ECONOMIC COMMISSION FOR LATIN AMERICA AND THE CARIBBEAN

DESARROLLO PRODUCTIVO

Nº 18

TWO STUDIES ON TRANSNATIONAL CORPORATIONS IN THE BRAZILIAN MANUFACTURING SECTOR: THE 1980s AND EARLY 1990s

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TRANSNATIONAL CORPORATIONS AND FOREIGN INVESTMENT

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United Nations
Division of Production, Productivity and Management
Santiago, Chile, 1994

LC/G.1842
December 1994

The author is grateful to Jacy Mendonça, João Carlos Ferraz, José Clemente de Oliveira, Maria Helena Zockun and Renato Baumann for their very helpful support. The International Division of Federação das Industrias do Estado de São Paulo (FIESP) was of substantial assistance in accessing transnational corporations in the first study. The second study is based on a research project on Competitiveness of the Brazilian industry made by Universidade Federal do Rio de Janeiro and Universidade de Campinas (IEI/UFRJ and UNICAMP), under the supervision of the Brazilian Ministry for Science and Technology.

This document was prepared by Ricardo Bielschowsky, of the ECLAC/UNCTAD Joint Unit on Transnational Corporations of the Division of Production, Productivity and Management of the Economic Commission for Latin America and the Caribbean (ECLAC). The views expressed herein are those of the author and do not necessarily reflect the views of the Organization.

Explanatory note

Desarrollo productivo **is the continuation, under a new name, of the *Industrialización y desarrollo tecnológico* (IDT) series, published periodically by the ECLAC Division of Production, Productivity and Management. This new name has been chosen as a more accurate reflection of the issues dealt with in this series. The articles will be grouped into at least three categories: i) restructuring and competitiveness; ii) transnational corporations and foreign investment; and iii) agricultural and rural development. These topics broadly reflect the internal organization of the Division (Joint ECLAC/UNIDO Industrial and Technological Development Unit, Joint ECLAC-/UNCTAD Unit on Transnational Corporations and Agricultural Development Unit), as well as the networks of public and private entities linked to these Units.**

The Division welcomes contributions to this series from all staff members of the ECLAC and United Nations systems, and particularly from members of the institutions comprising the networks, as well as distinguished specialists from Latin America and the Caribbean and outside the region.

Finally, it should be noted that recipients of the periodical publication *Industrialización y desarrollo tecnológico* will continue to receive the "Red de reestructuración y competitividad" issues of the *Desarrollo productivo* series, but will not always receive the issues on topics related to the transnational corporations and foreign investment network or the agricultural and rural development network, whose distribution coincides only partially with that of the old IDT. For this reason, the distribution of this publication will vary among recipients of issues in the series corresponding to different networks.

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FOREWORD

This number of "Desarrollo Económico" presents the second and third papers of a trilogy of studies on Transnational corporations (TNCs) and restructuring in the manufacturing sector in Brazil. The trilogy captures the restructuring process at three points in time, namely at a preliminary stage (1988/1989), one or two years after its 1990 acceleration (late 1991/early 1992), and at a more recent stage (early 1993).

The first paper, published by ECLAC in 1991 (ECLAC LC/R.1050), was based on data supplied by the Universidade Federal do Rio de Janeiro, derived from interviews held in late 1988 and early 1989 in 135 national and foreign firms, and on data supplied by the Confederação Nacional da Industria, derived from a survey of 550 foreign and national firms.

Those data showed that a few initial steps were being taken at that time by TNCs (and national firms) towards the introduction of new organizational techniques and industrial automation. In light of the trends observed thereafter, and of some international comparisons, these steps now appear very modest. They nevertheless show that both foreign and large national firms were by then well aware of their relative technological backwardness. It also shows a favourable attitude towards modernization, and clear signs that their decision-making was fixing as a target the increase in efficiency and international competitiveness.

The second study consisted of interviews with 55 large TNCs three years later, by late 1991/early 1992. It is presented here as Part one. Besides covering a number of aspects showing a relatively passive attitude of these firms towards modernization during the eighties, it shows that in 1990 and 1991 they were committed to a thoroughgoing adjustment, vigorously reacting to severe economic crisis and to the initial steps of trade liberalization.

The third study (Part two), is based on a Survey on 104 large foreign and national firms conducted in 1993. It confirms the trends suggested in the earlier study, and goes much deeper into details of the process, confirming and qualifying the trends initially identified in the second study. By the time this review is being issued —end 1994— the Brazilian economy is giving promising signals of a long-term recovery. This means that investment in the manufacturing sector may regain the strength it used to exhibit before the debt crisis, and transform what up to now can be seen as a mere "adjustment" or "productive rationalization" into substantial modernization and restructuring. If this turns out to be the case, our trilogy may in the future be seen as a chronicle of the first stages of a process of structural change.

Part one

TRANSNATIONAL CORPORATIONS AND THE MANUFACTURING SECTOR IN BRAZIL

Technological Backwardness in the 1980s and Signs of a Significant Restructuring in the 1990s

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 investorsare 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).[1] 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.

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 [a]

(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.

[a] 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 *

(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.

* 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.

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.[2]

Table 3

BRAZIL: PERCENTAGE COMPOSITION OF FOREIGN CAPITAL STOCK IN THE MANUFACTURING SECTOR, 1980 AND 1990 *

	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
Total	**100.0**	**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.

* 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 *

	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).

* 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.

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.

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?

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, 1976-1980 = 100 and % shares)
Constant 1980 prices[a]

	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.

[a] Deflated by United States wholesale prices.

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.[3]

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).[4] 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 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.

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[a]	1.7	4.0	10.6[a]
Cellulose	16.6	4.4	1.0[a]	11.8	14.8[a]	31.1[a]
Capit. goods (on order)	39.8	37.9	37.1[b]	3.0	8.9	15.9[a]
Cap. goods (in series)	27.0	20.5	24.9	7.0	14.3	23.1[a]

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 Internacionales (IEI)/Federal University of Rio de Janeiro (UFRJ), November, unpublished.

[a] 1981.

[b] 1980.

Table 9

BRAZIL: INVESTMENTS IN SELECTED BRANCHES OF THE MANUFACTURING SECTOR, 1975-1979 AND 1980-1984

(Constant 1980 prices)[a]

	Indexes (1972-1974 = 100)		As a % of GDP (5)		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, electrical 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.

[a] Investment figures were deflated by the "deflator implicito 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)

	TNCs in Brazil		Brazil		Developed economies		LDCs	
	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.

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 coeffic. 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.

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.

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.[5] 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, 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.

Table 12

COMPOSITION OF MANUFACTURING EXPORTS IN 1980 AND 1989: BRAZIL, TNCs IN BRAZIL, DEVELOPED ECONOMIES AND LDCs

(Percentage shares)

	TNCs in Brazil		Brazil		Developed economies		LDCs	
	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[a] 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.

[a] Excludes oil refining.

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) •

	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).

• 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)[a]
(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
Total	**96**	**157**	**129**	**149**

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

[a] 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:

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.

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

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.

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.

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 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. Deverticalization 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). Deverticalization 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 deverticalization 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 tertiarization, which is a widespread practice in all branches.

The rationale for tertiarization 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 —"Kanbam", 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 10 years			1993-2000		
	Very important	Important	Slightly/ not important	Very important	Important	Slightly/ not important
Targets						
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
Determinants						
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 applicable	Very important	Important	Not important	Not applicable
Intra-firm trade measures								
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
Measures related to specialization and technical progress								
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.

Notes

[1] 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)).

[2] 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%).

[3] 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).

[4] 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.

[5] 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.

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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 *	19.1	23.3	18.1	16.0	-
Gr. Invest. in machinery and equipment/GDP *	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.

* 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 *	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.

* 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

	Foreing firm sales		Foreign firm exports	
ISIC sector	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.

Part two

ADJUSTING FOR SURVIVAL: DOMESTIC AND FOREIGN MANUFACTURING FIRMS IN BRAZIL IN THE EARLY 1990s

1. Introduction

This paper presents an analysis of the behaviour of large national enterprises (NEs) and transnational corporations (TNCs) in the adjustment process under way among firms in the Brazilian manufacturing sector.[1] The paper is based primarily on a set of data on individual firms supplied by a research project on the competitiveness of Brazilian industry.[2] The data consist of the answers given to a comprehensive questionnaire that was submitted to over 500 enterprises, of which 104 large ones were selected for the purpose of the present paper.

Specific sectoral characteristics can be analysed on the basis of the data provided. Unfortunately, owing to time constraints, the present paper is limited to a general analysis of the sample.

Because of the singularity of the adjustment process, its description in this report should be prefaced with a few comments on the macroeconomic environment that has determined it. Since the early 1980s, manufacturing firms in Brazil have been struggling against difficult macroeconomic conditions in a number of ways, and have adopted multiple forms of adjustment (Benjamin, 1993). During the 1981-1983 recession, a microeconomic rationalization of production took place, and involved considerable layoffs. Throughout the decade, the possibility of having all assets indexed to inflation —including working capital— helped firms to avoid or minimize losses attributable to chronically high inflation. Since the early 1980s they have managed to cope with difficulties in the areas of trade and production through good financial management, and have stayed on a sound financial footing. Moreover, when price controls were not in force, oligopolistic markets helped them to promptly pass on cost increases as price increases. Tax evasion was another common way of mitigating difficulties, as was switching part of the production from domestic markets to exports: between 1979 and 1985 alone, the export coefficient of the manufacturing sector as a whole rose from 6.6% to 12.9%.[3]

Industrial labour productivity increased by 20% in the period 1980-1985 and remained stagnant until 1990.

It appears that the efforts to expand exports, the 1981-1983 adjustment and the 1984-1985 economic recovery were factors that must have led to increased competitiveness in the period 1980-1985.

The rest of the 1980s was a period of rampant inflation and business uncertainties, during which the above-mentioned ways of surmounting difficulties were probably intensified. Firms had nevertheless experienced three very good years —the average yearly rate of GDP growth in 1984-1986 was over 6%— and the 1987-1989 recession was not severe (average yearly GDP growth was 2%). In addition, the country's economic closure helped firms to keep a "muddling through" attitude, within a strategy of passive survival.

The situation changed dramatically in 1990, when manufacturing firms were hard hit by a formidable set of more or less simultaneous events: drastic anti-inflation measures (including the confiscation of savings accounts and price controls), failure to control spiralling inflation, unprecedented domestic recession, soaring interest rates, exchange-rate appreciation and international recession, among others.

Another unusual feature of the period was the implementation of a trade liberalization plan, including the elimination of all import barriers, the initial stages of a tariff reduction programme (which eventually met its goal of decreasing average tariffs gradually from 32% to 14% in 1993), and the elimination of export subsidies.

As a result of this multiplicity of negative factors, firms suffered severe losses in 1990 and 1991: data on the profitability of manufacturing firms show average losses amounting to 4% of net capital in 1990 and 2% in 1991.

The firms' situation improved in 1992. In spite of continuing recession, high interest rates, high inflation and overall instability, positive profit rates were recovered. This may be attributed to three causes: lack of price controls, the devaluation of exchange rates (and robust export recovery) and, last but not least, *microeconomic adjustment*.

As a recent study suggests, microeconomic adjustment in manufacturing firms in Brazil began to gain momentum in 1990, owing primarily to the deterioration of macroeconomic conditions, and, to a lesser degree, to the trade liberalization that has taken place since then.

Productivity in the manufacturing sector rose 14% in 1991-1992 alone. It is possible that in 1993 —a year when economic recovery coexisted, paradoxically, with a 30% monthly inflation rate— further gains in productivity were obtained.

A very determined adjustment effort on the firms' part seems to be sustaining the current productivity increase. Unlike the production rationalization of 1981-1983, which did not involve major changes in the firms' attitude towards greater competitiveness, the current process seems to consist of changes that have a stronger impact and are less easily reversible.

The data supplied by the present study clearly indicate substantial progress in a number of basic determinants of competitiveness. However, they do not show a renewed investment cycle —which, incidentally, should not be expected before macroeconomic stability is recovered. Moreover, since the process consists mainly of rationalizing production and management, it involves large-scale lay-offs, which are unmatched by new demand for labour owing to the current recession.

It therefore appears that the firms are following a "defensive" strategy; however, the positive long-term consequences of the current process should not be underestimated. Anticipating the conclusions of the report, one might suggest that the current adjustment has two significant merits. First, it is helping to avert a major collapse in the manufacturing sector, as it increases Brazilian manufacturers' capacity to survive in the domestic crisis and in the aggressive international environment, through legitimate gains in competitiveness. Second, it is preparing the firms for more efficient investments in the future.

To correctly appreciate the nature of this adjustment, it is necessary to avoid simplistic comparisons with apparently similar processes in firms elsewhere in Latin America. Obviously, isolated examples of adjustment can always be found in firms nearly everywhere in the present turbulent era of fierce international competition and the "third industrial revolution". Even in Latin American countries characterized by de-industrialization during the 1980s, it is to be expected that a number of manufacturing firms will have made important adjustments in production and management similar to those described in this paper. The point here is that the Brazilian adjustment seems unique in that nowhere else has the rationalization of production and management spread so quickly and intensively as it has in Brazil over the last two to three years.

In sum, the case under consideration seems to represent the generalized and very positive reaction of a quite solid manufacturing structure to the threat of destruction by the combination of domestic crisis and international competition.

Before examining the survey results, a few general remarks on the comparison between national and foreign enterprises would be helpful.

The literature on transnational corporations in developing countries suggests that the improvements in efficiency which they produce directly and indirectly are among their most positive impacts in those countries. As world leaders in technical progress and management expertise, they are supposed to introduce and spread modernity in LDCs, and are expected to be superior to national firms in terms of technology, productivity and competitiveness.

Prior to the current changes, some comparative analyses were done of the two sets of enterprises in terms of technological behaviour in the Brazilian manufacturing sector.

Willmore (1987) studied 282 pairs of foreign and national firms (belonging to the same manufacturing branch and equal in terms of sales). He showed that foreign firms were superior to national ones in a number of aspects of technological performance: labour productivity, intensiveness of skilled labour, payment for patents, capital intensiveness and value added (as a percentage of sales).

Gonçalves (1986) studied technological spillovers and worker training in 52 TNCs in comparison to 32 NEs, showing that the two groups of firms obtained relatively similar results.

Braga and Matesco (1986), on the basis of overall fiscal statistics for 1978, 1980 and 1982, compiled data relating to spending on research and development and on payments for patents and technical assistance. In those three years, 8.4%, 5.4% and 10.4%, respectively, of such outlays by all manufacturing firms in the country were made by TNCs, a very small proportion considering that TNCs made over 30% of total sales. This means that national firms spent relatively more than TNCs. In another paper (Braga and Matesco, 1989), the same authors analysed an important survey on technological behaviour conducted by the Universidade de São Paulo in 1980-1981, involving 7,154 Brazilian industrial establishments. They concluded that TNCs imported more technology than NEs, and that they compared favourably to NEs in terms of rationalization of the production process and quality control. Finally, Braga and Willmore (1991) elaborated some econometric exercises based on the same data, and reached the same conclusions.

Once again, the data being analysed in this paper show that foreign firms performed better in a number of areas and maintained their previous superiority throughout the current adjustment process. In any case, more importantly, what the answers to the questionnaires show is, first, that both transnational and national corporations seem to be introducing rapid changes into their production and management activities, leading to very positive results in terms of their competitiveness; and, second, that some worrisome setbacks have also been experienced in both groups of firms.

A final comment is necessary at this point, regarding a factor which has been constantly present in the debate on foreign direct investment (FDI) in Brazil in recent years, namely the firms' attitude towards their stock of investments in the country. The experiences of other Latin American countries during the severe recession of the 1980s show considerable volatility among TNCs, in so far as plants were often abandoned and activities were often switched from local production to importing from the rest of the corporation. This factor is discussed by Gonçalves (1992) for Brazil's case. Based on data for the 1980s, the author concludes that TNCs have been "retrenching", meaning that they have not reinvested in their Brazilian facilities.[4] While this may indeed have been the case, some qualification is required.

First, though the figures for the 1980s do show a trend towards a gradually reduced presence in a shrinking domestic market —sales by TNCs in the manufacturing sector decreased from 37% to 33% between 1980 and 1990— they also show a

constant share in increasing manufacturing exports (around 50% in both 1980 and 1990). This contrasts with the very negative behaviour of TNCs in the manufacturing sectors of other Latin American countries, where they significantly abandoned production in a number of metalworking/engineering branches (incidentally, Gonçalves never implies any similarity).

Second, TNCs are in the process of making adjustments which seem to follow a clear pattern, namely that of adapting to greater competition in the domestic market so as to keep or strengthen their position in it. Besides, as shown in the next section, the data on the sales performance of TNCs in the sample in the period 1989-1992 compare positively to the sales performance of national firms, indicating that the TNCs have already recovered part of the market share they had lost during the 1980s. It seems, therefore, that retrenchment may have come to a halt.

The report begins with a description of the sample (section 2). The following sections analyse the business strategies behind the adjustment process (section 3), the main positive and negative results obtained (section 4) and the firms' evaluation of their current competitiveness, in terms of both microeconomic aspects and aspects related to the Brazilian economy's systemic competitiveness (section 5). Finally, a summary of the differences between NEs' and TNCs' behaviour is given in the last section.

2. The sample

The sample consists of 104 firms, of which 63 are national and 41 are foreign. In 1992 they sold approximately 25% of Brazil's manufacturing production; their exports amounted to 28% of total Brazilian manufacturing exports; and they employed about 4% of all operative labour in the manufacturing sector.

They are all large firms, though the TNCs are larger than the domestic enterprises. In 1992, the sales and exports of the TNCs averaged US$ 453 million and US$ 128 million, respectively, compared to US$ 167 million and US$ 41 million among the domestic firms. TNCs had an average of 2,500 operative workers, and domestic firms had around 1,200.

Since this paper compares the adjustment of production in TNCs and in national firms in the early 1990s, it is important to note that the group of TNCs in the sample showed better sales performance during the period than the group of domestic firms. As shown in table 1, the value of TNCs' sales in 1992 was approximately the same as in 1987-1989, while the value of national firms' sales declined by 13.5%. In the first group, idle capacity rose from 18% to 21% of potential production; in the second, it rose from 15% to 23%.

Equally noteworthy is the fact that exports increased faster in the latter group in the same period (17%) than in TNCs (10.5%). Consequently, export coefficients also increased faster in domestic firms, bringing them closer to those of foreign firms. It is clear from these data that exports probably worked as an escape valve for the NEs. As to imports, it should be noted that in spite of trade liberalization, coefficients changed very little, and were kept especially low in national firms.

Lastly, the period witnessed many lay-offs, as the number of operative workers was cut by 7.5% in TNCs and 12% in NEs. Dismissals were probably also frequent at the administrative level, owing to organizational changes. For instance, the number of administrative layers decreased in both groups of firms, from an average of around 6 levels to an average of around 5 levels.

Table 1

NATIONAL AND TRANSNATIONAL FIRMS IN THE SAMPLE: SOME BASIC FIGURES FOR THE PERIODS 1987-1989 AND 1992

	National firms		Growth rate (%)	Transnational firms		Growth rate (%)	Total		Growth rate (%)
	Value			Value			Value		
	1987-1989	1992		1987-1989	1992		1987-1989	1992	
Sales *	11 306 441	9 781 937	-13.5	18 017 668	18 124 174	0.6	29 324 109	27 906 111	-4.8
Exports *	2 081 092	2 439 356	17.2	4 642 329	5 129 923	10.5	6 723 421	7 569 279	12.6
Imports *	463 312	424 986	-8.3	1 445 317	1 505 672	4.2	1 908 630	1 930 658	1.2
Number of operative workers	75 675	66 893	-11.6	107 194	99 165	-7.5	182 869	166 058	-9.2
Idle capacity (average %)	15	23		18	21		16	22	
Layers in the hierarchy (average)	5.8	5.1		6.1	5.2		5.9	5.1	
Export coefficients (average %)	14.8	19.6		23.6	24.9		18.4	21.8	
Import coefficients (average %)	4.1	4.4		7.4	8.5		5.4	6.1	

* Values in constant 1992 prices, inflated by United States wholesale prices.

The sample was selected out of the UNICAMP/UFRJ/FUNCEX/FUJC project's larger sample, according to two criteria. First, the firms are large (with an average of 1,800 operative workers). Second, with the sole exception of the automotive sector, they belong to manufacturing branches represented in the project's sample by both national and foreign firms, so as to allow for comparability between the two groups of firms. Sectoral composition is as follows: food, 4 NEs and 3 TNCs; clothing, 5 NEs and 1 TNC; pulp and paper, 14 NEs and 6 TNCs; chemicals, 10 NEs and 8 TNCs; steel and aluminium, 7 NEs and 5 TNCs; machinery (including electrical), 11 NEs and 5 TNCs, electronics telecommunications' 8 NEs and 5 TNCs, auto parts, 4 NEs and 3 TNCs; and vehicles, 5 TNCs.

3. The strategies

Planning is a current activity in all the firms, and has a superior status in TNCs. Nearly 70% of the latter say they have a formal strategy which is periodically discussed and involves various areas of the firm, compared to 50% of NEs. Another 20% and 13% of them, respectively, say that their strategies, notwithstanding more limited diffusion within the firm, are formally elaborated. The remainder (10% of TNCs and 35% of NEs) have some kind of informal strategy.[5]

Undoubtedly, they have had a great deal to plan in the last few years. As was argued in the last section, they are having to adapt to very volatile and challenging circumstances; and they are effectively doing so, in various ways.

Curiously enough, up to now, and despite all sorts of adaptations, changes in trade coefficients do not appear as a leading element. The first aspect of industrial restructuring one normally looks at in Latin America is the degree to which firms are reorienting production so as to increase their imports and exports. Firms in Mexico, Argentina, Chile and other countries in the region have changed their production functions by adapting to considerably expanded trade. In the case of firms in Brazil, and in spite of the recent trade liberalization, the import coefficients of both TNCs and NEs seem to have changed very little between 1989 and 1992. As shown earlier, in the sample under consideration, imports increased from 7.4% to 8.5% in TNCs, and from 4.1% to 4.4% in NEs. Although export coefficients increased faster, from 23.6% to 24.9% in TNCs and from 14.8% to 19.6% in NEs, this was a consequence of decreased domestic sales rather than increased exports.

As mentioned previously, the main determinant of the firms' adjustment was domestic crisis. Table 2 shows definite evidence of that. Firms were presented with a list of twelve factors, and were asked to indicate which ones had most strongly influenced the definition of their current strategy. By far, the factor most often identified by both TNCs and NEs was recession in the domestic market. Both groups of firms also emphasized adaptation to consumer requests, and TNCs —to a much greater extent than NEs— mentioned globalization. MERCOSUR was also quite influential, but trade liberalization and stronger competition from imports were secondary to the above-mentioned factors: only 18% of NEs and 28% of TNCs considered that phenomenon an important factor in determining their strategy.

Table 2

MAIN FACTORS INFLUENCING THE FIRMS' CURRENT STRATEGY (OUT OF A LIST OF TWELVE): PERCENTAGE OF FIRMS THAT IDENTIFIED THE FACTOR INDICATED AS ONE OF THE MOST DECISIVE

	NEs	TNCs
Recession in the domestic market	76	70
Consumer requests	57	63
Market globalization	48	70
MERCOSUR	35	38
Trade liberalization	18	28

A very indirect indication of prospects for future export and import patterns among the firms is provided by the survey's finding that 75% of NEs and 71% of TNCs intend to export more in 1993-1995, and that 56% and 71% of NEs and TNCs, respectively, intend to import more in the near future. Although this implies that the performance of NEs may improve in terms of the balance of payments, this is difficult to forecast because the firms made no mention of absolute values or coefficients.

Most firms say their strategies include both the domestic market and exports (75% of TNCs and 76% of NEs). Only 20% of both groups of firms say their sales are exclusively aimed at the domestic market, and a mere 5% say they only export. Data from the second study in the "trilogy", limited to TNCs, indicate the relative weight of exports. Of a sample of 55 of the 100 largest TNCs in the manufacturing sector, 22% said they based their strategy only on the domestic market; another 58% did so primarily, but were also strongly influenced by exports; 8% were equally interested in the two markets; and only 12% placed more emphasis on exports or sold exclusively in foreign markets.

Thus, the Brazilian firms' current restructuring seems to be concerned primarily with trying to keep their share of sales in the domestic market, and secondarily with modernizing and gaining competitiveness for exports. In other words, this is not primarily an export-led restructuring —though this obviously does not mean that exports do not matter.

As far as export strategies are concerned, a very significant finding is the great importance attached to Latin American markets, particularly MERCOSUR. The figures in table 3 show the percentage of firms that said they were the most important or one of the two most important markets. As shown by the table, MERCOSUR is ranked higher than Europe and the United States and Canada, which have historically been larger export markets for Brazilian manufactures than Latin America. TNCs and NEs have very similar preferences.

Table 3

EXPORT MARKETS: PERCENTAGE OF FIRMS THAT INDICATED THE SPECIFIED MARKETS AS THE MOST IMPORTANT OR ONE OF THE TWO MOST IMPORTANT FOR THEIR EXPORTS

	National	Transnational
MERCOSUR	41	41
Other Latin American countries	22	22
United States and Canada	32	37
EEC	25	20
Eastern Europe	2	0
Japan	3	2
Other	14	25
None	2	2

In order to adapt their productive operations to stronger competition, firms have been redefining their strategies in a number of areas. The two basic areas concern "what" and "how" to produce. Redefinition of "what to produce" means determining where exactly to continue to add value within the factories themselves. Redefinition of "how to produce" means adjusting the production process so as to achieve greater competitiveness (higher quality, lower cost, faster delivery, etc.). Below is a summary of the findings in these areas, followed by a brief comment on some results concerning two other areas of potential change, namely relationships with suppliers and with workers.

a) *"Redefining what to produce"*

The figures in table 4 show the percentage of firms that replied affirmatively to a list of questions related to their strategy for change in their production arrangements. Four important conclusions can be drawn from the table.

First, both TNCs and NEs are dismissing personnel in support services and acquiring those services from other firms. Second, firms are becoming adept at quickly changing product models. There is no significant difference between TNCs and NEs in this regard. The way this particular question was phrased does not reveal the extent to which concern about product diversification has grown recently. However, as other elements in the survey —described later— indicate important progress in terms of "set-up" and "lead" times, this concern has probably increased.

Third, about 30% of TNCs and NEs are de-verticalizing; i.e., acquiring in the market inputs that used to be produced in-house. In most cases this should mean both buying more in the domestic market and importing more.

Table 4

CHANGES IN PRODUCTION STRATEGY: % OF THE FIRMS THAT ARE INTRODUCING CHANGES IN THE AREAS INDICATED

	National	Transnational
1. Reduction of support services (dismissal of service personnel and purchase of services from other firms)	63	68
2. Product diversification (rapid changes in product models)	60	65
3. De-verticalization (reduced production of inputs)	32	28
4. Specialization (reduced number of lines of production)	26	30
5. Verticalization (increased production of inputs)	8	3
6. Abandonment of production	2	3

Lastly, 26% of NEs and 30% of TNCs are reducing the scope of their activities and concentrating on fewer lines of production.[6] It should be noted that this is perfectly compatible with product differentiation. Firms are abandoning the production of goods in areas where they do not have comparative advantages, and are producing a larger number of models within the lines of production where they have comparative advantages.

b) ***Redefining "how to produce"***

As mentioned earlier, the current restructuring has not, as yet, involved large investments in fixed capital. In the future, however, investment in fixed capital by both TNCs and NEs will, in the vast majority of cases, be essentially directed towards modernization, and not primarily aimed at expansion. The introduction of new management techniques is considered a basic step in the production strategy of about 90% of both groups of firms, whereas plant modernization is seen as a basic process by some 80% of them.

Firms are mainly rationalizing their activities. Table 5 shows the hierarchy of rationalization targets relative to cost considerations. The figures show the percentage of firms that said that each target indicated was one of the two most important objectives of productive rationalization in terms of costs (firms were asked to indicate one or two major targets). It appears that TNCs are basically concerned with improving the use of inputs (increasing returns and reducing costs of stocks) and eliminating bottlenecks. Next come improvements in the use of labour. An equally high percentage of NEs rate higher efficiency in the use of inputs as one of the two main targets; unlike TNCs, however, a larger percentage of NEs consider stock management more important than reducing bottlenecks in production.

Table 5

MAIN COST-RATIONALIZATION TARGETS (% OF FIRMS THAT SAID THE TARGET INDICATED WAS THE MOST IMPORTANT OR ONE OF THE TWO MOST IMPORTANT IN THEIR COST-REDUCTION STRATEGY)[a]

	National	Transnational
1. Reduce consumption/increase returns on use of inputs	53	56
2. Reduce costs of stocks of inputs	50	49
3. Eliminate bottlenecks	31	49
4. Reduce labour	26	20
5. Reduce contamination	7	12
6. Reduce energy consumption	11	7
7. Other/no defined targets	7	7

[a] Each firm was asked to select at one or two aspects. The sum total of the figures for national and transnational firms is less than 200 because some of the firms named only one factor.

Two conclusions relative to labour costs can be drawn. First, another part of the questionnaire reveals that the percentage of firms —especially NEs— that foresee an increase in sales is much higher than the percentage that foresee an increase in employment: 87% of them expect sales increases in 1993-1995, whereas two thirds of NEs and 55% of TNCs expect to have either the same number of employees or fewer. In other words, they expect to generate low labour demand and high increases in labour productivity in the near future

Second, as has been noted in a number of recent articles in the Brazilian press, layoffs are taking place not only among workers but also among managers and executives. Unfortunately, the questionnaire paid very little attention to administrative issues, which also seem to be undergoing important changes in Brazilian firms. The questionnaire's most important finding in this respect is a reduction of the number of layers in the administrative hierarchy of both TNCs and NEs in the sample (from six to five layers, approximately). Also, over one third of the firms in both groups said they would make such reductions in the near future.

Besides simplifying communication and speeding up decision-making and action, this obviously implies a reduction in total wage and salary costs —especially considering the relatively high value of executives' earnings.

In spite of great concern about costs, firms are placing more emphasis on quality and technical standards, as shown in table 6.

They were asked first to indicate, from a list of nine, the most important or two most important strategic targets in terms of their sales in the domestic market; they were then presented with the same list and asked to indicate one or two major targets of their export strategy.

The most interesting conclusion that can be drawn from table 6 is that greater importance is given to quality than to price reduction in domestic sales. It is also interesting to note that, as far as exports are concerned, prices matter significantly more, but again, not as much as quality.

TNCs and NEs rate all aspects quite similarly. As could be expected, one of the relatively minor differences is the fact that more TNCs than NEs emphasize trade marks as a distinctive consideration in their domestic sales. A second difference is that TNCs put greater emphasis than NEs on universal technical standards, whereas NEs are more concerned with the specific demands of clients than TNCs. Finally, TNCs show greater concern about delivery time and NEs, about technological content.

c) *Relationships with suppliers and workers*

Relationships with suppliers may be undergoing important changes. Although the questionnaire only indicates changes over time in a single area (quality control on inputs, which is discussed later in this report), it does shed light on a number of interesting aspects which point to quality concerns in the buyer-supplier relationship. The results are concurrent with those of other recent studies that show a trend towards closer (and probably less conflictive) relationships, prompted by concern for technical standards.

First, firms were asked how many suppliers of their main input they preferred to deal with. TNCs and NEs have identical views on this: a marked preference for as few suppliers as possible, as long as they are not limited to a single supplier. The firms that prefer this alternative outnumber those that prefer to buy from the largest possible number of suppliers by about two to one.[7]

Table 6

DOMESTIC-MARKET TARGETS AND EXPORT TARGETS: HIERARCHY OF SELECTED AREAS (% OF FIRMS THAT SAID THE AREA INDICATED WAS THE MOST IMPORTANT OR ONE OF THE TWO MOST IMPORTANT IN THEIR SALES STRATEGY)

	Domestic market		Exports	
	NEs	TNCs	NEs	TNCs
1. Strict conformity to technical specifications	35	50	49	54
2. Strict compliance with particular specifications of clients	33	22	25	20
3. Strong brand-name identification	23	35	19	17
4. Low price	19	20	30	27
5. High technological content	21	15	21	10
6. Short-term delivery	17	20	10	24
7. Efficiency in technical assistance	11	18	6	10
8. Durability	6	10	3	2
9. Rapid development of new products	8	0	3	0
10. No strategy	2	3	2	0

[a] Each firm was asked to select one or two aspects. The sum total of the figures for national and transnational firms is less than 200 because some of the firms named only one factor.

Second, TNCs and NEs that prefer long-term commercial relationships and a systematic exchange of information on technical matters outnumber, by more than two to one, those that prefer to change suppliers according to the best conditions at any given moment. Finally, only 10% of TNCs and 2% of NEs prefer foreign suppliers; about 35% of TNCs and 44% of NEs prefer national ones, and roughly half of both groups of firms say they are indifferent to the supplier's country of origin.

As to relationships with workers, table 7 shows that there seems to be a clear pattern of behaviour. The vast majority of both groups of firms promote stability of employment with no formal guarantees; a minority prefer to give formal guarantees; and another minority either have no policy for labour stability or promote rotation.

Firms also show a marked preference for flexibility in the assignment of tasks: about two thirds of them, TNCs and NEs alike, say they promote task rotation, and about one third of NEs and one fifth of TNCs say they encourage workers to perform some tasks other than those for which they are primarily responsible. Finally, TNCs have a more positive attitude towards training, as over two thirds of them carry out well-organized and systematic training activities, compared to only half of NEs.

Table 7

LABOUR STABILITY: PERCENTAGE OF TNCs AND NEs THAT HAVE THE POLICY INDICATED

	NEs	TNCs
Formal guarantees of stability	3	10
Stability policies without formal guarantees	75	75
No stability policy	14	8
Rotation	0	3
No defined strategy	8	5
	100	100

4. Performance: progress between 1989 and 1992, and expected progress in the immediate future

The questionnaire clearly illustrates considerable progress in many basic areas related to competitiveness, as well as a few worrisome setbacks. Also, prospects for the near future are very favourable. Before exploring them, a few findings regarding the technological level of existing plants should be considered.

The firms were asked how old their most important equipment was. Quite surprisingly —in view of shrinking investment for a number of years— 32% of TNCs and 22% of NEs said it was less than five years old, and another 14% of TNCs and 29% of NEs said it was less than ten years old.

Firms were also asked to compare the technological standard of their products to that of the products traded by the world's leading producers. Then they were asked how modern their basic equipment was, in comparison to that used by the most important world exporters. Table 8 shows that their products compare quite well to the world standard, and far better than their equipment. It also shows that TNCs are more modern than NEs, in terms of both products and equipment.

Below is a summary of the survey's main results related to changes in competitiveness and prospects for the near future. These aspects are organized into five groups: a) improvements in the production process; b) introduction of industrial automation (IA) and new organizational techniques (OT); c) introduction of quality control systems; d) setbacks in training, research and development (R&D), engineering, etc.; e) gains in competitiveness (cost, quality, delivery time, etc.).

Table 8

TECHNOLOGICAL STANDARDS OF PRODUCTS AND EQUIPMENT: PERCENTAGE OF FIRMS WITH THE SPECIFIED CHARACTERISTICS

	Products		Equipment	
	NEs	TNCs	NEs	TNCs
Last generation	41	54	21	33
Generation before the last	37	27	42	45
Previous generations	10	5	21	8
Not applicable/ unknown	12	14	16	14
	100	100	100	100

a) ***Improvements in the production process***

Tables 9 to 16 show that firms are making progress in a whole set of variables related to efficiency in production. The tables are self-explanatory. It suffices here to stress two points. First, in all but one of the various aspects which were put to the firms, the overall trend is towards higher performance. The one negative aspect concerns energy costs, and may have been a result of higher energy prices and not of reduced efficiency in energy use. Second, a comparison between TNCs and NEs reveals two groups of changes. First, national and transnational firms started from equal positions and performed similarly in the following aspects: time of production, rate of returned products and efficiency in the use of raw materials. Second, national firms were less advanced than TNCs in 1987-1989 but progressed faster, equalling the performance of TNCs, in the areas of delivery time, reprocessed production, defective units, input rejection and time-and-motion analysis.

b) ***Industrial automation (IA) and organizational techniques (OT)***

Firms are currently introducing IA and OT. Table 17 shows the survey's results relative to IA. It can be seen that much was accomplished between 1989 and 1992, and much more is expected for 1993-1995. In view of the current investment recession, this result should be viewed with caution, as it probably reflects the sum of partial and isolated automation and, only to a very minor degree, the introduction of integrated systems of automation. It is also apparent that TNCs have introduced IA faster than NEs.

Table 9

AVERAGE PRODUCTION TIME: PERCENTAGE OF FIRMS IN THE SURVEY THAT WORK WITHIN THE SPECIFIED TIMES

	NEs		TNCs	
Days, 81 firms	1987-1989	1992	1987-1989	1992
Up to 3 days	19	25	10	13
4-10 days	10	14	17	20
11-30 days	25	21	13	17
30-90 days	14	10	23	13
Over 90 days	31	31	37	37
	100	**100**	**100**	**100**

	NEs		TNCs	
Hours, 23 firms	1987-1989	1992	1987-1989	1992
Up to 2 hours	17	36	18	18
3-6 hours	42	27	9	9
7-12 hours	25	27	36	36
Over 12 hours	17	9	36	36
	100	**100**	**100**	**100**

Table 10

AVERAGE DELIVERY TIME (DAYS): PERCENTAGE OF FIRMS IN THE SURVEY THAT PRODUCE WITHIN THE SPECIFIED TIMES, 1987-1989 AND 1992

	NEs		TNCs	
	1987-1989	1992	1987-1989	1992
Up to 3 days	5	11	12	15
4-10 days	20	26	17	18
11-30 days	25	30	17	23
30-90 days	28	12	20	20
Over 90 days	23	21	34	25
	100	**100**	**100**	**100**

Table 11

REPROCESSED PRODUCTION: PRODUCTION SUBMITTED TO A SECOND PROCESS/TOTAL PRODUCTION: PERCENTAGE OF FORMS IN THE SURVEY THAT WORK WITHIN THE SPECIFIED PARAMETERS

	NEs		TNCs	
	1987-1989	1992	1987-1989	1992
0%	14	17	24	22
Up to 1%	20	25	5	12
1-2%	8	10	7	12
2-5%	19	22	17	10
5-10%	6	3	10	15
Over 10%	33	22	37	30
	100	**100**	**100**	**100**

Table 12

AVERAGE RATE OF DEFECTIVE UNITS (PRODUCTION WITH DEFECTS/TOTAL PRODUCTION): PERCENTAGE OF FIRMS IN THE SURVEY THAT WORK WITHIN THE SPECIFIED PARAMETERS

	NEs		TNCs	
	1987-1989	1992	1987-1989	1992
0%	6	8	20	20
Up to 1%	14	18	5	5
1-2%	11	24	12	15
2-5%	22	16	10	17
5-10%	11	11	12	17
Over 10%	35	24	42	27
	100	**100**	**100**	**100**

Table 13

AVERAGE RATE OF INPUT REJECTION (REJECTED INPUTS/TOTAL PURCHASES): PERCENTAGE OF FIRMS IN THE SURVEY THAT WORK WITHIN THE SPECIFIED PARAMETERS

	NEs		TNCs	
	1987-1989	1992	1987-1989	1992
0%	16	16	20	20
Up to 1%	22	38	22	26
1-2%	11	5	5	7
2-5%	18	14	15	15
5-10%	5	3	7	10
Over 10%	28	24	31	22
	100	100	100	100

Table 14

AVERAGE RATE OF RETURNED PRODUCTS (VALUE OF RETURNED PRODUCTS/TOTAL SALES): PERCENTAGE OF FIRMS IN THE SURVEY THAT WORK WITHIN THE SPECIFIED PARAMETERS

	NEs		TNCs	
	1987-1989	1992	1987-1989	1992
0%	24	25	29	29
Up to 1%	38	40	44	44
1-2%	6	11	2	7
2-5%	8	5	2	0
5-10%	2	0	2	0
Over 10%	22	19	20	20
	100	100	100	100

Table 15

ENERGY COSTS (ENERGY COSTS/DIRECT COSTS): PERCENTAGE OF FIRMS IN THE SURVEY THAT WORK WITHIN THE SPECIFIED PARAMETERS

	NEs		TNCs	
	1987-1989	1992	1987-1989	1992
Up to 1%	13	6	15	15
1-2%	6	13	12	12
2-5%	21	22	15	17
5-10%	25	29	17	20
Over 10%	56	55	44	44
	100	100	100	100

Table 16

RAW MATERIAL EFFICIENCY (NOMINAL CONSUMPTION OF INPUTS/REAL CONSUMPTION OF INPUTS): PERCENTAGE OF FIRMS IN THE SURVEY THAT WORK WITHIN THE SPECIFIED PARAMETERS

	NEs		TNCs	
	1987-1989	1992	1987-1989	1992
Up to 80%	6	5	10	7
80-90%	27	21	24	20
90-95%	11	14	12	5
95-97.5%	8	3	10	10
Over 97.5%	48	57	44	59
	100	100	100	100

Table 17

PERCENTAGE OF PLANT OPERATIONS USING MICROELECTRONIC DEVICES: PERCENTAGE OF FIRMS IN THE SURVEY THAT WORK WITHIN THE SPECIFIED RANGES OF AUTOMATION

	NEs			TNCs		
	1987-1989	1992	1993-1995[a]	1987-1989	1992	1993-1995[a]
0-5%	43	29	17	46	20	5
6-20%	26	22	23	25	22	17
21-50%	12	17	21	6	33	35
51-100%	3	17	24	9	11	22
Not applicable	17	15	16	14	14	14
	100	100	100	100	100	100

[a] Projected.

Table 18 shows the results relative to the spread of OT. The figures reflect the steady introduction of all procedures in both NEs and TNCs. Looking at the set of procedures as a whole, it is difficult to say whether one group is superior to the other. On the one hand, national firms are in a better position than TNCs in terms of the statistical control of processes and of inbound just-in-time (and TNCs say they will be improving fast in the near future, so that the distance between the two groups of firms should decrease). On the other hand, TNCs are superior to NEs in terms of the use of quality control circles, time-and-motion analyses and production cells, a situation which is not expected to change in the near future. Finally, as to the other two aspects surveyed —the use of outbound just-in-time and participation in the clients' just-in-time— the two groups are behaving very similarly.

c) *Quality control*

Firms are actively introducing quality control procedures. The data in table 18 alone would be sufficient to imply this, as many of the procedures listed are directly or indirectly linked to quality control. But the survey provides three other types of information that confirm the concern for quality standards.

First, firms are actively trying to get the new international quality certificate "ISO 9000". As can be seen from table 19, the majority of them are already in the process of introducing methods that comply with the required standards, a few already have the certificate, and fewer than 10% either have never heard of it or do not want to apply for it. TNCs seem to have moved faster than NEs in this process.

Table 18

SPREAD OF ORGANIZATIONAL TECHNIQUES IN FIRMS: PERCENTAGE OF FIRMS IN THE SURVEY WITH THE SPECIFIED CHARACTERISTICS

	NEs			TNCs		
	1987-1989	1992	1993-1995[a]	1987-1989	1992	1993-1995[a]
Quality control circles (over 20% of workers involved in this activity)	11	16	36	18	40	58
Statistical control of processes (in over 20% of operations)	26	43	59	12	30	51
Time-and-motion analysis (applied to over 20% of operations)	31	47	50	42	49	62
Production cells (over 20% of workers involved in this procedure)	6	27	35	13	34	48
Inbound just-in-time (over 20% of workers involved in this procedure)	10	32	49	15	24	52
Outbound just-in-time (over 20% of suppliers involved in this procedure)	2	11	34	8	21	35
Participation in just-in-time of clients (involving over 20% of shipments)	8	17	31	3	20	29

[a] Projected.

Table 19

ISO 9000: PERCENTAGE OF FIRMS IN THE SURVEY THAT REPLIED AS INDICATED

	NEs	TNCs
% of firms that do not know of it	6	2
% of firms that know of it but have no intention of introducing it	2	5
% of firms that are conducting studies aimed at implementing it	35	24
% of firms that recently started its implementation	16	15
% of firms that are in an advanced phase of implementation	25	29
% of firms that have completed implementation but do not yet have the certificate	11	15
% of firms that have the certificate	5	10
	100	100

Second, firms are quickly diffusing quality control procedures throughout the production process, as shown in table 20. Quality assurance means "100% control", as against "sample control", labelled here as "quality control". It appears that both NEs and TNCs moved rapidly into the widespread use of quality assurance and quality control between 1989 and 1992, and that the process will continue in the near future. NEs started from a less favourable position than TNCs in quality assurance, but managed to equal TNCs' standards in 1992. As to quality control, the two groups show similar trends.

Lastly, firms are also introducing widespread quality controls for inputs. As can be seen from table 21, controls for a progressively larger share of the inputs are being implemented by both NEs and TNCs, at a very similar rate.

Table 20

QUALITY ASSURANCE AND QUALITY CONTROL: PERCENTAGE OF FIRMS USING THEM AT DIFFERENT STAGES OF THE PRODUCTION PROCESS

	NEs			TNCs		
	1987-1989	1992	1993-1995[a]	1987-1989	1992	1993-1995[a]
QUALITY ASSURANCE						
Nowhere	13	4	0	0	0	0
Only for finished products	13	14	8	16	16	8
Only at a few stages of production	24	8	4	1	8	4
At the essential stages of production	20	20	13	41	21	13
At all stages of production	28	45	68	19	47	74
	100	100	100	100	100	100
QUALITY CONTROL						
Nowhere	0	0	0	0	0	0
Only for finished products	9	4	8	10	5	6
Only at a few stages of production	14	11	2	7	11	6
At the essential stages of production	24	30	4	39	30	14
At all stages of production	48	53	83	44	49	70
	100	100	100	100	100	100

[a] Projected.

Table 21

QUALITY ASSURANCE: PERCENTAGE OF FIRMS THAT USE OR INTEND TO USE IT IN PURCHASING INPUTS

	NEs			TNCs		
	1987-1989	1992	1993-1995*	1987-1989	1992	1993-1995*
QUALITY ASSURANCE						
No inputs	12	10	0	9	6	0
A few inputs	35	18	9	31	11	8
Essential inputs	32	43	28	38	47	33
All inputs	21	27	61	22	33	56
	100	100	100	100	100	100

* Projected.

d) ***Training, R&D, engineering, marketing and technical assistance***

The results presented above illustrate important achievements in terms of improving quality and reducing costs. As noted earlier, they are part of an adjustment effort that follows a "defensive" pattern: maximum change at minimum cost. Many of the changes are indeed nearly cost-free, and most of the others entail investments that represent only a fraction of the firms' total assets. Nowhere is this pattern more clearly confirmed than in the evolution of some basic areas that affect long-term competitiveness, such as research and development (R&D) and training programmes. Although projections for the near future are very positive, and take into account the potential gains firms may derive from these activities, no progress has been made in these areas in recent years. On the contrary, the evolution seems to have been rather negative.

As shown by table 22, spending on training programmes, R&D, engineering, technical assistance and marketing as a percentage of sales was lower in 1992 than in 1987-1989. It is probable that trends have been worse in NEs than in TNCs in terms of absolute expenditure, since sales have declined more sharply in NEs than in TNCs. It is also interesting to note that TNCs have spent relatively more than NEs in all five areas. This is a new situation in the case of R&D, as previous studies showed superior performance by national enterprises in this regard.

Table 22

EXPENDITURES BY FIRMS, AS A SHARE OF TOTAL SALES, ON TRAINING, R&D AND ENGINEERING, TECHNICAL ASSISTANCE AND MARKETING: PERCENTAGE OF FIRMS THAT SPEND IN THE RANGES INDICATED

	NEs		TNCs	
	1987-1989	1992	1987-1989	1992
Cost of training programmes, as a % of sales				
0-0.1%	28	28	16	22
0.11-0.3%	14	16	22	12
0.31-0.8%	11	18	14	20
0.81-2.5%	14	18	24	24
Over 2.5%	32	21	24	22
Cost of R&D, as a % of sales				
0-0.5%	40	49	31	40
0.51-1.5%	18	19	20	20
Over 1.5%	42	32	49	42
Cost of engineering as a % of sales				
0-0.5%	43	49	29	27
0.51-4.5%	30	32	29	39
Over 4.5%	27	19	42	34
Cost of technical assistance as a % of sales				
0%	36	35	24	26
0.1-1.5%	21	30	30	25
1.5%-4.5%	11	10	2	10
Over 4.5%	32	25	44	39
Cost of marketing as a % of sales				
0-2.5%	38	40	24	27
2.5-10%	37	41	40	44
Over 10%	25	19	37	29

One interesting point revealed in table 22 is that spending by TNCs on technical assistance did not deteriorate as much as spending in the other areas —in contrast to the behaviour of NEs. The behaviour of TNCs is consistent with the observed trend towards a strong commitment to quality standards, assisting clients, "customizing", strengthening brand-name recognition, etc., whereas that of NEs, which cut spending in this area, is inconsistent with that trend.

Again, prospects for the near future (1993-1995) contrast positively with the firms' recent poor performance in these efforts to enhance competitiveness, as shown by table 23. A large majority of TNCs and NEs expect to increase training programmes,[8] 68% of TNCs intend to increase R&D (compared to 56% of NEs), and approximately half of both groups of firms said they would spend more on engineering. Spending on technical assistance is expected to increase in 44% of NEs and only 36% of TNCs, and marketing should increase only moderately in both groups; i.e., in just over one third of the firms.

e) *Gains and losses in competitiveness*

Thus far, we have looked at isolated aspects related to changes in competitiveness. Now, we will see how firms evaluate their effective gains between 1987-1989 and 1992. These results appear in table 24. The figures speak for themselves, pointing to a number of significant and quite similar improvements in both groups of firms. They also show, however, that in one fundamental aspect (costs), performance was heterogeneous, as factors of competitiveness deteriorated in a significant number of firms in both groups: whereas costs had decreased in over half of the firms by 1992, they had increased in another 30% of the firms. A detailed cost breakdown would be needed to evaluate this phenomenon correctly, as it is probably explained at least in part by greater idle capacity owing to recession and to other elements which are beyond the control of the firms (such as energy costs).

5. Firms' evaluation of their own competitiveness

The survey includes a block of questions regarding the firms' evaluation of conditions that determine their competitiveness. Table 25 shows how firms evaluate their performance in aspects which are potentially under their control, table 26 shows their evaluation of infrastructure conditions, and table 27 shows their views on how macroeconomic, fiscal and financial conditions affect them.

Three interesting conclusions can be drawn from table 25. First, unlike NEs, TNCs that are not pleased with the prices they charge outnumber those that are happy with them. Second, the evaluations were positive for all other aspects (in table 25, these aspects are ordered according to the proportion of national firms that evaluated them positively). Third, TNCs are more pleased than NEs with their performance in terms of conformity to technical standards, technical assistance, brand-name recognition and the technological sophistication of their products, while all other aspects are rated quite similarly by both groups of firms.

Table 26 shows that the firms complain about the cost of most infrastructure services; very few say that competitiveness is being strengthened by it. TNCs are considerably more critical in this regard than NEs in a number of areas, especially maritime and road transport. Quality is evaluated much more favourably than cost.

Table 23

PROSPECTIVE EVOLUTION IN THE NEAR FUTURE OF ABSOLUTE EXPENDITURE ON TRAINING, R&D, ENGINEERING, MARKETING AND TECHNICAL ASSISTANCE: PERCENTAGE OF FIRMS THAT INTEND TO SPEND MORE, LESS, OR THE SAME AMOUNT IN 1993-1995 AS IN 1992

		NEs	TNCs
Training programmes	More	76	71
	Same amount	20	29
	Less	3	0
		100	100
R&D	More	56	68
	Same amount	31	27
	Less	10	-
		100	100
Engineering	More	53	51
	Same amount	32	40
	Less	4	3
		100	100
Marketing	More	39	35
	Same amount	41	49
	Less	20	14
		100	100
Technical assistance	More	44	36
	Same amount	39	45
	Less	12	8
		100	100

Table 24

GAINS IN COMPETITIVENESS BETWEEN 1987-1989 AND 1992: PERCENTAGE OF FIRMS THAT PERFORMED AS INDICATED

	NEs			TNCs		
	Lower	Similar	Higher	Lower	Similar	Higher
Production costs	58	13	28	54	14	30
Product price	56	8	34	55	13	32
Delivery time	49	36	14	56	42	3
Time for developing new products	48	27	19	58	20	23
Efficiency in technical assistance	9	30	61	14	23	64
Technological sophistication	6	32	61	3	36	58
Adjustment to client specifications	6	33	59	6	41	53
Adjustment to technical specifications	3	44	49	3	47	50
Market acceptance of product brand name	5	58	36	3	61	36
Product durability	2	56	37	3	72	24

Table 25

FIRMS' EVALUATION OF FACTORS OF COMPETITIVENESS THAT DIRECTLY DEPEND ON THEIR OWN EFFORTS: PERCENTAGE OF FIRMS THAT EVALUATE THE FACTOR INDICATED AS POSITIVELY/NEGATIVELY AFFECTING THEIR CURRENT COMPETITIVENESS

	NEs			TNCs		
	Positive	Negative	Neutral/ no reply	Positive	Negative	Neutral/ no reply
Price	29	24	47	27	32	40
Conformity to technical specifications	52	3	2	71	0	29
Size of national market reached by the firm's products	46	6	48	48	8	44
Delivery time	43	5	52	37	7	56
Coverage of targeted segments of the market	44	2	54	49	0	51
Compliance with clients' specifications	44	3	53	42	5	53
Technical assistance	36	5	59	51	5	44
Brand-name recognition	31	2	67	37	7	56
Durability	18	2	80	22	0	78
Technological content	21	2	77	37	0	53
Time for development of new products	16	11	73	15	7	78
Size of the foreign market reached by the firm's products	33	8	55	34	2	64

Table 26

FIRMS' EVALUATION OF HOW COMPETITIVENESS IS AFFECTED BY INFRASTRUCTURE CONDITIONS: PERCENTAGE OF FIRMS THAT EVALUATE THE FACTOR INDICATED AS POSITIVELY/NEGATIVELY AFFECTING THEIR CURRENT COMPETITIVENESS

	NEs			TNCs		
	Positive	Negative	Neutral/ no reply	Positive	Negative	Neutral/ no reply
Road transport						
Cost	19	36	45	19	52	29
Quality	28	19	53	32	29	39
Speed	33	26	42	26	29	45
Maritime transport						
Cost	16	35	49	16	52	33
Quality	23	23	53	53	29	42
Speed	9	35	56	26	39	35
Ports						
Cost	12	56	32	10	61	29
Quality	9	44	47	16	52	32
Speed	7	49	43	16	52	32
Storage						
Cost	7	40	53	10	42	49
Quality	14	26	60	20	33	47
Electrical energy						
Cost	5	35	60	16	42	42
Quality	23	21	56	48	10	42
Other energy sources						
Cost	5	23	72	17	26	57
Quality	12	16	72	19	19	62
Telecommunications						
Cost	2	23	75	10	36	55
Quality	19	26	55	26	16	58

Except in terms of the quality of port services and of storage, the percentage of firms that say that the quality of public services affects them positively is either roughly equal to or greater than the percentage of firms that evaluate it negatively. There is little difference between the evaluations of the two groups of firms, except that TNCs seem to be more pleased with the quality of energy services than NEs. Finally, regarding the speed of transport services, it can be seen from table 22 that less than 30% of both NEs and TNCs say road transport affects them negatively, over 35% say that maritime transport has such an impact, and approximately 50% say that the slowness of port services is hurting competitiveness.

Table 27 shows that most firms complain about the macroeconomic and fiscal/financial context in which they operate. The various aspects that were put to the firms are organized in the table according to the intensity of the complaints. First, there is near-consensus —especially among NEs— that interest rates, taxes on inputs and products, and social security costs are too high, and that long-term credit availability is too low (the first five aspects listed in table 23). Next comes a group of factors which, in the opinion of between one third and one half of the respondents, affect firms negatively (fiscal incentives for fixed capital, tariffs on imported inputs and capital goods, and fiscal incentives for exports). Next come four aspects that have a negative impact on only of about 35% of the firms (current exchange rates, labour costs, short-term credit availability and fiscal incentives for investments in preferential regions); in all four areas, NEs complain relatively more than TNCs. Lastly, both TNCs and NEs are divided in their views on credit for exports and on protective tariffs on items that compete with the firm's goods.

6. Summary and conclusions

On the basis of the highly comprehensive survey coordinated by the UNICAMP/UFRJ/FUNCEX/FUJC team, this paper covered a large number of variables related to competitiveness in the Brazilian manufacturing sector, and used special tabulations to contrast the recent behaviour of large national and transnational corporations.

In the last two years or so, a number of isolated pieces of evidence have pointed to the introduction of significant improvements in competitiveness in the manufacturing sector. For example, IBGE data on labour productivity show a 14% increase in 1991-1992 alone, which contrasts with the constant labour productivity in the previous five years. Also, a burst of activity among technological consulting firms was observed, and a number of recent research projects drew similar conclusions. This extensive survey contributes decisively to an understanding of the process by providing a comprehensive overview of its inner workings.

The general conclusion is, on the one hand, that considerable progress in productivity, quality and other elements of competitiveness was made between 1989 and 1992, in both national and foreign firms; and, on the other, that progress is limited in both groups of firms by a lack of investment in fixed capital and by setbacks in long-term elements, such as training and R&D.

Three sets of issues were analysed in this paper: strategy, recent performance and prospects for the near future, as well as self-evaluations regarding competitiveness.[9] At this point, to synthesize the paper's tables and information, a summary of the three sets of results will be presented. The summary is intended to point out the similarities and differences in the behaviour of national and transnational corporations.

Table 27

FIRMS' EVALUATION OF COMPETITIVENESS RESULTING FROM MACROECONOMIC, FISCAL AND FINANCIAL FACTORS: PERCENTAGE OF FIRMS THAT EVALUATE THE FACTOR INDICATED AS POSITIVELY/NEGATIVELY AFFECTING THEIR CURRENT COMPETITIVENESS

	NEs			TNCs		
	Positive	Negative	Neutral/ no reply	Positive	Negative	Neutral/ no reply
Interest rates	5	79	16	12	69	2
Taxes on inputs	6	78	16	10	67	23
Taxes on products	5	76	19	13	60	27
Social security costs	5	71	24	5	61	34
Long-term credit availability	13	59	28	12	51	37
Fiscal incentives for investment in fixed capital	6	4	48	12	44	44
Protective tariffs on imported inputs	11	43	46	20	42	38
Protective tariffs on imported capital goods	8	41	51	20	34	46
Fiscal incentives for exports	21	33	46	12	32	56
Current exchange rate	8	35	57	20	22	58
Labour costs	18	27	55	15	20	65
Short-term credit availability	8	21	71	15	24	61
Fiscal incentives for investment in preferential regions	8	21	61	10	17	73
Credit for exports	25	25	50	27	22	51
Protective tariffs on goods that compete with the firm's goods	16	18	66	17	10	73

It shows that TNCs managed to maintain their superiority in a number of areas related to competitiveness, especially those in which both NEs and TNCs experienced setbacks, such as expenditures for training, R&D and engineering. This may have resulted at least partially from their greater capacity to cope with Brazil's severe macroeconomic crisis between 1990 and 1992. Although the crisis itself was the basic motive for adjustment in both groups of firms, it seems to have affected national firms more severely. At least in the sample here examined, national firms' sales in real terms were 13% lower in 1992 than in 1989, whereas foreign firms' sales remained unchanged.

i) *Strategy*. National and transnational firms alike said that recession in the domestic market had been the major determinant of their current strategy of change; quite surprisingly, trade liberalization seems to have had a relatively secondary influence. Also, as shown by Baumann (1993) in a paper based on the same survey, export coefficients are an important factor that differentiates strategies among firms. This does not mean that exports determine changes: as shown in the second paper in the "trilogy", firms are concentrating primarily on strengthening their position in the domestic market, and only secondarily on exports. Among external markets, MERCOSUR is the main target of both groups of firms.

Firms are changing the scope of their activities in four ways. First and foremost, both groups of firms are dismissing support personnel and contracting services from other firms. Second, and also very importantly, both groups of firms are trying to diversify products quickly (i.e., they are searching for new models). Third, about 30% of foreign and national firms are de-verticalizing (reducing inbound production of inputs). Finally, another 30% of both groups are specializing (reducing the number of lines of production).

These changes reflect a revision of "what to produce" and a concentration of production in product lines in which firms enjoy solid comparative advantages. At the same time, firms are redefining "how to produce" the product lines in which they feel strongest.

With regard to costs, the changes made by both groups of firms are mainly intended to improve the consumption of inputs and reduce the cost of stocks. TNCs rank cost-cutting through the elimination of bottlenecks as high as these two aspects, whereas NEs seem to consider it a little less significant.

Only one fifth of both groups of firms claim that reduction of their workforce is important for cost reduction. In the present context of large-scale lay-offs, this result may not reflect very sincere answers, and may arise instead from concerns about spreading the information to other workers in the firm or about the firm's public image, in view of the social effects of the practice. Alternatively, it may merely reflect the fact that firms have already effected all the dismissals they feel are necessary.

Both groups of firms say that quality is more important than costs and prices for strengthening competitiveness. This holds true in both their sales strategy for the domestic market and their export strategy, although prices are a subject of greater concern in the latter case than in the case of competition in the domestic market. Two important differences between NEs and TNCs in this respect are, first, that TNCs attach more importance to brand-name recognition in the domestic market than NEs, and, second, that while TNCs attach more importance than NEs to overall conformity to technical specifications, NEs rank compliance with the specifications of clients higher than TNCs.

Attitudes towards suppliers are said to be shaped by the building of permanent relationships with a small number of firms, as the TNCs and NEs that prefer this alternative outnumber, by two to one, those that prefer to buy from the largest possible number of suppliers. Although no information on trends in this area was given in the survey, this

may represent a new and quite positive trend away from the conflictive relationships of the past.

About 70% of both groups of firms have a policy of job stability without formal guarantees. They also tend to promote flexibility in the assignment of tasks to staff.

ii) *Performance*. Most of the firms said they had made improvements in the last few years in a wide range of areas, such as production costs, product prices, delivery time, time for developing new products, technological sophistication, technical assistance, adaptation to client specifications and compliance with technical standards.

A comparative analysis of more concrete indicators of competitiveness among national and transnational firms, based on data contrasting their situations in 1992 and in 1987-1989, reveals five groups of trends, all of which tend towards enhanced competitiveness:

- National and transnational firms started from equal positions and behaved similarly in the following areas: time of production, rate of returned products, efficiency in the use of raw materials and quality control.
- National firms were less advanced than TNCs in 1987-1989 but progressed faster, ultimately matching the performance of TNCs, in the following areas: delivery time, reprocessed production, defective units, input rejection, time-and-motion analysis and more intensive use of electronic devices and of inbound just-in-time.
- Transnational firms were more advanced than national firms and maintained their relative superiority in the use of outbound just-in-time, quality control circles, production cells and quality assurance.
- Transnational firms were less advanced than national firms, but managed to improve faster and match NEs, in participation in clients' just-in-time (which, however, remained at a low level).
- National firms were more advanced than TNCs and managed to maintain superiority in the use of statistical methods of controlling the production process.

Some quite negative results contrast with the achievements in the above areas. First, 28% of NEs and 30% of TNCs said they were operating at higher cost, which may imply that behaviour was somewhat heterogeneous during the period. More specific research, with a detailed cost breakdown, is necessary to ascertain whether the rising costs are attributable to factors which are potentially under the firms' control or to macroeconomic and infrastructure-related factors. They may stem from a combination of both —for instance, increased fixed costs, due to recession, and public service charges may outweigh the gains of microeconomic adjustments.

Both NEs and TNCs have scaled down expenditures (as a percentage of sales) on training, R&D, engineering and marketing, and national firms have also done so in the area of technical assistance. With respect to training, TNCs which have traditionally spent high percentages of sales in that area have continued to do so, and those which have spent little are now spending even less; the trend among NEs is different, as those who had spent liberally have reduced their effort in this area (and those who have traditionally spent little are not improving). In R&D, engineering and marketing, where TNCs were relatively superior in 1987-1989, a parallel deterioration has occurred in both groups of firms, though TNCs have retained their superiority. Finally, while NEs were decreasing expenditures on technical assistance, TNCs were increasing them.

It should be noted that although most of the above-mentioned negative trends occurred in both NEs and TNCs, the latter's performance was less severely affected: as the data refer to expenditures as a percentage of sales, and sales declined more steeply among NEs than among TNCs, expenditures in absolute terms must have declined more in national firms.

iii) *Self-evaluation in terms of competitiveness*. Firms were asked to evaluate their competitiveness in three sets of aspects. First, they were given a list of factors which depend on their own efforts; the replies were quite positive in all but one aspect, namely price. Firms seem generally satisfied with their performance in terms of delivery time, conformity to technical specifications, brand-name recognition in the market, compliance with technical specifications, etc. In line with the aforementioned setbacks in terms of costs, about one fifth of NEs and one third of TNCs are unhappy with the high prices they are charging. Very surprisingly, TNCs are more worried about this than NEs: only 24% of them are comfortable with their prices, whereas 47% of NEs say their prices are positively helping them to compete.

Over one third of NEs and over half of TNCs complain that transportation costs are affecting them negatively. Complaints are especially widespread on the subject of port services (cost, quality and speed). Two more areas which are said to have a very negative impact are storage and electrical energy costs.

Well over half of the firms say they are harmed by high interest rates, taxes on inputs and products, social security costs and long-term credit availability. Except in the last area, the percentage of national firms which claim to be harmed is significantly larger than that of foreign firms.

Lastly, it is interesting to note that 25% of NEs and only 9% of TNCs say they are being hurt by the current level of import duties on competing goods. This result indicates that the trade liberalization under way is not seen as a danger by most firms. A specific analysis is required to determine which firms are complaining, and in which sectors. From various statements in the press, and from a few recent studies, it can be inferred that some de-industrialization may be occurring in branches such as pharmaceuticals, computers and electronic components, sophisticated electronic consumer goods and machine tools.

It is necessary at this point to recall that the "danger" posed by liberalization means different things to different firms. In globalized branches like the four just mentioned, and more especially in those where high-technology assets are the focus of world competition —such as active biotechnological agents and electronic components— TNCs welcome liberalization even when it forces them to close up part of their production facilities. For them, as long as their commercial strength in the local market is not in danger, profits may well be maximized in the long term through a combination of less local production and more intra-firm imports. This is why, in smaller countries where market scales in the past led to high production costs, high capital volatility was observed in the context of trade liberalization. National firms, for obvious reasons, do not have the alternatives open to TNCs.

There can be little doubt that all the changes described in this paper reflect a defensive strategy among firms. There is a clear pattern of improving competitiveness through slightly increased investment, combined whenever possible with reduced short-term expenditures, even in areas that are critical for the long term, such as training and R&D. Obviously firms must solve a number of basic problems in order to turn the current positive but limited achievements into a long-term, sustained increase in competitiveness.

Problems arise in a number of areas. It is unnecessary to stress how heavily Brazil's long-term competitiveness depends on macroeconomic stabilization and the solution of the public-sector financial crisis, as well as on efforts to improve the supply of public services. Needless to say, from the viewpoint of a systemic approach to a nation's competitiveness, microeconomic adjustment is only one of a number of decisive elements.

However, as indicated in the introduction to this paper, the benefits of the current adjustment should not be underestimated. Its distinctive feature —as compared, for

instance, to other Latin American countries— is that it is very generalized in manufacturing firms in Brazil, and has spread very quickly, in just one or two years. It is playing an important role in the current context of macroeconomic difficulties and trade liberalization, by helping to avert a major collapse in the manufacturing sector —as observed, for instance, in Chile and Argentina in the 1970s and early 1980s— by increasing Brazilian manufacturers' capacity to cope with an aggressive international environment and a difficult macroeconomic context, through legitimate increases in competitiveness. Moreover, although it has not yet contributed to major technical progress —flexible automation, for instance, seems to be very scarce— it represents a preparatory phase that will ensure a more sound introduction of technical progress in the future. As a number of specialists on industry have pointed out, it is important for firms to rationalize their production processes to maximize the fruits of new investments related to the so-called third industrial revolution.

The positive events described in this paper contrast with the overall pessimism of recent analyses. Brazil's manufacturing structure seems to be quite solid, and a special kind of "survival instinct" persists in the private sector, in the face of harsh economic circumstances.

The consistency of TNCs' behaviour with general trends should not be surprising, as their strategy is perfectly rational: they are adjusting so as to make optimum future use of large investments made in the past and of a large present and future domestic market. Like national firms, they are trying to consolidate their presence in the turbulent Brazilian market, which was dealt a severe blow in recent years by the combination of crisis and trade liberalization. Except in isolated cases, they should not be expected to close their plants or leave the country, as some TNCs did in other countries of Latin America.

This means that the mentality of TNCs in Brazil is quite similar to that of domestic firms —at least the large ones dealt with in this paper. It seems, accordingly, that the two groups basically require the same kinds of economic and industrial policies.

In general terms, nothing more than the obvious can be recommended to policy-makers. Macroeconomic stability, growth and improvements in so-called systemic competitiveness (physical infrastructure, education, etc.) are by far the most important factors to address in efforts to promote investment and technical progress among both foreign and national firms in Brazil. Broadly speaking, it seems that the only important difference between the two groups of firms lies in the availability of long-term credit, since TNCs have more access to international finance. The National Economic and Social Development Bank (BNDES), which recently started financing TNCs without restrictions, should introduce a policy to cope with the strong probability that once investments recover in Brazil, funds will become very scarce.

Sweeping changes in the overall institutional framework were introduced in the last two to three years —trade liberalization, including the computer/informatics branches; improvements in the rules for profit remittances; elimination of patent restrictions; etc. Since they resulted from important political negotiations, it seems that the impacts of these changes should be followed up before new orientations are suggested.

Policy recommendations are nevertheless most urgent at the level of specific branches of production. The recent success of negotiations and policy implementation in the automotive industry is a striking example of how essential sectoral efforts are for improving competitiveness. As the present paper is one of numerous studies based on the Campinas/FURJ research on competitiveness, and as it does not discuss different branches of the manufacturing sector —as do 32 other studies—, the reader is advised to consult the latter for specific recommendations on industrial policy.

One remark should be made here regarding the convergence of interests between the Government and large firms with respect to the competitiveness of small- and medium-scale suppliers. Contrary to what might be expected, it may well be that large producers at the end of chains of production —such as TNCs in the automotive sector— have a strong interest in reinforcing the capacity of domestic suppliers instead of replacing them with imports. The rationale for this procedure lies in a number of factors, such as the fear of future exchange-rate depreciation and balance-of-payments difficulties, the advantages of having suppliers close at hand, the high costs of changing supply patterns and, last but not least, the fear of projecting an unfavourable image owing to the social impact of de-nationalizing production. If this is indeed the case, the Government and large firms —especially TNCs— should make joint efforts to enhance the competitiveness of domestic suppliers.

This writing (August 1993), the prospects for solving the macroeconomic crisis in the short term remain uncertain. None the less, the Brazilian economy is expected to grow by 3.5% in 1993, a remarkable result under the circumstances.

As stated earlier, the firms surveyed expect to go on improving in many important aspects regarding competitiveness in the period 1993-1995, and to reverse the negative trend in areas such as expenditures on R&D, technical assistance and training. In other words, they expect to conclude the present cycle of changes that reflect a "defensive" strategy. The current economic recovery is allowing firms to breathe more freely after some hard years, and this may help them to fulfil their expectations.

Notes

[1] In this paper, firms in which at least 25% of the voting capital is owned by non-nationals are considered TNCs.

[2] "Estudo da competitividade da industria brasileira", conducted by the universities of Campinas and Rio de Janeiro (UNICAMP/UFRJ), the Fundação Centro de Estudos de Comercio Exterior (FUNCEX) and the Fundação João Cabral (FUJC). The paper was prepared at the request of the research project managers, under a technical cooperation agreement between Brazil's Ministry of Science and Technology and the United Nations Economic Commission for Latin America and the Caribbean (ECLAC).

[3] Between 1980 and 1988, the export coefficient for transport equipment increased from 9.4% to 18.4%; for non-electrical machinery, from 11.6% to 16.6%; and for electrical machinery, from 5.8% to 8.2%.

[4] On the recent evolution of FDI in Brazil, see also Barros (1993).

[5] According to the survey, TNCs' main sources of information for planning are their own research, their participation in activities promoted by business associations and visits to other firms abroad. NEs get information mainly from local trade fairs and congresses, business associations and visits to firms abroad.

[6] In reply to another question in the same questionnaire (no. 37), practically all the firms (95%) stated that no "horizontal diversification" is planned (i.e., no production of goods that are technologically dissimilar to the present ones or that belong to other branches).

[7] If this is a new trend in Brazilian industry —and other studies show that it is— it may be affecting producers of inputs/components in interesting ways. They are probably getting a positive push towards specialization and rationalization, in an unfavourable context of rapid market concentration, where the weaker firms in each specific market and product either disappear or specialize in other products.

[8] The answers to another question in the survey provide some interesting information on the percentage of firms with over 50% of their employees systematically involved in training programmes: a) management: 50% of NEs and 54% of TNCs; b) professionals and technicians: 28% of NEs and 19% of TNCs; c) skilled labour: 28% of NEs and 39% of TNCs; d) unskilled labour: 17% of NEs and 19% of TNCs.

[9] Unfortunately, owing to time constraints, a detailed sectoral analysis of the data collected could not be included in the present paper.

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