

THE INDUSTRIAL AND TECHNOLOGICAL DEVELOPMENT OF BRAZIL
AND EEC 1992

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INTRODUCTION

- I. MACROECONOMIC CONSTRAINTS
- II. INDUSTRIAL STRUCTURE AND STRATEGIC OPTIONS
- III. FOREIGN TRADE
 - III.1 Foreign Trade and Domestic Products
 - III.2 Imports
 - III.3 Exports
 - III.4 Regional Integration
- IV. FOREIGN INVESTMENT
- V. SCIENCE AND TECHNOLOGY
 - V.1 Brazilian SET in the International Context
 - V.2 The Brazilian S&T System.- Complete but Weak and Heterogeneous
 - V.3 The Role of Government
 - V.4 Signs of Change in the Productive Sector
- VI. HUMAN RESOURCES OF SCIENCE AND TECHNOLOGY
 - VI.1 The Stock of Human Resources in Brazil
 - VI.2 The Brazilian Graduate System
 - VI.3 Training Human Resources Abroad
 - VI.4 The RHAЕ Program
- VII. THE BRAZILIAN CRISIS AND COOPERATION FROM THE EEC

REFERENCES

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INTRODUCTION

One of the outstanding events of this decade, and in all likelihood, of this century, will be the beginning of an integrated Western Europe-EEC 92. Analogous movements of integration are under way, across the Atlantic, between the U.S., Canada and Mexico and in the Southern Hemisphere between Japan and its neighbouring NICs.

Such processes are closely related to deep-seated world wide industrial changes, based on new and pervasive technologies, such as microelectronics and biotechnology.

The purpose of this paper is first, to analyze the recent Brazilian industrial and technological development, focusing on the role played by EEC countries and the implications of EEC 92, and second to present suggestions for cooperation from the European Economic Community to foster the development of Brazilian industrial and technological capability.

The paper is divided into seven sections, following a decreasing order of generality. The first section presents the prevailing macroeconomic constraints to industrial and technological development. The second section analyzes the existing industrial structure and its present strategic options. The following two sections look abroad, focusing on international trade, regional integration and direct foreign investment. Sections V and VI examine in more detail the conditions of the Brazilian scientific and technological systems and the development of human resources. Finally, Section VII presents the suggestions for cooperation from the EEC, following the same order of subjects.

I. MACROECONOMIC CONSTRAINTS

In the Brazilian economic history the decade that now ended stands in sharp contrast with the rest of the period from the Second World War. Accustomed to very high rates of growth (an average of 8% per year from 1950 to 1980) the Brazilian economy in the eighties got mired in its worst economic crisis¹, of which no end is in sight.

The depth of the present crisis can be better gauged by comparing the eighties with the preceding decade. In the period 1971/80 the per capita gross domestic product increased 66,4%. In contrast, in the years 1981/88 it declined 1.3%. Gross capital formation during the seventies was on average 23% of the product and it fell to an average of 18% in the period 1981/88. Inflation rates, which averaged 33% per year during the seventies, reached an astounding 70% per month in January 1990. At the same time, inequality, the dark side of Brazilian economic growth, has increased — the Gini concentration index of personal income distribution increased from 0.56 in 1982 to 0.60 in 1987 (Silva, 1989).

The seventies are important for understanding the present crisis not only for reasons of historical proximity. In fact, it was during that decade, especially its second half, that the seeds of the crisis were sown and, at the same time, were established the productive conditions which may support an exit to the present plight of the Brazilian economy.

After the first oil shock and with the petering out of "Brazilian miracle" of 1968/73, based on the internal market for durable consumer goods, the Brazilian Government undertook an ambitious industrial development programme (II PND) geared to import substitution of basic products (including substitution of oil for alcohol) and capital goods. As shown in more detail in Section V, the development of the scientific and technological infrastructure and the setting up of technology-intensive industrial sectors was included in the programme.

¹As shown by Reis et al. (1989), the crisis of the eighties in Brazil was worse than the thirties depression, if measured by the evolution of the per capita GDP. In the thirties, by 1934 the per capita GDP had recovered to the level of 1929, while during the eighties in 1989 it was still below the level of 1980.

The programme was financed, internally, by substantial transfers of resources: the Government mobilized a vast array of fiscal and credit incentives, kept tariffs and prices of basic inputs supplied by State enterprises (steel, oil, etc.) low and defined a wage policy which led to wage increases much below the growth of labour productivity. Nonetheless, the major characteristic of the finance strategy adopted was the reliance on foreign credits — the gross external medium and long term debt increased from US\$ 17 billions in 1974 to US\$ 50 billions in 1979.

Favourable lending conditions and incentives to exports (which grew 12% per year from 1974 to 1979) seemed to justify such path of growth-cum-debt. At a deeper level, such strategy allowed postponing major changes in the finance structure of the Brazilian economy.

Such strategy was brusquely disrupted by external factors at the end of seventies and beginning of the eighties. The price of oil imported by Brazil almost trebled between 1979 and 1981, terms of trade fell abruptly (in 1982 they were 62% of the 1978 value), the US dollar (to which the Brazilian currency is pegged) appreciated, international lending rates increased steeply (the LIBOR which had averaged 7.8 in 1974/78, shot up to 15.1% in 1981/82) and, from 1982 onwards, the international sources of funds dried up (Horta, 1989).

The policies followed by the Brazilian Governments (1979/85 and 1985/90) put the burden of adjustment on the shoulders of wage earners and on the State itself.

Although the Brazilian price system is highly indexed, wages have not kept up with other price increases. The minimum wage, for instance, has now reached its lowest point since it was established at the end of the thirties and the share of labour (employees earnings) in total product at factor prices fell to less than 40% in the eighties. The ensuing decline of standards of living is exemplified by the reduction of 8.3% of per capita consumption of family units between 1980 and 1987 (Horta, 1989).

The other point of convergence of the crisis has been the State finances. The growth of the public debt expresses such convergence: in 1988 the total debt was equivalent to 47% of the GDP, over the double of 1980

(22%). The debt to foreign creditors had increased from 12.7% to 25.4% of the GDP and the internal debt had risen from 9.3% of the GDP to 21.3% between 1980 and 1988 (Giambiagi, 1989).

Such growing indebtedness of the public sector evidences a deep seated fiscal crisis which lies at the center of present economic policy debate. The gross tax burden in Brazil is low, compared to OECD countries, and has shown a downward trend. From 26% of the GDP in 1970 it fell to 24.6% in 1979/81 and further down, to 22% in 1987. The net tax rate fell more steeply—from 14% of GDP in 1975 to 5.7% in 1987. Such decline reflects not only the deterioration of taxes with growing inflation (the Tanzi effect) but also the fiscal incentives given by the Government, of which a substantial part is directed to export activities and, especially, the transfers to pay interests on the public debt.

The adjustment to the unfavourable external conditions of the eighties had, however, deeper effects on public finances than a reduction of earnings. In first place, in order to reduce the foreign exchange risk of the private sector and, then, to minimize the consequences of foreign exchange devaluations on prices, the Government took over the responsibility for most external debt. Thus, the Government share of the external debt rose from 42.5% in 1980 and to 81.2% in 1988 (ibid.).

From 1980 to 1988 Brazil paid US\$ 84 billions for interests on its external debt (equivalent to 131% of the total debt in 1980) (Horta, 1989). Such payments, which amounted to almost 5% of GDP in the period 1984/88, relied mainly on a successful trade balance adjustment: combining import restrictions with export incentives, the trade deficit of 1980 (US\$ 2.8 billions) turned into a mega surplus in 1988 (US\$ 19 billions). Despite such adjustment, in 1989 the Government stopped payments on the foreign debt, in a tacit moratorium.

However, the transformation of the foreign exchange proceedings earned by the private sector into local currency led the Government to increase its internal debt in the spectacular rate shown above, in order to avoid major inflationary consequences.

Thus, external and internal debts have become inextricably intertwined.

In a cumulative process with inflation rates, the internal debt became short termed. As shown by Silva (1989) the average maturity of the debt stock at the end of 1988 was three months, a half of the value prevailing at the beginning of that year. More seriously, practically all the internal debt had its value established daily, in the overnight market, shortening thus all operational time horizons.

Except during the short-lived Cruzado Plan of 1986, the Government used the rate of interest it paid on its debt as a major policy instrument to discourage foreign exchange evasion and to control demand.

This policy achieved its objectives only partially. Thus, foreign exchange evasion was substantial, under several forms, such as export underinvoicing and investments abroad² and a "parallel" foreign exchange market acquired officious status. By functioning as the prime rate for the financial market, the high interest rate paid up by the Government may have checked part of the demand but at a very high cost in terms of shifting resources from productive investments to short-term financial uses.

Moreover, such policy had a self-reinforcing negative effect by increasing interest payments and thus increasing the public deficit and requiring additional indebtedness.

As shown by Giambiagi (1989) the public sector borrowing requirements (the public sector operational deficit) decreased from 6.8% of the GIP in 1980 to 2.7% in 1984 and surged back during the second half of the decade to reach 4.3% in 1988. Excluding interest payments, the public sector showed a positive balance in the period 1983/88, although at the end of the period increases of personnel expenditures practically eliminated such surplus. Therefore, in recent years interest payments account for practically all the public sector deficit.

Since personnel expenditures and transfers for social security proved to be politically incompressible and given the snowball character of interest

²Estimates of the flight of resources abroad vary considerably. One of such estimates (Reis, 1989) puts the capital flight between 1977 and 1987 at the level of US\$ 20 billions.

payments, the Government opted to try reduce the deficit by cutting down its investments. Public administration investment, as defined by national accounts (excluding State enterprises) declined from an average of 3.1% of GDP in the period 1976/80 to 2.7% in 1987. State enterprises were even more seriously affected. In the period 1980/82, when the projects of the II PND were being completed, their investment was 5.2% of the GDP. In 1988 such share dropped to 2.8%.

The plight of State enterprises has been further compounded by a pincer of Government policies: while in the late seventies/early eighties they were instructed to borrow heavily abroad, during the last decade their prices were greatly reduced in real terms in order to subsidize the private sector and to keep down inflation rates. As a consequence, their performance qua enterprises suffered and the quality of their services was been greatly impaired.

Although in recent years some State-owned enterprises were sold to the private sector, such privatization was supported by Government loans and had a very limited effect on the public deficit.

Nowwithstanding the perverse effects of the way in which the public debt was financed in Brazil, in terms of resource allocation, time horizons and expected rates of return, it should not be turned into the scapegoat for the inflation which plagues the economy.

There are at work other factors in the behaviour of economic actors which contributed to the recent hyperinflation. One of such factors was the indexation of the price system, which propagates price movements and embodies a resistant "inflation memory". As mentioned above, such indexation was not neutral in terms of income distribution, with wage earners coming worse off the distributive conflict. In fact, such indexation system and the public deficit reflect the unwillingness of entrepreneurs to share any of the burdens of controlling inflation and their political capacity to impose their will upon the rest of society. The history of Brazilian development provides ample evidence that the recent behaviour of managers and entrepreneurs is a structural feature, which was exacerbated by the rise of inflation rates.

Finally, it is important to stress that the characteristics of the

Brazilian financial system, where long-term credit is provided by Government sources only, contributes in no small way to finance strategies based on price increases. In the recent past, the combination of very high real interest rates, the laxness of Government price controls and, in many sectors, the market power of few enterprises, have made price increases a much easier and safer financial strategy than investing to reduce costs and increase productivity. The financial system itself has a strong vested interest in high inflation rates and a soaring public debt because such factors are a major determinant of the very high profit rates they enjoyed during the recent past.

Although such features are deeply ingrained into the economic and political fabric of Brazilian society, the recent inflation lost the functional usefulness that it had in the past and a consensus emerged that controlling inflation is the prime objective of economic policy.

To sum it up, the financial strategy of the great industrialization spurt of the seventies had a built-in fragility which became explicit during the last decade, triggered by external factors and compounded by the incapacity of the Brazilian elite to introduce the structural changes which were necessary. In this respect, perhaps the most tragic feature of the eighties is not the crisis itself but the fact that it left unresolved (and worsened) all the problems it inherited. In this sense, it was truly a "lost decade".

The Government which took over in mid-March 1990 has taken some drastic measures in terms of reducing the liquidity of the economy and thus cutting down inflation rates from 90% per month to about 10%. Public debt payments were reduced accordingly and the Government has announced it intends to sell many of the State enterprises and reduce personnel expenditures by at least 30%. Its strategy of renegotiation of the external debt has not been made public yet.

The response of the productive sector to the new policies has been, on the whole, recessionary, with a decline in the levels of production and an increase in lay-offs, especially in industry.

Therefore, the macroeconomic constraints now prevailing in Brazil to

industrial and technological development are quite severe. However, if such constraints are alleviated, the productive structure inherited from the seventies and further developed over the last decade provides substantial scope for such development, as next sections endeavour to show.

II. INDUSTRIAL STRUCTURE AND STRATEGIC OPTIONS

The development of Brazilian economy since the Second World War has been led by manufacturing industry, which increased its share of GDP from a fifth in 1950 to a third in 1980. However, during the last decade this share fell to 30% in 1987, practically the same level of 1970 (29%). As shown in Table II-1 manufacturing industry growth rates during the eighties were not only very small on average (0.5% per year during the 1980/88 period), in sharp contrast with the previous decades, but they also fluctuated widely, ranging from an increase of 9% in 1980 to a drop of more than 10% the next year. Investments declined during the decade and in 1987 were at the same level of 1980 (see Table II-1).

Table II-1

MANUFACTURING INDUSTRY GROWTH RATE AND INVESTMENT Index - 1950/88

PERIOD	AVERAGE GROWTH RATE (%)	INVESTMENT INDEX (1980 = 100)
1950/60	9.1	N. A
1960/70	6.9	N. A
1970/74	12.5	N. A
1975/80	7.2	N. A
1980/88	0.5	N. A
1980	9.1	100.0
1981	-10.4	97.3
1982	-0.5	98.9
1983	-6.1	91.3
1984	6.1	77.1
1985	8.3	80.2
1986	11.3	96.5
1987	1.0	100.0
1988	-3.4	N. A

SOURCES: E.C.L.A. - 1950/70
Willberg and Panariello (1990) - 1970/80
N.A. - Not available

The metaphor of the glass which is half full or half empty depending on who looks at it applies very well to an assessment of the Brazilian manufacturing industry.

Thus, local production supplies practically all internal demand. As shown in Table II-2, the import coefficient of manufactures is less than 5% with mechanical products, electrical and electronic and transport equipment holding the highest import coefficients (around 10% of consumption). This makes Brazil one of more closed industrial economies of the world, limiting the benefits of the international division of labour. A consensus seems to have been reached internally that such degree of closedness is harmful to the development of the country and a process of gradual import liberalization, started at the end of the last Government is being hastened by the present incumbent, as described in more detail in the following section.

As evidenced by the low import coefficients throughout the industrial structure (see again Table II-2) the latter is highly integrated, with local intraindustrial sales accounting for over 40% of total industrial production in 1980³ — a pattern more akin to developed countries than to other LDCs.

Table II-2

MANUFACTURING INDUSTRY - IMPORTS AS A SHARE
OF INTERNAL CONSUMPTION - 1980, 1985, 1987

(% at 1980's prices)			
INDUSTRY	1980	1985	1987
Non-Metallic Mineral	1.7	0.8	1.3
Metallurgy	6.2	2.0	2.7
Mechanics	15.2	7.4	10.6
Electric and Telecom Equipment	12.4	8.9	10.4
Transport Equipment	7.3	5.8	10.4
Paper Products	4.1	1.7	2.5
Rubber Products	5.1	2.7	3.6
Chemicals	9.8	4.0	5.2
Pharmaceuticals	8.4	4.6	6.3
Textiles	0.5	0.3	0.8
Clothing and Shoes	0.2	3.7	0.2
Food Products	6.6	3.2	5.0
Manufacturing Industry	6.6	3.4	4.6

SOURCES: Willberg and Panariello (1990).

³ Computed from the 1980 input-output tables.

As shown in Table II-3, this structure is changing. It is especially significant that the most technologically dynamic sectors, such as those producing chemical, mechanic and electrical and electronic products, have continued to increase their share of manufacturing value added during the eighties (to 33% in 1987 from 31% in 1980 and 23% in 1970) despite the poor industrial performance of the decade, albeit at a slower pace than during the seventies, when such sectors were fostered by the Government Development Plan.

Table II-3

MANUFACTURING INDUSTRIES VALUE ADDED STRUCTURE
1970, 1980, 1987 - in (%)

INDUSTRIES	1970	1980	1987
Mechanical	7.2	9.7	10.8
Electrical and Electronics Equipment	5.5	7.0	6.8
Chemicals	10.2	14.6	15.6
SUBTOTAL	22.9	31.3	33.2
Perphume, Soaps, Candles	1.5	1.0	0.9
Textiles	9.3	6.6	6.1
Clothing leather and Shoes	4.0	5.5	5.2
Food Products	12.9	11.0	14.4
Beverages	2.1	1.3	1.6
Tobacco	1.3	0.7	1.1
SUBTOTAL	31.1	26.1	29.3
Pharmaceuticals	3.4	1.7	1.7
Wood and Furniture	4.3	4.3	2.8
Printing	3.6	2.7	2.1
Transport Equipment	8.5	8.0	6.7
Metallurgy	11.5	11.4	8.9
Non-Metallic Mineral	5.7	5.6	6.5
Paper Products	2.5	2.9	3.2
Rubber Products	1.9	1.3	1.4
Plastic Products	1.9	2.3	1.5
Others	2.0	2.3	2.1
TOTAL	100.0	100.0	100.0

SOURCE: IBGE

The share of such sectors in Brazil is similar to the share they hold in more advanced industrialized countries, as shown in Table II-4, suggesting a process of industrial convergence; with the difference that in Brazil chemicals tend to be more important than in the advanced countries, with the reverse holding for electrical and electronic and mechanical products.

In fact the differences run much deeper, especially if one looks at the segments of the above mentioned sectors which act as the sources of technical progress for industry and the rest of the economic system.

Table II-4

BRAZIL, USA, FRG, JAPAN AND ITALY
MECHANICAL, ELECTRICAL & ELECTRONICAL INDUSTRIES
SHARES OF MANUFACTURING VALUE ADDED IN 1980 AND 1987

INDUSTRY	(in %)					
	BRAZIL		USA	FRG	JAPAN	ITALY
	1980	1987	1980	1980	1980	1980
Mechanical	9.7	10.8	17.0	15.8	13.5	11.7
Electrical & Electronics	7.0	6.8	9.7	11.6	11.8	8.7
Chemical	14.6	15.6	9.6	14.2	8.8	12.1
Total	31.3	33.2	36.3	41.6	34.1	32.5

SOURCES: Brazil - Table II-2, other countries - Furtado(1989).

Thus, comparing the structure of the electronics complex in Brazil and in more advanced countries (Tables II-5 and 6), we can see that in Brazil, in spite of the progress of the data-processing segment, based on the Informatics Policy, the production of consumer goods still predominates, while in the latter countries professional electronics is dominant. The small share of the Brazilian electronics complex held by the segments producing industrial automation equipment, instruments and components is especially serious because of the role played by such segments in the diffusion of technical progress and

increased productivity. Moreover, because the consumer goods segment benefits from a special import status, by virtue of its location in the Amazons region, it imports most of its components and equipment, reducing the possibilities of development of the latter two segments. Therefore, in Brazil the economies of scope and the synergy characteristic of the electronics complex in developed countries are largely absent.

Looking at the half of the glass which is full, we can point out that, in spite of the small scale of production of electronics industrial automation equipment and their relative high cost, their use is spreading in Brazilian industry.

Table II-5

THE ELECTRONICS STRUCTURE IN BRAZIL
VALUE OF PRODUCTION IN US\$ 1000 AND %

SECTOR	1986		1987		1988	
	VALUE	%	VALUE	%	VALUE	%
DATA	:					
PROCESSING	2126	33.4	2578	39.4	2465	35.1
TELECOMMS	636	10.0	617	9.4	1004	14.3
INDUSTRIAL	:					
AUTOMATION	199	3.1	294	4.5	309	4.4
INSTRUMENTS	55	0.9	77	1.2	74	1.1
(CAPITAL GOODS)	:					
S. TOTAL	(3016)	(47.4)	(3566)	(54.5)	(3852)	(54.9)
CONSUMER	:					
GOODS	3137	49.3	2731	41.8	2813	40.1
COMPONENTS	209	3.3	242	3.7	348	5.0
TOTAL E C	6362	100.0	6539	100.0	7013	100.0

SOURCES: S.E.I. (1989), except consumer goods from Piragibe and Tigre (1990)

Table II-6

THE ELECTRONICS COMPLEX IN ADVANCED COUNTRIES
 MAIN ELECTRONICS PRODUCTS MARKETS - 1987

PRODUCT	(in % and total value)			
	USA	JAPAN	EUROPE (1)	TOTAL
EDPE	41.4	17.5	39.8	39.8
CONSUMER	11.7	17.0	16.4	14.6
COMMUNICATIONS	12.8	8.9	19.1	13.0
AUTOMATION, INSTRUMENTS AND OTHER EQUIP.	14.0	7.4	9.0	10.6
COMPONENTS	20.1	29.2	17.7	21.1
TOTAL	100.0	100.0	100.0	100.0
VALUE (US\$MILLIONS)	200.7	156.1	111.4	468.2

(1) FRG, UK, FRANCE, ITALY.

SOURCE: Paiva (1988)

Thus, the number of programmable controllers locally produced and sold increased from 412 in 1984 to 5274 in 1988 (SEI, 1989). Such controllers were purchased mainly by assembly process industries (automotive, plastic and rubber products, electrical and non-electrical machinery, including electronics). Continuous process industries, such as chemical and petrochemical and metallurgy, although heavy users (especially of more complex products), are switching to the use of digital systems of distributed control. The production of the latter started in 1984 and over a hundred were sold during 1985/88.

Local production of numerical control units is around a thousand per year, with a total value of about US\$ 20 millions, a market similar to France. According to data from SEI (1989) the growth of the market was impressive — 5.5 times between 1984 and 1987.

The growth in the stock of numerically-controlled machine tools (NCMT)

has been remarkable too — from less than 500 in 1980 it had reached about 5000 in 1988, most of which (70%) were locally produced. The use of such machinery — the symbol of flexible automation — is spreading. While in 1980 two thirds of the NCMTs were used by machinery producers (especially machine tool makers) and another 17% in the transport equipment industry (mainly automotive), in 1988 users of NCMT included firms producing electrical and electronic durable consumer goods, steel, agricultural machinery and several other sectors. The use of NCMT is also percolating down the size distribution of firms — while in the early eighties only large firms used the equipment, presently users include also medium- and even small-sized enterprises.

On the other hand, NCMTs accounted for less than 3% of the total number of machine tools produced in Brazil in the period 1985/87 and for 36% of the value of production. Such shares of production are well below those observed in more advanced countries, where NCMTs account for more than half of the value of production of the industry (two-thirds in Japan).

More generally, the machinery sector (electrical and non-electrical) has been one of the worst affected by the crisis of the eighties, especially the firms which produce custom-built equipment, which were caught by the recession at a time they were completing their expansion of capacity fostered by the Development Plan of the seventies and which have State enterprises as their main clients.

It is generally believed that a substantial part of the machinery sector, especially the smaller enterprises, have lost ground in technological terms, increasing the heterogeneity of the sector and the gap between Brazil and other countries.

The undevelopment of the machinery industry is especially noticeable for the segment producing precision equipment and components, which suffers badly from the lack of machinery (which has to be imported) and from qualified manpower too. As it is well known, this segment, although small in size, is highly important in terms of embodiment and diffusion of technical progress.

Finally, in the case of the chemical complex, the Brazilian complex is heavily slanted to basic chemicals, especially oil refining, which accounted

for 36% of production of the complex in 1984 (Haguenauer, 1989). The integration of the complex is still partial, concentrated on petrochemical downstream chains of production. Other chemical industries, such as pharmaceuticals, pigments and pesticides, produce locally only the final products, importing the most technologically relevant inputs. Fine chemicals the most dynamic segment of the complex in the world is also poorly developed (ibid.).

Two other critical sectors, which straddle many industrial complexes, biotechnology and new materials, are also poorly developed, in spite of favourable natural resources (e.g. in rare earths). Such sectors did not benefit from the boom of the seventies and investment in them during the last decade (largely by private enterprises) has been limited, concentrated in agricultural uses for biotechnology and ceramics in new materials.⁴

Thus, the Brazilian industrial structure, in spite of its high level of integration, lacks precisely those segments which are most relevant in terms of technical progress, the segments which act as engines of innovation, providing the rest of the system with product and process innovations.

This "hole" in the industrial-technological "tissue" is enlarged by the lack of investment in scientific and technological endogenous capability (discussed in more detail in a following section). It is especially serious at a time in which a great technological transformation of the productive structure is under way, not only in the older industrialized countries but also in other developing nations, such as the Southeast Asian NICs.

Notwithstanding such structural problems, the Brazilian industry has shown signs of great vitality in face of severe macroeconomic constraints. As shown above new forms of automation have been incorporated by the Brazilian industry. More generally, data computed from Araujo Jr. et al. (1989) show that 46% of the industry has consistently increased its productivity from 1975 to 1984 and another 25% increased productivity between 1984 and 1982. Such increases in productivity cut across all industrial complexes, the main exception being the construction complex, one of the worst affected by the

⁴For new materials see Lastres et al. (1988) and for biotechnology Almeida et. al. (1990).

depression of the eighties.

Recent interviews with 134 leading industrial firms reported by Ferraz et al. (1990) show that such enterprises intend to expand their investment in new forms of automation and organization of production, with a strong emphasis on total quality control. As discussed in more detail below there are also signs that the productive sector is increasing its spending on R&D, following a generalized perception that the Brazilian industry must seek higher levels of productivity in order to compete internationally.

Such elements warrant a (guarded) optimism about the future of the Brazilian industry. However, before the industry now stands a true crossroads.

Until the end of the seventies Brazilian industrialization was governed by import-substitution, with imports providing clear signposts of the direction of industrial development. There is a consensus in Brazil that such process is exhausted. Although import-substitution is still feasible in some strategic branches such as fine chemicals and precision mechanics, such investments do not have the weight and linkage power to stimulate the whole industrial sector as had in the past investments in durable consumer goods and, later, industrial inputs and capital goods industries. Moreover, as already indicated, there is a consensus that such process has been overextended, leading to an undesirable closedness of the economy.

Given the present industrial structure, exports cannot provide an alternative source of growth. As shown in more detail in the next section, the sectors in which Brazil seems to have comparative advantages are few and are mostly resource-intensive industries, which have limited international growth and low internal linkages. It is widely agreed by trade specialists that in order to increase exports at a time in which the fiscal crisis is leading to a phasing out of the credit and fiscal incentives to export activities, the technological content of the latter must be upgraded and new sectors, which are more technologically-intensive and have a higher-growing international demand, must enter the fold of exporters.

Therefore industrial development in Brazil must be based on the internal market. Potentially, there is great scope for industrial development. Thus,

the very low standards of living of the bulk of the population suggest that increases in real wages would lead to a great expansion of demand for consumer goods. Since wage-goods account for a very high share of industry (see Table II-3) and such industries have been the slowest to use the new forms of automation, their expansion would lead to heightened interindustrial transactions. Similarly, the deterioration of most State services, of economic infrastructure, such as roads, energy and communications, and social services, such as health and education, require substantial investments with intensive industrial linkages. As indicated in the previous section, such investments require solving the fiscal crisis. In both cases, the integrated industrial structure is a powerful instrument for carrying the stimuli throughout the economic system.

If some the conditions above outlined are met, then the structural weaknesses of the Brazilian industry will come to the fore, since demands for more technology-intensive equipments and inputs and for more endogenous technological capability will be sharply increased.

Such capabilities will also be required by the changes in the export structure previously mentioned, so that the two movements would be convergent and complementary, with synergy effects.

Barring a drastic change in the foreign debt repayment, the exchange constraint stemming from it will prevent a leap forward in imports. Although there is, as shown in Section III, substantial scope for increasing imports of machinery and technology, such imports cannot fully substitute for the local supply for reasons of efficiency (e.g. the need of proximity between suppliers and users, especially in the case of new processes, the need to cater for the specificities of local production, etc.) and of political sovereignty. Moreover, the development already achieved by the Brazilian industry in such areas warrants it a status of infant industry.

Therefore, in order to avoid bottlenecks arising from lags between demand and supply of such industrial and technological capabilities, preventive steps should be taken, especially since investments in technological capability have a long period of maturation.

As discussed in more detail in Section V, Brazilian expenditures for

science and technology are very small (0.7% of GDP) and most of them (over 90%) carried out by the State. Increasing them substantially would bear little weight on the public finances (for the Union, the largest spender, they represent 4% of the budget) and even more so for the industry, which is presently very liquid in terms of assets and where the few enterprises which do perform R&D activities spend for this purpose on average less than 0.5% of their earnings.

Therefore, there is now the possibility of laying the ground on which to base a new stage of industrial development in Brazil by strengthening local scientific and technological capability. In spite of the prevailing macroeconomic constraints such investment is feasible and making it will be a watershed in the country's industrial history.

Taking this path at the present crossroad, instead of the alternative path, which involves waiting and postponing such investments until bottlenecks arise, depends mainly on internal conditions, some of which, as indicated, are favourable (e.g. the perception of the importance of increasing productivity and local technological activities).

An industrial policy with clearly stated goals and instruments is one of such conditions. The present Government directives so far lack such purposefulness, but hopefully, they will be improved by the promised "programme of industrial competitiveness", which should make explicit the sectoral priorities and the respective policy measures.

Under the present circumstances international cooperation can be a powerful aid to such purposes, a point to which we return in the last section of this work.

III. FOREIGN TRADE

III.1 Foreign Trade and Domestic Product

A major trait of the Brazilian economy is its relative "closedness" to international trade, especially if compared to other countries. As shown in Table III-1, except for India, all indicators of "openness" to foreign trade

Table III-1

International Trade and Internal Market - Brazil and other countries

COUNTRIES	"OPENNESS" OF THE ECONOMY (a) %				IMPORTS AS A SHARE OF INTERNAL MARKET (b) %				EXPORTS AS A SHARE OF GDP (c) %				DEGREE OF INTERNATIONALIZATION (d)	
	1980	1983	1987	1988	1980	1983	1987	1988	1980	1983	1987	1988	1980	1987
FRG	28.7	30.2	29.0	29.7	28.7	29.7	27.8	28.5	31.3	28.5	31.8	48.50	50.70	
Argentina	8.0	12.2	nd	10.3	9.0	10.3	nd	6.7	14.7	nd	nd	15.10	nd	
Australia	17.4	15.3	17.0	15.8	13.7	15.8	17.5	17.0	14.5	16.3	16.3	28.37	31.00	
Brazil	10.0	10.1	7.0	9.1	10.8	9.1	5.7	8.9	11.2	8.5	8.5	18.73	13.88	
Canada	27.4	23.8	25.9	22.9	26.9	22.9	25.7	28.3	25.5	26.2	26.2	47.67	45.21	
South Korea	37.6	37.1	40.7	37.3	38.5	37.3	39.8	33.7	36.5	44.9	44.9	51.52	66.79	
Spain	17.0	21.6	19.1	21.7	17.7	21.7	18.3	15.8	21.3	20.2	20.2	41.21	34.66	
USA	10.4	8.7	9.1	9.4	10.7	9.4	10.4	10.2	7.9	7.4	7.4	18.81	16.96	
France	22.1	22.6	20.8	22.6	22.5	22.6	20.7	21.5	22.5	20.9	20.9	39.16	37.25	
India	8.3	7.4	7.1	8.3	9.7	8.3	8.1	6.6	6.4	5.8	5.8	15.66	13.41	
Italy	21.9	20.5	18.2	20.8	23.0	20.8	18.2	19.8	20.0	18.0	18.0	38.25	32.92	
Japan	15.3	14.6	10.9	13.9	15.6	13.9	9.3	14.9	15.5	12.8	12.8	28.16	20.89	
Mexico	13.0	14.5	nd	10.5	13.4	10.5	nd	12.6	19.5	nd	nd	24.26	nd	
UK	26.1	26.2	26.8	26.0	25.6	26.0	27.0	27.2	26.7	26.3	26.3	45.88	46.28	
Thailand	27.2	24.0	29.0	25.7	28.3	25.7	29.0	24.5	20.3	29.0	29.0	46.00	49.59	

(a) $(X + M) / Zi / GDP$ (b) $IM = GDP + M - X$ (c) X / GDP (d) $DI = TE + (1 - TE) * TP$ $TE = X / GDP$; $TP = M / IM$

SOURCE: Carvalho (1990)

put Brazil at the bottom of the list. Moreover, the same indicators show that in the recent years, especially since 1984, the Brazilian economy reduced its foreign transactions as a proportion of its product.

To put this into a historical perspective, Table III-2 shows the evolution of imports (M), exports (X) and total trade $[(M+X)/2]$ as ratios to the gross domestic product over the period 1965/88. We can see that imports averaged 5% of GDP over the second half of the sixties and increased during the seventies, when they averaged 7.8% of the domestic product (with a peak of 11.5% in 1974, after the first oil shock). Such ratio was sustained during the first half of the eighties, but declined sharply from 1985 to 1988 to the same levels of the sixties, reaching 4.1% of the GDP in 1988, the lowest share in 24 years.

Table III-2

RATIOS OF IMPORTS EXPORTS AND AVERAGE TRADE
TO GDP - 1965/88 - FIVE YEAR AVERAGE - IN %

YEARS	IMPORTS (M)	EXPORTS (X)	TRADE $(M+X)/2$
1965/69	4.96	6.22	5.59
1970/74	7.72	6.76	7.24
1975/79	7.88	6.68	7.28
1980/85	7.78	9.56	8.67
1985/88	5.03	9.40	7.22

SOURCE: Computed from CACEX and World Bank data.

During the second half of the sixties exports accounted for a larger share of GDP (6.2%) than imports, but during the seventies such position was reversed, leading to large foreign trade deficits, especially during the mid-years of the decade. However, during the eighties, exports grew at very high rates, reaching a peak of 11.5% of GDP in the period 1983/85 (see Table III-3), but lagged in the past three years, when their share was reduced to 7.2% of the GDP. Nonetheless, because imports were curtailed more deeply, the trade surplus averaged 4% of GDP during 1986/88, one of the highest in the world.

As a result of this process, the foreign trade ratio increased from an average of 5.6% of GDP during the sixties to 8.7% in the first half of the eighties, but during the second half of the latter decade reverted to the levels of the seventies (7.2%). However, differently from seventies, such ratio is presently due to high exports and low imports.

Table III-3

RATIO OF BALANCE OF PAYMENTS ITEMS TO GDP - 1977/87

(PERCENT)

Year	Exports	Imports	Trade Balance	Non-Factor Service Export	(4)/(1) *100	Non-Factor Service Import	(6)/(2) *100	Net Factor Services Balance	Services Balance	Current Account Balance	Capital Account Balance
	1	2	3	4	5	6	7	8	9	10	11
1977	6.90	6.80	0.10	0.40	5.80	1.10	15.90	-1.60	-2.36	-2.30	2.60
1978	6.30	6.80	-0.50	0.40	6.30	1.10	17.50	-2.30	-3.00	-3.50	5.80
1979	6.90	8.20	-1.30	0.40	5.80	1.20	14.60	-2.80	-3.80	-4.90	3.90
1980	8.60	9.80	-1.20	0.50	5.80	1.60	16.30	-3.30	-4.30	-5.40	4.30
1981	8.80	8.30	0.50	0.60	6.80	1.40	16.90	-4.10	-5.00	-4.40	4.70
1982	7.10	6.80	0.30	0.40	5.60	1.40	20.60	-5.10	-8.00	-5.70	4.00
1983	10.60	7.50	3.10	0.60	5.70	1.40	18.70	-5.70	-8.50	-3.30	3.60
1984	12.70	6.50	6.10	0.70	5.50	1.30	20.00	-5.60	-8.20	0.00	3.20
1985	11.20	5.80	5.50	0.70	6.20	1.20	20.70	-5.20	-5.60	-0.10	0.00
1986	8.20	5.20	3.10	0.50	6.10	1.10	21.10	-4.40	-5.00	-2.00	0.50
1987	8.70	5.00	3.70	0.50	6.70	1.00	20.00	-3.70	-4.20	-0.50	0.80

SOURCE: World Bank

The trade adjustment of the eighties is also remarkable given the terms of trade. From the mid-1960s to 1977, the evolution of the terms of trade was, on balance, favorable to Brazil but, from 1977 onwards, they declined abruptly and remained throughout the eighties, on average, 40% lower than in 1977 (see Table III-4).

Some points of consensus have recently emerged about the Brazilian foreign trade: first, that the economy is too closed. Imports should be increased and diversified in order to use technical progress generated abroad embodied in capital goods and inputs. Exports, for which there is a growing concern about their competitiveness, should also be diversified and technologically upgraded. Second, there is an agreement that the massive transfer of real resources abroad implicit in the mega trade surpluses is undesirable, not least because of its negative aspects in terms of expansion

of the means of payment and on the indebtedness of the public sector, rendering more difficult the control of inflation, the main problem of the Brazilian economy (see Section I).

The first point can be dealt with mainly by internal policies but the second strongly depends on the decisions of Brazilian foreign creditors, since servicing the foreign debt has been the main reason behind the policy of obtaining huge trade surpluses.

III.2 Imports

Brazil is one of the economies which has carried further the process of import substitution, as evidenced by the very low import coefficients shown above (Tables II-2 and III-1). As a general rule of the thumb, it can be said that imports are made only for goods and services which cannot be produced and/or financed locally.

The restrictions to imports, a strategic feature of the Brazilian industrialization policy, were considerably tightened during the past decade. However, differently from the previous decades, the restrictions were not imposed following an "industrialization logic", in order to stimulate local production, but were established with the primary objective of obtaining trade surpluses in order to serve the foreign debt.

The import controls regime involved both tariff and non-tariff barriers, especially the latter. At the core of the non-tariff barriers was the foreign exchange allocation system. Although such system has now been dismantled, it is worth while to describe it in order to understand its effects.

Based on estimates of foreign exchange earnings, Government authorities allocated such resources according to four priorities:

- servicing the foreign debt;
- priority imports for economic stabilization, mainly crude oil and wheat;
- imported inputs required for exports, especially drawback imports;
- all other imports.

Table III-4

BRAZIL - FOREIGN TRADE -VALUE AND VOLUME

YEAR	TOTAL IMPORTS FOB SMN. (1)	TOTAL EXPORTS FOB SMN. (2)	IMPORT PRICE INDEX 1980=100 (3)	EXPORT PRICE INDEX 1980=100 (3)	TERMS OF TRADE 1980=100 (5)	IMPORT VOLUME INDEX 1980=100 (6)	EXPORT VOLUME INDEX 1980=100 (7)
1960	1,293	1,268	n. a.	29.0	n. a.	n. a.	22.3
1961	1,292	1,403	24.0	30.0	125.0	25.0	23.5
1962	1,304	1,214	24.0	27.0	112.5	25.0	23.3
1963	1,294	1,406	25.0	26.0	104.0	24.5	27.1
1964	1,086	1,430	24.0	32.0	133.3	21.6	23.1
1965	941	1,595	24.0	32.0	133.3	18.6	25.4
1966	1,303	1,741	25.0	31.0	124.0	24.8	29.0
1967	1,441	1,654	25.0	31.0	124.0	26.8	27.6
1968	1,855	1,881	26.0	30.0	115.4	33.1	31.7
1969	1,993	2,311	25.0	31.0	124.0	34.6	36.1
1970	2,507	2,739	26.0	35.0	134.6	41.6	37.2
1971	3,247	2,904	27.0	34.0	125.9	50.7	39.4
1972	4,232	3,991	26.0	38.0	146.2	61.5	50.2
1973	6,192	6,199	36.0	53.0	147.2	74.4	57.6
1974	12,641	7,951	52.0	66.0	126.9	100.5	58.7
1975	12,210	8,670	57.0	66.0	115.8	95.2	64.7
1976	12,383	10,128	59.0	77.0	130.5	94.3	74.3
1977	12,023	12,120	61.0	93.0	152.5	87.3	65.8
1978	13,683	12,659	65.0	86.0	132.3	91.8	74.3
1979	18,084	15,244	78.0	94.0	120.5	99.9	81.4
1980	22,955	20,132	100.0	100.0	100.0	100.0	100.0
1981	22,091	23,192	111.0	94.0	84.7	86.7	120.3
1982	19,295	20,174	107.0	88.0	82.2	79.5	109.8
1983	15,429	21,901	102.0	84.0	82.4	66.5	125.6
1984	13,917	27,004	97.0	85.0	87.6	63.8	153.9
1985	13,153	25,638	91.0	80.0	87.9	63.0	163.9
1986	14,044	22,394	71.0	80.0	112.7	135.0	
1987	15,052	26,225	83.0	80.0	96.4		
1988	14,692	33,781					

SOURCE: CACEX

The Federal Government decided an annual foreign exchange allocation for crude oil and wheat, which were imported by two parastatal enterprises (Petrobrás and Banco do Brasil), the annual import budget for the direct administration, the state owned enterprises and the budget for the imports of institutions (public and private) under regional programs which enjoy special tariffs.

The authority for the allocation of the remaining foreign exchange, was delegated to a special agency (CACEX) for all merchandise imports and to the Central Bank for all other non-factor services (about 20% of merchandise imports).

As a consequence, all imports by the private sector had to be authorized by CACEX. Importers had to register as such and they had to obtain import licenses from CACEX. Such licenses were issued only within an approved amount for an annual import entitlement given to the enterprise by CACEX (the "import program"), with the exceptions of imports of (i) oil and wheat, (ii) from ALADI countries, (iii) under the drawback system and (iv) for a regional development program in the North of the country (SUFRAMA).

In some cases, before CACEX could grant the import licence, the importer had to obtain authorization from other Government agencies. Thus, electronic products imports had to be approved by the Special Informatics Secretariat (SEI) and imports of capital goods and intermediary products which were not part of direct foreign investments had to fulfill external financing requirements established by the Central Bank.

Import licenses were not granted to a list of products banned for protective reasons neither for imports which benefitted from fiscal benefits and which had a "national similar". The "similarity" was defined by criteria of price, quality and delivery time, through consultation between CACEX and local producers. In the case of capital goods, where such criteria are hard to apply, foreign financing (either by international agencies or by suppliers) often led to a waiver of the similarity clause.

Although in theory a firm willing to pay the full tariff and related taxes could avoid the application of the similarity clause, the very high tariff levels proved to be a strong dissuasor of such strategy. State

agencies purchases were subject to the similarity clause, except when financed by international institutions.

As a consequence of the Law of Similar, importers were often led to establish some form of market-sharing agreement with domestic producers. In some cases such agreements were formalized, such as when there were pre-established import limits on import-competing goods, as applied to some steel and non-ferrous metal products, or when a "national participation agreement" was established between an importer and domestic producers, defining ex-ante what products would be imported. The latter was applied mainly to large investment projects, especially of State enterprises.

Under such system of stringent direct import controls the tariff barriers played a minor role. Although nominal tariff rates were very high, a wide variety of special import regimes allowed total or partial exemption of tariff duties and other import taxes, rendering the tariff system further inoperative.

Since late 1987 the Government introduced a number of trade reforms which included a reduction of non-tariff barriers through the liberalization of the import programs by increasing their limits, by relaxing the external financing requirements, by reducing to a fourth the list of banned imports (about 10% of total tariff lines), by limiting the number of preferential tariff regimes and by accelerating the process of issuing the import licenses.

Moreover, in 1987 the Government introduced GATT-conforming regulations on countervailing duties, a custom valuation code and a anti-dumping law to replace a system of surcharges levied against a list of products considered as being dumped in Brazil.

A major tariff reform — the first in 30 years — was introduced in 1988, which reduced the average level and the variance of tariff rates and reduced the level of effective protection afforded by the full rates. After a revision in 1989, the average tariff had declined to 35% and the median and modal values were, respectively, 35 and 40% compared to 51, 30 and 45% in 1987 (Leme, 1989). Although some special import regimes were maintained by a new Industrial Policy Law, the use of import fiscal incentives under such Law was possible only if a tariff reduction was not feasible.

The tariff reform was preceded by studies which tried to assess the appropriate levels of effective protection to Brazilian products and tariff levels were strenuously negotiated with domestic producers in order to avoid disruptive effects. Although high-tech products, such as CNC units, ceramic new materials and fine chemicals had their tariff rates reduced, they retained higher-than-average protection, albeit on a temporary basis (Leme, 1989).

Thus, from the late 1987, the trend of the Brazilian import policy has been to reduce import barriers and to shift the weight of import controls from non-tariff to tariff barriers.

The Government recently instated seems committed to pursuing such course at a faster pace. It has abolished the import programs, the special regimes and the negative list and has reiterated its intent to use tariffs as the main trade policy instrument.

An ambitious programme of tariff reform was announced, whereby in 1994 the average tariff would be 20%, varying between 0 and 40%, compared to the present average of 35% within the range of 0 to 105%. High-tech infant sectors may, however, enjoy a tariff protection higher than the 40% ceiling on a temporary basis.

As a result of the policies above described and the response of Brazilian industry to their stimuli, not only the role of imports in supplying the Brazilian market became minimal, as previously discussed, but also the structure of non-service imports became rigidified.

The evolution of the imports structure during the 1964/88 period is shown in Table III-5. Few items (oil, cereals, machinery and chemical products) account for almost two-thirds of imports.

The same Table evidences the effect of the two oil shocks, in 1973 and 1979 — oil imports almost quadrupled between 1972 and 1974 more than doubled again between 1978 and 1980. Although the Government undertook a highly successful program of substituting gasoline for alcohol, no local substitutes were found for diesel oil, the main fuel of the transport system, which, after the railway system was scrapped, is totally dependent on road transport, except for some commodities such as iron ore. As a result, there is an

imbalance between supply and demand of the various oil derivatives, with a surplus of gasoline (which is exported) and a dearth of diesel oil.

The reduction of oil imports reflects also the success of PETROBRAS, the State oil company, in finding and exploiting off-shore oil along the Brazilian coast. Investments for such purpose, which led to the mastery of complex technologies for deep-water exploration, have recently been reduced because of cash shortages, partly associated with the fuels price system, which penalizes the company. Therefore, should the international price of oil surge again, its impact on Brazilian imports would be significant, albeit considerably less than in the seventies.

Imports of chemical products consist of great variety of products, mainly fine chemicals and intermediary products, reflecting the level of integration of the chemical complex previously described. A considerable part of such imports is ascribed to infra-firm transactions and it is generally believed that there is considerable overinvoicing involved in such operations. It is also believed that this is an area in which import-substitution could be carried further, were it not for the preference of the leading firms, especially transnational companies, to continue importing such products.

Machinery imports (electrical and non-electrical) tend to be procyclical, as it is shown by their upturn during the seventies, especially during the second half of the decade, and their decline in the eighties, especially during the 1983/85 recession (see Tables II-1 and III-5). Such imports are also deeply affected by their financing, which plays a major role in determining the source of supply circumventing the Law of Similars, as reported above.

Therefore, if the Brazilian economy resumes growth, imports of machinery are likely to increase considerably. This cyclical factor will probably be compounded by the lack of investments in technology by many capital goods producers in Brazil, which has probably increased their technological gap with foreign competitors. The provision of credit from abroad on competitive terms would certainly increase imports of machinery further up.

TABLE III-5 - BRAZILIAN IMPORTS STRUCTURE - VALUE AND % - 1964/88
 US\$ MILLIONS F.O.B.

PERIOD	(10) TOTAL	(1) CEREALS (%)	(2) MINERAL FUELS (%)	(3) CHEMICAL PRODUCTS (%)	(4) NON- ELECTRICAL MACHINERY (%)	(5) ELECTRICAL MACHINERY (%)	(6) OTHERS (%)						
1964	1,086	100	16.67	18.32	49	4.51	167	15.38	55	5.06	435	40.06	
1965	940	100	12.66	17.3	58	6.17	138	14.68	45	4.79	407	43.30	
1966	1,303	100	11.44	191	14.66	83	6.37	198	15.20	70	5.37	612	46.97
1967	1,441	100	11.17	178	12.35	80	5.55	235	16.31	84	5.83	703	48.79
1968	1,855	100	8.73	230	12.40	104	5.61	328	17.68	116	6.25	915	49.33
1969	1,993	100	7.23	237	11.89	105	5.27	400	20.07	140	7.02	967	48.52
1970	2,507	100	4.47	281	11.21	142	5.66	531	21.18	181	7.22	1,260	50.26
1971	3,247	100	3.51	377	11.61	166	5.11	751	23.13	210	6.47	1,629	50.17
1972	4,232	100	3.12	469	11.08	213	5.03	1,070	25.28	321	7.59	2,027	47.90
1973	6,192	100	5.65	769	12.42	340	5.49	1,232	19.90	476	7.69	3,025	48.85
1974	12,641	100	3.84	2,961	23.42	636	5.03	1,772	14.02	712	5.63	6,074	48.05
1975	12,210	100	3.72	3,100	25.39	531	4.35	2,337	19.14	894	7.32	4,976	40.75
1976	12,382	100	4.30	3,841	31.02	715	5.77	2,114	17.07	927	7.49	4,252	34.34
1977	12,023	100	2.32	4,081	33.94	640	5.32	1,728	14.37	841	6.99	4,454	37.05
1978	13,683	100	5.13	4,483	32.76	726	5.31	1,982	14.49	910	6.65	4,880	35.66
1979	18,083	100	5.44	6,773	37.46	984	5.44	2,267	12.54	1,043	5.77	6,032	33.36
1980	22,960	100	5.41	10,200	44.43	1,114	4.85	2,375	10.34	1,183	5.07	6,867	29.91
1981	22,090	100	4.89	11,340	51.34	804	3.64	2,303	10.43	1,140	5.16	5,423	24.55
1982	17,395	100	4.38	10,457	53.92	740	3.82	1,666	8.99	1,160	5.98	4,522	23.32
1983	15,430	100	5.87	8,607	55.78	666	4.32	1,094	7.09	800	5.18	3,358	21.76
1984	13,916	100	6.00	7,345	52.78	662	4.76	948	6.81	700	5.03	3,426	24.62
1985	13,153	100	5.56	6,176	46.96	718	5.46	1,223	9.30	750	5.70	3,555	27.03
1986	14,044	100	5.85	3,540	25.21	1,056	7.52	1,595	11.36	1,200	8.54	5,831	41.52
1987	15,052	100	2.48	4,709	31.28	1,045	6.94	1,862	12.37	1,150	7.64	5,913	39.58
1988	14,605	100	1.32	4,135	28.31	1,130	7.74	2,310	15.82	1,360	9.31	5,477	37.50

SOURCE: CADEX and Central Bank of Brazil.

A recent study by CEPAL (1989) on trade of technology-inclusive products⁵ shows that Brazilian imports of such products (detailed in Table III-6) take a much smaller share of its total imports than in the rest of the world, especially in the Asian NICs (see Table III-7). At the same time it confirms the closedness of the Brazilian economy, it points out at the small participation of Brazil in the international technological revolution embodied in such products, which are essentially, capital goods or intermediary products, i.e. conveyors of higher productivity and quality.

Table III-6

BRAZIL - TECHNOLOGY INTENSIVE PRODUCTS INTERNATIONAL
TRADE - 1985 - IN US\$ MILLIONS AND %

ISIC	PRODUCTS	IMPORTS		EXPORTS	
		value	(%)	value	(%)
513-514	INORGANICAL CHEMICAL	141.7	9.8	68.7	4.3
266-581	PLASTICS AND SYNTHETIC				
	FIBRES	159.8	11.0	267.1	16.8
541	PHARMACEUTICALS	110.9	7.6	38.0	2.4
711	ENGINES, TURBINES AND				
	BOILERS	360.5	24.8	617.1	38.7
714	OFFICE AND CALCULATING				
	MACHINES	215.7	14.8	184.8	11.6
724	TELECOMMS EQUIPMENT	74.1	5.1	219.7	13.8
734	AIRPLANES	198.4	13.7	161.0	10.1
861-864	INSTRUMENTS	174.1	12.0	38.2	2.4
TOTAL	TOTAL	1,453.2	100.0	1,594.6	100.0

SOURCE: ECLA data bank.

⁵CEPAL considered technology-intensive products the ISIC groups 513-514, 266-581, 541, 711, 714, 724, 734 and 861-864, based on several studies of high-tech products trade (see CEPAL, 1989).

Table III-7

TECHNOLOGY-INTENSIVE PRODUCTS TRADE AS A SHARE OF TOTAL IMPORTS AND EXPORTS BRAZIL AND OTHER COUNTRIES - 1983 - IN %

COUNTRIES	IMPORTS	EXPORTS
BRAZIL	23.9	10.0
U.S.	25.0	42.6
JAPAN	28.2	32.1
EEC	26.6	25.0
ASIAN NICs (1)	33.1	24.9
WORLD	26.2	26.2

(1) Taiwan, Hong Kong, South Korea, Singapore.
SOURCE: ECLA.

In contrast with the trade balance, the services balance of Brazil shows a consistent deficit over time (see Table III-3). The bulk of payments abroad on the services account is factor-related, especially interests, which take up almost 80% of total expenditures. As shown in Table III-3 the net factor services negative balance jumped from 1.6% of GDP in 1977 to an average of 5.4% in the years 1982/85, declining slightly thereafter but still composing one of the major constraints to Brazilian economic development. Factor service is treated in more detail in other sections of this work so that we shall concentrate below on non-factor services (NFS).

As shown in Table III-3 NFS imports have maintained a stable relationship to GDP, around 0.5%, but have increased their relationship to merchandise imports, from an average of 16% in the period 1977/81 to the present 20% because of the sharp reduction of the latter.

Table III-8 presents a break-down of NFS imports. Almost a half of such expenditures are for transport services and some 5% for insurance. Such expenditures are not covered by the Brazilian export incentives, scheme which operates at FOB level, limiting thus its efficacy (Carvalho, 1990).

Table III-8

SERVICES - FACTOR AND NON-FACTOR IMPORTS AND EXPORTS IN 1987
(In US\$ Millions)

	IMPORTS	EXPORTS
A - FACTOR SERVICES	10259	558
Interests	9319	527
Profits and Dividends	940	31
B - NON-FACTOR SERVICES	4291	1974
Transport	2071	1323
Insurance	242	28
Leasing of Equipment	448	4
Industrial Tech. Licensing	60	3
Speciliased Tech. Services	123	76
Patent Licensing	3	-
Others	1344	540
TOTAL	2018	2532

SOURCE: Gonçalves (1989).

The other services singled out in the Table are those directly related to technology, which account for 15% of NFS imports. Most of such expenditures (70% of the technology-related NFS) are for equipment leasing. A substantial part of such equipment is used for oil exploration, which, as we shall see below, absorbs a large share of the payments for specialized technical services too. The latter services take up close to 20% of technology-related NFS, and are discussed in more detail in Section V.

Payments for patents are almost negligible (US\$ 3 millions), probably because Brazilian legislation forbids such payments between affiliates and parent-companies of international companies and because patents must be deposited in Brazil within the Paris Convention priority period (one year) in order to be eligible for licensing.

Industrial technology licensing, which is used mainly by the capital goods industry, also plays a minor role in services imports and it is analysed in more detail in the section covering the issues of technological development in Brazil.

To sum it up, there is now a consensus that it is necessary to reduce

both the level and nature of import controls in Brazil, i.e. to cut down trade barriers and to use tariffs as the main policy instrument. Another consensus seems to be that the liberalization must be selective, in order to avoid disruptions of the type which characterized the Argentinian experience.

However, there is disagreement about the purpose of the import liberalization: while some regard it mainly as means of exerting pressure on local producers to lower price increases, others look at higher imports as a means of fostering the technological and productive capacity of the economy.

The import structure will change according to the policy-mix which shall prevail. Thus, if the latter approach is dominant, it is probable that technology-intensive products and services, especially capital goods and producer services, will be more important than in the first approach, which will tend to concentrate on final demand goods.

The Government seems to learn towards treating imports mainly as an instrument of inflation control, believing that the difficulty of reducing the latter is due to the "cartelization" of the Brazilian industry, which imports would break down.

Internal forces still at work will determine the policy mix which will rule the import liberalization process. However, external factors, such as the willingness of Brazilian creditors to renegotiate the debt so that part of the export earnings can be used for imports instead of servicing the debt will certainly be decisive to the implementation of the new import policy.

As shown in Table III-9, Brazilian imports come mainly from the industrialized countries, especially the EEC, which, as a group, is the main supplier to Brazil.

Within the EEC, the Federal Republic of Germany (FRG) is the main supplier of Brazil, concentrating about 40% of Brazilian imports from the Community. In the recent past, France and Italy held approximately the same share of Brazilian imports (16% each), with the U.K., closing the rank of major suppliers with about 11%. Therefore, the four above-mentioned countries account for over 80% of the Brazilian imports from the EEC.

Table III-9

BRAZILIAN IMPORTS PER ECONOMIC ZONES
(percentual participation) - 1960/88

COUNTRY	1960	1965	1970	1975	1980	1985	1988
United States*	30.99	29.94	32.86	25.28	17.86	19.87	21.37
Japan	2.69	3.41	6.35	9.05	4.64	4.18	6.57
Canada	1.10	1.17	2.45	1.66	3.55	3.02	2.87
Latin-American Integration Association - ALADI	14.01	24.20	10.52	5.88	11.73	12.25	12.71
Others of America	4.79	1.58	1.13	0.68	0.88	0.47	1.00
European Economic Community - EEC	26.85	22.00	29.47	24.98	15.31	14.20	22.09
European Free Trade Association - EFTA	5.51	4.80	5.65	5.65	2.71	3.11	5.08
East Europe	5.50	5.47	2.06	1.57	1.08	2.54	2.19
Others of West Europe	4.00	2.11	1.73	1.19	1.17	0.44	0.12
Asia (except Japan and Middle East)	1.41	0.61	0.65	0.55	2.17	4.43	2.23
Middle East	2.61	4.29	4.15	19.03	33.94	21.86	18.76
Africa	0.53	0.35	2.85	4.09	4.82	13.15	4.42
Oceania	0.01	0.07	0.13	0.39	0.14	0.48	0.59
Others**	-	-	-	-	-	-	-
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

SOURCE: Cacex

* Including Puerto Rico

**Provision for ships and aircraft, not declared and special operations

Except, for the FRG, with which Brazil had a trade deficit in 12 years of the period 1970/1987, Brazil tends to run trade surpluses with all other major EEC suppliers. In fact, in the period 1970/87, Brazil had trade deficits with the EEC only in three years, 1971, 1974 and 1975, strongly concentrated in the latter two years, when imports of capital goods increased (data computed from Andrade, 1990).

As expected, imports from the industrialized countries consist mainly of industrial products, especially chemicals and machinery, although the U.S. is also a major supplier of cereals.

Imports from developing countries, which originate mainly in the Middle East and ALADI countries, are concentrated on oil and, less significantly, on cereals and other primary products. However, imports of capital goods from Argentina have come to play an important role in the trade between the two countries ruled by their Integration Agreement, as analysed in more detail below.

Therefore, the countries which stand most to benefit from an import liberalization programme, especially if such process is directed to more technology-intensive products, are the EEC countries. However, to reap such benefits, such countries, as well as the U.S. and Japan, must modify their credit policy, aligning it with their commercial interests.

III.3 Exports

As shown above, the role played by exports in the Brazilian economy has increased substantially (see Table III-3). Such expansion was accompanied by a substantial diversification of trading partners and by dramatic changes in the composition of exports.

Table III-10 traces the changes of the relative weights of trading partners of Brazil during the 1960/88 period. Among developed countries, the main features are the decline of the U.S., which, although it is still the main individual trading partner of Brazil, now accounts for about 26% of the latter exports, compared to 44% in 1960. The importance of Eastern European countries has also declined while the role played by the Japanese and Canadian markets has increased substantially.

The EEC countries are now the main market for Brazilian products, with a share equivalent to that of the U.S.. Such share remained relatively stable during the period, except during the late sixties/early seventies, when the Community countries absorbed about a third of Brazilian exports. The composition and destiny of such exports are analyzed in more detail below.

Table III-10

BRAZILIAN EXPORTS PER ECONOMIC ZONE
(percentual participation) - 1960/88

COUNTRY	1960	1965	1970	1975	1980	1985	1988
United States*	44.43	32.60	24.68	15.42	17.42	26.53	25.80
Japan	2.42	1.88	5.29	7.75	6.12	5.44	6.72
Canada	1.31	1.56	1.48	1.57	1.21	1.62	2.59
Latin-American Integration Association - ALADI	6.96	12.64	11.06	13.81	17.18	8.71	65.40
Others from America	0.98	0.14	0.69	1.99	0.95	0.95	1.17
European Economic Community - CEE	26.67	32.22	34.93	27.82	27.15	23.99	27.66
European Free Trade Association - EFTA	5.69	5.79	5.42	3.58	3.26	2.85	1.60
East Europe	5.59	5.60	4.51	8.79	6.49	3.87	3.09
Others from West Europe	3.46	4.06	5.93	6.00	3.70	2.63	0.58
Asia (except Japan and Middle East)	0.91	1.14	2.96	2.14	3.75	6.94	8.18
Middle East	0.38	0.81	0.64	5.14	5.16	5.73	4.40
Africa	0.95	1.40	2.15	47.61	5.73	6.55	2.71
Oceania	0.25	0.16	0.11	0.32	0.58	0.72	0.81
Others**	-	-	0.15	1.06	1.29	3.47	3.73
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

SOURCE: Cacex

* Including Puerto Rico

**Provision for ships and aircraft, not declared and special operations

The importance of developing countries increased sharply from 10.4% in 1960 to 28% in 1988 and their composition was also drastically changed. While in 1960 Latin American countries (mainly ALADI countries) accounted for three-fourths of Brazilian South-bound exports, in 1988 this share had dropped to 43%. After reaching a peak of 17% of total Brazilian exports in 1980, ALADI's importance as a market has declined, as a consequence of the regional crisis. African and Middle Eastern markets increased their shares abruptly during the seventies, as a result of the oil-shocks and the subsequent efforts of Brazil to redress the trade balance, but their importance has declined too during the eighties. In contrast, during the last decade Asian countries (Japan and Middle East excluded) have increased their role as markets and now stand second only to Latin America.

As regards the composition of exports, the changes have been substantial too. In broad categories, there was a sharp decline of the role played by primary products, especially coffee, which were affected also by the reduction of international prices, and an increase in manufactured and semi-manufactured products.

Using a simple indicator of "revealed comparative advantages", which relates for each sector "i" its share in total Brazilian exports with its share in total world trade, computed by Carvalho (1990), we can see (Table III-11) that Brazil tends to have stronger comparative advantages in resource-intensive products, both of mineral (non-metallic minerals and metallurgy) and agricultural origin (leather goods, pulp and paper, rubber products, and food products). Although the Table shows a strong comparative advantage in chemical products this is strongly influenced by the classification of vegetal oil and oil-cake, flour and other solid residues of oil seeds in the chemical industry. A more proper classification, under the food products industry would increase the latter share of exports by approximately 60%, reinforcing its role as the main Brazilian exporter as well as its "revealed comparative advantage".

The sectors which evidence a relative comparative advantage account for over 60% of total Brazilian non-primary exports and such share (see Table III-12) has remained relatively stable during the eighties, albeit with a slight decline from 1980 to 1987 (from 66 to 62%). Among other major exporters, the industries producing transport equipment, textiles and apparel and shoes (which accounted for, respectively, 12.3, 4.2 and 5.3% of exports in 1987) are also increasing their ratio of comparative advantage to close to 1. Most other sectors have increased their comparative advantage ratio over the 1976/87 period, suggesting that the Brazilian exports may be moving to a structure similar to that of the world trade (see Tables III-11 and 12).

As regards services exports, Table III-3 shows that they hold a small and stable relationship both to GDP and to merchandise exports (around 0.5 and 5.4% on average). Non-factor services (NFS) account for almost 80% of exports and two-thirds of NFS exports are accounted by transport services, which are strengthened by regulations concerning the mandatory use of Brazilian ships under freight conferences (see Table III-5).

Table III-11

BRAZILIAN MANUFACTURING EXPORT
 "REVEALED COMPARATIVE ADVANTAGES" INDEX(1) - 1976/87

Product	1976	1980	1984	1987
Non-Metallic Minerals	0.41627	0.92831	1.64804	0.987136
Metallurgy	0.54946	0.80993	1.53408	2.012922
Mechanics	0.33816	0.71933	0.43658	0.449378
Electric & Telecom Equipment	0.46079	0.29885	0.20504	0.333186
Transport Equipment	0.49398	0.65130	0.43164	0.835720
Wood products	0.60771	0.68058	0.60591	0.818869
Furniture	0.29898	0.10705	0.10617	0.183321
Paper products	0.27614	0.99463	1.09489	1.042930
Rubber products	0.35900	0.80597	1.18149	1.418400
Leather products	2.45224	1.33970	0.86880	0.945401
Chemicals	1.97734	1.38925	1.83520	1.757838
Pharmaceuticals	0.18015	0.28125	0.32336	0.328123
Perfume, soap and candles	0.17959	0.63567	0.35409	0.245317
Plastic products	0.08361	0.37327	0.48909	0.263293
Textiles	0.85002	0.78022	0.65296	0.973823
Clothing and Shoes	0.68188	0.55801	0.88267	0.869199
Food products	3.79154	3.52711	3.45512	3.092438
Beverage	0.21345	0.90387	0.98201	0.137989
Tobacco	3.61930	3.23656	3.77157	3.956357
Printing & Publishing	0.22375	0.22709	0.12397	0.152394
Others	0.09092	0.13944	0.15857	0.156135

(1) Specialization measured for each sector "i" as: $[X_i^B / X_t^B]$ where X_i^B are

$$[X_i^w / X_t^w]$$

Brazilian exports of sector "i"; X_t^B are Brazilian total exports; X_i^w are world exports of sector "i" and X_t^w are total world exports.

SOURCE: Carvalho (1990)

Table III-12

MANUFACTURING INDUSTRY EXPORTS STRUCTURE - 1980/87

INDUSTRY	(%)		
	1980	1983	1987
Non-Metallic Mineral	1.3	1.2	1.5
Metallurgy	6.8	10.3	13.0
Mechanics	8.7	5.6	6.8
Electric and Telecom Equipment	2.7	2.6	3.9
Transport Equipment	7.4	7.9	12.3
Paper Products	3.0	2.7	3.3
Rubber Products	0.8	0.7	1.3
Chemicals	18.1	23.3	18.4
Pharmaceuticals	0.3	0.3	0.4
Perfume, Soaps, Candles	0.2	0.2	0.2
Plastic Products	0.3	0.4	0.3
Textiles	4.3	4.6	4.2
Clothing and Shoes	2.8	3.9	5.3
Food Products	34.8	29.0	22.9
Beverages	0.9	0.5	0.1
Tobacco	1.7	2.5	1.9
Others	4.9	4.3	4.3
Manufacturing Industry	100.0	100.0	100.0

SOURCE: Willberg and Panariello (1990)

Technology-related services (mostly specialized technical services) account for only 4% of NFS exports, according to Central Bank data. However, such figures probably grossly underestimate the earnings abroad from the sales of technical services. Gonçalves (1989) estimates that only 12% of the net profits generated abroad by the firms exporting services of construction and engineering are sent back to Brazil. Such low level of repatriation can be explained not only by the usual precautionary and speculative reasons for holding foreign exchange reserves abroad, but also because most (60%) of the firms which operated abroad found necessary to establish subsidiaries or affiliates therein, financed by their own resources.

Exports of the construction and consulting sector suggest that Brazilian comparative advantages lie in areas, such as transport and energy, where the Brazilian market, especially public investment, offered scope for learning. The studies available refer mainly to the experience of the late

seventies/early eighties and they show that other developing countries were the main market for Brazilian exports of services (see Gonçalves, op.cit. for a review of such studies). Nonetheless, Guimarães (1990) reports that at least one of the main Brazilian construction firm has recently established a subsidiary in Portugal in order to profit from the entry of that country into the EEC.

The evidence about the linkages between exports of technology-related services and industrial goods in Brazil is mixed. A study of the early eighties (FUNCEX, 1982) argues that such-exports are indeed linked — with contracts for engineering services leading to exports of equipments and building materials such as steel, pre-fabricated construction modules, etc and with contracts for construction and assembly including the supply of industrial goods. However, the same study reports the scepticism of industrial enterprises about the effectiveness of such linkages, which must be further researched.

The decline of Brazilian exports of specialized technical services, which had reached a peak of US\$ 141 millions in 1981 and were reduced to US\$ 76 millions in 1987, probably reflects the crisis of other developing countries, but is also influenced by the lack of supportive Government policies, especially as regards financemnt of such services, which is a critical factor in the international market.

As shown above, Brazilian exports seem to be based mainly on the use of the country's abundant natural resources. However, the intensity of use of natural resources has often required the deployment of considerable technical resources, as in the case of the soya-complex (grain, oil, cake, etc.). In fact, the diffusion of soya throughout the Brazilian territory, which made possible the massive expansion of production and exports was the result of local research and development efforts.

Notwithstanding the results of the recent export-drive there is a growing concern in Brazil about the competitiveness of its exports. Part of the existing competitiveness is often considered to be of a "spurious nature", since it is predicated upon the misery of the people, expressed by low wages. The complex system of export incentives, either by providing exporters with fiscal and credit incentives, or by linking imports to exports or by keeping

the price of State enterprises goods and services (e.g. steel and electricity) low, is also frequently criticized as a source of false competitiveness. In order to achieve objectives of greater social equity and long-run growth, both sources of export performance should be eliminated.

It is acknowledged that in many sectors which are technologically stabilized internationally, the scale of operation and the technological maturity achieved by Brazilian industry warrant a less socially iniquitous competitiveness, such as in the steel and petrochemical industries.

For other products, such as armaments, aircraft and some types of simple machine-tools, the capability of the local industry to design and manufacture goods targeted to specific markets has also been recognized as an important source of export performance. The same applies to some technology-intensive but mature services such as engineering and construction.

Nonetheless, there is widespread concern about the small share of technology-intensive products within Brazilian exports. As shown in Tables III-11 and 12 the export share and revealed comparative advantages of industries producing technology-intensive products, especially the electrical and electronic industry and the non-electrical machinery sector, are very low. At a more disaggregated level, Table III-7, drawn for a set of products identified by several international sources as being "technology-intensive" (CEPAL, 1989), shows that the share of such products in Brazilian exports is less than half of their share in total world exports. A break-down of such exports is shown in Table III-6.

Moreover, there is also a deep worry about the intensity of absorption of new technologies, both in terms of new equipment and in terms of new forms of organizing production, by the more traditional export industries, such as textiles, apparel and shoes, which is considered to be too low, leading to a loss of potential competitiveness.

Such concerns have increased in the recent past, partly because of the international trend towards "produced comparative advantages" (Lafay et al., 1989) and partly because of a declining export performance of Brazil. The first point is well documented and does not need further elaboration. As for the second, although Brazil is the ninth producer of manufactures in the

world, it ranks only nineteenth in terms of exports. Moreover the Brazilian share of world exports, which had increased from 1.3 to 2.3% between 1976 and 1984 has declined since then, to 1.5 in 1987 (Carvalho, 1990). The latter finding requires further research, since the decline occurs across the board, for all sectors (with the exception of transport equipment), suggesting that macroeconomic factors such as the backlash of the 1986 stabilization plan may have played a major role in such reduction (see Table III-13).

Therefore, a strong current of opinion seems to be emerging about the need to couple the foreign trade policy to its industrial and science and technology sisters into a coherent whole, differently from the recent past, when the three policies have been managed separately and often contradictorily. Although the present Government has started to dismantle the export-incentive system, it has not yet taken steps to replace it by specific export-oriented technological incentives.

III.4 Regional Integration

The threats to Brazilian exports which stem from internal factors, such as the lack of investment in productive capacity embodying the latest vintages of equipment and the low levels of investment in research and development, are compounded by international factors arising from the increase of protectionism and the trend to regional integration.

As regards protectionism, non-tariff barriers (NTB) are estimated to have reduced Brazilian exports by at least 10%, with losses evenly distributed between agriculture and manufacture exports (circa US\$ 2 billions each).

Pereira (1989) evaluates the protection derived from the existence of non-tariff barriers applicable to Brazilian exports to the EEC and U.S. based on two indicators of the incidence of such barriers: (i) the coefficient of frequency, reflecting the percentage of the number of commodities affected by non-tariff barriers, and (ii) the coefficient of coverage indicating the percentage of the value of the commodities subject to non-tariff barriers.

Table III-13

BRAZILIAN EXPORT PARTICIPATION IN WORLD TRADE
(%)

Product	1976	1980	1984	1987
Non-Metallic Minerals	0.62	1.61	3.70	1.57
Metallurgy	0.74	1.53	3.69	3.01
Mechanics	0.43	1.25	0.99	0.67
Electric & Telecom Equipment	0.67	0.59	0.52	0.52
Transport Equipment	0.71	1.23	1.05	1.24
Wood products	0.84	1.23	1.50	1.22
Furniture	1.17	0.20	0.26	0.27
Paper products	0.40	1.90	2.60	1.58
Rubber products	0.60	1.54	2.92	2.12
Leather products	3.52	2.55	2.15	1.41
Chemicals	2.04	1.77	2.75	2.64
Pharmaceuticals	0.26	0.54	0.80	0.50
Perfume, soap and candles	0.21	0.78	0.53	0.37
Plastic products	0.12	0.70	1.19	0.46
Textiles	1.30	1.50	1.64	1.45
Clothing and Shoes	0.98	1.05	2.17	1.30
Food products	5.46	6.87	8.69	4.61
Beverage	0.31	1.72	2.43	0.21
Tobacco	5.19	6.22	9.29	5.91
Printing & Publishing	0.31	0.43	0.31	0.23
Others	0.13	0.26	0.39	0.23
EXPORTS TOTAL	1.36	1.77	2.28	1.5

SOURCE: Carvalho (1990)

It should be noted that the UNCTAD data bank utilized by Pereira includes practically none of the technical barriers and phyto-sanitary regulations applicable within the EEC. This omission tends to under-estimate the occurrence of non-tariff barriers more at an individual country level than for the EEC as a whole.

Since the EEC is treated as a group, the indicators used are very sensitive to NTBs imposed by single countries, which are then reflected upon the coefficients for the Community as whole, regardless of the market-share of the country imposing the barrier. Thus, the sharp increase of the EEC coefficients in 1985 may be attributed to the establishment of import deposits by Greece in that year (abolished later, in 1987). Therefore the coefficients for the year 1983 are probably more representative of the level of protection prevailing in the Community (Guimarães, 1990).

As shown in Table III-14 the level of protection in the US tends to be higher than in the EEC for mining and manufacturing and lower in agriculture. The EEC coefficients indicate the absence of non-tariff barriers in the case of mineral raw-minerals. On the other hand, the coefficient of frequency associated with agricultural products is high, reflecting the Community's agricultural policy. However, the coefficient of coverage referring to Brazilian agricultural products is close to zero, bearing out the fact that the NTBs associated with the EEC common agricultural policy affect only few items exported by Brazil. Nonetheless, some of such items, such as meat, fruit juice, tobacco and sugar are important exports from Brazil, accounting for about 20% of total exports.

As regards manufactured exports, Burle (1989) provides data disaggregated at product level (excluding food products). As shown in Table III-15 the developed countries, especially the U.S. and the EEC, apply NTBs to products for which Brazil has "revealed comparative advantages". Moreover, the only sector for which the coverage coefficient declined in the 1981/86 period was the manufacture of shoes, for which the U.S. ended countervailing duties in 1984. All other sectors show stable or increasing coverage coefficients.

Table III-14

FREQUENCY AND COVERAGE OF NTB FOR BRAZILIAN PRODUCTS
EEC AND USA

	(percentage)					
	Frequency Coefficient			Coverage Coefficient		
	1983	1985	1986	1983	1985	1986
	EEC					
Agriculture	48.58	49.76	49.76	3.57	4.01	4.01
Mining	0.16	0.65	0.65	0.00	0.00	0.00
Manufacturing	28.37	44.88	44.88	29.23	45.37	43.33
Total	25.32	39.22	39.22	24.52	38.03	38.01
	USA					
Agriculture	0.11	0.11	0.11	0.11	0.11	0.11
Mining	49.65	8.23	8.23	49.65	20.36	20.36
Manufacturing	24.08	24.73	26.39	39.67	32.51	34.34
Total	25.08	22.94	24.45	39.20	30.78	32.44

SOURCE: L.V. Pereira, "O Protecionismo dos paises desenvolvidos e o acesso de produtos brasileiros aos mercados externos", FUNCEX, 1989

Table III-15

COVERAGE COEFFICIENT OF NTBS APPLIED BY DEVELOPED COUNTRIES TO BRAZILIAN
MANUFACTURED EXPORTS - 1981 AND 1986 IN % AND 1985 VALUE (US\$ MILLIONS)

PRODUCTS	USA		EEC		JAPAN		OTHERS		TOTAL		VALUE 1985
	1981	1986	1981	1986	1981	1986	1981	1986	1981	1986	
ORGANIC CHEMICALS	54.54	54.54	18.69	19.47	98.98	98.98	34.82	34.82	65.10	65.10	725.6
OTHER CHEMICAL	0.00	0.00	3.02	3.02	100.00	100.00	76.37	76.37	13.30	13.30	156.5
LEATHER GOODS	0.00	0.00	18.10	18.10	0.00	0.00	18.60	18.60	14.30	14.30	137.4
TEXTILE FIBRES AND YARNS	77.20	77.20	100.00	100.00	16.60	16.60	29.60	29.60	74.60	74.60	274.3
COTTON FABRICS	100.00	100.00	100.00	100.00	0.00	0.00	43.26	100.00	97.80	100.00	139.2
OTHER	100.00	100.00	62.40	62.40	0.00	0.00	2.00	24.85	78.20	79.90	109.4
IRON	41.20	41.20	13.10	16.70	0.00	0.00	0.00	0.00	16.40	17.00	506.8
IRON AND STEEL PLATES	0.00	100.00	100.00	100.00	0.00	0.00	0.00	34.10	23.60	73.70	467.9
IRON AND STEEL TUBES	0.00	99.50	100.00	100.00	0.00	0.00	0.00	100.00	2.30	99.50	167.9
CLOTHING	64.10	68.30	77.30	77.30	0.00	0.00	27.70	27.70	67.80	68.90	172.2
FOOTWEAR	100.00	0.00	100.00	100.00	98.70	98.70	82.40	82.40	93.60	23.20	907.6

SOURCE: Burie (1989).

Pereira (1989) differentiates between the non-tariff barriers defined by the common commercial policy of EEC and those adopted individually by specific countries (Table III-16). The results obtained bear out the fact that, if the Greek import deposit is left out, the restrictions derived from the common policy of the EEC are more frequent and affect Brazilian exports more than the non-tariff barriers imposed by individual countries. This result is undoubtedly significant from the point of view of an evaluation of the possible effects of the EEC92.

Table III-16

FREQUENCY AND COVERAGE COEFFICIENTS IN THE EEC
COMMUNITY AND INDIVIDUAL COUNTRY POLICIES

(Percentage)

	Total		Community		Individual Countries	
	FC	CC	FC	CC	FC	CC
1981	25.32	24.53	21.30	20.06	9.01	14.77
1983	25.35	24.53	21.33	20.10	9.01	14.77
1985	38.92	38.03	21.84	20.33	37.26	37.26
1986	39.22	38.01	21.73	20.30	37.27	37.27

SOURCE: See Table III-12.

The intensive use of export incentives as an instrument of trade policy makes the Brazilian exports especially liable to (justified and unjustified) anti-dumping and countervailing duties.

In the EEC, Pereira (1989) reports six proceedings over the 1979/1987 period for violation of the GATT rules on subsidies, and fourteen having to do with the practice of dumping.

Of the six cases involving subsidization, only the one referring to soya bean flour ended up with a non-subsidy decision. The cases entailing solutions unfavourable to Brazilian exports referred to footwear (started in 1976: concluded with a price agreement); women's footwear (1981, agreement on suspension and export tax); cotton yarn (1983, quota agreement); hot rolled sheets (1982); and cold rolled sheets (1982; in the last two cases the

surcharges of the anti-dumping proceedings prevailed).

Of the fourteen cases concerning dumping, three concluded with decisions favourable to Brazilian exports, namely: tool steel (started 1979) compressors (1980); and ordinary carbon steel wire rods (1985). Of the remaining cases, six resulted in price agreements: iron joints (1980); wood fibreboard (1982); iron and steel shovels (1984); binder and bale twine (1985); ferro-alloys (1986); and Kraftliner paper (1987). In three cases, despite a conclusion running counter to Brazilian exports, the respective decisions were suspended based on a voluntary agreements: iron and steel products (established in 1985), hot-rolled sheets (1982); cold-rolled sheets (1982), and hot-rolled coils (1982). Unfavourable decisions were handed down in a case referring to oxalic acid (1984) and a second one dealing with iron joints (1985).

The effects of these cases on Brazilian exports to the EEC were examined in the above mentioned study, which looked into the evolution in the series of exports of the affected products. These series indicate that the commencement of the enquiries almost invariably occurred in the year in which exports of the respective products peaked or in the year following; they also show that, with the exception of iron joints and oxalic acid, the volume of exports fell after the respective investigations started.

The agreement on exports restrictions of steel and iron established in 1985, with quotas subject to yearly renegotiation, has not, however, turned out to be an obstacle to Brazilian exports to the EEC, except in the case of the small quotas stipulated for Portugal and Ireland. As a matter of fact, Brazilian exporters did not use up the quota that had been assigned to them (especially in 1985, 1986 and 1989). On the other hand, Brazilian exports have been limited by frequent alterations in technical standards in Germany and, to a lesser extent, in the United Kingdom (Guimarães, 1990).

The Multifibre Agreement has also not produced a major inhibiting effect on sales by the textile and the apparel industries in the European market, despite the fact that annual rates of growth authorized for Brazilian exports were reduced in the more recent version, though it may have indeed proved restrictive in the case of specific products. It may be noted that the Brazilian producers were favourable to maintaining the Agreement on the medium term, which may reflect their concern about competition from new producers of developing countries. (Ibid.)

The U.S. recently imported unilateral trade sanctions against Brazilian exports because of lack of patent protection for pharmaceutical products and processes in the latter country, despite the fact that the Brazilian provisions stand in accordance with the international intellectual property laws. The present Government has promised to ammend the Industrial Property Law in order to introduce full patent protection for the pharmaceutical products.

Since multinational companies, especially of U.S. origin, dominate the Brazilian pharmaceutical market, holding 85% of sales, it is supposed that the unilateral action of the U.S. Government, taken after a short period of negotiation, was really of a pre-emptive nature, aiming at the yet undeveloped markets of fine chemicals and biotechnology products.

The U.S. Government has also exerted very strong pressure against the Brazilian Informatics Law by threatening import sanctions totally out of proportion to any estimate of market losses by U.S. firms caused by the informatics policy. The concessions obtained, among others, in the software policy, finally led to the withdrawall of the threat by the USTR.

On the other hand, Brazilian exports have to some extent benefited from the General Preference System. However, the EEC GPS practically excludes mineral raw-materials and is applied only marginally for Brazilian exports of agriculture and food products, covering respectively, 10 and 16% of the exports of the two sectors to the Community (see Table III-17).

The GPS is more relevant to low-technology manufactured exports, such as textiles and wearing apparel and to most of the more technology intensive sectors, such as machinery and equipment, transport equipment and chemicals. (ibid.).

As a consequence of the combination of the peculiarities of the GPS and of the structure of Brazilian exports to the EEC, only about 30% of total exports are covered by the System.⁶

⁶ As regards national markets, Brazilian sales under the GPS were especially important in the U.K. (45% of exports in 1985), Italy (49%) and the FRG (39%). In France and the Netherlands they were below the Community average, respectively 19 and 26% (Guimarães, 1990).

Table III-17 - Brazilian exports to EEC under GSP schemes

	1984		1985	
	GSP exports (US\$MILLION)	GSP exports/total exports (percentage)	GSP exports (US\$MILLION)	GSP exports/total exports (percentage)
Agriculture	25.20	1.40	66.30	3.50
Mining	1.70	0.10	2.70	0.10
Food, beverage and tobacco	475.00	25.60	465.30	24.40
Food products	284.00	15.30	280.00	14.70
Tobacco	190.00	10.20	185.20	9.70
Textiles, wearing apparel, leather	303.50	16.30	251.30	13.20
Textiles	205.60	11.10	165.70	8.70
Wearing apparel	57.70	3.10	58.60	3.10
Wood products and furniture	80.30	4.30	85.90	4.50
Paper, printing and publishing	83.80	4.50	54.00	2.80
Chemicals	359.70	19.40	353.00	18.50
Non-metallic mineral products	16.80	0.90	14.90	0.80
Basic metals and metal products	490.00	26.40	596.20	31.20
Basic metals	100.00	5.40	130.00	6.80
Machinery and equipment	155.30	8.40	233.70	12.20
Elect. equip. and apparatus	23.50	1.30	21.20	1.10
Transport equipment	211.20	11.40	211.30	11.10
Other	22.20	1.20	20.10	1.10
Total	1858.20	100.00	1989.70	100.00
		30.20		30.70

SOURCE: Computed by FUNCEX from CADEX data.

Moreover, such advantages are further undermined by the preferential tariffs granted to other countries. The tariff exemptions on tropical agricultural products granted under the Lomé Convention affect some important exports by Brazil, such as green coffee, cocoa paste and meat products, all of which are exempt under the Lomé Convention but subject to duties of 5%, 11% and 17%, respectively, when imported from Brazil. As regards manufactures, products which originate from the EFTA countries enjoy free access to the Community, competing thus with Brazilian products under favourable conditions.

There is a widely diffused opinion in Brazil that protectionist barriers, such as those above described, will be strengthened by the integration in North America between the U.S. and Canada and Mexico, in Europe by the EEC 1992 project, eventually modified and widened by closer links with Eastern Europe and, finally, in Asia by the informal but not less effective integration between Japan and the local NICs. It is generally believed in Brazil that notwithstanding the positive trade effects wider markets may have and despite the liberal rhetoric of all Governments involved, Brazil, as an outsider to such integrated markets, stands to lose market share.

As regards the U.S./Canada agreement, already in force, Resende (1990) provides some elements for evaluating its potential impact on Brazilian exports. As already mentioned, Canada has become an significant trading partner of Brazil, absorbing 2.6% of total Brazilian exports (see Table III-9). Since such exports are mainly of tropical food products (especially coffee) and textiles, the competition from U.S. products will probably be small. However, in the U.S. market, the competition of Canadian products with Brazilian substitutes is likely to be greater, especially in markets where both Brazil and Canada supply an important share. As shown by Resende, there are several products, (sugar, chocolate, organic and non-specified chemicals products, pig iron, iron and steel plates and pipes) where both Canada and Brazil supply more than 5% of the U.S. market. Such products accounted for about 11% of total Brazilian exports to the U.S. in 1985.

Should Mexico, which already holds close commercial and industrial ties to the U.S., reinforce such links by a formal agreement, the threat to Brazilian manufactured exports, especially of low and medium intensity of technology would be considerably amplified, although no estimates of such

trade losses are available yet.

As regards the EEC, it is convenient to examine first, in some detail, the Brazilian exports to the Community.

As shown in Table III-18 Brazilian exports to the EEC are more diversified than its imports (see above), both in terms of products and partners. As regards the latter, the Netherlands stand out as the main market for Brazilian products (23%), followed by FRG (19%), Italy (17%) and France (12%). The predominance of the Netherlands is probably explained by port facilities, especially suitable for the handling of the type of goods Brazil exports to the EEC.

In fact, three-fourths of the imports of Brazilian products by the Netherlands are composed of agricultural products, food, beverages and tobacco. Moreover, to the Netherlands come around 40% of the EEC's imports of food, beverages and tobacco, chemicals and basic metals from Brazil (see Table III-18, parts B and C). It is estimated that over 80% of the products shipped to Rotterdam go to the FRG, making the latter the main importer of Brazilian products.

Intra-firm trade probably explains part of the concentration of some exports in specific countries. Thus, the absorption by the Italian market of 63% of Brazilian exports of transport equipment is clearly related to FIAT's global strategy. However, further research is needed to explain other very high concentration ratios, such as 50% of machinery and equipment (electrical and non-electrical) in Italy or 55% of wood products and furniture in the U.K., especially on the role played by the GPS.

As shown in the same Table, Brazilian exports to the EEC consist mainly of agricultural products, food, beverage and tobacco, which account for about 60% of total exports. More technology-intensive exports (chemicals - 4.7%, machinery - 5.3% and transport equipment - 3.6%) account for 13.6% of total exports and go mainly to the Netherlands (chemicals, with the caveat above), FRG (all three), Italy (all three) and France (transport equipment).

Table III-18

BRAZILIAN EXPORTS TO EEC BY COUNTRY AND SECTOR
- 1985 -

	Benelux	Denmark	France	Germany	Greece	Ireland	Italy	Nether-lands	Portugal	Spain	United Kingdom	Total
	A - Value (US\$MILLION)											
Agricul. prod./food/beverage/tobacco	322.90	79.90	570.80	588.90	42.20	6.20	438.20	1153.90	85.90	393.60	339.30	4021.9
Agriculture products	173.20	68.70	204.00	360.60	38.90	0.20	338.70	310.30	73.20	231.90	83.00	1880.5
Food, beverage and tobacco	149.80	11.20	366.80	228.40	3.40	6.00	101.40	843.60	12.70	161.80	256.30	2141.4
Mining	98.20	0.70	80.80	301.30	1.00		139.40	37.50	1.40	67.60	48.60	776.4
Textiles, wearing apparel, leather	25.60	12.60	57.70	143.80	8.40	5.10	58.50	28.80	28.40	15.10	71.50	455.5
Wood products and furniture	4.70	1.90	4.80	21.80	0.20	5.30	5.20	6.00	1.70	3.70	66.70	122.2
Paper, printing and publishing	78.30	0.10	12.20	24.40	1.20	0.10	19.10	1.70	5.60	0.20	8.40	151.5
Chemicals	18.50	1.90	25.10	61.30	1.20	0.20	46.80	139.50	3.00	7.30	20.80	325.6
Non-metalic mineral products	1.20	0.30	0.50	9.70	0.10		0.50	0.70	0.00	0.10	3.20	16.1
Basic metals	6.10	3.00	2.20	44.30	4.70	0.10	99.40	155.80	1.30	39.90	22.50	379.2
Machinery and equipment	15.70	0.70	14.10	77.00	0.70	0.10	184.50	24.80	5.50	3.50	41.40	368
Transport equipment	3.90	19.20	26.20	27.30	1.00	0.00	156.10	5.90	2.70	0.30	7.00	249.7
Other	2.00	0.20	2.60	9.30	0.10	2.50	2.20	3.80	0.40	1.30	2.80	27.1
Total	577.10	120.30	797.00	1309.10	60.90	19.70	1149.80	1558.30	136.00	532.50	632.20	6893.2
	B - Country percentage											
Agricul. prod./food/beverage/tobacco	56.00	66.40	71.60	45.00	69.30	31.60	38.10	74.00	63.20	73.90	53.70	58.3
Agriculture products	30.00	57.10	25.60	27.50	63.80	1.00	29.30	19.90	53.80	43.50	13.10	27.3
Food, beverage and tobacco	25.90	9.30	46.00	17.40	5.50	30.70	8.80	54.10	9.30	30.40	40.50	31.1
Mining	17.00	0.60	10.10	23.00	1.60		12.10	2.40	1.10	12.70	7.70	11.3
Textiles, wearing apparel, leather	4.40	10.50	7.20	11.00	13.80	25.80	5.10	1.80	20.90	2.80	11.30	6.6
Wood products and furniture	0.80	1.50	0.60	1.70	0.40	26.80	0.50	0.40	1.30	0.70	10.60	1.8
Paper, printing and publishing	13.60	0.10	1.50	1.90	2.00	0.70	1.70	0.10	4.10	0.00	1.30	2.2
Chemicals	3.20	1.50	3.10	4.70	2.00	1.10	4.10	9.00	2.20	1.40	3.30	4.7
Non-metalic mineral products	0.20	0.20	0.10	0.70	0.10		0.00	0.00	0.00	0.00	0.50	0.2
Basic metals	1.00	2.50	0.30	3.40	7.80	0.40	8.60	10.00	0.90	7.50	3.60	5.5
Machinery and equipment	2.70	0.60	1.80	5.90	1.20	0.60	16.00	1.60	4.00	0.70	6.50	5.3
Transport equipment	0.70	15.90	3.30	2.10	1.70	0.10	13.60	0.40	2.00	0.10	1.10	3.6
Other	0.30	0.10	0.30	0.70	0.10	12.90	0.20	0.20	0.30	0.30	0.40	0.4
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100
	C - Product percentage											
Agricul. prod./food/beverage/tobacco	8.00	2.00	14.20	14.60	1.00	0.20	10.90	28.70	2.10	8.40	100.00	
Agriculture products	9.20	3.70	10.80	19.20	2.10	0.00	17.90	16.50	3.90	4.40	100.00	
Food, beverage and tobacco	7.00	0.50	17.10	10.70	0.20	0.30	4.70	39.40	0.60	12.00	100.00	
Mining	12.70	0.10	10.40	38.80	0.10		18.00	4.80	0.20	6.30	100.00	
Textiles, wearing apparel, leather	5.60	2.80	12.70	31.60	1.80	1.10	12.80	6.30	6.20	15.70	100.00	
Wood products and furniture	3.90	1.50	3.90	17.90	0.20	4.30	4.30	4.90	1.40	54.60	100.00	
Paper, printing and publishing	51.70	0.00	8.10	16.10	0.80	0.10	12.60	1.20	3.70	5.60	100.00	
Chemicals	5.70	0.60	7.70	18.80	0.40	0.10	14.40	42.80	0.90	6.40	100.00	
Non-metalic mineral products	7.20	1.60	3.10	60.10	0.50		2.80	4.10	0.10	20.10	100.00	
Basic metals	1.60	0.80	0.60	11.70	1.20	0.00	26.20	41.10	0.30	5.90	100.00	
Machinery and equipment	4.30	0.20	3.80	20.90	0.20	0.00	50.10	6.70	1.50	11.20	100.00	
Transport equipment	1.60	7.70	10.50	10.90	0.40	0.00	62.50	2.40	1.10	2.80	100.00	
Other	7.30	0.60	9.60	34.50	0.30	9.40	8.00	13.90	1.30	10.20	100.00	
Total	8.40	1.70	11.60	19.00	0.90	0.30	16.70	22.60	2.00	9.20	100.00	

SOURCE: Guimaraes (1990)

As shown by Guimarães (1990), Brazil is a marginal supplier to the Community — on average, Brazilian exports represent 1% of the EEC imports, with the largest shares pertaining to the Netherlands (2.4%), Spain (1.8%), Portugal (1.8%) and Italy (1.3%). At the sectoral level the same order of magnitude apply, except for food products and tobacco, where the Brazilian share of EEC imports is around 7%.

Exports at the product level are shown in Table III-19. Three products — oil cake, flour and other solid residues; coffee and iron ore — account for 40% of total exports.

Following Guimarães (1990), we can group the products in four categories: (i) agricultural and agro-industrial products (e.g. coffee, the soya products), which account for 53.5% of Brazilian exports; (ii) mineral raw-materials (ores) and natural resource, scale-intensive products (pulp, paper and paperboard) (16% of exports); (iii) low-technology manufactured products, typical of NIC's exports (textiles, wearing apparel, footwear, steel products) (17% of exports) and (iv) manufactured products with a higher technological content (capital goods and chemical products), which account for 13.5% of Brazilian exports to the EEC.

Of such groups of products, the second is the least likely to be affected by EEC92, grounded on its natural resources advantages. Probably the most EEC92 — sensitive group is the last one, composed by products which are technologically mature and scale-intensive, where the advantages of enterprises located within the Community vis-à-vis third parties are likely to increase. For the other two groups of products, the major threat to Brazilian exports is likely to come from other third parties to the Community, both from other NICs (for the second group and for the tropical products within the first) and from more developed countries, such as the U.S., for temperate-zone products, such as soya and beverages. Hence, for the two groups which compose the bulk of Brazilian exports to Community, a decisive factor will be how the EEC arranges its scheme of regional and national preferences, which remains yet to be decided.

Table III-19

BRAZILIAN EXPORTS TO EEC - 1986

Products	US\$ MILLION	Percentage
Agriculture products	298.60	5.60
Ores	649.80	12.10
Manufacturing	4417.70	82.30
Pig iron	26.40	0.50
Steel ingots and ferroalloys	103.10	1.90
Flat and non flat steel products	41.30	0.80
Non-ferrous metals	145.50	2.70
Other steel products	16.20	0.30
Machinery parts	124.20	2.30
Office machines	24.60	0.50
Domestic electric appliance and parts	18.00	0.30
Electronic appliance and parts	25.90	0.50
Radio/television receiver; appar. for sound reproduction	59.20	1.10
Motor vehicles	127.60	2.40
Motor vehicle motors and parts	27.90	0.50
Other vehicles and parts	67.90	1.30
Wood sawn or chipped	112.80	2.10
Pulp and chemical wood pulp	129.00	2.40
Paper and paperboard	85.70	1.60
Leather products	61.80	16.60
Basic chemicals	58.60	0.50
Petrochemical products	85.20	1.40
Oil-cake, flour and other solid residues of oil seeds	890.90	2.90
Pharmaceutical products	29.10	0.90
Other chemical products	74.80	1.40
Textiles	153.90	10.70
Wearing apparel	45.90	1.50
Footwear	75.60	1.60
Coffee not roasted	576.70	2.70
Coffee roasted or concentrated	78.60	1.20
Meat, fresh, chilled or frozen	83.70	1.60
Meat products	145.20	2.70
Preparation used in animal feeding	62.30	1.20
Other food products	403.70	7.50
Beverage	15.10	0.30
Tobacco	197.50	3.70
Other	243.80	4.50
Total	5336.00	100.00

SOURCE: Computed by FUNCEX from CACEX data, in Guimaraes(1990)

As mentioned above, a substantial part of Brazilian exports of the more technology-intensive products is made of intrafirm trade and will thus respond to the global strategies of multinational firms. Despite the uncertainty surrounding the implementation of the EEC92 project and the even greater uncertainty about the Brazilian growth prospects, several leading Brazilian firms, which already export to the EEC are establishing productive facilities within the Community, to forestall barriers to trade and profit from the expanded 1992 market. Guimarães (1990) reports several of such cases, covering a wide spectrum of sectors — producers of agricultural products, such as orange juice and soya derivatives, apparel goods, wood agglomerates and car parts.

Notwithstanding the importance of such decisions by enterprises, it is unlikely that they will have the strength to counterbalance the weight of eventual decisions of the Governments of the Community to maintain and possibly reinforce the present protectionist trend.

Latin American integration is often posited as counterbalance to other regional integration movements. However the past record of ALADI (Latin American Industrial Development Association) and of its predecessor, ALALC (Latin American Free Trade Association) does not warrant much optimism on such count.

ALADI, established in 1980 by the Montevideo Treaty, has operated based on three main mechanisms: partial agreements, which establish preference margins applied to a list of products negotiated bilaterally; the regional tariff preference which has margins, up to 20%, which are applied multilaterally to all goods included in the intraregional trade (except those which are excluded by specific countries) and a program of the expansion which sets preference margins of up to 80%, applicable to goods presently purchased outside the region.

Within this framework, Brazil and Argentina signed since 1986, 22 protocols of agreement covering a wide range of subjects, from the establishment of binational enterprises to sectoral agreements (wheat, capital goods, automotive industry, etc.). Such agreements were consolidated in 1989 by a treaty which has the objective of establishing a common market between the countries in the medium term. However, such treaty has not been ratified

by the two Congresses yet.

Following the signature of the above mentioned protocols of agreement both countries strengthened their links to Uruguay, exempting from taxes and most other tariff barriers the imports from that country.

As shown above (Tables III-9 and 10), trade with ALADI countries plays a relatively minor part in Brazil's external transactions. Within such trade, the share which is negotiated under the norms of the Montevideo Treaty has steadily increased during the eighties, from 27% in 1980 to 67% in 1987 (Araujo Jr., 1990).

As shown in Table III-20, Brazilian trade with ALADI countries increased steadily during the seventies and reached a peak in 1981, when it was 13 times the value of 1970. Following debt crisis, which hit the whole region, and the ensuing policies of reducing imports to adjust the balances of payment, the value of trade of Brazil with the region declined sharply so that in 1985 it was 48% lower than in 1981. Since then, Brazilian regional trade has recovered, especially exports, which, in 1988, increased by a fourth, reaching the second highest level of 19 years. During this period, the trade balance of Brazil has been positive, except for the years 1982/83, when imports of oil from Mexico and Venezuela led to small trade deficits.

The trade of Brazil with its ten ALADI partners is fairly concentrated with four of them: Argentina, Mexico, Uruguay and Venezuela, which supply about 70% of the Brazilian imports from the region and purchase around 56% of Brazilian exports.

Imports from Mexico and Venezuela are consist almost exclusively of oil and have steadily declined since 1982. In that year Brazil imported US\$ 1586 millions of oil from the two countries (US\$ 635 and 951 millions, respectively) and in 1988 it imported US\$ 121 millions from Venezuela and nothing from Mexico, a result of the success of the import-substitution programme and of the shift on trade to the Middle East.

Uruguay has steadily increased its share of Brazilian imports, from 7% in 1980 to 17% in 1988 and supplies mainly agricultural products and agro-based industrial inputs.

Table III-20

BRAZILIAN TRADE WITH ALADI COUNTRIES - 1970/88

(in US\$ Millions)

YEAR	EXPORTS	IMPORTS
1970	303	264
1971	355	271
1972	408	350
1973	557	557
1974	918	944
1975	1,197	718
1976	1,202	1,173
1977	1,480	1,343
1978	1,619	1,422
1979	2,475	2,209
1980	3,458	2,692
1981	4,209	3,126
1982	2,862	3,286
1983	2,057	2,204
1984	2,829	2,140
1985	2,231	1,614
1986	2,522	1,823
1987	2,973	1,779
1988	3,704	1,857

SOURCE: Araujo Jr. (1990).

Argentina too has expanded its role as a regional supplier to Brazil, increasing its share of regional imports from 28% in 1980 to 38% in 1988, making it the largest supplier of Brazil. Although over 40% of Argentinian imports into Brazil consist of agricultural products, the role of capital goods has recently increased by virtue of the agreement signed between the two countries. Thus, the share of capital goods in Argentinian exports to Brazil has practically doubled from 1986 (the year the capital goods protocol was signed) to 1988, when it amounted to 16% of total exports. The value of such exports increased by the same ratio.

Brazilian exports to those four countries consist mainly of capital goods (35% in 1988) and of intermediary products (56%), with consumer goods having their share reduced from 17% in 1980 to 9% in 1988.

Exports of capital goods deserve a more detailed analysis since their share of exports and their value has declined over time. As shown in Table III-21 such exports to all countries were reduced from 1980 to 1988, except for Venezuela, where they increased by 2.5 times, despite the reduction of Brazilian imports from that country. Such evolution reflects the economic conditions of the region and the relative increase of exports in 1988 can be ascribed to the efforts of Brazilian firms to export in order to compensate for the crisis of the internal market.

Table III-21

BRAZILIAN EXPORTS OF CAPITAL GOODS TO ARGENTINA, MEXICO, URUGUAY AND VENEZUELA
IN VALUE (US\$ MILLIONS) AND AS % OF TOTAL EXPORTS 1980/88

YEAR	ARGENTINA		MEXICO		VENEZUELA		URUGUAY	
	value	(%)	value	(%)	value	(%)	value	(%)
1980	357	32.7	311	66.2	91	39.6	150	48.4
1981	269	30.6	379	58.9	141	34.6	198	53.1
1982	114	17.1	126	38.8	179	37.8	48	34.8
1983	165	25.2	42	24.3	125	46.5	26	25.0
1984	171	20.0	67	23.5	153	41.9	34	25.0
1985	140	25.5	97	43.9	156	53.1	48	34.3
1986	170	24.9	66	42.3	215	61.6	72	35.5
1987	252	30.3	81	47.4	208	55.6	126	47.2
1988	240	24.5	116	42.3	231	45.9	131	40.8

SOURCE: Araujo Jr. (1990).

Within this context, it is useful to examine in more detail the Capital Goods Agreement (CGA), one of the protocols signed between Argentina and Brazil in 1986. The most successful of the sectoral trade agreements established at that date, the CGA illustrates well both strengths and weaknesses of the way in which Latin American integration has been carried so far.

The CGA establishes a partial free trade zone, circumscribed to capital goods. The universe of products embraces the majority of electrical and non-electrical machinery, their parts and components and non-automotive transport equipment. It excludes electronic products because of the Brazilian Information Policy and automotive transport equipment, which is covered by another sector agreement (which has not progressed).

From such universe of products, the two countries are to agree on a "common list" for which mutual tariffs will be nil and all other import restrictions will be eliminated. Thus the products included in the common list should be treated as "national products", with all the ensuing preferences vis-à-vis third parties.

As originally conceived the CGA should be a programme of industrial complementation between the two countries, based on intraindustry trade.

From the signature of the CGA to the present there were five rounds of negotiation of the common list. Within the list predominates non-electrical machinery produced in short batches (e.g. machine tools). Trade on parts and components is limited to a percentage of commerce of finished products. Custom-built equipments were excluded, pending upon specific negotiations, among others, on purchase policies of State enterprises (which are the main market for such goods) and credit facilities.

As shown in Table III-22 the CGA had remarkable results in terms of volume of trade, which increased four-fold over the period 1986/88.

The share of trade on capital goods between the two countries covered by the Agreement has also increased, especially for Argentina, where exports under the CGA accounted for 31% of her exports of capital goods to Brazil in 1988. For Brazil, such share is much less important — 14% in 1988. Thus, Argentinian industry seems to have benefited most, increasing its exports to Brazil over sixteen times over the 1986/88 period.

Machine tools, the core branch of the capital goods industry are the main products exported from Argentina to Brazil having increased their value 28 times from 1986 to 1988. In the last year they accounted for 47% of the total exports under the CGA. Numerical control machine tools (NCMT), which