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EXPORTING AND THE SAGA FOR COMPETITIVENESS
OF BRAZILIAN INDUSTRY - 1992 *

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EXPORTING AND THE SAGA FOR COMPETITIVENESS
OF BRAZILIAN INDUSTRY - 1992

Renato Baumann¹

I - Introduction

The Brazilian economy has - for a whole decade - presented what have probably been its worst economic indicators ever; by the end of the 1980s, the difficulties were even sharper. Inflation had mounted to 12-month rates as high as 3000% by mid-1990, and averaged more than 800% in the following two years, whereas real per capita GDP fell 15% between 1988 and 1992.

Meanwhile, exports grew at a very rapid pace, with yearly growth rates reaching nearly 5% between 1980 and 1992, thanks mainly to industrial products, exports of which increased until they accounted for 74% of total exports by 1992.

These two sets of figures have led some analysts to see the dynamism of exports as an important source of growth for the industrial sector that partially compensates for the depressed domestic market. According to such views, industrial exports have become important not only as a source of foreign exchange, as most previous analyses of the Brazilian experience have suggested, taking into account, among other things, the relative insignificance of external sales for total domestic production. By disaggregating the sources of growth, one finds that the external market has also become more important as a source of demand for some industrial sectors.

Furthermore, the experience of 1986 - when several exporters diverted products from the external market to meet the overheated domestic demand and very soon found that the cost of losing foreign contracts proved to be too high - has led to expectations that the increasing involvement in export activity is likely to become more permanent than before.

At the same time, the period since 1987 has witnessed an unprecedented movement towards the opening of the Brazilian economy to imports, which has intensified since 1990.

The precondition for domestic producers to operate successfully in a more open context is to improve competitiveness so as to survive the inflow of competing imports and maintain (or

¹UN/ECLAC. The opinions expressed herein are those of the author, and do not necessarily reflect the views of the institutions with which he is affiliated.

increase) their share of international markets. Improved competitiveness has thus become an explicit target for private producers and policy makers in Brazil as never before.

The present study draws on the primary results of a large research project undertaken jointly by the Instituto de Economia - Universidade Federal do Rio de Janeiro, the Universidade de Campinas and the Brazilian Ministry of Science and Technology on the main features of Brazilian industry with regard to its competitiveness. The research sought to portray the basic steps undertaken recently by Brazilian industrial firms in pursuing competitiveness, their views concerning the main trends and their plans for future action in this regard. A total of 1,500 questionnaires were sent to firms all over the country, and firms were selected on the basis of their contribution to sectoral production, according to the 1985 census.

The results reported here represent a partial processing of data from 350 firms that answered the questionnaire. It was assumed that in order to evaluate the peculiarities of the export sector, the sample of firms should be designed in a way that allows for isolating the effects of exports (i.e., sectoral comparability of exporters and non-exporters), firm size sectoral specificities. A sub-sample of 199 firms in 11 sectors² was then identified, and forms the basis for the present analysis.

This study is part of a series of papers dealing with a wide range of subjects directly and indirectly related to the basic issue of the competitiveness of Brazilian industry³. More specifically, the present paper seeks to: a) identify the basic action undertaken in the last five years with regard to improving competitiveness, as reflected in the answers to the questionnaire, and b) try to relate whatever differences might be found in the behaviour of the firms to the differences in their involvement in export activity.

This study should be seen as only a first approach to the subject, since time constraints did not allow it to: a) take into account all the information⁴ available from the research and b)

²Steel products; power generating machinery; automobile industry; cotton textiles; pulp; paper; cement; producers of television, radio and sound receivers; fertilizers; furniture; and apparel and clothing.

³A parallel study dealing with broad issues based on the same primary data is Bielschowsky (1993).

⁴A number of aspects, such as a detailed account of manpower training, the entrepreneurs' view of the limitations imposed by the physical and technological infrastructure and others, have not been

process the data so as to isolate the specific effects due to firm size, sectoral specificities and involvement in export activity.

Furthermore, this paper should not be expected to include here a comprehensive testing of the effects stemming from involvement in the external market. That would require further work, taking into consideration the characteristics of the period of analysis - above all the domestic recession and exchange-rate overvaluation that have affected the export sector - and controlling for firm size and sectoral specificities, among other attributes.

Instead, the aim of this first approximation is to depict efforts made by the firms surveyed in order to foster competitiveness, and to try to identify indications that involvement in export activity might lead to a differentiated approach. As a by-product, it attempts to determine whether these sample results confirm in broad terms some specific procedures that characterize exporting firms elsewhere.

The structure of the paper is as follows. The second section presents a very brief overview of some positive effects that might be expected from increased involvement in exporting, as a reference for a comparative evaluation of the results obtained. The third section presents a description of the sample of firms and the basic structure of the questionnaire. The fourth section summarizes the basic findings and how they compare to previous evidence, and the main conclusions and some policy implications are presented in the last section.

II- A brief account of the positive effects to be expected from exporting

Theory - as well as empirical evidence from the experience of several countries - would lead one to expect a positive correlation between exporting and the improvement of competitiveness. Not only is maintaining a certain level of competitiveness a precondition for successful export performance. There is a virtuous circle linking more exports to more efficient production processes, to better identification of international market opportunities, closer contact with technical progress, and so on, all of which feeds back into improving the conditions for exporting more and in a more sustained way.

At the level of firms, it is often found that firms in developing countries have difficulties in collecting rents accruing from new technologies and thus spend relatively limited resources

considered here.

on basic, innovative research and development (R&D) activities; instead, they orient their research activities towards adapting foreign technologies.

But causality is likely to work in both directions. Exports increase the size of the market and might thus encourage a return to innovative activities. Also, the external market might impose more rigorous conditions on exporters, thus reinforcing the demand for these technological change activities.

As far as the type of technological improvement activities is concerned, it might therefore be expected that the greater the degree of involvement of a given firm in export activity, the more likely it is to adopt innovations in cost-cutting, quality improvement and product differentiation.

As far as the way of acquiring technology is concerned, the classification adopted by Kirim (1990) for modes of transfer of knowledge can be used. These transfers might take place according to "formal" (market-mediated) contracts (direct investment, licensing, management contracts, turnkey projects), or they might be absorbed via "informal" (non-market) mechanisms such as learning by exporting, imitation, keeping up with technical literature, visiting trade fairs, scientific exchange and others.

It is not the purpose of this study to go into an extensive survey of the related literature. Instead, it will merely review some pieces of evidence relative to a developing country which recently moved towards a more liberal trade orientation - information on Turkey provides a basis for comparison - and a few indicators already available for Brazil.

The results reported in Kirim (1990) for 659 firms in 1987-1988 will be used as a reference for the Turkish experience.

Kirim finds no discernible difference between exportes and domestic-market-oriented firms in terms of their relative R&D spending. Export orientation seemed to influence the direction, of technological research efforts. The three most important technological change activities for exporters were, in order of importance: 1) cost reduction; 2) capacity stretching (expanding the physical yield of existing plants and equipment without making major investments in new capital equipment); and 3) quality improvement.

For non-exporters, the ranking was somewhat different, with quality improvement in first place, followed by cost reduction and (lastly) capacity stretching.

Since competing with imports primarily requires product quality, and only to a lesser extent price differentials, the technological activity of domestic-market-oriented firms would be

expected to focus more on product differentiation and less on cost-reducing technological research activities. Exporting firms, on the other hand, could be expected to undertake systematic activities involving cost-reducing, quality-improving and product-developing technological change.

There also seem to be differences between exporters and non-exporters, in the way these technological changes take place. Exporting firms not only were involved in more cost-reducing technological activities than domestic-market-oriented firms, but also carried out these activities more systematically.

Furthermore, both exporting and domestic-market-oriented firms usually acquired their technologies through formal, non-equity modes of technology acquisition only in those cases where the products or technologies were new to them. Domestic-market-oriented firms relied predominantly on domestic and informal sources for acquiring technologies, while exporting firms relied on market-mediated transfer mechanisms. The main reason seems to be that "in activities that are new to the country and to the industry the easiest way to gain access to the technologies is by entering into a formal agreement with a foreign supplier; in other areas where domestic firms have been established for some time, it was always preferable to obtain the incremental knowledge without actually paying for it" (p.1354).

There is apparently no corresponding processed information of this kind on Brazil. However, at least three sets of evidence dealing with specific characteristics of exporting firms are available that provide a background for a comparative evaluation of the results obtained in the present enquiry.

First, Braga (1990) reports on data for 4,342 establishments in 13 industrial sectors for 1981.

He finds - as Kırım did in Turkey - that the probability of rationalizing the production process through product quality control methods, control of raw materials and changes in the layout of the production plant increases with foreign ownership, technology imports, exports and size. The probability of using quality control is also positively affected by product diversification. Furthermore, it was found that not only does involvement with exports have an intense impact on all the technological activities considered, but also that firms that export are much more likely to be involved in technological activity than non-exporting firms.

The export/sales ratio, size and foreign capital ownership also increase the probability that a given firm will develop new products and create a manpower training programme.

Willmore (1992) reports on the results for 17,053 Brazilian manufacturing firms in 1980.

He finds, first, a negative relation between R&D and exporting. The existence of a research and development programme appears to have no significant effect on the probability that a firm will engage in export or import activities. The causality seems to be in the opposite direction, since Braga/Willmore (1991) found that exporting increases the probability that a Brazilian firm will engage in R&D.

Exporters tend to be much more concerned about advertising. Firms producing highly advertised, hence differentiated, goods are more likely than others to participate in international trade. Also, exporting firms depend more heavily on imports than domestic-market-oriented firms.

Finally, some complementary evidence was obtained by Willmore, and published as CEPAL (1985), from data on 12,435 firms in 1978.

It showed that firm size was the most important factor affecting both the probability that a firm will export and its subsequent export performance. As far as the competitive attributes being considered above are concerned, it was found that advertising expenditures and licence agreements were very strongly and positively correlated with both the probability of exporting and export performance, once again very much in line with the results reported for Turkey.

III - The sample

The analysis is based on data for 199 firms in 11 industrial sectors. In 1992, these firms exported a total of US\$ 6.2 billion, or 23% of total Brazilian exports of industrialized products in that year.

In order to evaluate the role of involvement in exporting, the primary data were processed by grouping the respondent firms according to their export/total sales ratios, in five groups arbitrarily defined as:

- i) non-exporters (firms with an X/Y ratio of up to 5%);
- ii) firms with an X/Y ratio of 6% to 10%;
- iii) firms with an X/Y ratio of 11% to 30%;
- iv) firms with an X/Y ratio of 30% and 50% and
- v) firms with an X/Y ratio of over 50%.

The sample is described according to the number of firms in each category and to their share of the total sample exports as follows:

Export/sales ratio (%)	Number of firms (%)	Share (%) of sample exports	
		1987-1989 (average)	1992
0 to 5	54.2	0.93	0.37
6 to 10	8.4	0.83	1.26
11 to 30	22.3	34.25	30.38
31 to 50	9.5	35.16	43.16
Over 50	5.6	28.83	24.83
Total	100.0	100.00	100.00

More than half of the firms have a very low (less than 5%) export coefficient, and are thus considered non-exporters, or domestic-market-oriented firms. The second notable point revealed by these figures is that the group of firms with export coefficients between 30% and 50% presented the most impressive performance in terms of the external market, significantly increasing their share in total sample exports between the two periods considered here.

Most (72%) of these firms are part of economic groups, a characteristic common to all five sets of firms. In all but the last group, about half (48%) of the firms are multiproducers (i.e., produce several items) and (47%) have several producing units (multiplant).

IV - Basic results

a. Recent adjustment

The analysis of these data calls for some preliminary remarks about the year they were collected (1992). It is known from previous research that most of the production sector - manufacturing in particular - in Brazil was by that time undergoing a significant change, after some traumatic experiences since 1990, when liquidity was drastically reduced by government policies, national output declined, domestic interest rates went up very markedly, inflation remained at monthly levels of around 25% and an open trade policy

pushed domestic producers into an unprecedented exposure to competition from imports. It is therefore expected that these data reflect the firms' efforts to adapt as much as the basic differences between exporters and non-exporters.

Second, the questionnaire was designed to identify the basic features of the production sector insofar as measures to improve competitiveness are concerned. Hence, the questions were not totally tailor-made to deal with the specific subject of export activity. The analysis from the viewpoint of involvement with the external market is therefore a by-product, even though a great deal of information - unprecedented in several respects - is available from the processed data.

Keeping these two points in mind, it is interesting to note that most (59%) of the firms classified as non-exporters or domestic-market-oriented (DMOs) - those with an export/sales coefficient of less than 5% had total sales worth less than US\$ 20 million in 1987-1989, while those firms with export/sales ratios of over 30% recorded sales worth over US\$ 120 million that year, indicating a positive correlation between size and export/sales ratios in the sample.

In 1992 the correlation between the X/Y ratio and total sales remained positive, but there are clear indications that the exporters were less vulnerable to the domestic recession: among the DMO firms, 70% had sales below US\$ 20 million (compared to 59% in 1987-1989), whereas for exporters the impact is inversely proportional to the export/sales ratio, as shown by the following indicators:

X/Y (%)	% of firms with sales over US\$ 120 million	
	1987-1989 (average)	1992
10 to 30	44	33
31 to 50	64	57
Over 50	62	62

This would indicate that - as expected - the external market has acted as a "cushion", softening the negative impact of domestic recession on these firms in direct proportion to their involvement in exports.

As a confirmation of the importance of the external market as a buffer against domestic recession, one could add that the proportion of firms with export/sales ratios of 10% to 30% that had total exports worth at least US\$ 12 million increased from 58% in 1987-1989 to 74% in 1992, whereas for those firms with export/sales ratios of over 30%, that proportion remained close to 90% in both periods.

The number of employees per firm shows a distribution similar to that of total sales: 63% of DMO firms had up to 500 workers in 1987-1989, while 25% to 36% of the firms with export/sales ratios of over 10% had more than 3,000 workers.

In 1992 there was a clear adjustment process, with significant reductions in jobs. Among non-exporters, the proportion of firms with up to 500 employees increased to 76%, whereas among exporters with export/sales ratios of over 10%, the proportion of firms with over 3,000 workers fell to between 13% and 29%.

This reduction in jobs was accompanied by a corresponding change in the decision-making process within the firms, as reflected in the number of hierarchical levels. In 1987-1989, half of the non-exporters had up to five decision-making levels⁵, and this proportion increased to 67% in 1992. The same occurred in the several groups of exporters, in increasing proportion with their export/sales ratio, as shown below:

X/Y ratio	% of firms with up to 5 hierachical lLevels	
	1987-1989 (average)	1992
6 to 10	67	75
11 to 30	46	60
31 to 50	15	46
Over 50	12	40

It follows from the previous paragraphs that one set of differences between exporters and DMO firms stem from their capacity to cope with domestic recession and the intensity of their adjustment in the use of production factors.

However, owing either to the feeling that the worst recessive period is over, or to hopes of improved competitiveness as a result of the adjustment process, more than half of the firms in every group - regardless of their export/sales ratio - expected higher profits in 1993-1995 than in 1992, and in 1996-1998 in comparison to 1993-1995.

It is worth noting that improved competitiveness is not necessarily related to more imports. Data show that 60% or more of non-exporters did not import either capital goods or inputs in

⁵Firms were asked whether they had up to three decision-making levels, four or five levels, six or seven levels, or over seven levels. In 1987-1989 21% of the firms with X/Y ratios of 10% to 30% and 31% of firms with X/Y ratios of 30% to 50% had more than seven levels. In 1992 those proportions fell to 4% and 15%, respectively.

1987-1989 or in 1992⁶. Exporting firms are apparently more dependent on imports: more than 25% of the firms with an export/sales ratio of over 10% imported inputs worth more than US\$ 10 million in both 1987-1989 and 1992.

This is consistent with the results obtained by Willmore (1992), as reported in section II: there is a greater propensity to import in exporting firms as compared to DMO firms.

Another basic characteristic of the exporting firms in this sample has to do with the market of destination for their exports. There seem to be some differences in the markets of destination, and these differences appear to be linked to the export/sales ratio, and hence to the size of the firms. In the smallest group of exporters (firms with export/sales ratios of 6% to 10%), 75% of the firms made sales to MERCOSUR in 1992, 42% to "other countries of Latin America" and 50% to the United States and EEC. Among those firms with export/sales ratios of over 50%, 87% export to the United States, 62% to the EEC and only 12% to MERCOSUR.

It seems, therefore, that all firms export to the United States and the EEC, but only a limited number of them - and not the largest ones - explore the regional market⁷. Needless to say, this generic conclusion must be qualified by information at the sectoral level.

When asked how they channelled their sales, it turned out that by and large all the firms said they used mostly their own sales structures. It is certainly remarkable that only medium exporters

⁶However, that proportion was higher (61%) in 1987-1989 than in 1992 (56%) for inputs, indicating that even in this group there was some increase in the consumption of imported inputs.

⁷The relative importance of MERCOSUR merits some additional consideration. The percentage of firms in each group that said it was important is as follows:

X/Y	0-5	6-10	11-30	30-50	Over 50
(%)	27.5	75.0	42.9	30.8	12.5

Although the Southern Cone market is considered important for most firms in the 6% - 10%, one must take into account the relatively high proportions indicated by the firms in other groups. For those firms with X/Y ratios of 0% to 5%, this is the market with the highest indicators. For the two groups of firms with X/Y ratios of 11% to 50%, the percentages are significant, although smaller than the corresponding indicators for the United States/Canada. Note, however, that the above-mentioned groups comprise the bulk of the sample exports.

(firms with export/sales ratios of 10% to 50%) referred to the use of trading companies and licensed firms, when one would have expected the smaller exporters to be the main customers of those intermediaries.

In sum, the evidence reviewed thus far indicates an overall trend towards adjusting the number of jobs and the hierarchical structure in each firm, and suggests the existence of basic differences between exporters and non-exporters with regard to their capacity to resist the domestic recession and their propensity to import. Also, there are differences among exporters with regard to the market of destination of their external sales and the way they channel their exports.

Table 1 summarizes the main indicators in 1992 in comparison to 1987-1989.

Table 1 - Sample indicators by groups of firms

X/Y ratio (%)	Total sales variation (%)	Export variation (%)	Input imports/ sales (%)		Employment/sales (%)	
	----- 1987-1989/1992		1987-89 (average)	1992	1987-89 (average)	1992
0 to 5	-4.9	-48.6	9.3	9.5	1.1	0.9
6 to 10	-2.2	96.4	3.6	8.1	1.6	1.3
11 to 30	-7.1	9.3	4.8	5.2	0.8	0.7
31 to 50	5.6	44.3	5.5	5.6	0.6	0.5
Over 50	8.4	9.0	8.1	9.6	0.4	0.4

Source: See text.

A comparison of the first two columns of table 1 shows that in all groups of exporters, external sales increased more than total sales between the two periods. Also, growth in total sales was sharper for those groups of firms involved in some export activity. Export performance was particularly intense among firms with export/sales ratios of 6% to 10% and 31% to 50%. Although these

results must be qualified by sectoral information,⁸ they suggest that on the whole, some exporting was better than no exporting, although it is not clear whether more exports are better than fewer exports. That is, one cannot conclude - from these data - that increasing the export/sales ratio above a certain level is in itself an assurance of better overall sales performance. In other words, it seems more reasonable to infer that exports worked as a buffer against domestic recession than that this period was one of export-led growth.

Table 1 also shows that, in general, all groups of firms increased their imported component; however, because the variation in the import/sales ratio was more intense among small exporters (those firms with export/sales ratios of 6% to 10%) and among the largest exporters (firms with export/sales ratios of over 50%), there does not seem to be a linear relation between the export/sales ratio and the import/sales ratio.

Finally, the last two columns of table 1 confirm the overall reduction in the number of jobs in all groups of firms. Once again, however, this is not a major characteristic linked to the export/sales ratio: suffice it to say that among the largest exporters, the employment/sales ratio remained the same in the two periods.

What these indicators imply at is that there actually are differences between exporters and DMO firms, but also that the adjustment process they reflect is apparently more a result of strategies to improve or consolidate the firms' competitive position in the domestic market than of strategies for penetrating the external market. This should become even more clear in the following discussions of market strategies, productive performance and managerial, technological and productive capability.

b. Market strategies

Firms were asked whether they intended to explore specific market segments or several diversified ones, and which would be the main tool in their strategies with regard to the domestic and the external markets.

It is remarkable that between 52% and 63% of the firms in almost all groups revealed an interest in exploring specific market segments. This seems to indicate a wide spread concern with competitiveness via specialization. Only among those firms exporting more than half of their output was that proportion a bit

⁸Export price variations might help explain some of these results.

smaller (38%) and similar to the proportion of answers indicating all market segments.

This view that specialization leads to competitiveness is revealed even more clearly by the information related specifically to the competitive strategies of the firms.

Table 2 summarizes information on product strategy and administration of production, showing - for each group of firms - the percentage of firms that gave affirmative answers.

According to table 2, firms target specific market segments; they are also (especially non-exporters) concerned about brand-name identification and specific clients' requirements. Also, a number of exporters of all sizes are concerned about providing technical assistance for their domestic sales, as well as improving the technical specificity of their products.

Technical specificity of products is also an attribute strongly considered for exports; the higher the export/sales ratio of the firms, the more importance it is given. Coupled with the importance given to brand-name identification and delivery time, this would seem consistent with the previous indications of strategies for targeting specific market segments.

Table 2 - Competitive strategies of firms
(Product and production administration)

Attributes	No. of firms	Export/sales (%) ratio				
		0-5	6-10	11-30	31-50	50-100
(% of firms) (*)						
Product strategy						
Domestic market:	100					
Brand-name identification		45	33	n.s.	n.s.	38
Efficiency of technical assistance		n.s.	n.s.	n.s.	n.s.	38
Specificity of product		n.s.	33	38	38	38
Specific clients' requirements		38	33	n.s.	n.s.	n.s.
External market:	100					
Low price		n.s.	50	48	n.s.	n.s.
Brand-name identification		n.s.	n.s.	n.s.	n.s.	38
Delivery time		n.s.	n.s.	n.s.	n.s.	38
Technical specificity of product		n.s.	33	38	77	75
Production flow administration:						
	176					
Reduce inventories		50	80	50	53	n.s.
Improve raw materials utilization		38	47	45	60	70
Reduce emission of pollutants		n.s.	n.s.	n.s.	n.s.	50
Reduce jobs		n.s.	33	38	n.s.	n.s.
Reduce bottlenecks in production		n.s.	n.s.	35	47	n.s.
Production process:	107					
Increase standardization		n.s.	n.s.	n.s.	n.s.	60
Increase flexibility		85	92	85	79	40
Main productive unit:	171					
Outsourcing basic services		40	47	67	73	90
Specialize product line		n.s.	47	47	n.s.	n.s.
Renew product line		58	60	61	73	50

Source: See text. N.s. - non-significant (less than 33%)

(*) Firms were asked to indicate each attribute as "important" or "very important", and could indicate up to two attributes. Figures show the percentage of firms in each case.

It is also worth noting that low price is an attribute not considered for sales in the external market, and only those firms with low export/sales ratios seem to take it into account. This seems consistent with the assumption that Brazilian exporters are "price-takers"; that is, too small to influence international price levels.

Figures referring to production flows also reveal some clear trends. By and large, firms are trying to reduce their inventories. Note that this is true of all those dependent on the domestic market for most of their operations, and one reason is probably the cost of keeping inventories in a recessive inflationary environment. This might also explain why the largest exporters do not consider this item in a significant magnitude⁹.

There is also a universal concern about improving the utilization of raw materials, in increasing proportion to involvement in exporting. This is due not only to improved competitiveness; for the largest exporters there is also a parallel preoccupation with the emission of pollutants, a probable consequence of barriers imposed by importing countries¹⁰.

It was shown in previous paragraphs that the adjustment in recent years comprised a significant reduction in jobs. According to table 2, it appears that no further reduction of significant magnitude is to be expected; only some groups of firms indicate an intention to reduce jobs and bottlenecks in production.

Figures at the end of table 2 confirm that the firms aim at increasing the flexibility of production processes, outsourcing basic services in direct proportion to their export/sales ratios and renewing their product line. Once again, this seems consistent with the previous indications of a quest for competitiveness based on specific market segments and more efficient and flexible production processes.

There are also some differences between exporters and non-exporters with regard to their approach to other firms, as shown in table 3.

⁹Note that this approach differs from that previously reported for the Turkish firms.

¹⁰This is confirmed by the indications - to be discussed later in the text - that non-tariff barriers, have a negative impact on the largest exporters.

Table 3 - Competitive strategies of firms
(Relations with suppliers and other firms)

Attributes	No. of firms	Export/sales (%) ratio				
		0-5	6-10	11-30	31-50	50-100
		(% of firms) (*)				
Input purchases:	107					
Lower price		83	75	66	71	88
Technical specifications		54	50	59	79	75
Durability		n.s.	33	33	n.s.	33
Input suppliers:	106					
Preference for lowest number of suppliers		37	67	50	79	44
Joint R&D programmes		n.s.	58	n.s.	50	n.s.
Joint product development		43	75	50	86	44
Information about product quality		63	92	73	93	56
Stable commercial links		38	75	77	79	78
Suppliers certified by the firm		40	67	53	71	56
Suppliers offering the most advantageous conditions		53	33	37	36	44
Links with other firms	105					
Association for specific projects		n.s.	50	52	71	70
No strategy		55	33	n.s.	n.s.	n.s.

Source: See text n.s. - non-significant (less than 33%)

(*) Firms were asked to indicate each attribute as "important" or "very important", and could indicate up to two attributes. Figures show the percentage of firms in each case.

All firms (rationally enough) prefer to buy inputs at low prices. It is, however, interesting to note that concern with the technical specifications of the inputs - although significant for all groups of firms - is an attribute far more important for the largest exporters, and might be a reflection of the more demanding external market. However, this is not so in the case of durability.

Firms in general prefer to deal with a limited number of suppliers, and the exporters in particular attach importance to stable, long-term commercial links with their suppliers. Most firms care about product quality and say they exchange information about it with their input suppliers. But while domestic-market-oriented firms often consider buying from suppliers that offer the most advantageous conditions, it would seem from the figures in table 3 that exporters tend to prefer those suppliers certified by the firm, and often carry out joint product development programmes.

Furthermore, exporters tend to strategically associate with other firms for developing specific projects, while most domestic-market-oriented firms say they have no strategy in that regard.

This might be an additional indicator of the more exacting demands and greater stability of the rules required (and barriers imposed) by the external market as compared to domestic sales.

Additional evidence of the firms' approach to modernization and to dealing with specific market segments is found in their investment strategy.

As shown in table 4, a significant share of the firms consulted said they intended to invest both in increasing capacity and (more intensively) in modernizing productive capacity. The figures also reflect an intention to produce new items that are technologically similar to the present production lines. This is particularly characteristic of those firms with higher export/sales ratios, who aim also at explicitly specializing their product lines.

One interpretation of these responses seems to be that exporters are in general more sensitive to the requirements and demands of the external market, and although there is a general trend towards modernizing production processes, common to most of the firms surveyed, the evidence is stronger for the firms with greater involvement in the external market.

Differences are also found in the way firms finance their investment, although at this level of analysis not much can be said about the extent to which the differences are due to the export/sales ratios or to the size of firms.

Table 4 - Competitive strategies of firms
(Investment policy and determinants of current strategy)

Attributes	No. of firms	Export/sales (%) ratio				
		0-5	6-10	11-30	31-50	50-100
		(% of firms) (*)				
Investment strategy:	110					
Increase capacity in current lines		54	33	74	38	50
Modernization without capacity variation		42	67	58	56	70
New products tech. similar to current production		41	33	45	56	60
Specialize product line		n.s.	58	36	38	40
Financing:	179					
Own resources		79	87	73	71	n.s.
Public credit		n.s.	40	43	71	70
Domestic private financing		n.s.	47	35	53	n.s.
External private financing		n.s.	n.s.	38	65	60
Localization:	110					
Present location		88	75	71	88	100
Latin American countries (non-MERCOSUR)		n.s.	50	50	n.s.	n.s.
Determinants of present strategy	176					
Domestic recession		78	87	85	71	40
Import competition		n.s.	n.s.	n.s.	47	n.s.
Market globalization		n.s.	73	46	59	60
MERCOSUR		n.s.	47	n.s.	65	n.s.
Consumers requirements		54	40	77	71	90

Source: See text n.s. - non-significant (less than 33%)

(*) Firms were asked to indicate each attribute as "important" or "very important", and could indicate up to two attributes. Figures show the percentage of firms in each case.

The figures in table 4 suggest that the lower the export/sales ratio (or the smaller the firm), the more it depends on its own resources for financing investment. In fact, it is worth noting that about 80% of the domestic-market-oriented firms and small exporters depend on their own resources, while less than one third of the largest exporters do so. Instead, the figures indicate an increasing reliance on public credit and (as expected) external private financing that is directly proportional to the firms' grouping according to export/sales ratio. Note, furthermore, that the largest exporters rely almost exclusively on public credit and external private financing: the last column shows little (or no) indication of using the firms's own resources or domestic private credit.

Not surprisingly, by and large the firms intend to maintain their productive units in their present location, but half of those firms with export/sales ratios of 6% to 30% (small to average exporters) say they plan to invest in other Latin American countries, out of the MERCOSUR area. This last figure calls for a cautious interpretation, for it might comprise capital movements into some of the region's tax heavens.

A final set of indicators that seem to confirm previous conclusions has to do with the factors that have actually determined the present strategy adopted by the firms.

As shown at the end of table 4, and as might have been expected in view of previous indicators, domestic recession did affect all groups of firms, but especially those that depend most on the domestic market. Import competition, on the other hand, is generally not considered as important, except for some medium to large-scale exporters.

Market globalization is particularly relevant for most exporters, and all groups of firms - mainly the largest exporters - care increasingly about consumer requirements.

Interestingly enough, these figures suggest that MERCOSUR has become an important factor for some firms, but that only for those groups of firms with export/sales ratios of 6% to 50% - that is, small to medium exporters - does the subregional market matter, for the definition of both their competitive strategies and their investment policies.

c. Productive performance

The evidence presented so far has shown the increasing preoccupation of firms with consumer requirements, technical specifications of inputs and products, more efficient use of inputs and raw materials and other indicators, all pointing in the same

direction of increased competitiveness.

A similar movement can be identified in the changes that have taken place in recent years in the production process.

Tables 5, 6 and 7 show some basic indicators of the adaptation of the production process to the competitive strategy adopted by the firms.

There is an overall tendency to reduce the average production time. Between 1987-1989 and 1992 there has been an increase in the number of firms with production time of less than 10 days, coupled with a simultaneous reduction of the percentage of firms with a production cycle of more than 30 days. A similar movement is observed in the percentage of firms that have reduced their average delivery time.

The indicators relative to the average rate of reprocessing and the average rate of defective units out of total production also show a general reduction - between the two periods - in the percentage of firms in which more than 10% of output has imperfections.

It is, however, worth noting that half of the group of largest exporters had a zero rate of reprocessing in both periods, which might indicate a pre-existing concern with efficiency not found in other firms. On the other hand, this same group shows an increase in the percentage of firms with a rate of defective units/total output of over 10% between periods, which calls for further, detailed analysis.

There is a marked reduction in the average rate of input rejection in all groups of firms between 1987-1989 and 1992 - especially among the smaller exporters and domestic-market-oriented firms - which confirms the concern about making better use of inputs, but could also reflect a policy of reducing costs.

The argument that such changes are in fact related to movements linked to competitiveness is based on indicators that show a general reduction in the rate of returned products/total and a corresponding increase in the efficiency rate of raw material consumption, which would reflect more efficiency in the production process¹¹.

This is additionally confirmed by a set of data which indicate that in comparison with 1987-1989, 1992 product prices and

¹¹Note that this does not allow one to test the hypothesis advanced by Kirim (1990) that exporters and non-exporters rank differently their efforts with regard to cost reduction and quality improvement.

production costs were relatively lower, firms paid higher wages, brand-name acceptance in the market was similar or higher, firms (mainly exporters) took less time to deliver products, provided relatively more technical assistance, and produced items with higher technological sophistication, closer to technical specifications, with the same durability and increasingly better adapted to clients' specifications.

The possibly negative counterpart of these positive movements is the indication that firms in general increased the share of energy consumption in total costs; this is particularly clear among the largest exporters. But as the question refers to costs, it does not clarify whether this is due to higher energy prices or to actual consumption.

When asked how they view their main competitors (table 8), the firms' overall reaction seems consistent with previous evidence, as it reflects a movement towards increased brand-name acceptance in the market, less time required for product delivery, more efficient provision of technical assistance, etc. The only aspect that is worth noting is the difference between exporters and domestic-market-oriented firms in that the latter tend to reflect the inflationary domestic environment, considering product prices and wages higher in 1992 than five years earlier.

Table 5 - Competitive strategies of firms
(Productive performance)

Attributes	No. of Firms	Export/sales (%) ratio				
		0-5	6-10	11-30	31-50	50-100
(% of firms)						
Average production time						
In 1987-1989	145					
Up to 10 days		37	27	19	25	40
Over 30 days		28	18	63	67	40
In 1992						
Up to 10 days		43	36	19	33	40
Over 30 days		28	18	50	50	40
Average delivery time						
In 1987-1989	187					
Up to 10 days		37	27	8	8	25
Over 90 days		23	27	64	62	50
In 1992						
Up to 10 days		44	33	22	31	37
Over 90 days		20	27	42	54	25
Average reprocessing rate						
In 1987-1989	169					
None		18	13	14	14	50
Over 10%		29	20	42	36	25
In 1992						
None		18	13	14	7	50
Over 10%		25	20	19	29	25
Average rate of defective units/total output						
In 1987-1989	169					
None		17	7	3	7	13
Over 10%		31	27	33	43	25
In 1992						
None		17	7	3	7	13
Over 10%		24	13	19	36	38

Source: See text

Table 6 - Competitive strategies of firms
(Productive performance)

Attributes	No. of firms	Export/sales (%) ratio				
		0-5	6-10	11-30	31-50	50-100
(% of firms)						
Average rate of input rejection	101					
In 1987-1989						
Up to 1%		40	42	46	31	63
Over 10%		33	17	32	31	13
In 1992						
Up to 1%		45	50	56	31	75
Over 10%		30	8	18	23	13
Average rate of returned products/ total sales	169					
In 1987-1989						
Up to 1%		59	73	58	64	75
Over 10%		19	0	17	29	13
In 1992						
Up to 1%		69	67	61	64	88
Over 10%		14	0	11	21	13
Energy costs / direct costs	169					
In 1987-89						
Up to 1%		16	27	29	14	0
Over 10%		41	13	28	43	38
In 1992						
Up to 1%		15	13	11	14	13
Over 10%		35	20	25	29	50
Rate of efficiency of raw material consumption (nominal/ effective rate)	101					
In 1987-1989						
Up to 80%		10	25	7	8	13
Over 97.5%		48	25	54	38	50
In 1992						
Up to 80%		10	17	7	8	13
Over 97.5%		58	42	64	46	63

Source: See text

Table 7 - Competitive strategies of firms
(1992 compared to 1987-1989)

Attributes	No. of firms	Export/sales (%) ratio				
		0-5	6-10	11-30	31-50	50-100
		(% of firms) (*)				
Product price	158					
Lower		46	73	72	64	57
Production costs	158					
Lower		28	67	53	64	71
Average wages	154					
Higher		38	47	48	31	n.s.
Similar		35	n.s.	n.s.	n.s.	71
Market Acceptance of product brand name	155					
Higher		40	47	n.s.	43	57
Similar		52	40	65	50	43
Time required for delivery	154					
Less		40	67	63	50	71
Time for developing new products	135					
Less		33	67	67	50	67
Efficiency in technical assistance	136					
Higher		46	67	54	83	67
Technological sophistication	137					
Higher		46	53	48	69	67
Conformity to technical specifications	143					
Higher		40	33	63	43	57
Similar		46	67	n.s.	50	43
Product durability	129					
Similar		57	79	55	56	80
Conformity to clients' specifications	137					
Higher		55	46	71	50	66

Source: See text n.s. - non-significant (less than 33%)
 (*) Firms were asked to indicate each attribute as "important" or "very important", and could indicate up to two attributes. Figures show the percentage of firms in each case.

Table 8 - Competitive strategies of firms - View of the main competitor

Attributes	No. of firms	Export/sales (%) ratio				
		0-5	6-10	11-30	31-50	50-100
		(% of firms) (*)				
Product price	152					
Similar		40	43	37	50	71
Production costs	151					
Higher		n.s.	36	n.s.	36	71
Average wages	146					
Higher		n.s.	36	n.s.	n.s.	43
Similar		45	43	35	38	n.s.
Market acceptance of product brand name	150					
Higher		n.s.	64	n.s.	36	n.s.
Similar		41	n.s.	41	36	n.s.
Time required for delivery	150					
Similar		46	57	n.s.	43	57
Time for developing new products	138					
Similar		n.s.	n.s.	n.s.	43	57
Efficiency in technical assistance	135					
Higher		n.s.	64	36	42	43
Similar		36	36	36	42	0
Technological sophistication	136					
Higher		n.s.	53	42	n.s.	n.s.
Conformity to technical specifications	141					
Similar		49	50	46	64	43
Product durability	129					
Similar		51	69	48	78	60
Conformity to Clients' specifications	139					
Higher		n.s.	50	41	n.s.	n.s.
Similar		44	33	37	69	n.s.

Source: See text. n.s. - non-significant (less than 33%)

(*) Firms were asked to indicate each attribute as "important" or "very important", and could indicate up to two attributes. Figures show the percentage of firms in each case.

d. Managerial, technological and productive capability

Evidence surveyed at the beginning of this study indicates that the approach of exporters to expenditures on technology, technical assistance, etc. differs from that of domestic-market-oriented firms. The information obtained from the present sample of firms tends to confirm this discrepancy.

Table 9 summarizes a number of such indicators, relative to 1987-1989 and 1992.

It is interesting to note, first of all, that about half of the non-exporters spent nothing at all on research and development (R&D) in both periods, whereas a similar proportion of the group of largest exporters spend over 4.5% of their total sales in this activity. This obviously confirms expectations based on the analysis of broader samples (Braga (1990), Braga/Willmore (1991)) mentioned at the beginning of this article. There are, however, indications that there has been a reduction in this item in 1992 in comparison to the previous period, probably owing to the overall cost-cutting policy.

A similar relation is also found with regard to expenditures on engineering, sales, technical assistance and manpower training programmes - exporters spend relatively more on these items - and here again the indicators show a general reduction between the two periods.

The differences between exporters and domestic-market-oriented firms are even sharper with regard to activities associated with the monitoring of the technological standard of production. Table 10 shows some relevant indicators.

As Kirim (1990) found in Turkey, it appears from the figures in table 10 that most services such as projects, product tests, certificates of compliance with technical requirements and consultancy services in marketing, management and quality are acquired in the domestic market, and that there is a concentration of affirmative answers in the group of largest exporters. No significant number of non-exporters said they had purchased those services either domestically or abroad.

Typically, the types of services purchased abroad are associated with product specificities, and consist of tests, certificates of compliance with technical specifications and consultancy services on product quality. This is consistent with the previous reasoning that large exporters are subject to fierce consumer pressures and competitive efforts.

However, the lack of indicators showing the purchase of technological services by non-exporters does not indicate a lack of

concern with quality. The evidence presented above - on more efficient technical assistance and closer conformity to technical and client specifications, among others - clearly suggests an increasing preoccupation with quality improvement. What the figures at the beginning of table 10 seem to show is that, first, even domestic-market-oriented firms have not been significantly affected by competition from imports (as indicated in table 4, import competition is not an important issue for the design of the firms' strategies), and second, that (as Kirim (1990) found in Turkey) these firms are more likely to acquire technologies mainly from informal sources in the domestic market.

This is partially confirmed by the figures in Table 11. When asked about the origin of the technical norms they use, firms indicated a predominance of their own criteria for raw material handling, machinery operation and product standardization. Domestic-market-oriented firms rely on official norms for input qualification, product specifications, standardization and tests, while large exporters also use international norms for product specifications and tests.

Another important fact indicated in table 10 is that in spite of the continued period of economic recession in Brazil, most firms in all groups - but mainly exporters - feel that their products compare very favourably (last or penultimate generation) with those produced by the main world exporters.

Furthermore, productive capacity is also said to compare positively: between 40% and 70% of the firms indicate that their most important equipment is less than 10 years old and belongs to the last or penultimate technological generation. Domestic-market-oriented firms - harder hit by domestic recession - compared less favourably, as illustrated by the lower proportion of answers, but it is nevertheless remarkable that the corresponding indicators for this group of firms are in the 40%-50% range.

Table 9 - Competitive strategies of firms
(Managerial, technological and productive capability)

Attributes	No. of firms	Export/sales (%) ratio				
		0-5	6-10	11-30	31-50	50-100
(% of firms)						
R&D expenditures/ total sales	169					
In 1987-1989						
None		52	n.s.	n.s.	n.s.	n.s.
Over 4.5%		n.s.	n.s.	n.s.	36	50
In 1992						
None		49	n.s.	n.s.	n.s.	n.s.
Over 4.5%		n.s.	n.s.	n.s.	n.s.	37
Engineering / Total sales	169					
In 1987-1989						
None		50	n.s.	n.s.	n.s.	n.s.
Over 4.5%		n.s.	n.s.	36	36	37
In 1992						
None		47	n.s.	n.s.	n.s.	n.s.
Over 4.5%		n.s.	n.s.	n.s.	36	38
Sales expenditures/ Total sales	169					
In 1987-1989						
Up to 5%		39	40	44	43	25
Over 10%		n.s.	n.s.	n.s.	36	36
In 1992						
Up to 5%		35	47	50	43	50
Over 10%		n.s.	n.s.	n.s.	36	n.s.
Technical assistance/ Total sales	169					
In 1987-1989						
Up to 0.5%		40	n.s.	n.s.	n.s.	n.s.
Over 4.5%		36	33	36	43	50
In 1992						
Up to 0.5%		34	n.s.	n.s.	n.s.	n.s.
Over 4.5%		37	33	n.s.	36	36
Training programmes/ Total sales	169					
In 1987-1989						
0.3% to 0.8%		n.s.	33	36	n.s.	n.s.
Over 2.5%		35	n.s.	n.s.	n.s.	36
In 1992						
0.3% to 0.8%		n.s.	47	47	36	n.s.
Over 2.5%		35	n.s.	n.s.	n.s.	n.s.

Source: See text.

n.s. - non-significant (less than 33%)

Table 10 - Productive capability and technological standards

Attributes	No. of firms (a)	Export/sales (%) ratio (% of firms)				
		0-5	6-10	11-30	31-50	50-100
Services acquired in 1991-1992						
a) In the domestic market						
Projects		n.s.	n.s.	n.s.	n.s.	50
Tests		n.s.	n.s.	n.s.	36	63
Metrology		n.s.	40	n.s.	n.s.	50
Certificate of compliance with technical specifications		n.s.	n.s.	n.s.	n.s.	50
Consultancy in marketing		n.s.	n.s.	n.s.	36	38
Consultancy in management		n.s.	n.s.	n.s.	71	75
Consultancy in quality		n.s.	40	n.s.	50	88
b) Abroad						
Tests		n.s.	n.s.	n.s.	n.s.	50
Certificate of compliance with technical specifications		n.s.	n.s.	n.s.	n.s.	38
Consultancy in quality		n.s.	n.s.	n.s.	n.s.	38
Generation of the main products of the firm Compared to the technological standard of the main world exporters						
Last or penultimate		41	73	67	71	75
Age of the most important equipment						
Up to 10 Years		49	67	47	n.s.	37
Technological generation of the most important equipment						
Last or penultimate		41	60	64	69	63

Source: See text.

n.s. - non-significant (less than 33%)

(a) 169 respondents

Table 11 - Origin of technical norms used by firms

Attributes	Export/sales (%) ratio				
	0-5	6-10	11-30	31-50	50-100
	(% of firms)				
Input qualification					
Domestic (ABNT/INMETRO)	51	36	35	n.s.	n.s.
Firms'own criteria	n.s.	n.s.	40	33	75
Raw materials handling					
Firms'own criteria	57	40	50	50	100
Machinery operation					
Firms'own criteria	43	40	62	56	100
Product specifications					
Domestic (ABNT/INMETRO)	39	n.s.	n.s.	n.s.	n.s.
International	n.s.	n.s.	n.s.	63	n.s.
Firms'own criteria	n.s.	50	n.s.	n.s.	67
Product standardization					
Domestic (ABNT/INMETRO)	41	n.s.	n.s.	n.s.	n.s.
Firms'own criteria	41	55	n.s.	n.s.	60
Product tests					
Domestic (ABNT/INMETRO)	47	46	n.s.	n.s.	n.s.
International	n.s.	n.s.	n.s.	50	n.s.
Gauging					
Domestic (ABNT/INMETRO)	69	67	69	50	50

Source: See text. n.s. - non-significant (less than 33%)

e. Technological capability

The counterpart of the movement towards more efficient production, quality improvement and higher product competitiveness is the need to adopt a number of measures related to the automation of production, the control of the production process, human resources policies and other factors. Tables 12 to 15 provide an overview of the main related points identified in the answers to the questionnaire, comparing the evolution between 1987-1989 and 1992 to the firms' plans for 1993-1995.

There was a clear increase in the number of firms using microelectronic devices in their main productive unit between 1987-1989 and 1992. These are mostly medium to large exporters, and the indications are that these groups of firms intend to intensify the utilization of these devices in the next two years.

An interesting difference between exporters and DMO firms is found in their approach to the ISO 9000 regulations. Over half of the non-exporters said they either didn't know or didn't think it was relevant to implement those regulations¹², while half or more of the exporters were already implementing them. This is consistent with the expectation that exporters are subject to more strict market rules and barriers.

Also consistent with the previous pieces of evidence pointing to an increasing concern with quality and efficiency are the clear indications in every group of firms of a recent increase in the adoption of statistical control of production processes, the use of quality control circles, time-and-motion analyses, production cells, inbound just-in-time, outbound just-in-time, quality assurance activities at all stages of production, quality control activities at all stages of production, and quality assurance and control activities for all inputs. The indications are that the use of these mechanisms is likely to intensify in 1993-1995.

The indicators are in general more intense in direct proportion to the export/sales ratios of the firms, and this (once more) confirms the increasing concern with quality improvement and cost reduction¹³.

¹²However, another 39% of them said that they were already implementing them.

¹³However, not much can be said about the ranking of these technological change activities as to the relative importance which exporters attach to them.

Table 12 - Automation, process control

Attributes	No. of firms (a)	Export/sales (%) ratio				
		0-5	6-10	11-30	31-50	50-100
(% of firms)						
% Operations by microelectronic devices						
In 1987-1989						
Over 20%		n.s.	n.s.	n.s.	n.s.	n.s.
In 1992						
Over 20%		n.s.	n.s.	33	46	71
Projected 1993-1995						
Over 20%		n.s.	n.s.	56	66	67
With regard to ISO 9000 regulations						
Don't know or don't want		54	n.s.	n.s.	n.s.	n.s.
Being implemented		39	53	51	43	50
Already implemented		n.s.	n.s.	37	43	50
Statistical control of Production process						
In 1987-1989						
Over 20%		n.s.	n.s.	n.s.	n.s.	n.s.
In 1992						
Over 20%		n.s.	42	41	n.s.	n.s.
Projected 1993-1995						
Over 20%		44	44	64	69	71
Source: See text.		n.s. - non-significant (less than 33%)				
		(a) 169 respondents				

Table 13 - Organizational procedures

Attributes	No. of firms	Export/sales (%) ratio				
		0-5	6-10	11-30	31-50	50-100
(% of firms)						
Quality control circles (Over 20% of workers involved in this activity)	165					
1987-1989		n.s.	n.s.	n.s.	n.s.	n.s.
1992		n.s.	n.s.	36	n.s.	n.s.
Projected 1993-1995		34	n.s.	66	38	50
Time-and-motion analysis (number (%) of operations)	141					
1987-1989		n.s.	42	n.s.	36	33
1992		n.s.	42	52	54	33
Projected 1993-1995		38	56	65	50	33
Production cells (Over 20% of workers involved in this activity)	140					
1987-1989		n.s.	n.s.	n.s.	n.s.	n.s.
1992		n.s.	42	n.s.	n.s.	n.s.
Projected 1993-1995		n.s.	44	33	33	n.s.
Inbound just in time (over 20% of workers involved in this activity)	143					
1987-1989		n.s.	n.s.	n.s.	n.s.	n.s.
1992		n.s.	33	n.s.	n.s.	n.s.
Projected 1993-1995		47	67	56	n.s.	n.s.
Outbound just in time (Over 20% of suppliers involved in this activity)	143					
1987-1989		n.s.	n.s.	n.s.	n.s.	n.s.
1992		n.s.	n.s.	n.s.	n.s.	n.s.
Projected 1993-1995		n.s.	44	42	46	n.s.
Participation in just in time of clients (over 20% of shipments)	140					
1987-1989		n.s.	n.s.	n.s.	n.s.	n.s.
1992		n.s.	n.s.	n.s.	n.s.	n.s.
Projected 1993-1995		n.s.	44	38	n.s.	n.s.

Source: See text. n.s. - non-significant (less than 33%)

Table 14 - Quality control procedures

Attributes	No. of firms	Export/sales (%) ratio				
		0-5	6-10	11-30	31-50	50-100
						(% of firms)
Quality assurance activities (all stages of production)	112					
1987-1989		n.s.	n.s.	n.s.	n.s.	n.s.
1992		n.s.	50	36	54	n.s.
Projected 1993-1995		52	70	76	77	63
Quality control activities (all stages of production)	156					
1987-1989		n.s.	n.s.	47	54	38
1992		n.s.	50	43	62	57
Projected 1993-1995		47	40	71	64	86
Quality assurance activities for inputs (all inputs)	119					
1987-1989		n.s.	n.s.	n.s.	n.s.	n.s.
1992		n.s.	36	n.s.	42	n.s.
Projected 1993-1995		39	55	63	69	71
Quality Control activities for inputs (all inputs)	158					
1987-1989		n.s.	33	n.s.	62	n.s.
1992		n.s.	n.s.	n.s.	50	38
Projected 1993-1995		58	n.s.	35	55	71

Source: see text.

n.s. - non-significant (less than 33%)

Table 15 - Human resources policy

Attributes	No. of firms	Export/sales (%) ratio				
		0-5	6-10	11-30	31-50	50-100
Stable contracts with no formal guarantees	175	45	87	70	71	90
Flexibility in broadly defining jobs	177	45	53	56	71	70
Training policy:	177					
External institutions		39	47	65	65	50
Systematic internal programmes		n.s.	73	78	88	100
Non-systematic internal programmes		42	33	38	n.s.	50

Source: See text. n.s. - non-significant (less than 33%)

Tables 1 and 2 have shown that this movement towards more efficient production had a corresponding adverse effect on employment, as firms began outsourcing basic services, among other measures. The figures in table 15 confirm that all groups of firms - but especially the larger exporters - have adopted as a strategy the practice of making stable job contracts with no formal guarantees, and also use flexibility in broadly defining jobs.

At the same time, however, most firms - again, predominantly exporters - have training programmes (systematically or not) and rely mostly on external institutions to carry them out. Optimistic conclusions should be qualified, however, by the indications (table 9) of a reduction in training programmes/total sales ratios between 1987-1989 and 1992.

f. "External" determinants of competitiveness

A final set of data appears in tables 16 to 21. Firms were asked to isolate which - in their view - were the main determinants of competitiveness, with regard to market characteristics, industrial organization, relations with suppliers and characteristics of raw materials, attributes of equipment, macroeconomic conditions and international elements.

The questions sought to ascertain how entrepreneurs considered each attribute with regard to its importance for the competitiveness of their firms in the market where they compete, as well as its influence on the firm itself. Furthermore, the questions on the effects on the firm referred to the present situation (as of 1992), so that for a given attribute, such as "conformity with client specifications", firms would say whether they considered it important for competing and whether the present degree of conformity had an identifiable positive or negative impact on the firm.

In relation to market characteristics, in general the firms in all groups (not surprisingly) considered as important or very important for competing all of the attributes listed in the questionnaire - low sales prices, knowledge of product brand name, fast product delivery, fast development of new products¹⁴, efficiency in technical assistance, technical sophistication of products, conformity with client specifications, exploring specific market segments, and the possibility of exploring a large domestic market.

¹⁴Apparently this was the only attribute more important for small to medium exporters. The answers given by all the others were positively correlated with the export/sales ratio.

Table 16 - Determinants of Competitiveness as Identified by the Firms
(Market Characteristics)

Attributes	No. of firms (a)	Export/sales (%) ratio (% of firms)				
		0-5	6-10	11-30	31-50	50-100
Low sales price						
Sectorally:						
Important or very important	88	100	94	100	100	
For the firm:						
Positive	48	n.s.	n.s.	n.s.	n.s.	
Product brand name						
Sectorally:						
Important or very important	88	92	90	79	100	
For the firm:						
Positive	64	47	51	n.s.	n.s.	
Fast product delivery						
Sectorally:						
Important or very important	95	100	94	94	100	
For the firm:						
Positive	55	47	49	53	60	
Fast development of new products						
Sectorally:						
Important or very important	54	92	81	81	80	
For the firm:						
Positive	n.s.	n.s.	n.s.	n.s.	n.s.	
Efficiency in technical assistance						
Sectorally:						
Important or very important	71	92	77	94	100	
For the firm:						
Positive	37	40	49	40	40	
Technical sophistication of products						
Sectorally:						
Important or very important	71	75	84	75	80	
For the firm:						
Positive	n.s.	n.s.	n.s.	n.s.	n.s.	
Conformity with technical specifications						
Sectorally:						
Important or very important	80	83	94	94	100	
For the firm:						
Positive	39	40	62	59	90	
Conformity with client specifications						
Sectorally:						
Important or very important	73	92	94	94	90	
For the firm:						
Positive	46	40	62	47	70	
Specific market segments						
Sectorally:						
Important or very important	76	100	84	75	100	
For the Firm:						
Positive	51	47	56	n.s.	40	
Large domestic market						
Sectorally:						
Important or very important	90	100	97	100	40	
For the Firm:						
Positive	46	40	53	47	n.s.	

Source: See text. n.s. - non-significant (less than 33%)
(a) 176 respondents

Table 17 - Determinants of competitiveness as identified by the firms
(Industrial organization)

Attributes	No. of firms (a)	Export/sales (%) ratio				
		0-5	6-10	11-30	31-50	50-100
		(% of firms)				
Deverticalization of production						
Sectorally:						
Important or very important		72	75	50	75	80
For the firm:						
Positive		n.s.	n.s.	n.s.	37	n.s.
Market diversification						
Sectorally:						
Important or very important		55	67	70	94	80
For the firm:						
Positive		n.s.	n.s.	n.s.	44	50
Large-scale production						
Sectorally:						
Important or very important		85	75	78	94	100
For the Firm:						
Positive		n.s.	n.s.	n.s.	n.s.	80

Source: See text. n.s. - non-significant (less than 33%)
(a) 176 respondents

Table 18 - Determinants of competitiveness as identified by the firms
(Intersectoral Relations - Suppliers and Raw Material)

Attributes	No. of firms (a)	Export/sales (%) ratio				
		0-5	6-10	11-30	31-50	50-100
		(% of firms)				
Long, stable relations with suppliers						
Sectorally:						
Important or very important	95	100	97	100	100	100
For the Firm:						
Positive	76	53	74	53	70	70
Long, stable relations with clients						
Sectorally:						
Important or very important	100	100	97	100	100	100
For the firm:						
Positive	85	73	92	82	100	100
Keeping own distribution systems						
Sectorally:						
Important or very important	68	58	63	50	70	70
For the firm:						
Positive	42	n.s.	n.s.	n.s.	44	44
Access to other distribution systems						
Sectorally:						
Important or very important	61	33	66	81	90	90
For the firm:						
Positive	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Low price for raw materials						
Sectorally:						
Important or very important	98	92	97	100	80	80
For the firm:						
Positive	50	n.s.	45	53	70	70
Rapid access to raw materials						
Sectorally:						
Important or very important	100	100	93	100	100	100
For the firm:						
Positive	48	33	47	41	60	60
Technical appropriateness of raw materials						
Sectorally:						
Important or very important	95	100	97	100	100	100
For the firm:						
Positive	55	n.s.	58	47	70	70
Durability of raw materials						
Sectorally:						
Important or very important	61	83	70	75	70	70
For the firm:						
Positive	52	40	n.s.	n.s.	n.s.	n.s.
Raw materials corresponding to the firm's Specifications						
Sectorally:						
Important or very important	85	100	93	94	100	100
For the Firm:						
Positive	43	n.s.	41	n.s.	40	40

Source: See text. n.s. - non-significant (less than 33%)
(a) 172 respondents

Table 19 - Determinants of competitiveness as identified by the firms
(Intersectoral relations - equipment)

Attributes	No. of firms (a)	Export/sales (%) ratio (% of firms)				
		0-5	6-10	11-30	31-50	50-100
Low price of equipment						
Sectorally:						
Important or very important		83	92	90	94	100
For the firm:						
Positive		n.s.	n.s.	n.s.	n.s.	n.s.
Rapid equipment delivery						
Sectorally:						
Important or very important		73	100	87	100	100
For the firm:						
Positive		n.s.	n.s.	n.s.	n.s.	n.s.
Efficient technical assistance for equipment						
Sectorally:						
Important or very important		83	100	93	100	100
For the firm:						
Positive		35	n.s.	n.s.	41	50
Technical sophistication of equipment						
Sectorally:						
Important or very important		78	99	93	94	100
For the firm:						
Positive		41	n.s.	47	41	n.s.
Conformity of equipment to technical specifications						
Sectorally:						
Important or very important		89	100	83	94	100
For the firm:						
Positive		35	n.s.	45	35	44
Durability of equipment						
Sectorally:						
Important or very important		90	100	97	100	100
For the firm:						
Positive		48	n.s.	47	47	60
Opportunities to import raw materials or components						
Sectorally:						
Important or very important		83	82	93	100	80
For the firm:						
Positive		35	n.s.	40	35	60
Opportunities to import equipment						
Sectorally:						
Important or very important		73	100	90	100	90
For the firm:						
Positive		n.s.	n.s.	40	35	60

Source: See text. n.s. - non-significant (less than 33%)
(a) 171 respondents

Table 20 - Determinants of competitiveness as identified by the firms
(Intersectoral Relations - macroeconomic conditions)

Attributes	No. of firms (a)	Export/sales (%) ratio (% of firms)				
		0-5	6-10	11-30	31-50	50-100
Labour cost						
Sectorally:						
Important or very important		88	100	97	94	60
For the firm:						
Negative		48	n.s.	n.s.	n.s.	n.s.
Interest rate						
Sectorally:						
Important or very important		100	100	100	100	90
For the firm:						
Negative		79	53	82	94	70
Exchange rate						
Sectorally:						
Important or very important		70	100	87	94	90
For the firm:						
Negative		35	33	44	n.s.	n.s.
Long-term credit						
Sectorally:						
Important or very important		88	92	97	94	90
For the firm:						
Negative		47	40	61	94	50
Short-term credit						
Sectorally:						
Important or very important		78	92	87	94	90
For the firm:						
Negative		45	40	n.s.	41	n.s.
Export financing						
Sectorally:						
Important or very important		53	100	97	100	90
For the firm:						
Positive		n.s.	n.s.	n.s.	n.s.	50
Tax on inputs						
Sectorally:						
Important or very important		98	100	93	100	90
For the firm:						
Negative		82	67	71	77	70
Tax on products						
Sectorally:						
Important or very important		100	100	93	100	90
For the firm:						
Negative		85	67	73	71	70

Source: See text. n.s. - non-significant (less than 33%)
(a) 175 respondents

Table 20 (cont.) - Determinants of competitiveness as identified by the firms
(Intersectoral relations - Macroeconomic conditions)

Attributes	No. of firms (a)	Export/sales (%) ratio				
		0-5	6-10	11-30	31-50	50-100
		(% of firms)				
Fiscal incentives to exports						
Sectorally:						
Important or very important		63	100	90	94	90
For the firm:						
Negative		n.s.	40	42	n.s.	n.s.
Fiscal incentives to investment						
Sectorally:						
Important or very important		75	100	100	88	90
For the firm:						
Negative		n.s.	60	63	47	40
Import tariffs on inputs						
Sectorally:						
Important or very important		70	100	93	94	70
For the firm:						
Negative		36	33	53	59	n.s.
Import tariffs on capital goods						
Sectorally:						
Important or very important		55	92	89	94	80
For the firm:						
Negative		n.s.	n.s.	58	47	n.s.
Import tariffs on competing goods						
Sectorally:						
Important or very important		53	92	58	50	n.s.
For the firm:						
Positive		n.s.	33	n.s.	n.s.	n.s.
Social security costs						
Sectorally:						
Important or very important		98	92	100	100	90
For the firm:						
Negative		76	53	87	71	n.s.

Source: See text.

n.s. - non-significant (less than 33%)

(a) 175 respondents

Table 21 - Determinants of competitiveness as identified by the firms
(Intersectoral relations - international conditions)

Attributes	No. of firms (a)	Export/sales (%) ratio				
		0-5	6-10	11-30	31-50	50-100
Access to new foreign technologies						
Sectorally:						
Very important		n.s.	67	63	81	60
For the firm:						
Positive		34	47	34	n.s.	40
Technological links with foreign firms abroad						
Sectorally:						
Very important		n.s.	50	47	69	n.s.
For the firm:						
Positive		n.s.	47	33	n.s.	n.s.
Harmonization of trade policies						
Sectorally:						
Very important		n.s.	50	53	44	50
For the firm:						
Negative		n.s.	n.s.	41	44	n.s.
MERCOSUR						
Sectorally:						
Very important		n.s.	n.s.	47	38	n.s.
For the firm:						
Positive		n.s.	n.s.	34	41	n.s.
Tariff barriers to international trade						
Sectorally:						
Very important		n.s.	33	47	75	100
For the firm:						
Negative		n.s.	n.s.	n.s.	71	56
Technical barriers to international trade						
Sectorally:						
Very important		n.s.	n.s.	n.s.	63	80
For the firm:						
Negative		n.s.	n.s.	n.s.	47	60

Source: see text.

n.s. - non-significant (less than 33%)

(a) 111 respondents

Also, there is no significant indication that any of these attributes would at present have negative effects on the firms. Instead, most of the firms in all groups were satisfied (positive influence) with the present status of product delivery time, efficiency in providing technical assistance, and conformity with technical and client product specifications.

As far as the attributes of industrial organization are concerned, most firms - regardless of their export/sales ratio - consider important or very important the deverticalization of production, market diversification and large-scale production. Only some of the larger exporters, however, indicated that the present situation has positive effects on their firms.

Firms of all groups also praise - as determinants of competitiveness - the maintenance of long and stable relations with suppliers and clients and the possibility of gaining rapid access to raw materials that are also cheap and technically appropriate and that correspond to the firm's specifications. Apparently they are less worried¹⁵ about the distribution system for their products, be it exclusive or belonging to third parties.

Thus, entrepreneurs have in general indicated positive effects on their firms stemming from the present status of their relations with suppliers and clients and rapid access to raw materials.

A very high proportion (nearly all) of the firms in all groups consider (not surprisingly) as very important for competitiveness rapid access to cheap, durable, technically sophisticated equipment with efficient technical assistance and conformity to technical specifications. Also very important are opportunities to import equipment and raw materials and components.

No significant proportion of firms manifested satisfaction with the present situation with regard to the price or delivery time for acquiring new equipment. A sizeable share (about 40% or more) of the entrepreneurs consider positive for their firms the present level of technical sophistication and durability of the equipment¹⁶, but apparently only the exporters seem satisfied with current terms for importing equipment and raw materials¹⁷.

¹⁵However, they still consider it important or very important for competing in the market.

¹⁶In accordance with the evidence provided by table 10, which suggests a relative technological updating of the most important equipment in most firms.

¹⁷This is consistent with the indications (table 1) that only these firms have imported significantly in recent years.

In their appraisal of the macroeconomic determinants of competitiveness, the firms are almost unanimous in naming the level of domestic interest rates, the level of taxation of production and social security costs as very important items. Other relevant variables are (as expected) the exchange rate, labour costs, the availability of short- and long-term credit and fiscal incentives for exports and for investment in general.

It is particularly remarkable that import tariffs on competing goods apparently rank last in importance, considering the percentage of firms that classified it as important. One group of firms even indicated that this attribute had positive effects.¹⁸

The figures in table 20 reflect more explicitly the dissatisfaction of entrepreneurs with some of the most obvious effects of inflation in a context of fiscal deficit: a large number of firms noted the negative impacts of high interest rates, the limited availability of long-term credit, the relatively high tax on inputs and products and (for all but the largest exporters) the level of import tariffs on inputs and social security costs.

The first and last sets of indicators in table 20, taken together, indicate that labour costs seem relevant mainly for domestic-market-oriented firms, while social security costs affect most groups of firms. The corresponding (non-significant) indicators for the group of largest exporters might be interpreted as a suggestion that the relatively higher intensity of the adjustment that took place in this group (table 1) has made these firms less sensitive to factor costs.

A final set of determinants of competitiveness external to the firms concerns some key factors in international relations. It is worth noting, first of all, not only that a smaller number of firms answered this part of the questionnaire, but also that the percentages in each row of table 21 are smaller than in table 20. This reflects the obvious fact that firms are, on the whole, more concerned about domestic constraints; only exporters care about these international determinants¹⁹.

According to table 21, firms consider as very important for competing in their markets access to new foreign technologies - either directly or via links with foreign firms - and mechanisms to avoid barriers that currently affect their exports.

At the firm level, there are indications that the groups of

¹⁸This is consistent with the previous indication that import competition is not relevant to the definition of production and marketing strategies.

¹⁹The figures in the first column of table 21 apparently confirm that domestic-market-oriented firms are less interested.

medium to large-scale exporters are at present negatively affected by tariff and technical barriers to trade, and by the present harmonization of trade policies.

This dissatisfaction with the present harmonization of trade policies does not refer to the consolidation of MERCOSUR. In fact, MERCOSUR is considered important by small- and medium-scale exporters (firms with an export/sales ratio of up to 50%) -as shown by the figures in table 4 - and these firms have indicated positive effects.

V - General evaluation

This study is a first attempt to identify - through a partial processing of the data obtained from a survey of industrial firms in Brazil in 1992 - the basic actions recently undertaken by those firms to improve their competitiveness, and to relate the differences among the firms to their involvement in exporting activity.

It should be clear that the results obtained here have to be carefully considered in light of the specific (unusual) period when the firms were surveyed. That was a time when the domestic economy presented recessive conditions, coupled with record inflation and fiscal imbalance. It was also a period when the export sector was starting to recover from the effects of the highest exchange-rate overvaluation since the adoption of the crawling-peg mechanism in 1968.

From the perspective of the participation of domestic products in the international market, the toll taken by these adverse conditions was a significant fall - in the second half of the 1980s -in the market share of Brazilian exports in most geographic areas²⁰. In addition, some structural constraints have been of increasing concern to analysts of the Brazilian trade sector. Not only do natural resources-intensive products with low processing still represent an overwhelming share of the country's exports. A large proportion of the non-traditional products exported from Brazil have relatively less dynamic markets; at least in terms of demand in OECD countries, the prospects stemming from the structure of specialization seem to compare poorly with those of competitors²¹.

In such a context - and given the peculiarities of the

²⁰For basic data, see BNDES (1993).

²¹In this regard, see Fichet (1993).

questionnaire - this study should not be expected to constitute a comprehensive test of the role of exports. Instead, the purpose of this first approximation (not controlling for firm size or sectoral peculiarities) is to depict the efforts that have been made by the firms surveyed in order to foster competitiveness, and - whenever possible - to try to identify indications that involvement in the external market might lead to a differentiated approach.

The analysis has shown an overall movement of most producers towards productive efficiency; an intensification of the use of quality criteria in purchasing inputs, using raw materials and managing the production process; a clear concern with product quality and the provision of technical assistance; and a preoccupation with meeting client-determined specifications, in specific market segments.

The results also show that the sampled firms have, as a rule, gone through an adjustment process clearly motivated by the recent recessive inflationary conditions of the domestic market; among other consequences, this has led to lower labour/output ratios.

The evidence surveyed here also tended to confirm in broad terms the results obtained elsewhere with regard to exporters being more concerned with formally (i.e., by means of market-mediated contracts) acquiring technology and adapting themselves to more strict market conditions than domestic-market-oriented firms.

In the external side, the data indicate that the larger exporters are being affected by the barriers importing countries impose on their products. Additionally, there is evidence that MERCOSUR has become a factor taken into consideration by some firms in defining their strategies, although the largest exporters do not seem to be among them.

The inferences one might derive from these indicators for suggesting policy measures should take into account, first, that they refer to a fairly representative set of firms, corresponding to 23% of the exports of industrial products in 1992. Also, one should keep in mind the fact that firms with the highest export/sales ratios are large in size, belong to economic groups and have diversified lines of production. This might be indicative of the importance of inter-industrial relations for the export sector²².

This seems to be confirmed by the respondents' concern about maintaining stable commercial relations with suppliers and clients, as well as the preoccupation with meeting client specifications and providing technical assistance in specific market segments.

²²As indicated also in BNDES (1993).

An optimistic view of these indicators would suggest that this approach of "specialization leading to competitiveness" might have deeper roots in the productive structure than the simple analysis of the export structure would suggest. If so, this would also mean greater capacity to disseminate the benefits of exporting activity into the productive sector and lead to more systemic competitiveness.

A pessimistic view would stress the fact that the external market actually served as a "cushion" against the domestic recession during the period of analysis, and hence export performance might be vulnerable to an upturn in economic activity. This could be confirmed by the indications that firms care most about the domestic market.

The truth probably lies in between. As emphasized earlier, the period of analysis is unusual in that domestic recession influenced most of the outcomes, as reflected in the cost-cutting policies that led to reduced expenditures on engineering, sales, manpower training and other items. But at the same time, the figures presented here point to an increasing concern with the number of operations by microelectronic devices, with implementing the ISO 9000 regulations and other factors, all of which would indicate a more systematic and careful approach to more demanding markets (firms do not seem to worry much about import competition), where firms feel as technologically updated as their competitors.

One might add that these animal spirits of the export sector might be reinforced by previous experience: in 1986 a domestic boom induced several exporters to redirect their sales, only to learn very soon the costs of losing stable relations with foreign clients, a characteristic specifically praised in the answers to the present survey.

It is hard to derive more definite conclusions from such a broad analysis, without going into details about the role of the firms' size and sectoral specificities. The sample comprises such diverse sectors as the production of power-generating machinery, furniture and apparel and clothing, among others, but the shortage of time for analysis does not allow for more detailed treatment of the information.

Furthermore, it would be interesting to know if there is any significant difference between foreign and domestically-owned firms (especially among the larger exporters) with regard to the variables considered here. Bielschowsky (1993) shows that the movement towards competitiveness has apparently been more intense in subsidiaries of foreign companies than in domestic firms, although the intensity of the changes in the latter are quite impressive. But his sample does not allow for the analysis of performance according to the export/sales ratio, as in the present study. That would require a further processing of the primary data.

The policy implications that follow from these sets of data are numerous. First, the firms surveyed show an overall confidence with regard to their conditions for competing with imports. This would indicate that (possibly with some specific sectoral exceptions) there seems to be, in general, no reason to reverse the policy of low import barriers. The evidence reviewed seems to recommend instead that international negotiators should intensify efforts to reduce the trade barriers affecting exports.

The indications of concern with structural competitiveness might look inconsistent with the reduction of expenditure on related measures such as manpower training, if one does not take into account the short-term peculiarities of the period. It seems, however, that this inconsistency is unsustainable over time, and that firms will sooner or later be forced to resume these activities if they are to maintain or improve their level of competitiveness. But it is also an indicator that there is a case for complementary policy measures to help firms overcome the difficulties that led to that reduction. Such initiatives become even more important in a period of systematic and generalized reduction of employment/sales ratios.

By and large, the firms surveyed point to the levels of domestic interest rates and of taxes on inputs and products as two major constraints they have to face. Needless to say, this affects all the firms, but it is interesting to note that the exporters have been able to gain access to cheaper foreign financing. When considered together with the indications that these firms belong to economic groups, these differentiated conditions might lead to considerations of the likely consequences for the domestic market structure. Measures to ensure fair competition might become even more necessary than before.

The results presented here also suggest other types of policies more directly related to the quest for systemic competitiveness, such as informing a broader spectrum of firms of the importance of adopting mechanisms like those prescribed by the ISO 9000, providing credit and other incentives to help (mainly smaller) firms improve their managerial, technological and productive capability, and several other initiatives.

The range of possibilities for policy suggestions is as varied as the topics covered by this report. It is hoped that this broad picture will prove helpful in identifying the main issues. More specific conclusions would require a more detailed analysis of the enormous amount of information available, at the sectoral level.

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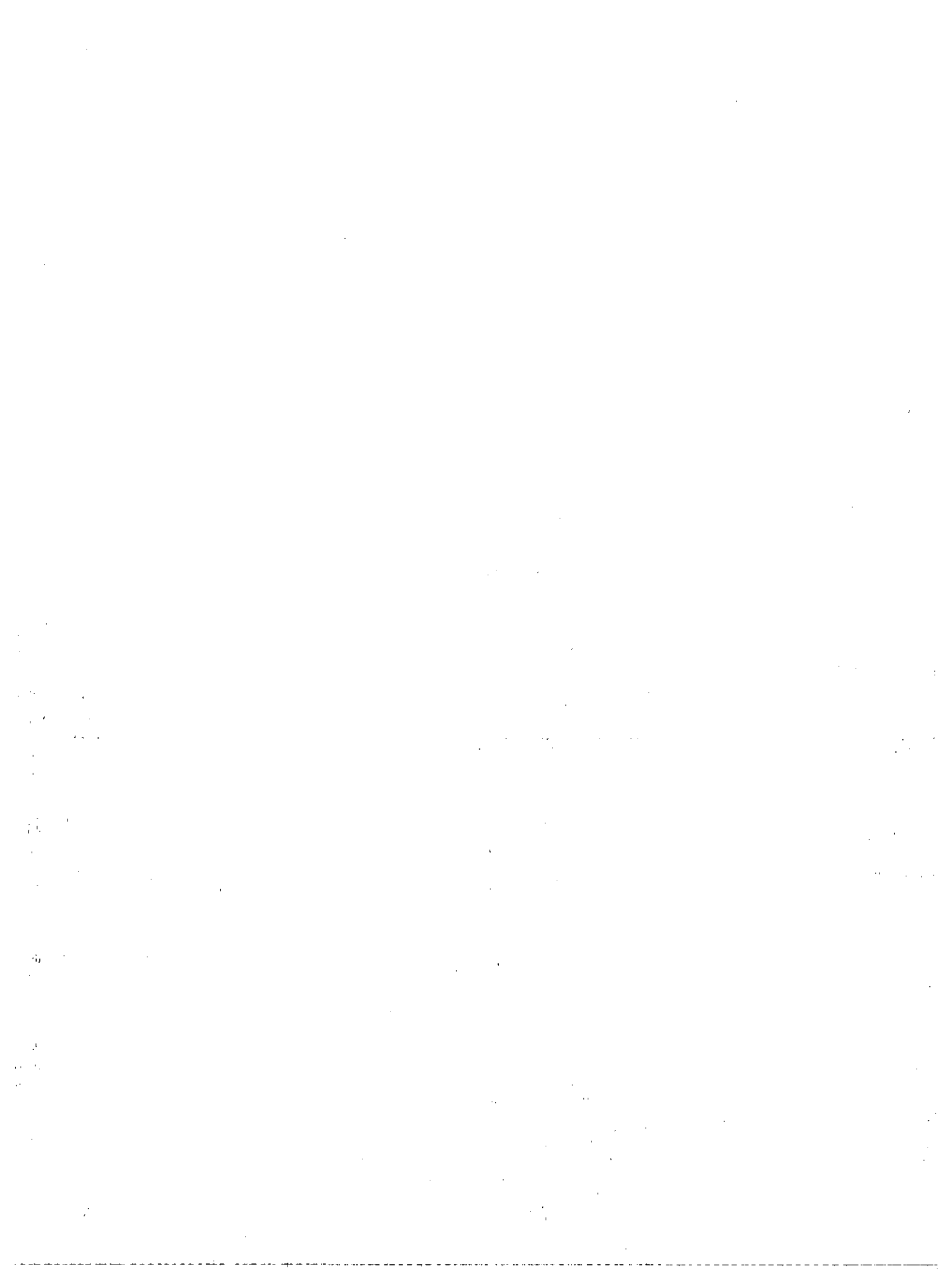
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