

As stated earlier, exports performed very well in the 1980s. In that period, Brazil managed to increase its share in the international market for manufactures other than processed food.<sup>4</sup> Two marked changes relating to exports took place. First, export coefficients strongly increased. Second, export composition shifted in a very positive way, decreasing Brazil's dependence on food exports —which performed disastrously in the 1980s, not only in Brazil but in most LDCs as well— by increasing other exports (especially steel, aluminium, petrochemicals, and pulp and paper). TNCs contributed significantly to these positive trends.

Brazilian export coefficients in the manufacturing sector doubled in the 1980s (table 11). Although they had also doubled in the 1970s, they had done so in a context of strong domestic growth, whereas the context in the 1980s was one of severe domestic recession. As much as national enterprises, TNCs were responsible for the higher export coefficients, which are now much closer to those prevailing in many developed countries than they were in the early 1980s.

The extent of the changes in the composition of manufacturing exports can be seen in table 12. The main changes were a radical reduction in the share of food, and a sharp increase in the share of intermediate goods (in such capital-intensive, resource-based branches as basic metallurgy, pulp and paper and chemicals). This trend is evident in both Brazilian exports as a whole and TNCs' exports in particular. It differed from the trend in the rest of the world in that 1) food declined only slightly in the composition of the developed economies' exports and 2) basic metallurgy dropped sharply in both developed economies and LDCs. With respect to the goods produced by the metal-working branches,

---

<sup>4</sup> On the subject of the competitiveness gained by the Brazilian manufacturing sector in the 1980s, see Bonelli, 1992. Annex table 3 presents data based on Bonelli's study.



Table 12

*COMPOSITION OF MANUFACTURING EXPORTS IN 1980 AND 1989: BRAZIL, TNCs IN  
BRAZIL, DEVELOPED ECONOMIES AND LDCs  
(Percentage shares)*

	<u>TNCs in Brazil</u>		<u>Brazil</u>		<u>Developed economies</u>		<u>LDCs</u>	
	1980	1989	1980	1989	1980	1989	1980	1989
Food, beverages and tobacco	28.3	13.1	49.3	20.9	8.4	7.12	2.7	7.2
Basic metallurgy (Steel and non-ferrous metals), chemicals <sup>a</sup> and pulp and paper	17.4	36.1	14.5	37.5	27.9	25.2	21.8	17.3
Metal-working (mech., elect. and transport equipment)	47.5	45.2	23.6	27.8	49.8	55.3	23.2	38.2
Other	6.8	5.6	12.6	13.8	13.9	13.4	32.3	27.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Based on Organization for Economic Cooperation and Development (OECD), Economic Commission for Latin America and the Caribbean (ECLAC), and Joint ECLAC/DESD Unit on Transnational Corporations, and data prepared by José Mauro de Moraes, consultant for the ECLAC/DESD research on industrial restructuring in Brazil.

<sup>a</sup> Excludes oil refining.

their share of total exports by TNCs in Brazil declined, whereas among Brazilian exports as a whole and world exports (especially LDCs' exports), the share of these goods in world trade has increased markedly.

### 3. Negative trends (and a qualification of the idea of technological backwardness)

The positive changes just described seem to have resulted mainly from the productive capacity installed in the 1970s, and partially from the latest stage of the investment cycle in intermediate goods which started in the mid-1970s and ended in the early 1980s. The latter decade was nevertheless quite negative in terms of investments, productivity and technical progress, as described below.

a) Decline in investments

As shown in table 13, investments declined in the 1980s in both the Brazilian economy as a whole and its manufacturing sector. Although specific data on TNC capital formation were not available, the data on the inflow of FDI shown in table 7 —which are financial figures, but may be taken as an approximation of "real" investment— indicate poor performance in this area as well.

Table 13

*BRAZIL: INVESTMENTS (GDCF): INDEXES (1976-1980=100) AND AS A PERCENTAGE OF GDP, 1976-1990*

*(Constant 1980 prices) <sup>a</sup>*

	Indexes			GDCF/GDP (%)		
	1976-1980	1981-1985	1986-1990	1976-1980	1981-1985	1986-1990
All sectors	100	81	94	23.6	18.1	17.7
Mach. and equip.	100	68	84	9.6	5.8	5.9
Manufacturing sector	100	78	n.a.	4.5	3.2	n.a.

Source: Brazil, Brazilian Geographical and Statistical Institute (IBGE).

<sup>a</sup> Deflated by the "deflator da formação bruta de capital fixo" (IBGE).

b) Negative productivity changes

The Brazilian manufacturing sector's labour productivity not only remained stagnant, but even declined slightly in the 1980s. In some branches where the presence of TNCs is significant, it declined considerably, in contrast to the performance in the developed economies, as shown in table 14.

c) Technological backwardness

A number of recent studies in various relevant manufacturing branches, as well as consensual opinion in Brazil, indicate that the introduction of technical progress was slow and insufficient during the 1980s (CNI (1989), Maciel (1990), Ferraz and others (1990), Ferro (1990), Coutinho and Suzigan (in press)). The results of this study confirm that this problem affected all groups of enterprises, including TNCs.

Table 14

*LABOUR PRODUCTIVITY INDEXES IN THE MANUFACTURING SECTOR, 1989  
(1980=100) BRAZIL, UNITED STATES, GERMANY AND JAPAN*

*(Selected branches and total)<sup>a</sup>  
(1980=100)*

	Brazil	United States	Germany	Japan
Industrial chemicals (351+352)	97	143	128	145
Metallurgy (37+ 381)	104	142	124	117
Non-electrical machinery(382)	92	181	126	148
Electrical machinery (383)	91	180	137	206
Transport equipment (384)	72	147	131	123
<b>Total</b>	<b>96</b>	<b>157</b>	<b>129</b>	<b>149</b>

Source: Based on United Nations Industrial Development Organization (UNIDO), Handbook of Industrial Statistics, 1990, Vienna, 1990.

<sup>a</sup> Index of output divided by the indexes of "operative workers" in the cases of Brazil, the United States and Germany, and divided by the indexes of total employees in the case of Japan. Numbers in brackets correspond to ISIC classification.

Nevertheless, this point deserves a few qualifications. It would be too much to say that analysts exaggerate the idea of backwardness, because this would be a very subjective statement and because in this case any exaggeration serves as a good warning for the future. Besides, no one can doubt that a technological revolution is occurring in the world. However, it would not be incorrect to say that Brazil still has reasonably good manufacturing conditions and an excellent basis for technological updating. The Brazilian manufacturing sector was formed very recently, so that in many branches —such as petrochemicals, pulp and steel— it is not yet outdated. Moreover, in spite of its inability to innovate on a global scale, Brazil has mastered basic production know-how, and this is a fundamental asset. Finally, it cannot be said that its enterprises failed entirely to improve their efficiency in the 1980s.

That perception is also confirmed by this study. For instance, when asked whether they were more efficient now than in 1980, 58% of the firms surveyed stated "more efficient", and 38% stated "much more efficient". When asked how the firm's efficiency had developed in the 1980s in given areas, the answers were as follows:

Table 15

**BRAZIL: IMPROVED EFFICIENCY IN MANUFACTURING TNC IN  
THE 1980s, IN GIVEN AREAS**

*(Questionnaire answers)*

*Distribution of answers (in percentages)*

	Great progress	Some progress	No progress	Not applicable
(a) Decrease in costs due to output rationalization	36.0	54.0	6.0	4.0
(b) Labour productivity	30.0	64.0	6.0	0.0
(c) Decrease in stocking time	26.0	56.0	14.0	4.0
(d) Quality of product in terms of durability	24.5	26.5	10.2	38.8
(e) Quality of product in terms of manufacturing defects	38.0	44.0	8.0	10.0
(f) Quality of product in terms of performance	32.0	44.0	4.0	20.0
(g) Improvements in product design	22.9	31.3	10.4	35.4
(h) Adjustment to world technical requirements	24.5	55.1	4.1	16.3
(i) Adjustment to time requirements of the world market	16.3	40.8	12.2	30.6
(j) Greater flexibility in the manufacturing process	24.5	57.1	6.1	12.2

These results show, first, that complete inertia was an exception in nearly all areas, and second, that although "some progress" was in most cases twice as frequent an answer as "great progress", the latter was significantly frequent in items related to product quality and cost decreases. They also contrast with the data presented in table 14 on productivity changes. In addition to reflecting a probable sample bias, they are apparently influenced by the fact that the answers were given in late 1991 and early 1992, so that changes resulting from the 1990-1991 adjustment efforts (described in the next section) are considered in the executives' perception of past performance.

Perhaps the best evidence as to the issue of relative technological backwardness is given by the replies to a question aimed at making a simple "technological inventory" of the TNCs in the sample. Table 16 summarizes the answers to the question, "How do you qualify the following aspects related to technological advancement in your firm as compared to the present technological level in the world's main exporting firms in your sector?"

The following conclusions may be drawn from table 16: i) TNCs have relatively new production facilities whose average age and equipment quality are not significantly inferior to international standards; ii) the degree of automation in their plants is considerably below international standards; iii) the extension of the use of "Japanese" organizational techniques is not up to international standards, but the differences are not as great as in the case of automation; iv) quality of products and plants corresponds to international standards; and v) labour productivity is low in relation to international standards.

Table 16

*TNCS IN THE BRAZILIAN MANUFACTURING SECTOR: TECHNOLOGICAL  
BACKWARDNESS RELATIVE TO INTERNATIONAL STANDARDS  
(Questionnaire answers)*

*Distribution of answers (in percentages)*

	Higher	Similar	Lower	Much lower
(a) Modernity of equipment	6.0	60.0	34.0	0.0
(b) Digital automation	0.0	24.0	60.0	16.0
(c) Intensity of use of new organizational techniques	6.0	40.0	52.0	2.0
(d) Labour productivity	6.1	36.7	57.1	0.0
(e) Quality of plant operation	16.3	61.2	22.4	0.0
(f) Quality of products	14.3	77.6	8.2	0.0
(g) Quality of skilled labour	6.0	54.0	38.0	2.0
(h) Quality of unskilled labour	2.0	28.6	55.1	14.3
(i) Price in the domestic market higher than internationally	40.4	44.7	12.8	2.1

It should be noted that the information in table 16 was obtained between November 1991 and January 1992, so that it comprises the perception of the effects of the current adjustment process. As argued in section IV, the last two years saw significant progress in organizational techniques, as well as major improvements in productivity. Product quality seems to have been a focus of continuous effort throughout the 1980s and up to the present. Finally, since investment activities were especially weak in recent years, the enterprises' equipment and production processes are getting "older" at the present time, and the firms are maintaining very low levels of industrial automation.

It is interesting to note that, when asked about the causes of technological backwardness, the executives were nearly unanimous in pointing out that by far the most important cause was the enduring crisis and the consequent fall of investments. The lack of economic openness was also mentioned as a cause of backwardness, but with far less emphasis.

#### IV. THE PERIOD 1990-1991 AND SIGNS OF SIGNIFICANT ADJUSTMENT IN MANUFACTURING TNCs

The period 1990-1991 marked the start of an extensive microeconomic adjustment process in most manufacturing TNCs in Brazil. This process has been quite comprehensive, encompassing elements such as important managerial changes, the rationalization of production processes, the introduction of new organizational techniques, output specialization and the reduction of vertical integration, all aimed at greater efficiency. Described below are the main elements of this process.

Most TNCs had become aware of their relative technological and managerial backwardness and of the need for adjustment, especially since many of their parent companies had themselves begun to implement a restructuring process. But TNCs were mainly compelled to adjust by an aggravation of the crisis, which sharply cut their profits and in many cases led to severe losses. This decision, once taken, was reinforced by the liberalization process, which gave TNCs some basic guidelines as to the direction and intensity of their reforms.

The years 1990 and 1991 represented a very singular period for enterprises in the manufacturing sector. First and foremost, they faced particularly negative economic conditions stemming from the macroeconomic context. The years 1990 and 1991 were particularly bad for the Brazilian manufacturing sector. Among the varied and more or less concomitant components of the acute Brazilian crisis were a) drastic anti-inflationary measures, which included the confiscation of savings accounts and caused an interruption in the firms' normal operations for much of the first half of 1990; b) price controls; c) unrelenting inflationary pressures; d) severe domestic recession; e) high interest rates; f) extreme overvaluation of the cruzeiro (steep decline in exchange rates); g) international recession and a major drop in the value of exports; and h) elimination of import barriers and implementation of a tariff-reduction programme (with no accompanying introduction of anti-dumping measures, at a time when international commodity prices were plummeting). Also, a strong wave of international criticism of Brazilian economic policy, largely echoed by the local press, exacerbated the existing climate of great uncertainty in Brazilian business circles.

Moreover, manufacturing firms witnessed in 1990 the convincing announcement and initial measures of an overall economic liberalization plan. By far the most important policy element that affected their decision-making was trade liberalization—including the reduction of export subsidies—but other measures regarding industrial policies, privatization and changes in the rules governing FDI were also influential.

All of these factors added up to a formidable shock to TNCs, which found themselves forced into an **emergency** adjustment process. Data on corporate profitability in 1990 and 1991 show overall losses in the Brazilian economy, clearly indicating how deeply the crisis affected them. Over one third of the

enterprises in the sample also suffered losses in at least one of the two years, and most of the others saw their profits decline sharply.

Approximately half of the 55 enterprises in the sample started their adjustment process in the period 1990-1991 (a large proportion of them started it in the second half of 1990). Some 20% of the enterprises had already initiated it in 1988-1989, and vigorously stepped up the process in 1990-1991. Another 15% are modern and relatively up-to-date enterprises in which changes have been continuous over time, but which are now adapting to trade liberalization. The remaining 15% showed no particular reaction to the crisis and the liberalization, as far as an adjustment process was concerned. In sum, only 15% of the enterprises in the sample were not actively responding to the crisis and the liberalization.

The adjustment involves large-scale dismissals of administrative personnel and operative workers. Since the changes do not correspond to investments in either expansion of productive capacity or modernization, and imply virtually no financial costs, they are perfectly compatible with the currently widespread reluctance to invest, as a consequence of severe macroeconomic instability. For this reason, automation has thus far been absent from the adjustment process. The executives seem to depend on it very little for increased efficiency in the short and medium term. There is reason to believe that automation—and, even more, "flexible automation"—will be extensively introduced only at a later phase, along with a new investment cycle in the Brazilian economy.

Nearly four fifths of the enterprises surveyed had dismissed over 10% of their employees during 1990-1991; the average dismissal rate was 20.1%. These figures give an idea of the extent of the process. When the TNCs in the sample are classified in seven different manufacturing branches, it is seen that the number of employees decreased by 29% in transport equipment, and that in electronics/telecommunications, electrical and mechanical equipment, chemicals, and basic metallurgy the dismissal rates ranged from 20% to 23%. In food enterprises there were virtually no dismissals, and in the enterprises in other branches the reduction stood at 15%. Part of the reduction is, of course, a consequence of other circumstances, and mainly related to the domestic recession. But according to the entrepreneurs, an important part of it—well over half, in their opinion—is a result of the firms' structural adjustment, so that there will be no return to the previous situation when the economy recovers.

Clearly, nothing unprecedented is taking place in Brazilian TNCs, since similar changes have for many years been occurring worldwide in the large western TNCs in response to the so-called Asian challenge. Nevertheless, Brazil's case is of particular interest for two reasons. First, despite the legitimate concern about structural reduction of the manufacturing sector's demand for labour, the restructuring means good news for the Brazilian economy, in that it represents a basic step towards greater efficiency and competitiveness. Second, the Brazilian adjustment process stands out by virtue of its extraordinary speed.

The microeconomic adjustment process takes place at both the operative plant level and the general management level, and consists of two sets of changes. The first is a move towards "focusing" the firms' activities on what they can do best, i.e., concentrating on core activities where their relative advantages are evident. This adjustment relates to "what to do". The second set of changes concerns management adjustment, and consists of two sub-groups of changes, namely those addressed at the very concept of business administration, and those which involve organizational techniques (the latter mainly affecting the operative plant level). In other words, it relates to "how to do". The following is a simple and brief description of these changes.

i) Focusing on "core activities"

The what-to-do area encompasses three complementary processes. First, it involves "deverticalization", i.e., the reduction of vertical integration (larger purchases of inputs per unit value of sales, to reduce direct indoor value-adding). Second, it involves "specialization", or the reduction of the array of goods that the firm produces for final sale. Devverticalization and specialization are referred to by the executives as "down-sizing", a concept sometimes used to mean the abandonment of parts of production plants or even of complete plants. Third, it includes what the entrepreneurs have been calling "tertiarization", namely the purchase from other firms of a number of services that traditionally were performed by employees. These usually consist of labour-intensive activities such as transport, cooking, security, cleaning and equipment maintenance.

Deverticalization and specialization are occurring mainly in the metal-working sectors (the "electronics complex", the mechanical and electrical capital goods sector and the transport equipment sector). Devverticalization is also an important trend in the pharmaceutical sector. It is significant that among all manufacturing branches, these are precisely the ones where the relative shares of TNCs in the Brazilian market are at their highest level.

Deverticalization is leading both to larger input purchases in the domestic market and to greater imports. The proportions in which the two kinds of backward vertical integration are being combined differ among the various branches. In the technology-intensive ones, where liberalization is having a greater impact, the major element in devverticalization is higher import coefficients.

Specialization also relates both to the domestic market and to trade liberalization. It entails the abandonment of certain lines of production in which final sales had difficulty competing with other enterprises in the domestic market, and the abandonment of lines of production which cannot compete with exports. There are signs that Brazilian ambitions of strong domestic production in the informatics/microelectronics sector and in the more complex biotechnological sectors (basic pharmaceuticals, etc.) are currently being challenged. In both sectors, "high-tech" production seems to be shrinking.

Deverticalization and diversification are of little or no importance in other branches where TNCs have a significant presence, namely the capital-intensive branches that process materials on a continuous basis, such as petrochemicals, steel, and pulp and paper, as well as the food branches. This is not the case for tertiaryarization, which is a widespread practice in all branches.

The rationale for tertiaryarization is to end employment in support activities where direct wages are higher than market prices—a practice that TNCs are not abandoning in relation to core activities (leaving the service provider to decide whether or not to pay for social security costs, which are considerably high, in Brazil, as a percentage of direct wages). A disturbing social consequence of this process is that workers are quite probably experiencing worse job conditions than when they were employed by TNCs, both because the wages paid by firms in these service sectors tend to be lower, and because their compliance with basic laws on social welfare and labour rights is probably far poorer.



ii) Managerial changes

TNCs are in the process of thoroughly revising long-established management concepts, in respect to both the general administrative level and the plant level. They also seem to be introducing new management techniques, especially in relation to quality. Interviewees made frequent reference to the concept of total quality control. Such changes are taking place in two areas.

First, they occur at the "white collar level". The three most important new procedures seem to be:

a) The verticalization of responsibilities ("business-unit system"), whereby a director who is responsible for the production of a particular set of goods is also made responsible for purchasing, marketing, sales and other activities related to it. Effectiveness and speed of response in the corporations' activities is the main target of this innovation.

b) The elimination of several layers of the management hierarchy. This change frequently complements the "business-unit system", again to achieve greater agility. Cost-cutting at higher wage levels was also mentioned by executives as an important determining factor.

c) A drastic reduction in the number of personnel in "support" activities —secretaries, office boys, chauffeurs, etc. In the executives' words, it means the dismissal of the "nice-to-have" people, and the introduction of a "do-it-yourself" mentality, common in most developed economies but heretofore infrequent in Brazilian enterprises.

The other area of management changes concerns production facilities, or the "blue collar level". Like the "white collar level", it includes a simplification of the hierarchical structure, but mainly concerns the introduction of new organizational techniques, such as "just-in-time" and "quality control circles".

To date, "just-in-time" has been diffused fastest within the individual firms. A conflictive relationship between suppliers and clients prevents the "just-in-time" method from progressing at the desired pace at the external level. Of course, "just-in-time" applies primarily to chains of production that end with assemblers.

However, the "total quality control" concept goes far beyond "just-in-time", and, in one way or another, is currently being implemented by most of the enterprises surveyed. For instance, participatory management methods, including the broadening of workers' responsibilities, are becoming common. Also, the steps necessary for entitlement to international quality certificates such as the ISO 9000 are being taken by a good number of enterprises. As is well known, the ISO 9000 is a set of procedures that implies, within the concept of total quality (in terms of defects, product specifications, delivery times, etc.) a close relationship between the certified firm, its suppliers and its clients or customers.

As many executives stressed, it is difficult to categorize each firm's specific managerial adjustment into any one of the new wave of managerial concepts. Executives in all branches tend to favour the expression "total quality control", a fancy label which, in fact, is used to characterize any systematic attempt to reduce waste, and therefore to decrease costs, improve quality and guarantee consumer satisfaction.

However, as the executives often emphasized in the interviews, these adjustments were essentially of an emergency nature, and did not reflect any careful planning. They simply represented a radical attack on the most evident shortcomings in administration and production. In fact, the mere existence of glaring inefficiencies allowed for rapid improvement in many areas. The crux of the matter was the resolute decision to change, which shattered long-established practices and therefore necessitated attitudinal changes among staff and, frequently, the dismissal of high-ranking employees.

At the production level, rationalization of the production process perhaps best describes this shift. It includes simple but immediately effective changes in the indoor management of stocks —“Kanban”, for instance, is a very simple method— as well as a concentrated attack on bottlenecks, layout changes, intensified use of the labour force (often attempted along with the introduction of greater responsibilities for the workers), and various other efforts to cut costs (in energy consumption, for instance).

## V. ECONOMIC POLICY AND INVESTMENT PROSPECTS FOR THE 1990s

This section gives a brief description of the executives' assessment of the Government's current economic policies and of prospects for future investment in light of a specific hypothesis presented to them, namely that of future economic growth and price stability.

Most executives gave a positive evaluation of the new trade liberalization policy. However, nearly half of them were, by late 1991 and early 1992, worried about the timing of its introduction, given the recession in the Brazilian economy, and were opposed to any acceleration of the tariff reduction (which did, in fact, take place recently). During the interviews, many of them complained about the absence of non-tariff barriers, especially anti-dumping instruments. Table 17 shows how firms answered the question, "What is your appraisal of the import tariff reduction policy which the Government is currently implementing?"

Table 17

### ENTREPRENEURS' APPRAISAL OF THE TARIFF REDUCTION POLICY

*Distribution of answers (in percentages)*

	Excellent	Reasonable	Wrong	Very wrong
(a) Generally speaking	44.0	56.0	0.0	0.0
(b) As to the timing of its introduction, considering the uncertainties related to the exchange rate's instability	18.0	52.0	26.0	4.0
(c) As to the timing of its introduction, considering the current recession in the Brazilian economy	14.0	42.0	38.0	6.0
(d) As to selectivity (different tariffs according to different groups of goods)	14.0	72.0	12.0	2.0
(e) What do you think of a possible option for less selectivity?	13.0	45.7	34.8	6.5
(f) As to the speed of the tariff reductions	12.5	70.8	10.4	6.3
(g) What do you think of a possible option to increase the speed of the tariff reductions?	18.0	28.0	42.0	12.0
(h) What do you think of a tariff reduction for the goods you produce larger than that scheduled by the Government?	18.4	36.7	32.7	12.2
(i) What do you think of a tariff reduction for other goods larger than that scheduled by the Government?	18.4	42.9	36.7	2.0

The Southern Common Market (MERCOSUR) free trade agreement among Argentina, Brazil, Paraguay and Uruguay is still a subject of preliminary discussion in the enterprises, and there are many doubts regarding operational issues. The general impression is that the Brazilian subsidiaries will benefit from the integration, although it is not expected to have an important influence on any future changes of strategy.

Most enterprises show no interest in taking part in the privatization of State-owned enterprises in the infrastructure sectors. Telecommunications is an important exception to this, in the particular case of those enterprises which produce equipment for the sector. Interest in the privatization of petrochemical and steel enterprises is also limited to enterprises belonging to the branches concerned.

The main economic policy demand is for growth and price stability. Then come foreign exchange stability, tax reduction, elimination of the law on informatics, liberalization of the treatment of foreign capital and trade liberalization (in decreasing order of importance). Such demands are consistent with the enterprises' evaluation of the factors that had the most negative impact on their performance in the 1980s (inflation, financial crisis of the public sector, high interest rates, behaviour of domestic demand and evolution of exchange rates, in decreasing order of importance).

The executives were pessimistic about the short and medium terms, but optimistic about long-term prospects. They said Brazil had been an excellent country for foreign investments until the 1970s, had become a bad one in the 1980s, and would become excellent again in the future. Once the conditions for growth and relative price stability were recovered, TNCs' traditional interest in the Brazilian market would also revive. They intended to invest in Brazil mainly for its domestic market, but exports would have an important complementary role in their investment decisions. Table 18 shows the answers to the question, "In a context of macroeconomic stability and growth (e.g., 5% to 7% per annum), which of these hypothetical situations would be crucial for your firm's performance in the future?"

*Table 18*

*FUTURE GROWTH STRATEGY OF FIRMS*

*Distribution of answers (in percentages)*

(a)	Domestic market increase	22.0
(b)	Domestic market increase, but also strongly influenced by exports	58.0
(c)	Domestic market and export increases, at the same level of importance	8.0
(d)	Export increase, but also strongly influenced by domestic market	10.0
(e)	Export increase	2.0
	Total	100.0

TNCs are aiming at intensive modernization, particularly in their organizational methods, but also in terms of automation. Cost reduction will be by far the most important target of these efforts (in the 1980s, product quality and changes in product specifications were motivational factors as important as cost reduction). Finally, and again in contrast to the 1980s, competition with imports is an important motive for technical progress. However, competition with firms located in Brazil and, to an even greater extent, export competitiveness, are rated as more important motivators than competition with imports. Table 19 shows the answers given to the question, "What was (in the last 10 years) and what is expected to be (in the rest of the 1990s) the importance of each of the aspects listed as motives for your firm's technological updating?"

Table 19

*TNCs' MODERNIZATION TARGETS AND DETERMINANTS**Distribution of answers (in percentages)*

	LAST TEN YEARS			1993 - 2000		
	Very important	Important	Slightly/Not important	Very important	Important	Slightly/Not important
<b>TARGETS</b>						
(a) Introduction of new products and changes in existing ones	46.9	34.7	18.4	38.8	44.9	16.3
(b) Decrease in manufacturing costs	48.0	44.0	8.0	69.4	28.6	2.0
(c) Decrease in the wages/sales ratio	8.3	39.6	52.1	6.3	64.6	29.2
(d) Improvement in product quality	53.1	34.7	12.2	51.0	34.7	14.3
<b>DETERMINANTS</b>						
(e) Competition with other firms in the domestic market	28.0	36.0	36.0	20.4	53.1	26.5
(f) Competition with imports	6.0	14.0	80.0	18.8	43.8	37.5
(g) Concern about international competitiveness of exports	40.8	32.7	26.5	51.1	34.0	14.9

Finally, table 20 gives an idea of the changes expected in the role of the Brazilian subsidiaries in global corporate strategies. The firms were given a list of "restructuring" measures involving their trade relationships with the parent corporation and changes concerning output composition and technical progress. They were then asked to what extent the Brazilian subsidiaries had involved themselves in the worldwide restructuring process in the past, and to what extent they expected to involve themselves in the future.

The results show a greatly intensified emphasis on process innovations and labour productivity enhancement. Also —though to a lesser extent— the Brazilian subsidiaries expected to gain importance in their corporations' total trade (including greater intra-firm trade). "Globalization", in the sense of producing in the Brazilian subsidiary "parts" of goods which are manufactured in cooperation with plants located in other parts of the world, was of little importance in the past, and is not expected to be of radically greater importance in the future (it will be of little or no relevance to some 60% of the enterprises and will be "very important" to just 14.6%). Among the reasons for this perception are the fact that the domestic market will continue to be of major importance for foreign investment, and that during the current difficult period in Brazil the parent companies have instructed their Brazilian subsidiaries to "adjust" and "survive", a point which was stressed in the interviews.

Table 20

*TNCs SUBSIDIARIES IN BRAZIL AND GLOBALIZATION**Distribution of answers (in percentages)*

	PAST				FUTURE			
	Very important	Important	Not important	Not applicab.	Very important	Important	Not important	Not applicab.
<b>INTRA-FIRM TRADE MEASURES</b>								
(a) Increasing share in the total exports of your international partner	16.7	35.4	37.5	10.4	20.8	45.8	25.0	8.3
(b) Increasing exports to parent company and to other subsidiaries	16.7	25.0	33.3	25.0	18.8	33.3	25.0	22.9
(c) Increasing imports from parent company and from other subsidiaries	0.0	16.7	56.3	27.1	8.3	29.2	35.4	27.1
(d) Specializing in the production of "parts" of goods which are manufactured in cooperation with plants located in other parts of the world (example: "world car")	2.1	22.9	27.1	47.9	14.6	27.1	12.5	45.8
<b>MEASURES RELATED TO SPECIALIZATION AND TECHNICAL PROGRESS</b>								
(e) Changing the output composition owing to changes in relative world prices (energy, exchange rates, etc.)	6.1	32.7	38.8	22.4	12.2	24.5	44.9	18.4
(f) Introducing innovations in the main products	12.2	42.9	34.7	10.2	16.3	46.9	26.5	10.2
(g) Introducing innovations in the production process	16.3	59.2	20.4	4.1	32.7	51.0	12.2	4.1
(h) Increasing labour productivity	16.3	53.1	28.6	2.0	51.0	30.6	16.3	2.0

## VI. CONCLUSIONS

TNC executives believe that their firms will go on investing in Brazil in the future, once macroeconomic stability is recovered. Past investments (sunk costs), as well as the large current and potential domestic market, explain their optimism regarding long-term prospects. For the time being, however, TNCs are keeping investments to a minimum. The current stage focuses not on expansion, but on efficiency enhancement.

Observers of the Brazilian manufacturing sector have repeatedly been pleasantly surprised by the facts. This was so, for instance, in 1983, when amidst an acute external crisis, and in defiance of all forecasts, the manufacturing sector suddenly started producing large external surpluses. Now, and again to everyone's surprise, the manufacturing sector—or at least the majority of its TNCs—is vigorously reacting to its severe crisis with what seems to be a significant restructuring of production. Even though the first case was the result of large investments made in previous years, and the second is an emergency reaction to crisis and to liberalization which, so far, has included no recovery of investment, these phenomena do manifest a surprising adaptive capacity.

There is the possibility that the emergency nature of the adjustment could be causing firms to miss out on potential gains in efficiency. This topic was not considered in the present study, but it has important implications for the current Brazilian government policy aimed at supporting industrial competitiveness (*Política industrial e de comercio exterior*). Especially in the case of small and medium-sized Brazilian enterprises, there seems to be room for a special government effort to implement an ambitious programme of technological and management support aimed at increasing the adjustment's efficiency.

There are indeed signs that the adjustment process is not limited to TNCs. However, even if it were, their large presence in Brazil's most dynamic manufacturing branches and their direct impact through backward and forward linkages with other branches in the Brazilian industrial sector are sufficient to suggest that the period 1990-1991 may be seen in the future as the start of an overall restructuring affecting a substantial part of the Brazilian manufacturing sector. It may be recognized that some initial steps took place in previous years (see Ferraz and others, 1990). But the first significant move was made in the more recent period.

Both positive and negative consequences may arise from this process. The negative consequences are related to equity and employment problems. In the past, the Brazilian manufacturing sector absorbed labour intensively. During the 1970s, for instance, for every 10% increase in the manufacturing sector's output, its demand for labour increased by over 6%. One of the clearest results of this research is that the output elasticity of the demand for labour is expected to decrease dramatically in the future.

It might be argued that this is happening all over the world, as an inevitable result of technical progress and increased international competition (and the fact that in Brazil, low wages and the economy's lack of openness led to "excessive" employment in the past). While this is true, the problem for Brazil is that its social conditions may turn the current stage of technical revolution into a particularly difficult process. As is well known, Brazil has neither Japan's ability to absorb the impact of "technological unemployment" (through indoor solidarity between capital and labour, the creation of new manufacturing sectors, and the advantages of a growing economy), nor Europe's and the United States' social security systems. Although increased efficiency may, under certain conditions of competition, improve income distribution by lowering consumer prices, the benefits of this process may be outweighed by unemployment and wage decreases.

On the positive side, greatly increased efficiency can be expected. From an optimistic perspective, the current adjustment process can be seen as a preliminary step towards a broader modernization process—which is unlikely to occur before economic recovery takes place. It also reinforces the country's capacity to withstand competition with imports, which represents a big challenge for the Brazilian manufacturing sector at the current stage. Genuine concerns have been voiced about this issue because the economy is being liberalized at a time of recession, stabilization programmes and technological backwardness.

Trade liberalization is definitely on the policy agenda, and the general inclination in Brazil is to preserve it. As stated earlier, the executives are very much in favour of it, and the Government is determined to implement it. It obviously involves risks, and only experience will show how appropriately it is being implemented in the difficult context of the current economic crisis.

As mentioned previously, about half of the managers of large TNCs surveyed had reservations about the timeliness of liberalizing during a recession, and opposed an acceleration of the tariff reduction schedule. The reservations of managers of small and medium-sized Brazilian enterprises are certainly much greater. At the current time—September 1992—there are increasing signs of concern among entrepreneurs in all kinds of firms about the fact that the aggravation and prolongation of the Brazilian economic crisis is not being considered in the monitoring of the liberalization process. On the contrary, the Government shortened the original 1991-1994 schedule for tariff reductions in 1992 (it is now due to end in 1993). This has been singled out in the daily press by many executives as a mistaken and unnecessary change in the original rules of the game.

The information gathered for the present study indicates that Brazil has a very active industrial sector, capable of rapidly absorbing technical progress. It also has the advantage, relative to many other LDCs, of counting on its large domestic market for future growth (i.e., of not depending so heavily on exports), an asset that allows the country to give itself more time to adjust to fierce international competition. Brazil is therefore apt to take fewer risks in its liberalization process, at least until growth and investments have recovered. Of course, what this means in terms of the future agenda for the liberalization process is a matter for lengthy discussion.

A final comment should be made on the Brazilian economy's growth potential. As is well known, the basic formation of the industrial sector (frequently labelled the "import substitution process") had ended by the beginning of the 1980s. Some specialists feel that the next growth stage of the Brazilian economy should be one in which exports become the new engine of growth. However, this cannot be expected to occur if all entrepreneurs agree with those interviewed for this study. As indicated previously,



they stated that their future performance will essentially depend on the domestic market, and only secondarily on exports.

My personal view (based on Barros de Castro, 1990) is that Brazil will probably grow in the future through "domestic mass consumption". Efforts to increase exports will surely be an important additional element in future growth dynamics. But Brazil's ability to increase investments and absorb technical progress —and, thereby, to increase productivity and competitiveness— rely heavily on the conditions of exceptional growth created by the potential pattern of mass consumption. According to Castro, an "embryo" of this new propelling force in the Brazilian economy was already present in the 1970s —and prematurely blighted by the recession and crisis of the 1980s. A basic aspect of his analysis is the idea that the income elasticity of demand among the majority of the population for goods and services produced in the modern sectors of the economy is higher than for goods and services produced by the informal and less productive sectors. The exception would be the high income classes, which already demand goods solely from the formal sector. This means that economic growth in Brazil requires large gains in productivity.

Compared to developed economies, Brazil has a very large informal/low-productivity sector (i.e., a large degree of technological heterogeneity). The possibility of greatly increasing the economy's average productivity simply by transferring labour from very low-productivity sectors to relatively high-productivity ones is greater in Brazil than in the developed economies. This is, indeed, a basic "advantage" of backwardness. Another "advantage" is the existing technological gap between the modern sector in Brazil and that in the developed economies. For a promising late-comer, as Brazil has already proved to be, the current backwardness means that it has the potential for greater gains in productivity in the future than do countries which are closer to the world's technological frontier. In view of these considerations, the manufacturing sector should be allowed to complete its restructuring without being subjected to excessive external competition during the current economic crisis.

## VII. BIBLIOGRAPHY

- Araujo and others (1991), Oportunidades estratégicas da indústria nos anos 90, paper prepared for the "IV Forum Nacional", Rio de Janeiro, Instituto de Estudos Internacionais (IEI)/Federal University of Rio de Janeiro (UFRJ), November, unpublished.
- Barros de Castro, Antonio and F.E. Pires de Souza (1985), A economia brasileira em marcha forçada, São Paulo, Paz e Terra.
- Barros de Castro, A.B. (1990), "Consumo de massas e retomada de crescimento", A nova estratégia industrial e tecnológica: O Brasil e o mundo da III revolução, Fórum Nacional, Ideais para a Modernização do Brasil, Rio de Janeiro.
- Batista, J.C. (1987), Brazil's Second Development Plan, and its Growth-cum-debt Strategy, Texto para discussão series, No. 93, Rio de Janeiro, Instituto de Economia Industrial, Federal University of Rio de Janeiro (UFRJ).
- Baumann, Renato (1989), "Ajuste externo-experiência recente e perspectivas para a próxima década", Para a década de 90. Prioridades e perspectivas de políticas públicas, vol. 2, Brasília, Institute of Economic and Social Planning (IPEA)/Planning Institute (IPLAN).
- Baumann, Renato and Juan Carlos Lerda (eds.) (1987), Brasil-Argentina-Uruguai: a integração em debate, Rio de Janeiro, Editora Marco Zero/Editora Universidade de Brasília, July.
- Bonelli, R. (1992), "Fontes de crescimento e competitividade das exportações brasileiras na década de 80", RBCE (Revista Brasileira de Comercio Exterior), No. 31, April/June.
- Braga, H. and V. Matesco (1986), Progreso técnico na industria brasileira: indicadores e análise de seus fatores determinantes, Rio de Janeiro, Instituto de Pesquisa Economica Aplicada (IPEA)/Instituto de Pesquisas (INPES), Textos para discussão interna series, No. 99.
- Braga, H. and L.N. Willmore (1988), Importação de tecnologia e esforço tecnológico da indústria brasileira: uma análise de seus fatores determinantes, Textos para discussão interna series, No. 142, Rio de Janeiro, Instituto de Pesquisa Economica Aplicada (IPEA)/Instituto de Pesquisas (INPES).
- CNI Confederação Nacional da Industria (1989), Competitividade e estratégia industrial: a visão de líderes industriais brasileiros.

- CNI (Confederação Nacional da Indústria) (1991), Abertura comercial e estratégia tecnológica: A visão de líderes industriais brasileiros, May 1991.
- Coutinho, L. and S. Suzigan (eds.), Sectoral studies in the IFE/FECAMP Project on Technological Progress and the formation of an Innovation System in Brazil, in press.
- ECLAC (Economic Commission for Latin America and the Caribbean) (1992), Social Equity and Changing Production Patterns: An Integrated Approach (LC/G/1701(SES.24/3) and Corr.1), Santiago, Chile, April.
- Erber, F. and R. Vermulm (1992), Ajuste estrutural e estratégias empresariais - um estudo de caso dos setores petroquímico e de máquinas-ferramenta no Brasil, Rio de Janeiro, Instituto de Pesquisa Aplicada (IPEA), unpublished.
- Ferraz, J.C. and others (1990), "Trajetória de crescimento, difusão de inovações, qualificação e formação profissional", Cenários da indústria brasileira e da formação profissional, Salm and others, Rio de Janeiro, Instituto de Estudos Internacionais/Federal University of Rio de Janeiro (UFRJ), unpublished.
- Ferraz, J.C. and R. Bielschowsky (1991), Perspectivas del comportamiento tecnológico de las empresas nacionales y transnacionales en la industria del Brasil (LC/R.1050), Santiago, Chile, Joint ECLAC/CTC Unit on Transnational Corporations.
- Ferro, J.R. (1990), Para sair da estagnação e diminuir o atraso tecnológico da industria automobilística brasileira, São Paulo, State University at Campinas (UNICAMP), unpublished.
- Fritsch, Winston and Gustavo Franco (1991a), Foreign Direct Investment in Brazil: Its Impact on Industrial Restructuring, Paris, Development Centre of the Organization for Economic Cooperation and Development (OECD).
- \_\_\_\_\_ (1991b), Trade Policy Issues in Brazil in the 1990s, Rio de Janeiro, Catholic University of Rio de Janeiro (PUC), unpublished.
- Gonçalves, R. (1983), "O crescimento de empresas multinacionais e nacionais privadas na indústria de transformação: 1968/1980", Pesquisa e planejamento econômico, vol. 13, No. 1, Rio de Janeiro, Instituto de Pesquisa Aplicada (IPEA), April.
- Hofman, A. (1991), The Role of Capital in Latin America: A Comparative Perspective of Six Countries for 1950-1989, Working Paper No. 4, Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC), December.
- Lafetá, Daniel (1992), Capital estrangeiro no Brasil: expectativas quanto à reversão do comportamento, Texto para discussão series, No. 260, Instituto de Pesquisa Aplicada (IPEA), May.
- LTCB (Long Term Credit Bank of Japan and Instituto de Pesquisa Aplicada) (IPEA) (1986), Current Brazilian economy and business opportunities, Rio de Janeiro, unpublished.

- Maciel, C.S. (1990), Investimento e modernização tecnológica na indústria brasileira durante a década de oitenta, Campinas, IE/State University at Campinas (UNICAMP), unpublished.
- Misas, G. (1991), El papel de las empresas transnacionales en la reestructuración industrial de Colombia: una síntesis (LC/R.1055), Santiago, Chile, Joint ECLAC/CTC Unit on Transnational Corporations, December.
- Mortimore, M. (1991), Industrial modernization in Mexico. Results of a questionnaire administered to the largest foreign-owned companies in the manufacturing sector during May/June 1990 (LC/L.613), Santiago, Chile, Joint ECLAC/CTC Unit on Transnational Corporations, November.
- BNDES (National Economic and Social Development Bank) (1988), "O capital estrangeiro na industria brasileira: atualidade e perspectivas", Estudios BNDES, No. 10, May.
- Reis Velloso, J.P. (ed.) (1990), A nova estratégia industrial e tecnológica: o Brasil e o mundo da III revolução industrial, Fórum Nacional, Idéias para a Modernização do Brasil, Rio de Janeiro.
- Suzigan, W. (1991), "Situação atual da industria brasileira e implicações para a política industrial", Planejamento e políticas públicas, No. 6, Rio de Janeiro, Instituto de Pesquisa Aplicada (IPEA), December.
- United Nations Centre on Transnational Corporations (1991), World Investment Report, 1991: The Triad in Foreign Direct Investment, New York. United Nations publication, Sales No. E.91.II.A.12.
- Willmore, Larry (1985), "Estudo comparativo do desempenho das empresas estrangeiras e nacionais no Brasil", Pesquisa e planejamento econômico, vol. 15, No. 3, Rio de Janeiro, Instituto de Pesquisa Aplicada (IPEA), December.
- \_\_\_\_\_ (1987), "Controle estrangeiro e concentração na indústria brasileira", Pesquisa e planejamento econômico, vol. 17, No. 3, Rio de Janeiro, Instituto de Pesquisa Aplicada (IPEA), April.
- Zockun, Maria Helena (1987), A importância das empresas brasileiras de capital estrangeiro para o desenvolvimento nacional, Federação das Indústrias do Estado de São Paulo (FIESP)/Centro das Indústrias do Estado de São Paulo (CIESP).

## VIII. ANNEX: TABLES

Table A.1

*BRAZIL: AVERAGE YEARLY PERCENTAGE GROWTH IN GDP AND IN MANUFACTURING OUTPUT, AND INVESTMENT/GDP**(Percentage ratios for selected periods and years)*

	1943- 1980	1970- 1980	1981- 1989	1990	1991
GDP growth	7.4	8.7	2.4	-4.6	1.2
Manufact. output growth	8.4	9.0	0.9	-9.5	-0.5
Gross investment/GDP <sup>a</sup>	19.1	23.3	18.1	16.0	-
Gr. Invest. in machinery and equipment/GDP <sup>a</sup>	8.2	9.8	5.8	4.8	-

Source: Brazil, Getulio Vargas Foundation and Brazilian Geographical and Statistical Institute, various years, and ECLAC, Andre Hofman, 1992.

<sup>a</sup> At constant 1980 prices; excludes 1943-1947.

Table A.2

*SELECTED INDICATORS OF ECONOMIC PERFORMANCE IN THE PERIOD 1981-1990*

	1981-1983	1984-1986	1987-1990
Average yearly GDP growth %	-1.7	6.9	0.5
Average yearly inflation rates	135	177	1 172
Trade surplus (goods and services) As a percentage of foreign debt	-0.4	9.1	9.8

Source: ECLAC, on the basis of official information.

Table A.3

*COMPETITIVENESS OF BRAZILIAN EXPORTS IN THE 1980s: 1979-1989*

	Total exports (SITC 5 to 8)	Exports of manufactures (SITC 0 to 4)	Other exports
Due to (adjusted) effect of:			
Growth of world trade <sup>a</sup>	66	50	125
Competitiveness effect	34	50	-25
	100	100	100

Source: R. Bonelli (1992), "Fontes de crescimento e competitividade das exportações brasileiras na década de 80", RBCE (Revista Brasileira de Comercio Exterior), No. 31, April/June, table 3.

<sup>a</sup> Adjusted for the composition of Brazilian exports and for the composition of their destination.

Table A.4

*PERCENTAGE SHARES OF TNCs IN TOTAL SALES AND EXPORTS IN THE BRAZILIAN MANUFACTURING SECTOR: 1980 AND 1990*

ISIC SECTOR	FOREIGN FIRM SALES		FOREIGN FIRM EXPORTS	
	1980	1990	1980	1990
31 Food, beverages and tobacco	35.0	33.3	24.9	33.9
351 Industrial chemicals	55.1	47.8	71.5	57.2
352 Other chemical products	74.1	66.5	45.4	65.6
355-356 Rubber, plastic and glass products	37.0	29.8	71.8	70.2
37 Iron, steel and non-ferrous metals	43.4	36.2	34.3	45.4
381 Metal products	31.0	35.8	38.7	32.5
382 Machinery n.e.c.	50.1	42.2	81.7	82.6
383 Electrical machinery	58.0	48.9	89.1	87.7
384 Transport equipment	74.6	67.1	78.8	68.2
32-33-34-36-385-39 Other industries	27.3	33.5	21.4	13.6
Total	38.0	32.6	38.2	44.1

Source: See tables 5 and 7.



