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ESTUDO DA COMPETITIVIDADE DA INDÚSTRIA BRASILEIRA

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

Nota Técnica

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INTRODUCTION

This paper presents an analysis of the behaviour of large national firms (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.

The available data allows for analysis of sectoral specificities. Unfortunately, due to time pressure, the present paper is limited to 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 lay-offs. 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 eighties they managed to cope with difficulties in the commercial and productive areas through good financial management, and were able to keep sound financial positions. 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.

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

2 "Estudo da Competitividade da Industria Brasileira", conducted by the universities of Campinas and Rio de Janeiro, the Fundação de Estudos de Comercio Exterior and the Fundação João Cabral. 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, 11.6% to 16.6%; and for electrical machinery, 5.8% to 8.2%.

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 hardly 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, the appreciation of exchange rates 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 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, determined primarily by the deterioration of macroeconomic conditions, and secondarily by the trade liberalization that has taken place since then. 4/

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

A very determined adjustment effort among firms 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 is having two large 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.

Summing up, the case we are examining here seems to be one of an overall and very positive reaction of a quite solid manufacturing structure to the challenge of being destroyed by the combination of domestic crisis and international competition.

This paper is the third and last of a trilogy of studies on TNCs and industrial restructuring. The first 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 Indústria, 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 the firms were by then well aware of their relative technological backwardness:

"TNCs, as much as national enterprises, have a clear perception that they are technologically outdated relative to what is going on in the rest of the world. They show a favourable attitude towards modernization, giving clear signs that their decision-making is fixing as a target the increase in efficiency and international competitiveness" (Bielschowsky and Ferraz, 1990, p.7).

The second study consisted of interviews with 55 large TNCs three years later. It showed that in 1990 and 1991 manufacturing TNCs in Brazil were committed to a thoroughgoing adjustment. Some of its conclusions are worth reproducing here:

"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 the previous years, and the second is an emergency reaction to crisis and liberalization which, so far, has included no recovery of investments, these phenomena do manifest a surprising adaptative capacity" (Bielschowsky, 1992, p.27).

The questionnaire on which the present paper is based was conducted in the early 1993. It goes much deeper into details of the process, and confirms and qualifies the trends initially identified in the second study.

In sum, the trilogy captures the adjustment process at three important 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 advanced stage of the process (early 1993). It can therefore be seen as a chronicle of a process of adjustment.

As suggested before, it is much more than a simple adjustment, and its future developments may show that Brazil is going through the initial stages of a process of structural change - to be fully under way once the economy and the investments recover. If this turns out to be the case, the trilogy will have illustrated the early stage of a process of structural change.

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 leading world centres of 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 (1985) examined 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) examined some technological spill-overs and worker training among 52 TNCs in comparison to 32 NEs, showing that the two groups of firms had relatively similar effects.

Braga and Matesco (1986), on the basis of overall fiscal statistics for 1978, 1980 and 1982, compiled data relating to spending on R&D 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 Sao 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 (1988) 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 here necessary, regarding a factor which has been constantly present in the debate on foreign direct investment in Brazil in recent years, namely their attitude towards their stock of investments in the country. The experiences of other Latin American countries during the hard recession of the eighties show a "volatility" among TNCs, insofar as plants were often abandoned and activities were often switched from local production into importing from the rest of the corporation. This factor is discussed by Gonçalves (1992) for the Brazilian case. Based on data for the 1980s, the author says TNCs have been "retrenching", meaning by that the lack of reinvestments in their Brazilian facilities.⁴ While this may have been the case, it requires some qualification.

First, the figures for the eighties indeed 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 - but at the same time they show a constant share in increasing manufacturing exports (around 50% in both 1980 and 1990). This is far from the very negative behaviour of TNCs in the manufacturing sectors of other Latin American countries, where TNCs significantly abandoned production in a number of branches in the metal-working/engineering branches (incidentally, Gonçalves never implies any similarity).

Second, TNCs are in the process of 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, and as is shown in the next section, our sample's data on TNCs' sales evolution in the period 1989-1992 compare positively to sales evolution by national firms, indicating that the TNCs already recovered part of the market share they had lost during the eighties. It seems therefore that "retrenchment" may have come to a halt.

The report begins with a characterization 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 synthesis of the differences between NES' and TNCs' behaviour is given in the conclusive section.

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

1. 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 productive adjustments of TNCs and 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			TRANSNATIONAL FIRMS			TOTAL		
	Value		Growth	Value		Growth	Value		Growth
	1987-89	1992	Rate(%)	1987-89	1992	Rate(%)	1987-89	1992	Rate(%)
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 US wholesale prices.

The sample was selected out of the Unicamp/UFRJ/Funcex/FUJB project's larger sample, according to two criteria. First, the firms are large (average of 1.800 operative workers). Second, and with the exception of the automotive sector, they belong to manufacturing branches covered 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 (incl.electrical), 11 NEs and 5 TNCs, Electronics/telecommunication 8 NEs and 5 TNCs, Auto parts, 4 NEs and 3 TNCs; and Vehicles, 5 TNCs.

2. 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 it, 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 through adaptation 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 between 1989 and 1992 seem to have changed very little. As was shown before, 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 earlier, 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.

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 association and visits to firms abroad.

TABLE 2

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

	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 our 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 workers.

2.1. "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, TNCs and NEs are equally active at dismissing personnel in support services and acquiring those services from other firms. Second, firms are 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.

Lastly, 26% of NEs and 30% of TNCs are reducing the scope of their activities, 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.

TABLE 4

CHANGES IN PRODUCTION STRATEGY - PERCENTAGE 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 (reduction in the production of inputs)	32	28
4. Specialization (reduction in the number of lines of production)	26	30
5. Verticalization (increase in the production of inputs)	8	3
6. Abandonment of production	2	3

2.2. "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 be, in the vast majority of cases, 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 the targets indicated were 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

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).

two main targets; unlike TNCs, a larger percentage of NEs consider stock management more important than reducing bottlenecks in production.

TABLE 5

MAIN COST - RATIONALIZATION TARGETS (PERCENTAGE OF FIRMS THAT SAID THE TARGETS INDICATED WERE THE MOST IMPORTANT OR ONE OF THE TWO MOST IMPORTANT IN THEIR COST REDUCING STRATEGY)*

	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

* Each firm was asked to point at one or two aspects. The sum total of columns figures for national and transnational firms is less than two hundred because some of the firms only pointed at 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 articles in the Brazilian press lately, lay-offs 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 most important finding of the questionnaire in this respect is that there has been a reduction of the number of layers in the administrative hierarchy of both TNCs and NEs in the sample (from 6 to 5 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.

TABLE 6

DOMESTIC MARKET TARGETS AND EXPORT TARGETS - HIERARCHY OF SELECTED AREAS (PERCENTAGE OF FIRMS THAT SAID THE AREAS INDICATED WERE 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. High efficiency in technical assistance	11	18	6	10
8. High durability	6	10	3	2
9. Rapid development of new products	8	0	3	0
10. No strategy	2	3	2	0

* Each firm was asked to point at one or two aspects. The sum total of columns figures for national and transnational firms is less than two hundred because some of the firms only pointed at one factor.

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, among the relatively minor differences is that a larger percentage of TNCs than NEs emphasize trade marks as a distinctive consideration in their domestic market 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, higher concern by TNCs on delivery time and by NEs on technological content are also to be noted.

2.3. 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

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 a 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 stabilization of employees with no formal guarantees; a minority prefer to give formal guarantees; and another minority either have no policy for labour stability or promote rotation.

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

Firms also show a marked preference for flexibility in the assignment of tasks: about two thirds of them, TNCs and NEs, 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 third of them carry out well organized and systematic training activities, compared to only half of NEs.

⁷ One might suggest that 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

3. 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, and a few worrisome setbacks. Also, prospects for the near future are very favourable. Before exploring them, it is interesting to consider a few findings regarding the technological level of the existing plants.

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, compared to that used by the most important world exporters. Table 8 shows that product compares quite well to the world standard, and far better than equipment. Also, it shows that TNCs are more modern than NEs, in terms of both product and equipment.

TABLE 8

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

	PRODUCT		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

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, R&D, engineering, etc.; e) gains in competitiveness (cost, quality, delivery time, etc.).

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.

3.1. 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 negative aspect concerns energy costs, which may have been a result of higher prices of energy, and not of reduced efficiency in its 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 terms of delivery time, taxa de retrabalho, defective units, input rejection and time-and-motion analysis.

TABLE 9

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

	NEs		TNCs	
	1987-89	1992	1987-89	1992
Days, 81 firms				
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	
	1987-89	1992	1987-89	1992
Hours, 23 firms				
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	
	1987-89	1992	1987-89	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 FIRMS IN THE SURVEY THAT WORK WITHIN THE SPECIFIED PARAMETERS

	NEs		TNCs	
	1987-89	1992	1987-89	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 PRE-TRABALHADOS/TOTAL PRODUCTION) - PERCENTAGE OF FIRMS IN THE SURVEY THAT WORK WITHIN THE SPECIFIED PARAMETERS

	NEs		TNCs	
	1987-89	1992	1987-89	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	
	1987-89	1992	1987-89	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	
	1987-89	1992	1987-89	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	
	1987-89	1992	1987-89	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	
	1987-89	1992	1987-89	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

3.2. 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 17

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

	NEs			TNCs		
	1987-89	1992	1993-95*	1987-89	1992	1993-95*
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 applic.	17	15	16	14	14	14
	----	----	----	----	----	----
	100	100	100	100	100	100

(*) Projected.

Table 18 shows the results relative to the diffusion of OT. The figures show a 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 circles of quality control, 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.

TABLE 18

DIFFUSION OF ORGANIZATIONAL TECHNIQUES IN FIRMS - PERCENTAGE OF FIRMS IN THE SURVEY WITH THE SPECIFIED CHARACTERISTICS

	NEs			TNCs		
	1987-89	1992	1993-95*	1987-89	1992	1993-95*
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

(*) Projected.

3.3. 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 offers three other groups of information confirming 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 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	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 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		
	1987-89	1992	1993-95*	1987-89	1992	1993-95*
QUALITY ASSURANCE						
Nowhere	13	4	0	0	0	0
Only for finished products	13	14	8	16	16	8
Only at a few productive stages	24	8	4	19	8	4
In the essential productive stages	20	20	13	41	21	13
In all productive stages	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 productive stages	14	11	2	7	11	6
In the essential productive stages	24	30	4	39	30	14
In all productive stages	48	53	83	44	49	70
	----	----	----	----	----	----
	100	100	100	100	100	100

(*) Projected.

TABLE 21

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

	NEs			TNCs		
	1987-89	1992	1993-95*	1987-89	1992	1993-95*
QUALITY ASSURANCE						
No input	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.

3.4. 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 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 them, 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 the evolution in NEs has been worse 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 have shown superior performance by national enterprises in this regard.

One interesting point revealed in table 22 is that spending by TNCs on technical assistance did not deteriorate as much as 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, etc., whereas that of NEs, which cut spending in this area, is inconsistent with that trend.

TABLE 22

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

	NEs		TNCs	
	1987-89	1992	1987-89	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

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

Again, prospects for the near future (1993-95) contrast positively with the 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 in 36% of TNCs and marketing would be increased only moderately in both groups, namely in little over one third of firms (7).

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.

3.5. Competitiveness gains and losses

Thus far we went through isolated aspects related to changes in competitiveness. It is time to check now how firms evaluate their effective gains between the 1987- 89 period and 1992. This is shown in Table 24. The figures speak by themselves, showing a number of eloquent and quite similar improvements in both groups of firms. It also shows, however, that in one fundamental aspect, costs, performance was heterogeneous, as competitiveness conditions deteriorated in a significant number of firms in both groups: whereas costs had decreased by 1992 in over half of the firms, they had increased in another 30%. Detailed cost breakdown would be needed for a correct evaluation of this, as it is probable that it is at least partly explained by greater idle capacity due to recession and to other elements which are outside the control of the firms (such as energy costs).

TABLE 24

COMPETITIVENESS GAINS 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

4. 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 under their own potential 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, and differently from NEs, TNCs that are not pleased with the prices they practice outnumber those which are happy with it. 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 technological sophistication of 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 sea and road transport. Quality is evaluated much more favourably than cost.

With the exception of the quality of port services and of storage, in all other areas 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 sea 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 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 the import of inputs and of capital goods and fiscal incentives for exports). Next come four aspects which though also impacting

firms negatively only do it for a maximum of about 35% of of firms (current exchange rates, labour costs, short-term credit availability and fiscal incentives for investments in preferential regions); in all four NEs complain relatively more than TNCs. Lastly, both TNCs and NEs are divided in their views on credit for exports and on protective tariffs that compete with the firm's goods.

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

	positive	NEs negative	neutral/ no reply	positive	TNCs 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
Market coverage of targeted segments of 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

	positive	NEs negative	neutral/ no reply	positive	TNCs 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
Sea transport						
Cost	16	35	49	16	52	33
Quality	23	23	53	29	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
Telecommun.						
Cost	2	23	75	10	36	55
Quality	19	26	55	26	16	58

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**

	Pos.	NEs Neg.	Neutral/ no reply	Pos.	TNCs Neg.	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	46	48	12	44	44
Protective tariffs on imports of inputs	43	46	20	42	38	
Protective on imports of 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

5. SUMMARY AND CONCLUSIONS

On the basis of the highly comprehensive survey coordinated by the Unicamp/UFRJ/Funcex/FUJB team, this paper brought together 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, contrasting to 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. The extensive survey contributes decisively to an understanding of the process by providing a comprehensive examination 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, both in national and in foreign firms; and, on the other, that again in both groups of firms progress is limited by 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 wealth of 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.

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 were kept unchanged.

⁹ Unfortunately, due to time restriction, data allowing for rich sectoral analysis was not used in the present paper.

5.1. 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 by the second paper in our "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 stronger.

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 the latter 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 the present context of large-scale lay-offs, this may not be a very sincere answer, and may instead reflect 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 very fact that firms may have already done all the dismissals they find are needed.

Both groups of firms feel 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 aspect 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.

5.2. 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, taxa de retrabalho, 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 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 worrisome 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, on detailed cost breakdown is necessary to indicate 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.

5.3. 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 whose negative impact is said to be strong 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 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 "danger stemming from 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 involves closing up part of their production facilities. For them, as long as their commercial strength in the local market is not in danger, the long-term maximizing of profits may well result from a combination of less local production and more intra-firm imports. This is why, in smaller countries where market scales in the past implied 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. The pattern is quite clear, namely that of improving competitiveness through little extra investment, and at the same time and whenever possible trying to reduce expenditures in the short run, even in critical areas for the long run such as training and R&D. It is obvious that firms must face 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 ways of improving 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, and 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 a very generalized behaviour in manufacturing firms in Brazil, and one which was diffused 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 seventies and early eighties - 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 to the overall pessimism in recent analyses. Brazil's manufacturing structure seems to be quite solid, and a special kind of "animal spirit" persists in the private sector, one centered on surviving in wild 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 things from 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 Bank for Social and Economic Development (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. As they have 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 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 true, government and large firms - especially TNCs - should make joint efforts to enhance the competitiveness of domestic suppliers.

At the time of 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.

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