4.3 The Role and Policy of the Government for Supporting the SMEs

Being aware of the increasing importance of the SMEs which provide a crucial source of entreprenership, production, innovation, employment and exports, most of the countries visited by us have been strengthening their support to SMEs in recent years.

Their supporting programs are principally related to the following themes:

- Boosting business competitiveness including international competitiveness
- Facilitating the access to finance
-Providing necessary information to grow (e.g. technology, quality control, market information, etc.)
- Providing incentives including tax reduction and subsidies
-Developing human resources including training and education

The role and policy of the goverment for supporting the SMEs of selected countries are summarized as below.

(1) Argentina

Economic reforms have taken place in Argentina since 1991. During this period of time, Small and Medium Enterprises have been suffering to cope with the adaptation to the new macroeconomic environment.

Many of the SMEs suffer from inefficiency of management, fund, technology and lack of information system and planification for decision-making.

Since September 1994, the Secretary of Industry have started a supporting program led by a consulting group who provide professional advice to SMEs in different areas. By the end of 1995, they assisted more than 500 SMEs achieving the goal of the Government.

In March 1995, the Law 24467 was enacted which contains various supporting programs to SMEs. Major targeted items are: strengthening of financial support, development of local SMEs, creation of reciprocal guaranty societies, creation of integrated information and advice system, strengthening of INTA, INTI, INTEMIN, expansion of the Supplier Development Program, strengthening of the relationship

between large firms and SMEs, promotion of the access of SMEs to international markets, etc.

The objectives and goals of the Secretary of Mine and Industry for 1996 are as follows:

(a) Provide SMEs with technical assistance in different areas;

- Establish a diagnosis (check-up) of the whole company
- Identify the most important problems
- Promote a cultural change, necessary for the process to come
- Propose recommendations and guidelines which lead to solve the problems in the future
- Follow up the programs for those enterprises which were assisted in 1995.

In 1996, the Secretary of Mine and Industry will keep the same number of enterprises as assisted in 1995, i.e. they will assist newly 350 enterprises plus 150 enterprises selected from those SMEs assisted during 1995. Thus, they will continue to support SMEs together with the expert consultants.

(b) Link their program to other supporting institutions that provide guidance to SMEs.

(c) Establish an information network and database system necessary to obtain cross data of different industrial sectors to formulate a policy of SMEs.

(d) Develop workshops and/or practical courses providing quick response to SMEs that have an immediate impact on them.

(2) Australia

The success of many Australian SMEs came from the implementation of policy by both public and private sectors. Over the last decade the federal government has turned macro and micro-economic policy from the previous "inward-looking" view to that of an export oriented "outward-looking" focus.

The Australian government has implemented reforms designed to increase international competitiveness, remove impediments to business growth, facilitate information including government contracts and programs, and provide education and training.

Small businesses enjoy a high priority in government policy. The government is committed to a consultative approach which has led to increased cooperation and understanding between small business and policy makers. It should be noted that the government does not consciously support one sector of economic activity over another. Therefore the supporting programs are available to all SMEs.

The four main government bodies and their supporting activities are as follows:

- Department Industry Science and Technology (DIST)
DIST is one of the larger federal government departments which include the division of AusIndustry.

AusIndustry has been established with the aim of increasing Australia's international competitiveness and in this report, is responsible for over 500 industry assistance programs (example: R&D tax concession, competitive grants for R&D, etc.)

- The Australian Trade Commission - AUSTRADE

AUATRADE is a federal government agency which has been established to assist companies to successfully market their products and services overseas.

Its financial support programs include export market development grants, international trade enhancement scheme, etc.

- The Department of Employment, Education and Training (DEET)

DEET engages in enhancing Australia's international competitiveness through the development and maintenance of Australia's employment infrastructure and utilization of human resources

DEET offers a range of incentive programs to assist companies in employing and training personnel, improving employer and employee relationship as well.

- AUSAID

AUSAID is a division of the department of foreign affairs, and runs a number of programs which include the private sector linkages program and the development of import finance facility.

In addition to the above mentioned four government bodies, "Office of Small Business" provides advise to create new business or to expand the established business.

And "NIES" (National Industry Extensive Service) provides advise to increase exports and/or replace imports.

(3) Brazil

The features and basic policy of the Brazilian supporting measures are; emphasis on micro companies rather than small and medium enterprises; geographical dispersion of industrial production; and increase of international competitiveness. In addition, in order to support all the MSMEs, the government is making effort to decrease underground economy transforming the informal sector into the formal sector. (The number of firms of the informal sector is said to be six million)

The present National Administration of President Cardoso has prepared a proposal (white paper) on "Industrial, Technological and Foreign Trade Policy" which includes the main outlines of his program for the 1995-1999 period.

The objectives of the program are:

- Increase production and goods and services consumption, based on the economic growth and foreign trade
- Geographical dispersion of industrial production encouraging existing local industries, technology-based venture firms producing new regional investment opportunities
- Improvement of quality, creation of industrial dynamism, training of employees, as well as the correction of labor market deficiencies.

The strategic points of this program consist in the increase of investment, the speed up of technical training and the reinforcement of institutional reforms and updating of public administration.

The designing and implementation of policies will be performed by joint action between the private sector and the coordinator of governmental activities. The proposal includes the implementation of two programs: Small Scale Production Support Program and Brazilian Craftsmanship Program.

The Small Scale Production Support Program intends to clarify the role of the Federal Government, State governments, municipalities, private institutions and civil society. The program will aim at the following measures: a) stimulate the formation of new enterprises and the modernization of the existing ones; b) simplify and differentiate fiscal and legal treatment of micro and small enterprises; c) promote training and

technological innovation; d) promote the integration between large and medium enterprises and micro and small enterprises through sub-contracting and supporting programs; e) facilitate the access to loans and institutionalize of endorsement and guarantees system; f) promote the formation of consortiums and cooperatives; g) support the formation of venture business.

The Brazilian Craftmanship Program aims at structuring legal and normative basis for the sector, creating instruments to make it effective. Its objectives are the creation of specific credit lines, technical assistance to craftmen production and the creation of information system for the sector.

At present, the most important supporting institution in Brazil is SEBRAE which has a wide network all over the country providing MSMEs with useful information and supporting programs to make the sector to become competitive domestically and internationally. Other important institutions are CNI, FINEP, Banco do Brasil, BNDES and IBQP. The details of the activities of those supporting institutions are as mentioned in the previous chapters.

(4) Chile

In the past, after the opening of the economy of Chile, many SMEs lost their share in the local market, and their number decreased substantially in 1980s up until the transfer to civil administration occurred in 1990.

In 1991, the National Small and Medium Enterprises Support Program was launched, and in 1992, a New Technology and Science Program was implemented. Both programs are currently in operation, but they are now being reviewed and evaluated and their implementation methodology is being redefined. The first program is in charge of the Corporacion de Fomento de Chile (CORFO), while the Ministry of Economy is in Charge of the second.

Besides, recently the public and private sector have boosted initiatives in the quality and productivity management areas which intends to support the reform of management, the introduction of entrepreneurial development method and the implementation of productivity strategies.

The technology and Science Program aims at financing infrastructure, service and research activities of universities, research institutions and manufacturing enterprises,

The National Small and Medium Enterprises Support Program, on the other hand, includes the following support items.

- Marketing
- Acquisition of technology
- improvement of management and developing of human resources
- Computerization
- Joint venture between enterprises
- Financing

The Chilean supporting policy for SMEs principally aim at their productive modernization, technical development and export promotion.

The main public supporting institution are CORFO, SERCOTEC, PROCHILE, Fundacion Chile, Banco del Estado de Chile, Banco de Desarrollo and Banco Concepcion.

(5) Mexico

The present government policy is based on the plan called "Plan for Modernization and Development of Micro, Small and Medium Enterprises" implemented in 1991 by the Salinas administration.

The essence of this plan is;

- The formation of consortium to improve the access to funds, raw materials, intermediate goods and local and international market

- Expansion of the network of intermediating offices (bolsa) between large firms and subcontractors

- Promotion of the institutional financial support by NAFIN (Nacional Financiera) and BANCOMEXT (Banco Nacional de Comercio Exterior)

- Promotion of the acquisition of technology and quality control system especially TQC system through research institutions.

In May 1995, the Mexican government established the National Council of SMEs. The Council operates as coordinating body between public and private sectors

and also between local and the central government for the discussion and implementation of supporting policy of SMEs.

The Council has the following objectives:

a) Study, design and coordinate the implementation of support policies directed to improve the competitiveness of SMEs.

b) Promote mechanisms to provide SMEs with information and advisory services concerning trade and marketing, technology, production processes, product design, financing, and standardization of products.

c) Promote the formation of association of SMEs, and a closer linkage with big firms.

d) Develop strategies for export promotion.

e) Activate and develop local industry

As for financing, the Council studies measures to cope with the present financial crisis and to establish long-term supporting measures for SMEs.

Within the framework of the Council, several programs have been prepared for the promotion of specific sectors after the deep study of the sectors which suffered adverse influence by the opening of economy. Those programs will contribute to increase the competitiveness of industrial sectors which are facing difficult situation such as leather and footwear, textiles, clothing, and furniture.

The main public supporting organizations and institutions for SMEs are SECOFI, CANACINTRA, NAFINSA, BANCOMEXT and CONACYT.

(6) Japan

The Japanese government's recognition of the importance of SMEs in the Japanese economy, as well as their relatively disadvantageous position vis-a-vis large firms, led to active SME promotion policies in the post-World War II period. In the early post-World War II period, heavy and chemical industries were strongly promoted, and the basic principle behind SME policies was to protect SMEs from the large firms. By the mid-1950s this principle had changed from protection to promotion and modernization of SMEs. Behind the change in emphasis was the productivity disparity

between Japan's large firms and SMEs, which the government wanted to eradicate in order to achieve further economic expansion.

As the Japanese economy matured after a period of rapid economic growth in the 1950s and 1960s, the objectives of SME policies changed again. In the early 1970s, the emphasis of SME policies shifted from encouraging growth -oriented, large-scale production supporting to high quality, information-intensive production. Moreover, since the 1970s, policies have encouraged SMEs to shift from declining to growing sectors, and to cope with rapidly changing economic developments such as yen appreciation, two oil crisis, labor shortages, and environmental problems.

SME policies in Japan are basically formulated at the central government level, at MITI and its subordinate Small and Medium Enterprise Agency. These policies are then implemented mainly by local governments, public institutions, and semi-public institutions. Most institutions have national-prefectural linkages. the central body for the formulation of SME policies is the Chusho Kigyo Seisaku Shingikai (SME Policy Council), which consists of representatives from business, academia, labor unions, journalism, and the Housewives Federation, among others.

Instruments applied to carry out SME policies include financial, tax-subsidy, and regulatory measures. In the case of Japan, technical support for SMEs came largely through private channels, including parent firms, equipment suppliers, and other firms in the same line of business. Public institutions played only a subordinate role. Marketing support also come largely from parent firms, trading companies, and other private sources. Producers of intermediate goods in particular - such as auto parts and synthetic textiles - relied heavily on subcontractors.

Public support is more important in the area of finance. Most loans for Japan's SMEs were provided under competitive market conditions but three sources of direct credit - loans from specialized parastatals, loans channeled through local government, and loan guarantees - accounted for about 20% of all SME borrowing and 35% to 60% of investment borrowing.

The main public financial institutions are the People's Finance Corporation, Japan Finance Corporation for Small Business, the Central Bank for Commercial and Industrial Cooperatives, Credit Guarantee Corporation and Small Business Credit Insurance Corporation (details of their activities see 1.3.2.1)

Those financial institutions contributed greatly to the growth of SMEs facilitating their access to financing. Default rates of their financing average less than one-half of one percent of outstanding loans. In financing Japan successfully directed credit to SMEs in a well-functioning, prudential financial system.

(7) Korea

In the case of Korea, policies for the SMEs might be classified broadly into two categories.

One is the exclusive and discriminative policies between large and small business. The other is the complementary and cooperative policies between the two.

The policy measures classified in the former category include; the compulsory loans system, in which all commercial banks are required to lend more than a certain portion of annual incremental loans to SMEs; the reserved manufacturing system in which certain goods are reserved by law exclusively to be manufactured by SMEs; the trade financing system to be accessible only by SMEs; and the different tax incentives between large and small business.

In the latter category of the policy measures, the sub-contracting system is the most representative one. In 1975, the government introduced "The Law Promoting the Organization of SMEs into Sub-Contracting". The law was revised in 1978 when the government undertook measures to enhance the sub-contracting practice.

Preferential support, including the supply of loans, tax break for R&D and development of human resources, easy access to foreign capital and technical assistance, was given to the designated manufacturing sectors and production items (42 sectors and 1,160 items in 1993). Under this law, parent companies have to make clear product designs and specifications, ordering methods and delivery dates and notify these conditions before agreeing a long-term contract (minimum three years).

A parent company and the association of its suppliers must co-operatively submit a "common business plan" to the Ministry of Trade and Industry. The common business plans accepted in 1992 covered 139 parent firms and 1,261 SMEs.

This system has been contributing to increase the productive capacity and competitiveness of SMEs improving their technology and quality of manufactured goods.

(8) U.S.A.

In the United States, the government regards SMEs as a vital source of economic growth and job creation. As mentioned, 600,000 new firms have been born every years and increasing attention is now given to SMEs in alleviating the problem of industrial restructuring and accompanying worker dislocations.

The specific features of the Government policy are summarized as follows.

1) The Government does not have a specific industrial policy, that means the Government does not consciously support one sector of economic activity over another.

2) Special consideration has been taken to the allocation of the federal procurement to small business.

3) The government provides minority-owned firms or women-owned firms with supporting measures paying special attention to them.

The most significant government program in support of SME is run by the Small Business Administration (SBA) of the U.S. Department of Commerce which provides loans and loan guarantees for qualified SMEs. The SBA has a number of programs and services available. They include training and educational programs, advisory services, publications, contract assistance in addition to financial programs. The Agency also offers specialized programs for women business owner, minorities, veterans, international trade and rural development.

The share of federal procurement that went to small firms in fiscal year 1992 was 31%, up 1% over 1991. Small Business were awarded $61.6 billion of a total $199.8 billion in goods and services purchased by the Federal Government.

In the same fiscal year, minority-owned firms received approximately 4.1% of all federal procurement while women-owned firms received 1.3%. Overall, women and minority owned businesses are the most rapidly growing segments of federal contacting markets.

In financing the SBA guarantee program enables SMEs to provide longer-term financing which is not available on reasonable terms through normal lending channels.

In order to promote equity financing of SMEs, the Government has taken special measures to make the stock market and venture capital market grow. As a result of the development of those market, SMEs have been actively raising necessary fund through debt issues and initial public offering.

Another important supporting measure is federally-funded human resources development program for SMEs which is called Job Training Partnership Act (JTPA). JPTA is intended to be a partnership between the government and private sector employees. The intended beneficiaries of JPTA are individuals with primarily the unemployed and economically disadvantaged eligible to receive training and other services. JTPA councils at the local level and SMEs can be reimbursed for their on-the-job training costs when they hire JTPA participants.

Chapter 5
The Autoparts Sector

5.1 Focus of the Case Study

The principal aim of this chapter is to present a case study of Argentine PyMEs taking an example of the autoparts sector. It will eventually lead to package of policy recommendations including the assistance of finance, technology and quality control.

Nevertheless, not all the conditions surrounding autoparts PyMEs are applicable to other sectors. Importance of an industry-specific policy package, though not very fashionable in its philosophy at present, is well recognized for the automobile industry even in the NAFTA countries due to its massive externalities. Such special treatment should deal at least with the following two issues:

(1) Trade and investment agreements have a major impact on its development, because of the large economies of scale both in the assembly and autoparts sectors;

(2) As assemblers have accumulated a vast amount of resources regarding the above three capabilities, they may make a vital contribution to the development of the autoparts sector.

In order to formulate policies promoting PyMEs in the Argentine autoparts sector, detailed analysis needs to be conducted on: (i) growth dynamics created by the Mercosur framework, (ii) assemblers' procurement scheme through the trade agreement, and (iii) their system of fostering autoparts suppliers.

The institutional nature of Mercosur (Section VI.5.2) will become clearer by contrasting it with the ASEAN Free Trade Agreement / Brand to Brand Complementation (Section VI.5.6). The trade agreements and the automobile regime of each country are not the sole factors affecting the scale and direction of autoparts procurement within and between the Mercosur countries. It also depends on the locational strategy of assemblers (Section VI.5.3) as well as on the relative capability of autoparts suppliers especially in Argentina and Brazil (Sections VI.5.4 and VI.5.5). Fostering programs of the assemblers could be revitalized in better co-ordination with the government policy to promote the formation of subcontracting relationships (Section VI.5.7). The latter will constitute a framework of the package towards autoparts PyMEs, in which policies of the three issue-oriented assistance are combined according to the capability of target PyMEs on an appropriate timing (Section VI.5.8).

Although the research subject is extremely broad, issues directly relevant to the PyMEs policy will be discussed with priority. Therefore, factors related to the domestic

demand for automobiles, such as macroeconomic stability and growth perspectives, income distribution, population structure, consumer credit, second-hand market and mandatory inspection and maintenance, may not be specifically touched upon. Similarly, PyMEs policies beyond the assistance of finance, technology and quality control (e.g. regional policy, industrial infrastructure and estate planning) will not be referred to.

5.2 Mercosur

5.2.1 Introduction

Trade policy, like foreign exchange / foreign direct investment regulation and other macroeconomic policies, has fundamental impact on the local automobile and autoparts industry. Trade liberalization obviously threats infant or inefficient industries and forces them to exit or to improve product quality and productivity. Through specialization and exportation, however, it also brings about larger market and scale economies, without which local industries cannot stand the above threat. Even the best PyME policy, if any, would not allow autoparts suppliers to survive shortage of demand.

In the age of WTO, multinational automobile assemblers can secure an access to the world-wide car market and autoparts sources. Global liberalization could facilitate relocation of assembly plants, encourage specialization of local models per brand, and consequently, increase their productivity. Nevertheless, weak competitiveness may result in massive imports of vehicles and autoparts and unsustainable trade imbalances. Therefore, limited global liberalization is often supplemented with more advanced regional liberalization so that scale economies may be enough and trade imbalances may be mitigated. This will also enable member countries to negotiate as a "regional block" with other "blocks"

Mercosur is a customs union made of Argentina, Brazil, Paraguay and Uruguay. Customs union abolishes intra-regional tariffs and harmonizes extra-regional tariffs, finally aiming at becoming a common market where goods, labor and capital move freely within the region. However, this customs union is not yet completed and full of exceptions. Above all, the automobile industry is treated with special care even in industrially advanced countries due to its extremely large externalities on production and employment. Bilateral agreements between Argentina, Brazil and Uruguay introduced complicated sets of reservations to the basic trend of liberalization.

This section focuses on Protocol 21 and its amendments between Argentina and Brazil, the most important component of the regional framework. First, the main content of these agreements is elaborated. Second, statistics are presented related to the trade of vehicles and autoparts between the two countries. The analysis will give us a picture of the comparative advantage of the Argentine automobile and autoparts industry and a plausible division of labor with the Brazilian counterpart.

5.2.2 Institutional Framework

Although the bilateral agreements are quite complicated, the minimum essence of the trade regime can be summarized as follows:

(1) Specialization through this partial liberalization is pursued at the product levels of vehicles as well as autoparts.

(2) However, assemblers do not have to balance the vehicle trade. For example, deficit of vehicles could be compensated by surplus of autoparts and vise versa.

(3) Each country determines the quotas and tariffs imposed on imports from outside Mercosur.

(1) Specialization of Vehicles and Autoparts Production

The tariffs on the vehicles and autoparts trade between the two countries are zero, as far as each assembler balances the overall trade. On the Argentine side, each US$ 1.00 of exports to Brazil is compensated with US$ 1.20 of imports from Brazil. The absence of tariffs on the intra-regional trade of vehicles, though constrained by the compensation rule, urges assemblers to reduce the number of models and exploit on the complementarity between their plants in the two countries. This shows a contrasting approach with the ASEAN style of regulating trade in the automobile industry, which has so far halved the tariff on the intra-regional trade of autoparts only (see Section VI.5.6).

(2) Industry-Wide Compensation by Each Brand

Each assembler should achieve the compensation but can add up the balance of vehicles and promoted autoparts (i.e. excluding the after-market components). That is to say, large imports of autoparts are not necessarily compensated by exports of autoparts but by vehicles as well. The actual ratios of Argentine imports from / exports to Brazil of vehicles and autoparts[1] were 1.39/1.00 and 1.63/1.00 (US$ basis) respectively in 1993. Because assemblers can control the trade of vehicles and internally-produced autoparts (including those made by their affiliated suppliers) more easily than that of autoparts made by independent suppliers, the politically-set ratio of 1.20/1.00 attracted them to invest in Argentina. By exporting vehicles and internally-made components to Brazil, Argentine plants could import more components from Brazil at the zero tariff. This "carrot" was reinforced by the Argentine Decree 683/94 to the effect that 40% of the assemblers' fixed-asset investment can be assessed to calculate the compensation.

[1] The Brazilian prefer to compare the number of assembled units: 4.06/1.00 in the same year.

(3) National Autonomy as to the Extra-Regional Trade

The extra-regional trade of vehicles and autoparts is entrusted to each country, although Mercosur is basically a customs union. In Argentina, the quota on car imports is set at minimum 10% (15% in the case of commercial vehicles) of the expected local production unit but does not include the compensated imports by assemblers and distributors. In addition, individuals are not constrained by the above quota as far as they import (i) locally-produced models, (ii) models imported by assemblers and distributors at present, or (iii) their equivalents (not exceeding 20% of the production in the same year).[2] The rates of duty on vehicles are 2% for those compensated by assemblers with extra-regional countries, 15% for those compensated by distributors, and 30% (25% for commercial vehicles) for those uncompensated (including imports from Brazil and Uruguay) or imported by individuals.

The local contents ratio[3] can be seen as a kind of quota on importing autoparts. In Argentina, 40% (42% for commercial vehicles) can be procured from outside the Mercosur region.[4] However, even Mercosur products cannot be regarded as local when they are not compensated. The duty on non-local autoparts are varied from 12% to 18% depending on the nomenclature, but those compensated are treated with 2% duty.

On the other hand, Brazil did not have any quota or compensation scheme on car imports in 1994. The duty went down to the range between 20% and 32%. The local contents ratio was no longer controlled, except for the "popular cars" (with a less than 1,000cc engine) at 70%. Autoparts imported from Argentina were automatically regarded as local. The duty on non-local autoparts was also reduced to a maximum of 20%.

It was agreed that the duty would be gradually converged into the Mercosur Common External Duty (20%) by the beginning of 2000. Due to the balance-of-trade difficulties, however, Brazil suddenly pulled up the duty on cars to 70% in March 1995. Moreover, the Government decided in June to limit the car imports for the rest of the year to 50% of the amount imported so far that year. This trade dispute is discussed in Sub-Section VI.5.2.5 in more detail.

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[2] This personal import is allowed so as to put pressure on the price of locally assembled cars.

[3] Some concessions are given to in-coming investors as to the compensation and local contents regulations.

[4] This may not be a very precise expression, as the 60% local contents ratio based on the AHORRO value does not necessarily mean a possibility of importing 40%. This system modifies the measurement of local contents in view of avoiding underbillings and raising local value-added. Components are classified into several groups, each of which has an index based on US$ per kilo. This index is low for rough casting/forging but high for instruments, for example. The local contents ratio is then calculated in the following way:
(imported amount)*(index)=(AHORRO value),
(AHORRO for vehicles)=(AHORRO for imported autoparts)+(local value added),
(local contents ratio)=(AHORRO for imported autoparts)/(AHORRO for vehicles).

5.2.3 Trade of Vehicles

Table VI-5-2-1 shows the basic characteristics of the vehicle trade in the two countries. Comparing the two figures of the Argentine IoC (Index of Competitiveness), it can be said that Argentina enjoys a fairly balanced division of labor with Brazil but has little competitiveness in the global automobile market.

Table VI-5-2-1: Vehicle Trade in Argentina and Brazil

(1993; US$ million)

Argentina		Brazil	
Argentine Exports to Brazil	225		
Argentine Imports from Brazil	314		
Balance	-88		
IoC*	-0.16		
Argentine Exports to the World	287	Brazilian Exports to the World	1,758
Argentine Imports from the world	1,161		
Balance	-874		
IoC	-0.60		
Exports to Brazil/World	78.4%	Exports to Argentina/World	41.8%
Imports from Brazil/World	27.0%		

* : Index of Competitiveness = Balance / Total of Exports and Imports

Source: ECO-AXIS SA

As for the significance of the intra-regional trade, Brazil is by far the largest customer of vehicles made in Argentina. The Argentine market is also very important for assemblers in Brazil, but other countries absorb 60% of the exports. In the 1990s, Brazil has been phased out of the core program of assemblers' world strategy; instead, this country is increasingly located as the regional center. For example, it is not very clear how much Fiat can export Uno to Italy in face of the plant shutdowns there, or that GM can export to Mexico after NAFTA. On the other hand, Brazil supplies about a quarter of vehicles imported by Argentina.

Table VI-5-2-2 shows the vehicle trade between the two countries in detail. From the IoC figures, it appears that the trade of gasoline passenger cars, gasoline trucks and diesel trucks is nearly balanced, while Argentina almost unilaterally imports diesel passenger cars, trailers and buses.

Table VI-5-2-2: Balance and Competitiveness of the Vehicle Trade by Nomenclature between Argentina and Brazil

(1993; US$,000)

	A to B	B to A	Total	Balance	IoC*
Vehicles					
Diesel Truck	54,144	49,244	103,388	4900	0.05
Reciprocal Truck	19,894	19,939	39,833	-45	0.00
Reciprocal Passenger Car	150,623	179,918	330,541	-29,295	-0.09
Trailer	25	12,935	12,960	-12,910	-1.00
Diesel Passenger Car	47	33,881	33,928	-33,834	-1.00
Bus	0	15,122	15,122	-15,122	-1.00
Total (including others)	225,235	313,571	538,806	-88,336	-0.16

*IoC: Index of Competitiveness = Balance/Total
Source: ECO-AXIS SA

However, such statistics still hides a more subtle division of labor between the two countries. During the field work, it was often said that Brazil produces almost a complete line-up, and in particular, 2-door small models (45% of the total production). Argentina is cutting off the number of models due to complementation with Brazil and becoming the production center of pick-ups. Brazil has recently introduced brand-new models one after another, while Argentina still produces older models and models not very popular in Brazil (e.g. Escort 4-door). In addition, a large portion of the Argentine exports to Brazil are accounted for by two French brands, Renault and Peugeot, which are not yet assembled in Brazil. Discussion of this issue will be elaborated in Section VI.5.3.

Preempting the analysis to be conducted in Section VI.5.6, ASEAN countries have much more diverse levels of income per capita, and thus, levels of motorization. In such a situation, models developed in the assemblers' headquarters may not satisfy the demand widely from all the member countries. Introduction of "Asian models" can be seen as an effort to obtain the largest segment of the market. In contrast, the vehicle trade between Argentina and Brazil is less likely to face a similar problem, as the two countries have already achieved a fairly high level of motorization.

5.2.4 Trade of Autoparts

Table VI-5-2-3 shows the basic characteristics of the autoparts trade in the two countries. It should be noted that the scale of the autoparts trade exceeds by far the vehicle trade. Above all, Argentina imports autoparts twice as much as vehicles from Brazil. Brazil was proud of a positive IoC for autoparts with the rest of the world in the early 1990s. Brazilian autoparts accounted for approximately 11% of the total trade between the Mercosur members in 1992. Although the Argentine exports of autoparts to Brazil also exceed the vehicle exports, its trade deficit of autoparts is worse than that of

vehicles. In other words, Argentina suffers from a slightly lower IoC with Brazil for autoparts than for vehicles.

Table VI-5-2-3: Autoparts Trade in Argentina and Brazil

(1993; US$ million)

Argentina		Brazil		
Argentine Exports to Brazil	396			
Argentine Imports from Brazil	643			
Balance	-247			
IoC*	-0.24			
Argentine Exports to the World	602	Brazilian Exports to the World	2,665	
Argentine Imports from the world	1,292	Brazilian Imports from the World	1,700	**
Balance	-690	Balance	965	
IoC	-0.36	IoC	0.22	
Exports to Brazil/World	65.7%	Exports to Argentina/World	22.2%	
Imports from Brazil/World	49.8%	Imports from Argentina/World	18.6%	***

* : Index of Competitiveness = Balance / Total of Exports and Imports
** : estimated
*** : in 1992
Source: ECO-AXIS SA

As for the significance of the intra-regional trade, the Brazilian market for Argentine suppliers is much more important than the Argentine market for Brazilian suppliers. Unlike the vehicle trade, Brazil exports autoparts mainly to Europe and the USA. There are a number of large Brazilian-owned suppliers such as Metal Leve (pistons), Cofap (shock absorbers), Varga (breaks), Sabo (joints), among others. Exports to the sophisticated OEM market have provided them with precious opportunities to gain access to advanced product designs and enlarge their production scale, which is generally larger for autoparts than for vehicles.

Table VI-5-2-4 shows the autoparts trade between the two countries in detail. From the IoC figures, the autoparts of which Argentina accumulates trade surplus with Brazil are limited to reciprocal engines, gear boxes and engine components. These are mainly produced within assemblers' plants or by their autoparts subsidiaries. According to Table VI-5-2-5, assemblers account for a large proportion of the autoparts exports in both countries, but the figure is almost 70% in Argentina. On the other hand, imports from Brazil show a high level of dispersion. Such a contrast may indicate existence of the capability gap between local autoparts suppliers in Argentina and Brazil. Sections VI.5.4 and VI.5.5 will come back to this issue.

Table VI-5-2-4: Balance and Competitiveness of the Autoparts Trade by Nomenclature between Argentina and Brazil

(1993; US$,000)

	A to B		B to A		Total	Balance	IoC*
Autoparts (up to the top 20th category)							
Reciprocal Engine	2	86,730	19	1,714	88,444	85,016	0.96
Gear Box	1	164,414	4	48,729	213,143	115,685	0.54
Components of Reciprocal Engine	4	18,503	11	12,767	31,270	5,736	0.18
Shaft with Differential and Transmission	5	16,166	7	16,908	33,074	-742	-0.02
Equipment Controlling Liquid and Gas	17	637	20	1,337	1,974	-700	-0.35
Electric Ignition	10	6,462	10	13,823	20,285	-7,361	-0.36
Brake and its Parts	9	9,922	6	26,951	36,873	-17,029	-0.46
Tire	7	12,642	5	45,593	58,235	-32,951	-0.57
Wiper and Illumination	13	2,858	14	11,432	14,290	-8,574	-0.60
Body and Cabine	3	36,524	1	170,165	206,689	-133,641	-0.65
Other Components	6	13,595	2	67,512	81,107	-53,917	-0.66
Steering	12	2,947	8	15,472	18,419	-12,525	-0.68
Bolt, Nut and Washer	14	1,622	16	8,747	10,369	-7,125	-0.69
Chasis with an Engine Incorporated	8	11,304	3	66,465	77,769	-55,161	-0.71
Suspension	18	633	13	11,591	12,224	-10,958	-0.90
Pump	19	316	15	9,286	9,602	-8,970	-0.93
Measuring Equipment	20	193	18	6,353	6,546	-6,160	-0.94
Wheel	11	3,426					
Spring	15	1,547					
Radiator	16	788					
Supporting Shaft			9	14,280			
Bumper			12	12,380			
Lock			17	7,647			
Total (including categories below 21th)		395,509		642,982	1,038,491	-247,473	-0.24

*IoC: Index of Competitiveness = Balance/Total
Source: ECO-AXIS SA

Table VI-5-2-5: Exports by Assemblers and Independent Suppliers

(1993)

	Market			Exporter	
	OEM	Export	After-Market	Assemblers	Suppliers
Argentina	60%	15%	25%	68%	32%
Brazil	65%	17%	18%	39%*	61%*

*: preliminary figures. It should be noted, however, that this proportion seems to have been reversed in 1994, i.e. assemblers 55% and suppliers 45% (interview at Sindipeças).
Source: CAIA Catalogue 1995 for Argentine.
Autopeças Desempenho do Setor 1974/1994 and Sindipeças/BA&H, 1994, p.9

When local suppliers are not well established, assemblers can invest in an internal division or subsidiary to produce autoparts so that the local contents ratio may be satisfied. As assemblers have abundant financial and technological resources, this is quicker than to promote independent suppliers. If such a tendency continues, the current division of labor could be drastically changed in quite a short period of time. However, Table VI-5-2-6 shows remarkable stability in the trading pattern between Brazil and Argentina. One reason could be that out-sourcing is more efficient than vertical integration, although the former may take more time. The issue of out-sourcing and sub-contracting will be dealt with in Section VI.5.7.

Table VI-5-2-6: Recent Change in the Balance of Trade and Competitiveness of Selected Autoparts

(1992-94: US$,000)

Autoparts*	Class	1992				1993				1994			
		AtoB	BtoA	Balance	IoC**	AtoB	BtoA	Balance	IoC	AtoB	BtoA	Balance	IoC
Gear Box	870840	56,532	52,071	4,461	0.04	164,414	47,042	117,372	0.56	208,629	48,728	159,901	0.62
Shaft with Differential and Transmissio	870850	8,900	28,350	-19,450	-0.52	16,166	16,908	-742	-0.02	17,026	27,654	-10,628	-0.24
Brake	870839	3,698	15,615	-11,917	-0.62	9,534	23,441	-13,907	-0.42	10,947	31,208	-20,261	-0.48
Body Components	870829	19,274	102,357	-83,083	-0.68	36,374	146,108	-109,734	-0.60	45,584	157,595	-112,011	-0.55
Steering	870894	4,449	10,584	-6,135	-0.41	2,947	14,999	-12,052	-0.67	3,847	18,065	-14,218	-0.65
Other Components	870899	9,120	54,584	-45,464	-0.71	13,595	67,512	-53,917	-0.66	14,306	92,862	-78,556	-0.73

*The definitions of gear box, brakes, body components and steering are narrower than those in Table 8-1.

**IoC (Index of Competitiveness) = Balance/Total

Source: INDEC

5.2.5 Recent Disputes and a Future Trading Pattern between Argentina and Brazil

The Automotive Regime, which was accepted by the bilateral agreement, is widely regarded as having made a great contribution to attracting assemblers' investment in Argentina. The situation is acceptable to the multinational assemblers located in Brazil, but autoparts suppliers in Brazil felt themselves threatened. Assemblers imported more autoparts than vehicles from Argentina to Brazil, as their models produced in Argentina were outdated or not popular in Brazil. They asked the suppliers to invest in Argentina but at the same time hurried to establish their autoparts subsidiary, as autoparts made in Brazil are not treated as local unless compensated. Brazilian suppliers complain that the Regime was accepted when Mercosur was a distant future: "now that it is in full scope, Argentina should have terminated the regime at the end of 1994 as initially decided."

Suffering from soaring imports, Brazil suddenly raised the duty on automobiles to 70% in March, 1995. Moreover, the entire Mercosur framework was at bay in June when quota was applied to the imports from Argentina. Discomfort of the Argentine side is understandable, as the cause of the problem cannot be attributed to exports from Argentina.

Table VI-5-2-7: Vehicle Imports of Brazil

(US$,000 - CIF)

	1994 (Jan.-Dec.)		1995 (Jan.-May)	
Germany	129,610	14%	418,845	39%
Italy	276,206	29%	132,862	12%
US	125,256	13%	128,182	12%
France	55,487	6%	105,377	10%
Japan	107,076	11%	98,131	9%
Argentina	129,225	14%	63,330	6%
Others	131,996	14%	125,576	12%
	954,856	100%	1,072,303	100%

Source: SRFF/COTEC-CNI

Although the quota was an emergency measure, the high tariff continues to attract direct foreign investment of new assemblers. The Brazilian government has advanced to establish a new automotive regime similar to that of Argentina on 10 January 1996:

(1) The local contents ratio is 60% with three-year concessions to 50% for newly-investing assemblers and new models of the present assemblers.

(2) The tariff on capital goods is reduced by 90% to 2%. However, this reduction is applicable only to the FOB value of imports below the purchase of local capital goods by 1997, and below the two-thirds of the local machinery purchase from 1998 to 1999.

(3) The tariff on raw materials, autoparts and accessories/consumables is reduced by 85% to 2.8% in 1996. However, this will gradually go up to 10.8% in 1999. Imports of raw materials at this preferential rate is limited to the FOB value below the purchase of local products.

(4) The tariff on vehicles imported by the assemblers located in Brazil is halved to 35%. However, (i) the total of automobile-related imports from the other Mercosur countries, (ii) autoparts imports at the preferential rate from the rest of the world, (iii) all the vehicle imports from the rest of the world, and (iv) machinery imports at the preferential rate from the rest of the world should be within the quota limitation. The quota is calculated by the following formula.

Box VI-5-2-1: Formula to Calculate the Quota

Quota = Net Exports + Bonus (up to 37% of Net Exports)
Net Exports = FOB Value of Direct and Indirect Exports
- FOB Imports using the Draw-Back System
- Commission Payments and Credits
Bonus = (0.2 x FOB Exports)
+ α x Investment in Local Machinery
+ β x Machinery Imported at the Preferential Rate
α = 1.40 in 1996, 1.20 in 1997, 0.95 in 1998 and 0.70 in 1999.
β = 1.00 in 1996-97, 0.95 in 1998 and 0.70 in 1999.

More over, the autoparts imports should be below two thirds of this quota.

(5) If the quota and local contents regulation are not observed, the assemblers have to pay extremely high fine.

The Brazilian Automotive Regime was accepted by Argentina on 22 January 1996. However, such quota and local contents ratio no doubt violate WTO's TRIM regulation. Brazil submitted an application for waiver to the effect that this regime aims at equalizing competitive policies and conditions with Argentina to accelerate development of the regional common market.

Summarizing the argument, a preliminary vision of the automobile/autoparts trade between Argentina and Brazil is presented here:

- Argentina shows trade deficits both for vehicles[5] and autoparts at present.

[5] In the period from January to October in 1995, Brazil exported 94,154 units to and imported 16,583 units from Argentina

- In the autoparts sector, many independent suppliers could not survive the lengthy economic stagnation. Assemblers have made efforts to restore the local supply basis through internal production and autoparts subsidiaries so that the local contents regulation is cleared. Nevertheless, such vertical integration now suffers from inefficiency. Nor can it cope with the new rule to the effect that 25% of the value of exported vehicles has to be procured from independent suppliers (to be referred later).

- Although promotion of local suppliers is essential, it seems that even successful suppliers are unlikely to export a large amount of their products directly. Therefore, autoparts exported from Argentina may be limited to engine components, transmissions, body components, etc. for the time being.

- The recent macroeconomic stability, the Automotive Regime / Protocol 21 and the Mercosur Agreement have created an atmosphere attractive to automobile assemblers. Exports of vehicles are thus promising to offset deficits of the autoparts trade with Brazil. However, the newly introduced regime of Brazil and its lasting high tariff probably redirect part of assemblers' investment towards Brazil. Moreover, the size of the local market in Argentina does not allow them to produce efficiently several models per brand.

- Therefore, assembling plants in Argentina tend to concentrate on a few models, of which a high proportion of the production volume will be exported so that the trade deficits caused by importing autoparts and various models can be further compensated. Even so, balancing the trade in the automobile industry as a whole seems to be extremely difficult.

The next section (Section VI.5.3) will briefly review the characteristics of the local markets in Argentina and Brazil, and then study the production capacity and business strategy of automobile assemblers.

5.3 Dynamics of the Mercosur Automobile Industry

5.3.1 Past Trend of the Production and Market in the Argentine and Brazilian Automobile Industry

The production of automobiles in Argentina and Brazil have experienced large fluctuations for the last fifteen years (Tables VI-5-3-1). The industry grew very fast in the 1990s to reach the highest in the history in 1994. In 1995, however, the growth slowed down due to the so-called Tequila Shock in Mexico. It is said that Argentina suffered from 25-30% reduction, while Brazil managed to break the record again thanks to the boom in the first half of the year.

The main reason for the past stagnation was the depression of domestic market after stabilization programs were introduced to get out of the debt crisis. Brazil was able to cover the loss to some extent by aggressive exports, but the Argentine industry faced in 1990 the market size which was less than 30% of 1980. However, its recovery was quick once the macroeconomic stability started to bring back foreign capital, also encouraged by Protocol 21 and the Automotive Regime.

At the same time, the lower tariff and margin reduced the car price. The lower price then raised car imports and caused balance-of-trade problems in the two countries. In Argentina, the economic slowdown played a role of limiting car imports in 1995 and gave the country a breathing space. In contrast, Brazil saw a complete turn-around of the car trade in the early 1995. As a result, it introduced such emergency measures as high tariff and quantitative import restriction, which caused serious disputes with Argentina and generated anxiety in the mind of assemblers (see Sub-Section VI.5.2.5).

Table VI-5-3-1-(a): Production and Sales Statistics of the Argentine Automobile Industry

(units)

	Production	Exports	Internal Sales	Imports	Domestic Market
1980	281,793	3,607	275,058	68,361	343,419
1981	172,363	285	178,848	60,126	238,974
1982	132,117	3,234	131,805	5,339	137,144
1983	159,876	5,202	150,565	1,075	151,640
1984	167,323	4,243	165,059	519	165,578
1985	137,675	774	145,524	747	146,271
1986	170,490	357	165,575	1,049	166,624
1987	193,315	460	190,827	1,530	192,357
1988	164,160	1,662	162,517	1,379	163,896
1989	127,823	1,841	132,921	642	133,563
1990	99,639	1,126	94,787	1,173	95,960
1991	138,958	5,205	137,175	28,631	165,806
1992	262,022	16,353	243,363	105,882	349,245
1993	342,344	29,976	311,213	109,637	420,850
1994	408,777	38,657	360,721	174,871	535,592
1995Oct	244,018	44,382	191,201	85,274	276,475

Source: Anuario Estadistico 1994, ADEFA, and Informacion de Prensa, octubre 1994, ADEFA.

Table VI-5-3-1-(b): Production and Sales Statistics of the Brazilian Automobile Industry

(units)

	Production	Exports	Interoal Sales	Imports	Domestic Market
1980	1,165,174	157,085	980,261		980,261
1981	780,883	212,686	580,725		580,725
1982	859,304	173,351	691,294		691,294
1983	896,462	168,674	727,732		727,732
1984	864,653	196,515	677,082		677,082
1985	966,708	207,640	763,180		763,180
1986	1,056,332	183,279	866,728		866,728
1987	920,071	345,555	580,085		580,085
1988	1,068,756	320,476	747,716		747,716
1989	1,013,252	253,720	761,625		761,625
1990	914,466	187,311	712,626	9,358	721,984
1991	960,044	193,148	770,754	22,797	793,551
1992	1,073,761	341,900	740,228	23,688	763,916
1993	1,391,376	331,522	1,061,397	79,900	1,141,297
1994	1,581,400	377,600	1,206,175	193,100	1,399,275
1995Apr	511,000	99,100	401,747	190,800	592,547

Source: Anuário Estatístico, 1994, ANFAVEA, and Carta da ANFAVEA, various issues.

Although Argentina was a marginal exporter until recently, exports from Brazil have been much more significant. The first ceiling was hit in 1987-88, when the exports surpassed 300,000 units. It is remarkable to point out that the United States and Italy raised their shares in the latter 1980s (Table VI-5-3-2) because of VW's Fox project to America and Fiat's exports to Italy. However, Fox lost its competitiveness gradually, while Fiat Europe reduced imports partially due to idle capacity in Italy. Brazil is no

longer considered a possible export platform to industrially advanced countries, except for VW trucks to Europe.[6]

Table VI-5-3-2: Automobile Exports Destination

Argentina 1993 (US$)		Brazil 1988 (units)		Brazil 1993 (US$)	
Brazil	78.4	United States	20.4	Argentina	41.8
Uruguay	13.1	Italy	20.4	Chile	12.9
Chile	3.2	Argentina	14.3	Mexico	9.9
France	1.8	Venezuela	9.4	Uruguay	7.2
Paraguay	1.3	Chile	6.2	Italy	5.9
Venezuela	0.6	Canada	3.0	Venezuela	2.2
United States	0.5	Uruguay	3.0	United States	2.1
Peru	0.4	Columbia	2.4	Paraguay	2.0
Bolivia	0.1	France	2.2	Germany	2.0
Nigeria	0.1	Iraq	2.1	Colombia	1.8
Others	0.5	Others	16.6	Others	12.2
Total	100	Total	100	Total	100

Source: ADEFA and ANFAVEA

As for the share by vehicle types, passenger cars have 78-79% of the total production in both of the countries (Tables VI-5-3-3). However, the trend of the share shows a contrast between the two countries. Argentina is popular as a production site of pick-up trucks. GM returned and Toyota is coming to the country by producing only pick-ups initially.[7] Ford recovered the market share in 1995 by focusing on F-100 and F-150 pick-ups (Table VI-5-3-4). Approximately half of the Peugeot production of SEVEL is now pick-ups. On the other hand, Brazil has now comparative advantage in the production of small passenger cars. The "carro popular" regime pushed up the share of cars with an engine up to 1,000cc to over the half in 1995 (see Sub-Section VI.5.3.4 and Table VI-5-3-13).

[6] GM do Brazil might export Corsa to NAFTA countries, depending on the relative competitiveness between Brazil and Mexico. See also Note 7.

[7] GM is going to stop the production of Chevrolet pick-ups in Brazil.

Table VI-5-3-3-(a): Proportion of Passenger Cars in the Local Automobiles Production --- Argentina

(units)

	Passenger	Commercial	Total	Passenger/Total
1980	218,640	63,153	281,793	77.6%
1981	139,428	32,935	172,363	80.9%
1982	106,886	25,231	132,117	80.9%
1983	128,962	30,914	159,876	80.7%
1984	137,206	30,117	167,323	82.0%
1985	113,788	23,887	137,675	82.6%
1986	137,889	32,601	170,490	80.9%
1987	158,743	34,572	193,315	82.1%
1988	135,776	28,384	164,160	82.7%
1989	107,597	20,226	127,823	84.2%
1990	81,107	18,532	99,639	81.4%
1991	114,113	24,845	138,958	82.1%
1992	220,502	41,520	262,022	84.2%
1993	286,964	55,380	342,344	83.8%
1994	338,355	70,422	408,777	82.8%
1995Oct	192,858	51,160	244,018	79.0%

Note: commercial includes Category A (light) as well as B (heavy) vehicles.
Source: Anuario Estadistico 1994, ADEFA, and Informacion de Prensa, octubre 1994, ADEFA.

Table VI-5-3-3-(b): Proportion of Passenger Cars in the Local Automobiles Production --- Brazil

(units)

	Passenger	Commercial	Total	Passenger/Total
1980	933,152	232,022	1,165,174	80.1%
1981	585,834	195,049	780,883	75.0%
1982	672,589	186,715	859,304	78.3%
1983	748,371	148,091	896,462	83.5%
1984	679,386	185,267	864,653	78.6%
1985	759,141	207,567	966,708	78.5%
1986	815,152	241,180	1,056,332	77.2%
1987	683,380	236,691	920,071	74.3%
1988	782,411	286,345	1,068,756	73.2%
1989	730,992	282,260	1,013,252	72.1%
1990	663,084	251,382	914,466	72.5%
1991	705,303	254,741	960,044	73.5%
1992	815,959	257,802	1,073,761	76.0%
1993	1,100,278	291,098	1,391,376	79.1%
1994Jun	603,027	161,043	764,070	78.9%
1995Jun	651,374	181,549	832,923	78.2%

Note: commercial includes light vehicles.
Source: Anuário Estatístico, 1994, ANFAVEA, and Carta da ANFAVEA, various issues.

Table VI-5-3-4: Production Shift towards Pick-Ups in Argentina

(units)

	Pick-Ups	Total	%
Ford			
1990	5055	18810	27
1995 (Jan-Oct)	10471	24566	43
Peugeot			
1990	6448	19294	33
1995 (Jan-Oct)	15637	32971	47

Source: Anuario Estadistico 1994, ADEFA, and Informacion de Prensa, octubre 1994, ADEFA.

Tables VI-5-3-5 show the trend of market share by brand. Share fluctuations are remarkable in both of the countries.

In Argentina, SEVEL, its Fiat brand in particular, has increased the market share drastically after the control was transferred to the Macri Group. Although the share looks decreasing in the recent years, imports in 1992-94 includes those of Fiat models in fact. However, the future of SEVEL is not certain after the termination of the Fiat license, because the share of Peugeot is declining. On the other hand, Autolatina and CIADEA could not improve the performance by changing the control structure. That of the Ford Division, Autolatina, was miserable, mainly attributable to the lack of investment and obsolete models. It stuck to the old Falcon for thirty years (from 1961 to 1991)! VW is gradually going up after introducing Senda, and then Gol.[8]

Table VI-5-3-5-(a): Market Share of Each Assembler in Argentina

(%)

	SEVEL			CIADEA	Autolatina			GM	Imports
	Total	Fiat	Peugeot		Total	Ford	VW		
1981	15	NA	NA	21	(42)	NA	NA	0	22
1982	20	NA	NA	25	(47)	NA	NA	0	8
1983	21	NA	NA	27	(49)	NA	NA	0	2
1984	26	NA	NA	27	(45)	NA	NA	0	0
1985	31	NA	NA	31	(36)	NA	NA	0	0
1986	35	NA	NA	30	(33)	NA	NA	0	0
1987	40	NA	NA	30	28	NA	NA	0	0
1988	39	NA	NA	31	29	NA	NA	0	0
1989	43	NA	NA	29	28	NA	NA	0	0
1990	44	23	21	29	28	20	8	0	0
1991	46	26	20	25	26	20	6	0	4
1992	42	24	18	24	25	16	9	0	9
1993	37	23	14	23	23	11	12	0	17
1994	37	25	12	22	22	10	12	1	19
1995Oct	37	27	10	21	29	14	15	2	11

NA: not available.

Note: the share in the domestic market of Category A vehicles (including light commercial vehicles). However, the shares of SEVEL and Autolatina are divided into two brands in accordance with the relative production volume. In 1995, the figure for each assembler includes its own imports, and that for imports contains only vehicles imported by distributors and individuals. This is why the share of imports shows a large decline from 1994 to 1995.

Source: SEVEL, Anuario Estadistico 1994, ADEFA, and Informacion de Prensa, octubre 1994, ADEFA.

Autolatina reduced its share in Brazil, too. It can be said that this corporate partnership to increase the scale economies produced disastrous results. In contrast, Fiat demonstrated excellent performance in the Mercosur countries. It rode on the crest by introducing popular cars quickly and establishing smart division of labor between local production (Uno etc.) and imports (Tipo etc.).

[8] It can be argued that the rise and fall of the assemblers' share has strong correlation with changes in the ownership structure and vertical integration/disintegration. For further information, see Sub-Section VI.5.4.3.

Table VI-5-3-5-(b): Market (Production) Share of Each Assembler in Brazil

(%)

	Autolatina			Fiat	GM	Toyota	Others	Imports
	Total	Ford	VW					
1980	(62)	13	49	15	21	0	1	0
1981	(59)	16	43	19	21	1	1	0
1982	(57)	17	40	20	22	0	0	0
1983	(58)	18	40	17	24	0	0	0
1984	(58)	21	37	17	24	0	0	0
1985	(58)	20	39	17	24	0	0	0
1986	(56)	18	39	17	25	0	0	0
1987	51	14	37	26	23	0	0	0
1988	53	16	37	22	24	1	0	0
1989	51	17	34	23	25	1	0	0
1990	49	16	33	26	23	1	0	1
1991	47	16	32	28	21	1	0	3
1992	47	14	33	30	20	0	0	2
1993	47	14	32	28	19	0	0	6
1994Jun	47	12	36	26	22	1	0	3
1995Apr	40	13	27	26	18	1	1	14

Note: light commercials as well as passenger cars are included here. Due to data shortage, the figures up to 1993 are substituted for by the share of each assembler in the total production plus imports. In 1994 and 1995, the figures show the share in the domestic market.
Source: Anuário Estatístico, 1994, ANFAVEA, and Carta da ANFAVEA, various issues.

5.3.2 Size of the Future Automobile Market/Production

Overcoming the past fluctuations, the Mercosur automobile market is now ready for steadier expansion. In order to forecast the future demand as precisely as possible, factors such as macroeconomic growth, population structure, income distribution, average car age, parking space, car price, consumers credit and second-hand market need to be taken into consideration. The forecast thus calculated could still be out of the mark due to an unexpected external crisis. However, this sub-section cites the figures presented by the assemblers as they are, because the main research issue is not the forecast per se but its impact on the performance of autoparts suppliers.[9]

In Brazil, an authoritative report argued "The goal of two million units in 2000 is too ambitious. To achieve this goal, the economy will have to grow an average rate of 5-6% per annum. The goal also foresees exports of 500,000 units, which requires that the long-term stability of the exchange ratio is achieved. ..." (Sindipeças/BA&H, 1994, p.87). On the contrary, the President of ANFAVEA predicts at present that the automobile production in 1996 will reach 1,900,000 units (1,600,000 for the domestic market and the remaining for exports). Although Argentina is still struggling to recover the production pace recorded in 1994, the Brazilian industry seems to lead strong

[9] Most assemblers and their associations were not very happy to discuss the future market growth.

expansion based on its large potential market to be surfaced by the entry of the lower-middle income class.[10]

Table VI-5-3-6: Market Forecast by Assemblers

	Year	Argentina	Brazil	Mercosur	
CIADEA	2005			3,000,000	
VW	?	5-600,000	1.5-2,000,000		
Ford	2000			2,300,000	(5-7%/year)
GM	2000			2-3,000,000	
Fiat	2000			4,000,000 (?)	
Toyota	2000			2.5-3,000,000	
Mercedes	2000	400,000	2,600,000		
ADEFA	1996	600,000			
ANFAVEA	1996		1,900,000		
	2000			2.5-3,000,000	

5.3.3 Strategy of Automobile Assemblers

(1) Investment Plans and Production Capacity

As can be seen from Table VI-5-3-7, assemblers are expected to invest US$ 15-17 billion in the two countries by the year 2000 to expand the production capacity, modernize the assembly line and introduce new products. Table VI-5-3-8 shows that the above prediction of the market size is endorsed by the corporate behavior. The average production volume per plant (except for newcomers) is going to exceed 250,000 units in Brazil, while the same per model may reach 100,000 units in Argentina by reducing models per brand (to be discussed later). This surge of investment will raise the scale economies to such an extent that the competitiveness of the industry will be significantly improved.

Although both Argentina and Brazil enjoy benefits from the trade agreements, the recent Automotive Regime, together with the tariff protection and compensation rule, tilted the balance towards the latter country. Renault's decision to establish a large plant in Brazil has made the CIADEA's future look more fragile (Clarin, 2 August, 1995). Asia, Chrysler, Honda, Hyundai, Mercedes, Peugeot and Toyota are all starting to produce passenger cars or light commercial vehicles in Brazil. Those which already have assembly plants in both of the countries are said to be in the process of reviewing their model allocation and plant renovation plans.

[10] The population per vehicle is 11.3 in Brazil (1992) as against 6.0 in Argentina (1994).

Table VI-5-3-7: Investment Plans of Automobile Assemblers

(US$ million)

	Argentina			Brazil		
GM			1,100	1994-1999		2-2,500
	1996	Corsa (?)	4-500 (?)	1995-1996		1,200
					engineering	200
					stamping	200
					painting	300
					Corsa	200
					Corsa trans	200
				1998	new Corsa	400
					new model S10	200
					Omega/Vectra	800
Ford	1995-2000		1,000	1995-2000		2-2,500
		Escort/Orion	3-400	1995		750
		new models	700	95-early96		1,100
					truck/bus	200
					Fiesta eng/trns	400
				1999	HN80	1,000
Chrysler			80-90+α			500
Fiat	-1996	178	600-1,000	-1996	Betim, 178	1-1,300
				1995		250
					lorry plant	150
Renault (CIADEA)	1996-1999		500-650	1996-1999		900-1,000
		Clio	8-90			
VW			500	1995-2000		2-2,500
		Transax	250	1995	Kombi injection	
					lorry plant	500
				1996	EA-111 engine	250
					new model AB9	250
Mercedes Benz			90-100			400-500
		ZF gear box	70	-1999	new sedan	
					(with Chrysler)	250-400
				1995	bus/truck	80
Scania			NA	-1997		220
				1995	painting	12
				-1996		120
Toyota			100-150	1997-		2-300
Volvo			---			150-300
Peugeot (SEVEL)		Peugeot 306	100-260			3-500
Honda			---			100
Hyundai			100			100+α
Asia			---			500
Sub-Total			4,170-4,950			10,370-12,820
Total						14,540-17,770

Note: the table may include unofficial figures subject to modifications. The pledge for investment in Argentina seems particularly susceptible to the new Automotive Regime in Brazil. In addition, some industry experts argued that the plans were as a whole too huge to be sensible.

Source: interviews, newspapers, BOT, Reuters, EIU Country Report, JETRO, etc.

Special thanks to Mr. Kikuchi, advisor to Secretariat of Industry, Argentina.

Table VI-5-3-8: Production Capacity of Automobile Assemblers

(unit)

	Argentina			Brazil		
GM		pick-up (CIADEA)	17-20,000/y	1997	Total	700,000/y
	96-97	Corsa?	120,000/y		Corsa	225,000/y
		pick-up	25-30,000/y		Astra (?)	
Ford	1996.9	Orion/Escort	600/d	1996	Fiesta	270,000/y
	1998	Ranger	400/d		F100	
Chrysler	early 96	Grand	4,000/d			50-60,000/y
	2000	Cherokee	6-7,000/d			
Fiat	early 97	178	400/d		Total	2-2,300/d
	1998	178	800/d		178	250,000/y (?)
			180,000/y		Tipo	
					Tempra	
Renault (CIADEA)			170,000/y	1999		100,000/y
VW		Gol 1.6/1.8	600/d			600,000/y
					Gol 1.0/2.0	
					AB9 (Golf?)	2,000/d
Mercedes Benz	1997	Sprinter	15-25,000/y	1998	sedan	NA
		Bus (?)	7,000/y (?)			
Toyota	1997	Hilux	18,000/y	1999	Corolla	5-60,000/y
Peugeot			NA			100,000/y
Honda			---	1997.8	Civic	15,000/y
				1999	Civic	30,000/y
					plus Accord (?)	100,000/y
Hyundai			---		small passenger	30,000/y
Asia			---	early 97	Topic/Towner	50,000/y

Note: these figures include informal ones and are subject to modifications.
Source: interviews, newspapers, Reuters, EIU Country Report, JETRO, etc.
Special thanks to Mr. Kikuchi, advisor to Secretariat of Industry, Argentina.

(2) Reduction of Models per Brand

When the import was prohibited, assemblers offered a wide range of models to satisfy diverse tastes with local products. Because the small production size did not justify large fixed investment, they brought in dies and molds of outdated models from their headquarters. Once the market went up and the regional trade was unleashed, assemblers decided to introduce the world latest models with brand-new molds and dies. In order to compensate for big investment at a short interval, each model has to sell a large volume. To expand the production scale per model, model duplications are removed between Argentina and Brazil, and between the Mercosur and the rest of the world, Models of which local production is ceased are imported in return for exporting local models. The apparent division of labor between the two countries is as described above: pick-ups in Argentina and popular cars in Brazil.

In Argentina, the average design age has been reduced from 11.4 years in 1990 to 7.2 years (still more than twice the international average) in July 1994. At SEVEL's General Pacheco plant, for example, six final assembly lines are producing an equal number of models : Fiat Uno and Duana, Peugeot 504, 505, 405 and Regatta (pickup

version of 505). According to the recent CEPAL report (Shaiken, 1995: p.16), "(t)he wide variety of models resulted in a remarkable proliferation of parts. Painted bodies and half-finished cars are stored everywhere as cars come off the line because of a lack of parts or for other repair." A similar situation was found in the Ford Plant of Autolatina, where old Gol and new Pointer were put on the same line. Significant improvements are expected after the reduction of line-up as is shown in Table VI-5-3-9.

Table VI-5-3-9: Reduced Number of Models per Brand in Argentina

Category A	-1993	1994		1995 (Jan.-Oct.)		1996	Future
CIADEA	Renault 18	6 Renault 9	39,292	4 Renault 9	27,654	3 (Renault 9)	
		Renault 19	34,861	Renault 19	21,809	Renault 19	
		Trafic	12,828	Trafic	6,555	Trafic	
		Renault 21	4,238	Renault 21	1,632	Clio	
		Renault 11	1,866	(Renault 11)	2		
		Renault 12	13,464				
		Total	106,549	Total	57,652		
SEVEL		10 Uno	26,390	8 Uno	11,835	9 Uno	ceased (1997)
		Spazio	23,326	Spazio	13,998	Spazio	ceased (1997)
		Vivace	19,785	Vivace	13,045	Vivace	ceased (1997)
		Duna	49,803	Duna	29,889	Duna	ceased (1997)
		Regatta	6,010	(Regatta)	42		
		Peugeot 405	7,863	Peugeot 405	4,644	Peugeot 405	
		Peugeot 504	24,971	Peugeot 504	12,494	Peugeot 504	to be ceased
		Peugeot 505	4,101	(Peugeot 505)	154	Peugeot 306	
		504 pickup	11,497	504 pickup	12,540	504 pickup	
		Fiorino	4,790	Fiorino	3,097	Fiorino	
		Total	178,536	Total	101,738		
VW		4 Old Gol	30,599	4 Old Gol	10,833	2 New Gol	
		Senda	25,263	Senda	14,756		
		Pointer	728	Pointer	11,853	(Pointer)	
		Voyage	2,614	Voyage	4,123	Voyage	
		Total	59,204	Total	41,565		
GM		2 C 20 pickup	401	2 C 20 pickup	146	2 C 20 pickup	
		D 20 pickup	2,109	D 20 pickup	8,598	D 20 pickup	
		Total	2,510	Total	8,744		Corsa? (1997)
Ford	Sierra	4 Orion	4,098	4 Orion	14,026	3	
		Old Escort	19,123	New Escort	69	New Escort	
		F100	22,300	F100	10,244	F100	(F100)*
		F150	928	F150	227	Ranger	
		Total	46,449	Total	24,566		

*: the production of F100 will be transferred to Brazil in 1988.
Source: Anuario Estadistico 1994, ADEFA, Informacion de Prensa, octubre 1994, ADEFA, and interviews.

In Brazil, commercial vehicles are updated thanks to the large domestic market. As for passenger cars, the approach to model change depends on assemblers. GM clearly took a stance to follow Opel swiftly and is at present proud of the most competitive product line in the country. Most of its old models have already been replaced with Omega, Vectra and Corsa, one for a year from 1992 on. The remaining two old models, Monza and Kadett, are being phased out by Astra, first imported and then locally produced.

Table VI-5-3-10: Time Lag of the New Model Debut in GMB

	World Debut	Brazilian Debut	Time Lag
Omega	1986	1992	6 years
Vectra	1988	1993	5 years
Corsa	1993	1994	1 year
Astra	1992	1996?	4 years?

Note: the next model change of Omega, Vectra and Corsa will take place in 1998.
Source: Sindipeças/BA&H, 1994, p.43.

Fiat exploited on the popular car regime most effectively by modernizing the production line of Uno Mille. Based on that success, this assembler has expanded the product range by introducing Tempra, medium-sized car segment where there had been no product before, and then Tipo, the best-seller imported car (70,000 units a year at a time). The new model 178 will be launched in 1996 to succeed Uno Mille.

On the other hand, VW was making a large variety of models based on local styling. Its Anchieta plant was said to produce "440 cars spread over nine models on two shifts, utilizing a single robot" (Shaiken, 1995: p.14). Although new Gol introduced in 1994 has kept a breathing space, the product line seems to be slimmed down gradually. Imported Passat is taking place of aged Santana, and Parati, Saveiro and Voyage are to be substituted by model code AB9 in 1996-97. Finally, Ford is lagging behind the new model war. Fiesta will be at last produced locally from 1996, complemented with imported Taurus and Mondeo. Both of the companies tend to focus more on small cars.

The effect of new models is not limited to stimulating the consumers' demand. First, the model change, e.g. new Gol and Corsa, is a trigger for the installation of more advanced production facilities (e.g. welding automation), above all the establishment of new plants in the greenfield. Second, advanced technology required for new models provided assemblers with an opportunity and a criterion to select first-tier suppliers.

Third, the transfer of "world cars" is expected to increase the flexibility of procurement operations through the "Global Sourcing" program. Manufacturing the same automobiles and autoparts on different continents at the same time, assemblers can use the price and quality information elsewhere as a benchmark. Moreover, they can increase the scale economies of autoparts production by concentrating orders on a few suppliers which are awarded global sourcing contracts. This is an important reason why assemblers prefer "world cars" to "regional cars" (like VW's country-specific designs or the Asian cars developed by Japanese assemblers). For example, Fiat 178 Mundial is said to be designed in Italy, disregarding unique conditions of developing countries. The

same model will be assembled all over the world: Argentina, Brazil, China, India, Italy, Turkey, etc.[11]

(3) Intra-Firm Mercosur Trade

New investment and model changes are likely to result in the following patterns of assembler-specific Mercosur trade :

- CIADEA is exporting 20,000 units to Brazil, but autoparts (gearbox, engine parts and stamping parts) are exported to France because there is no assembly plant of Renault brand in Brazil. The exports to Brazil are balanced with maintenance-free batteries, stamping parts, castings, wheel and rims, etc. Once Renault establishes an assembly and engine plant in Brazil, CIADEA will stop engine production in Argentina so that Brazilian engines may be purchased to compensate for car exports.

- SEVEL is reviewing the intra-regional trade with Fiat do Brazil according to the imminent end of the licensing agreement. At the moment, it exports 30-40% of the engine and gear box production to Brazil, from which diesel engines are imported. However, Cormec (its engine and transmission subsidiary) was bought out by Fiat. This supplier continues to supply Peugeot 504 engines, but after the production of 504 is terminated, SEVEL has to produce Peugeot engines internally. Rather, a new division of labor is expected with coming Peugeot Brazil.

- VW currently produces Voyage, Pointer and new Gol in both Argentina and Brazil. Argentina will concentrate on new Gol 1.0/2.0 from May 1996, or possibly with Voyage, and would like to export 60-80% of the products to Brazil. In addition, Transax is now exporting over 60% of its transmission to Brazil. Brazil could be specialized in new Gol 1.6/1.8 and AB9 (Golf?) but is somewhat reluctant to reduce the model variety. Percentage of the unit exports to Argentina is expected to be much smaller. This will be supplemented with cold-strip sheet, body structure, engine parts, electricals, instruments and front panel.

- Ford Argentina will be specialized in medium-sized Escort and Orion as well as Ranger, of which a little less than 70% are exported to Brazil. Brazil will be specialized in sub-compact Fiesta, of which 40% (plus crankshafts, starters, etc.) are exported to Argentina.

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[11] The word "world cars" is sometimes used in a different sense. For example, Peugeot 504 pick-up for CIADEA and Ranger for Ford are called a world car, because their production will be concentrated in Argentina, from where exported all over the world. However, such a strategy cannot bring about the above "global sourcing" effect.

- Toyota's exports to Brazil may be ten times larger than its imports to Argentina. Autoparts imported from Brazil, though expected to increase rapidly, cannot catch up with Hilux exports. This imbalance will be mitigated by importing passenger cars in the future.

- GM exported 85-90% (May 1995) and 100% (June 1995) of its pick-up trucks to Brazil. Although cold-strip sheet, transmission, disk breaks, electricals, instruments and maintenance-free batteries were imported in return, the trade balance is a surplus with a big margin. Argentina and Brazil may produce identical models (e.g. Corsa), if the demand is sufficiently large.

- Mercedes Benz will discontinue the production of light/medium/heavy trucks in Argentina within 2-3 years. Instead, Sprinter (mini-bus, light transport wagon, pick-up single cub 2x4) is introduced. It will export 80% of the new model and 50% of the bus to Brazil in return for importing trucks, diesel engines for buses, body parts and cold-strip sheet.

5.3.4 Policy Impact on the Automobile Industry

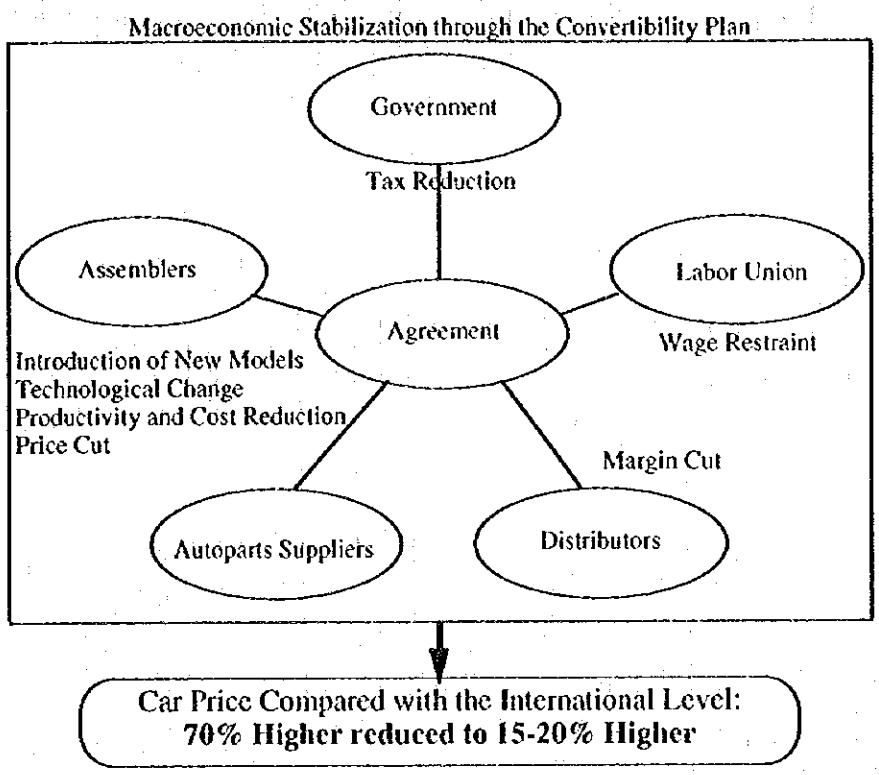
In addition to the trade policy discussed in Section VI.5.2, both Argentina and Brazil adopted policies to expand the market by reducing car price, and to promote fresh investment by smoothening the industrial relations.

(1) Argentina

In 1990, the local assembly of automobiles was reduced to less than 100,000. The government was then obliged to radically diverge from the conventional policy, which had been just a makeshift response to frequent crises. ADEFA members took an initiative for change by collecting information of the automobile policy from other 26 countries where their sister plants operate. A draft framework based on such a study was discussed with the trade union, autoparts suppliers, distributors and the government. This agreement, later institutionalized as Decree 2677/91 (Figure VI-5-3-1), stimulated domestic sales by effectively cutting car prices by 35%.[12] Manufacturers promised new investments, distributors cut sales commissions, the trade union restrained wage demand, and the government lowered taxes to 18%.

[12] Price war recurred in late 1995. Ford offered discounts of up to 40% on certain models and was followed by SEVEL, CIADEA, VW and GM.

Figure VI-5-3-1: Policy Formulation Process of the Automobile Regime



(2) Brazil

(a) The Sectoral Chamber (Câmara Setorial)

The Sectoral Chamber set up in 1991 is a policy-making institution similar to what was seen in Argentina for the Automotive Regime. It is a tripartite forum constituted by the federal and state government, the private business and the labor union, to discuss current problems of the entire industrial linkage, mutually compromise their interests and consensually take a strategic decision. This new structure allows broad-based participation in formulating industrial policy, which has traditionally been the domain of powerful interest groups. The Automotive Sectoral Chamber has had the most far-reaching impact of all the sectoral chambers, serving as a test case for this new institution. Its business representatives include not only assemblers and autoparts suppliers but also raw material suppliers, car dealers and importers, and "consórcios".

The Automotive Sectoral Chamber presented a plan to produce two million units and to increase 91,000 employees by 2000. The business sector pledged to invest US$ 20 billion by 2000 and, with the government, set the target of reducing the consumer price to promote market expansion (see Tables VI-5-3-11). In return for appealing to collective bargaining, rather than strikes, as a first tool of industrial relations, the labor won measures to sustain an employment level, guarantee of monthly wage adjustments in

line with inflation and a real salary increase of 20% over the period 1993-1995. The agreements also refer to the PBQP (human-resource development and R&D promotion) program, the new buyers' consortiums with easier financing terms, etc.

Table VI-5-3-11-(a): Tax and Margin Cuts by the Sectoral Chamber Agreements

(%)

	Mar-92	Feb-93
IPI	6.0	6.0
ICMS	6.0	0
Assemblers' Margin	4.5	3.0
Suppliers' Margin	3.0	1.2
Distributors' Margin	2.5	0.8
Total Price Reduction*	22%	10%

*: total share of the consumer price.
Source: ANFAVEA, Anuário Estatístico 1994, p.120.

Table VI-5-3-11-(b): Change in the Tax Rates on Gasoline Passenger Cars

(% in December)

		below 1,000cc	up to 100HP	above 100HP
1990	IPI	20.0	37.0	42.0
	ICMS	18.0	18.0	18.0
	PIS	0.65	0.65	0.65
	Cofins	1.2	1.2	1.2
	Total**	34.5	42.2	44.1
1993	IPI	0.1	25.0	30.0
	ICMS	12.0	12.0	12.0
	PIS	0.65	0.65	0.65
	Cofins	2.0	2.0	2.0
	Total**	17.0	33.0	35.3
1995*	IPI	8.0	25.0	30.0
	ICMS	12.0	12.0	12.0
	PIS	0.65	0.65	0.65
	Cofins	2.0	2.0	2.0
	Total**	23.0	33.0	35.3

*: March 1995.
**: total share of the consumer price.
IPI: Industrial Product Tax (Federal Excise Tax).
ICMS: Services and Circulation Tax (State Value-Added Tax).
PIS: Social Integration Program.
Cofins: Social Security Contribution.
The cascade effect of PIS/Cofins may add 10-15% to the tax burden (Sindipeças/BA&H, 1994, p.75).
Source: ANFAVEA, Anuário Estatístico 1994, p.42, and Carta da ANFAVEA.

Despite its commitment to long-term policies, the most effective measures thus far have been tax and margin cuts which stimulated in an immediate surge of the internal demand. Comparing the second quarter of 1993 with the first quarter of 1992, the reduction of 30% from the consumer price raised car sales by 120% (Table VI-5-3-12); i.e., the demand was extremely price elastic. However, the Sectoral Chamber scheme lost its vigor after President Franco came into office, as his populist advisors preferred

bilateral talks with assemblers. On the other hand, the state governments were absorbed in a review of the tax cuts, while the Federal Ministry of Finance in tariff reductions.

Table VI-5-3-12: Expansion of the Automobile Market in Brazil and its Shift to Cars with an Engine up to 1,000cc

	-1,000cc/Popular	Total	(%)
1992			
Jan-Mar	10.7	96.1	11.1
Apr-Jun	21.4	153.9	13.9
Jul-Sept	24.4	162.2	15.0
Oct-Dec	36.4	165.2	22.0
1993			
Jan-Mar	33.3	161.8	20.6
Apr-Jun	58.7	211.3	27.8
Jul-Sept	73.1	240.5	30.4
Oct-Dec	76.9	237.0	32.4
1994			
Jan-Mar	82.1	229.7	35.8
Apr-Jun	101.0	237.9	42.4
Jul-Sept	123.4	250.9	49.2
Oct-Dec	141.3	257.2	55.0
1995			
Jan-Mar	126.9	235.4	53.8
Apr-Jun	99.3	189.1	52.5

Source: ANFAVEA

(b) The Popular Car (Carro Popular) Regime

The Popular Car regime, introduced in April 1993 just after the second Sectoral Chamber agreement, is another policy which cut the tax rate and thus stimulated the local demand. IPI on cars with an engine up to 1,000cc had already been reduced in 1990 to the level 17% below that on cars with an engine up to 100HP in order to enhance the demand from the middle class suffering from stagflation. Fiat, latecomer to Brazil, had been increasing its market share by focusing on this segment. President Franco encouraged Autolatina, GM and Fiat to introduce such "popular" models by reducing IPI from 8% (after the two Sectoral Chamber agreements) to a symbolic 0.1%.

The popular car include existing models adapted for a 1,000cc engine (Gol 1000, Uno Mille, and Escort Hobby), relaunched Fusca (Beetle),[13] GM Corsa newly introduced in 1994 (to replace Chevette), and old Kombi. Prices of these models (except for Kombi) were set at US$ 7-8,000. The share of the total tax in the consumer price of these models is 17%, while it is 35.6% for gasoline passenger cars up to 100HP. Its consumer price had been reduced by 35.7% (as against 30% for gasoline passenger cars

[13] The production of Beetle had been discontinued since 1987 and was produced only in Mexico, with many parts and components imported from Brazil. It may have been terminated again in 1995.

up to 100HP) in the period of 14 months since the first Sectoral Chamber agreement.[14] As a result, the market share of popular cars dramatically went up in 1994.

Success of the "carro popular" regime has far exceeded the expectations. This is because it not only maintained the demand from the upper-middle class but also facilitated the new entry of customers from the lower-middle class. In September 1994, they took the majority of the domestic sales (Table VI-5-3-12), with Fiat accounting for 39% of the popular models. Assemblers have announced new investment plans and begun updating their local models, suggesting that GM and Fiat may turn Brazil into a platform of exporting popular cars. VW and GM have exclusive plants dedicated to their production (Taubaté and São José), leaving the other plants for superior models. This marks a striking turn-around from the previous situation in which assemblers focused on luxury models with higher profit margins for a restricted market.

Some criticize the regime that the popular models are diversion from the trend toward "world cars", i.e. standard models introduced simultaneously all over the world. The high market share of popular cars may also deprive other models of scale economies, making it harder to compete with imports in this lucrative market. Moreover, the access to new technology could be limited because the world cars, especially those at the higher market end, are the first to implement it. They expect the further tax cuts for non-popular models so that the skewed sales structure could be remedied.

Although tax cuts are desirable as far as the public finance is well managed, the above benefits will not automatically come into being. Brazilian technology for luxury cars are behind the world frontier by a large gap, which may not be filled easily with market protection. On the other hand, auxiliary benefits of the popular car regime should be more appreciated. It gave assemblers a precious opportunity to learn a mass-production logic and technology. It also brought the world-class economies of scale into the production of popular cars and a reasonable rate of return in this competitive segment. The internal reserve thus generated is likely to be reinvested unlike the profit from luxury cars.

(c) The Automotive Regime and the Tax Reform

The automobile industry had a very good time throughout 1994, thanks to lower car prices and a lower interest rate. However, the imports of vehicles soared under the trade liberalization and economic boom. The alarming balance of trade became the last call for the structural change of the industry and the tax reform rather than tax cuts, issues

[14] In fact, consumers had to pay a premium for popular cars, as the assemblers could not fulfill the heated demand throughout 1994. In early 1995, the government pulled up IPI from 0.1% to 8% again.

indispensable for international competitiveness but previously outside of easy consensus. For that purpose, the Cardoso Government has reinvigorated the Sectoral Chamber early 1995. It first took an emergency action to raise the import tax and impose the quota,[15] and then continued discussion finally to announce the automotive regime in January 1996 (see Sub-Section VI.5.2.5), containing the local contents regulation, tax breaks for capital goods, review of the duty on autoparts, etc. The Chamber's function is limited to provide an appropriate policy framework or an arena for negotiations, under which the business associations and labor unions co-ordinate their interests bilaterally, and each firm is left to make due efforts.

As for the tax reform, the industry, in particular the autoparts sector, complains that lower duty cannot be accepted unless the Cost Brazil, eating away the protection afforded by import tariffs, is mitigate. The federal, state and municipal governments introduced new kinds of tax one after another[16] during their financial crises. Such complexity of the tax system multiplied the overhead work of the business; it is said that over 30% of the office work is concerned with tax management, which could impose 20-30% additional administrative costs. Moreover, honest companies have to take the tax burden of those which remain informal to avoid being taxed.[17] If they borrow to pay the tax, the capital cost is high (financing ICMS and IPI have a negative impact estimated to be 5-7% of the factory price of vehicles). Consequently, the tax burden on Brazilian vehicles is larger than that in other countries, including Argentina:

Table VI-5-3-13: International Comparison of the Tax Burden on Vehicles

(%)

Country	Tax Rate on the Consumer Price
Brazil*	34.0
(popular)	17.0
USA	6.0
Japan	9.5
Argentina	18.0
Germany	15.0
Italy	16.0
France	15.7
UK	14.9
Europe Avg.	15.4

*: IPI, ICMS and PIS/Cofins on the final stage only
Source: Sindipeças/BA&H, 1994, p.74.

[15] Despite of the strong demand, Plano Real, higher tariff and quota, the market continues to keep price rises in early 1995. VW cars rose in price by between 5.6% and 9.9%, while GM cars went up between 4.5% and 9.8%. However, Fiat did not increase its prices at all.

[16] There were arguably 58-59 kinds of tax when the interviews were conducted.

[17] 45-50% of the autoparts suppliers could be informal.

The present tax regime also has a significant impact on the location of the automobile industry. States except for São Paulo argue that they are entitled to change the structure of state tax. The decision of tax incentives is arbitrary. Once assemblers pledge an investment plan in Brazil, states compete to provide additional tax and non-tax (finance, infrastructure and training) incentives through individual negotiations. Tax concessions, together with weaker unions, lower wages and cheap land, encourage them to relocate their plants, e.g. the truck plant of VW and the passenger car plant of Fiat, from the traditional ABCD area in São Paulo to the states of Rio de Janeiro, Minas Gerais and Santa Catarina. Such relocation is likely to cause a major reshuffle of the autoparts sector, since they ask suppliers to follow them for the JIT purpose. The tax reform has been currently discussed from the standpoint of the Federal Constitution. Unification of IPI and ICMS is expected.

Table VI-5-3-14: State-Level Incentives with respect to ICMS

State	Lending to ICMS	Grace Period	Real Interest Rate	Price Indexation
North-East				
Ceará	-100%	6-10 years	No Interest	100%
Pernambuco	70-80%	-10 years	3% per annum	100%
Bahia	50-70%	-6 years	No Interest	100%
Middle-West				
Goiás	-70%	-10 years	12% per annum	25%
South-East				
Minas Gerais	-75%	5-8 years	2.5% per annum	100%
Rio de Janeiro	40-75%	5 years	No Interest	100%
São Paulo	Strongly Objects Regarding the Incentives as Illegal			
South				
Parana	-80%	4 years	No Interest	100%
Santa Catarina	40-75%	-10 years	No Interest	100%
Rio Grande do Sul	-60% Drawback	(8 years)	---	---

Source: JETRO Daily, 29 August 1995.

5.4 The Argentine Autoparts Sector

5.4.1 Autoparts Localization

What can be made by the Argentine autoparts sector is known from the local procurement by assemblers. However, the assembler-supplier relationship depends not only on the local contents regulation and the competence of local suppliers but also on the history of assembly plants in Argentina and the strategy of their headquarters. Moreover, it seems reasonable that the same assembler imports more components from industrially advanced countries for newer and more complicated models. Therefore, different assemblers and models take different levels of localization. Four cases are presented here: Assemblers A, C, E and G.

(1) Assembler A

Assembler A is an Argentine licensee of the European brand. Its local contents ratio is at present 75% on average excluding imports from Brazil. Because it does not have a clear vision of the complementation with Brazil, the ratio is quite high, and the remaining is imported mainly from the country where the brand headquarters is located.

Table VI-5-4-1: Localization of Assembler A
(including components produced by internal divisions and subsidiary suppliers)

Autoparts	Present		2 Years Later		5 Years Later	
	Local	Import	Local	Import	Local	Import
Engine	80	20	100	0	100	0
Combustion System						
fuel tank	100	0	100	0	100	0
injection system	0	100	0	100	0	100
carburetor	100	0	–	–	–	–
intake and exhaust manifold	80	20	100	0	100	0
exhaust system	90	10	90	10	90	10
	Catalysts continue to be imported.					
Ignition	50	50	50	50	70	30
Lubrication and Cooling						
with air conditioner	100	0	100	0	100	0
without air conditioner	70	30	70	30	70	30
Transmission, Gear Box and Clutch	85	15	85	15	100	100
Steering	50	50	70	30	85	15
Suspension	60	40	70	30	80	20
Electric and Electronic Parts (excl. ignition)	60	40	60	40	75	25
Steel Parts	60	40	60	40	70	30
Stamping Parts	70	30	70	30	80	20
Plastic Parts	60	40	70	30	85	15
Rubber Parts	70	30	70	30	80	20

Source: Assembler A

(2) Assembler C

Assembler C is a subsidiary of the Brazilian subsidiary of the multinational assembler located in Argentina for a long time. Its local content ratio is high, but there is a clear division of labor with Brazil. For example, transmissions made in Argentina are exchanged with engines made in Brazil.

Table VI-5-4-2: Localization Scheme of Assembler C

Argentina
seats, interior, car radios, battery, brakes, wheels, tires, glass, paints, seals, steering gear cap, instruments cluster, bumper, heaters and air conditioners, gasoline tanks, gasoline pipes, lamps, radiators, stamping parts, engine parts (intake and exhaust valves, springs, piston ring, bearings, water pipes, oil pumps, intake and exhaust manifolds, air and oil filter, pulleys, alternators, starter motors, distributors, ignition system for carburetor engines (not for ignition engines), and exhaust system (muffler and pipes).
diesel engine assembly (expected soon), gasoline engines (expected some day).
Brazil
engine castings, crank shafts, camshafts, connecting rods, pistons.

Source: Assembler C

(3) Assembler E

Assembler E is one of the newcomers recently attracted by the economic stability of Argentina and the future prospect of Mercosur. It has a Brazilian subsidiary with long presence in the region. However, it felt difficulties in clearing the local contents regulation despite of the promotional ratio (50% for the first two years) set for newcomers.

Procurement in Argentina might account for up to 40% including the value added by assembly. Imports from Brazil (both internal production and out-sourcing) could range between 15-30% and probably increase for the time being, as the experience of exporting autoparts to industrially advanced countries is much appreciated. In the longer run, they will be substituted for by out-sourcing from Argentine subsidiaries of OEM suppliers and local independent suppliers. The imports are of course compensated by a high proportion of vehicle exports to Brazil.

Section 11 of Decree 2677/91 (the Automobile Regime) provides that 25% of the FOB value of exported vehicles should come from local independent (non-affiliated) suppliers. However, to identify suppliers in Argentina is said to be even more difficult than to observe the local contents regulation. Assembler E out-sources such components as body parts, although it is more economical to produce them internally.

Table VI-5-4-3: Localization Scheme of Assembler E

Internal Production in Argentina
large body parts, fuel tanks, etc.
Out-sourcing in Argentina
tires, plastic injection, etc. (brakes, alternators, starters, stabilizers, etc. in the future)
Internal Production in Brazil
doors, body panels, rear axles, cross members, etc.
Out-sourcing in Brazil
steering gear boxes, brakes, shock absorbers, clutches, drive shafts, wipers, electricals, glass, springs, bolts and nuts, etc.
Extra-Regional Imports
engines, etc.

Source: Assembler E

(4) Assembler G

Assembler G is planning of major restructuring of its product line-up in 1996 in view of complementation with Brazil. It has been already making continuous efforts at out-sourcing (only some axle parts, shafts, gears and machining parts are internally made at present), and will concentrate exclusively on assembly taking this opportunity of introducing a new model. Procurement operation of the new model seems extremely complicated and constantly changing, as it sticks to the economic principles of locating production most thoroughly as far as the local contents regulation is satisfied.

The local contents ratio of the new model will be at first 65%. Thanks to the advanced level of complementation, imports of Brazilian autoparts are unlikely to cause problems. Engines will be made by an Argentine subsidiary of a Brazilian autoparts supplier, which bought the transmission plant of Assembler G, based on an English design.[18] In addition, clutches, propeller shafts, upholstery of roofs and doors, seats, lights, paints, tires and wheels are locally procured. Transmissions are initially imported from Europe and then transferred to a local subsidiary of an OEM supplier. The definition of local contents becomes extremely complicated when different stages of a production process are conducted in different countries. For example, differential carriers and shaft drums are made in Argentina and Brazil, assembled in Uruguay and re-imported for final assembly. In the case of front axles, cross members, cross leaf springs, calipers, disk brakes, and steering knuckles are all imported as a unit from Europe, and then combined with local steering in Argentina.

[18] The engine supplier has to abide by the same local-contents regulation as the assembler.

5.4.2 Structure of the Autoparts Sector

(1) Profile of the Sector

According to the National Census in 1984, there were 1,700 autoparts suppliers. Approximately 41% were micro, 53% were small or medium and only 95 companies were considered as big. In terms of turnover, they represented 2%, 31% and 67% respectively.

Table VI-5-4-4-(a): Number of Establishments in 1984

	Large	PyMEs	Micro	Total
Buenos Aires	67	483	351	901
Capital	13	55	43	111
Córdoba	9	126	91	226
Santa Fe	4	110	108	222
Rest of the Country	2	144	103	249
Total	95	918	696	1709

Source: Moori-Koenig and Yoguel (1992)

Table VI-5-4-4-(b): Value of Production in 1984

(%)

	Large	PyMEs	Micro	Total
Buenos Aires	41.6	16.9	0.9	59.4
Capital	7.5	6.1	0.3	13.9
Córdoba	9.6	4.3	0.3	14.3
Santa Fe	5.9	3.6	0.3	9.8
Rest of the Country	3.2	0.4	0.1	2.6
Total	66.8	31.4	1.8	100.0

Source: Moori-Koenig and Yoguel (1992)

Such a substantial development of the local autoparts sector has been brutally reversed throughout the 1980s. The number of suppliers was reduced to about 600 in 1989, of which 20% were OEM specialists, 60% were suppliers both to assemblers and the after-market, and the remaining 20% were producing spare parts only. The sales to the OEM market barely reached 50%. This drastic decline was caused by (i) stagnation in the automobile market, (ii) rising average age of vehicles, and (iii) assemblers' shift in purchasing pattern.

The Automotive Regime may seem to have made the 1990s a decade of a leap forward for the automobile industry in Argentina. The autoparts sector also increased its production level three-fold from March 1991 to January 1994. The rate of operation of the installed capacity came up to 100% in 1994. However, the number of autoparts suppliers has been further reduced to 350 by the time of the present research. It is said that the sectoral concentration is so high that approximately 10% of the suppliers represent 65% of the total Argentine production. The OEM sales saw a slight upturn to 60%, followed by the after-market sales and exports (see Table VI-5-2-5). The number

of suppliers may become as small as 100 firms in 2000 (El Economista, 7 July 1995), one-seventeenth of 16 years ago, due to the trend towards trade liberalization (Section VI.5.2) and unit delivery (the next sub-section).

In order to understand the current situation of PyME suppliers in Argentina, questionnaire survey was conducted by the research team in co-operation with KPMG. The total number of contacted suppliers is 221 (83 from CAIA and 138 from CIFARA).[19] The total number of the replies is 93 (48 from CAIA and 45 from CIFARA). Although some firms declined any information disclosure outright, others could not participate as their manufacturing business in this sector or even their existence itself is under threat, or they could not grasp the current situation by themselves due to the on-going major restructuring.

Among the 93 suppliers who answered the questionnaire, 66 are classified as PyMEs (26 from CAIA and 40 from CIFARA). In Argentina, PyMEs are firms with a turnover in excess of 18 million pesos *or* a workforce of not more than 300 employees (Resolution No.401 of the Ministry of Economy). As can be seen from Tables VI-5-4-5, there are more small suppliers than medium-sized ones among the respondents. Approximately two-thirds of them have a history over three decades, but at the same time, over a quarter came into being in the turbulent epoch of the 1980-90s. Only eight PyME respondents are affiliated to foreign capital (the majority interest in five and the minority interest in three). Their nationality are: four from Brazil, three from Europe and one from other Latin America.

Table VI-5-4-5-(a): Size of the Autoparts PyMEs

Turnover	Number		Employees	Number	
Up to 2 million pesos	16	24%	Up to 20	4	6%
2-6	22	33%	20-50	15	23%
6-10	12	18%	50-80	10	15%
10-14	8	12%	80-100	11	17%
14-18	4	6%	100-150	10	15%
More than 18	4	6%	150-200	9	14%
			200-250	2	3%
			250-300	5	8%
Total	66	100%	Total	66	100%

Source: IDCJ/KPMG

[19] Until November 1995, there were four business associations related to autoparts suppliers: CAIA and CIFARA in the Capital, CAFAC in Santa Fe and CIMC in Córdoba. It is said that CAFAC and CIMC have 30 and 60 members respectively, when the total number of suppliers was 350 at the end of 1994. In other words, about 40 autoparts suppliers have departed CAIA and CIFARA during the first nine months in 1995. In November 1995, the four associations united to establish a new association, AFAC.

Table VI-5-4-5-(b): Date of Establishment

Established	Suppliers	
Before the 30s (1918)	1	1.5%
During the 30s	4	6.0%
During the 40s	5	7.6%
During the 50s	12	18.2%
During the 60s	21	31.8%
During the 70s	6	9.1%
During the 80s	11	16.7%
During the 90s	6	9.1%

Source: IDCJ/KPMG

As one of the measures of competitive strength, export performance of the respondents are reviewed here (Tables VI-5-4-6). Most of them are not major exporters; 35% of the suppliers do not export, and another 43% do not exceed 500,000 pesos a year. However, two foreign-affiliated PyMEs (Cibie Argentina and Thomson Ramco Argentina) and one Argentine PyME (Sintermetal) were ranked in the top autoparts exporters. In the entire sector (see Table VI-5-2-5), exports account for 15% of the total sales. Most exported items include gear boxes, engines and their parts, and body and cabin components, which are primarily produced by assemblers' internal divisions or their subsidiaries. Moreover, they are mainly destined towards Mercosur and other Latin American countries. It can be said, therefore, the competitiveness of the autoparts sector in Argentina is limited to the regional level. Other aspects of the sectoral performance will be analyzed in Sub-Section VI.5.4.4.

Table VI-5-4-6-(a): Exports by Autoparts PyMEs in the Last Fiscal Year

(million Pesos)

Export Value	Suppliers	
Did not export	23	34.9%
Up to 0.3	13	19.7%
0.3-0.5	15	22.7%
0.5-1.0	5	7.6%
1.0-1.5	7	10.6%
1.5-3.0	0	0%
3.0-5.0	1	1.5%
More than 5.0	2	3%

Source: IDCJ/KPMG

Table VI-5-4-6-(b): Major Autoparts Exporters in 1992

(million Pesos)

Company	Control	Product Line	Exports
Eaton	US	Heavy Axis and its Components	12.0
Daneri	US	Piston Rings and Piston Cases	7.5
Cibie Argentina	French	Car lights	5.0
Fate		Tires	5.0
Fab. Arg. Engranajes	German	Gear Box and Steering Wheel Parts	4.0
Perkins	English	Engines	3.5
Jaeger Argentina		Instruments	3.0
SKF	Swedish	Bearings	2.9
Armetal	German?	Brake System Parts	2.0
Thomson Ramco Arg.	US	Brake System Parts	2.0
Metalúrgica Tandil	CIADEA	Forge Parts	1.9
Sintermetal	local	Friction Bearings	1.2
Hoesch Argentina		Suspension Springs and Parts	1.0
Artazcoz		Friction Materials	1.0

Source: Clarin, 12 septiembre 1993.

Table VI-5-4-6-(c): Autoparts Exported from Argentina in 1993

(%)

by Destination		by Item	
Brazil	65.7	Gear Box	32.5
Uruguay	6.6	Reciprocal Engine	15.7
France	5.5	Components of Reciprocal Engine	11.0
United States	4.5	Body and Cabin	9.6
Chile	3.5	Other Autoparts	6.1
Germany	1.9	Tire	4.8
Paraguay	1.8	Shaft with Differential and Transmission	4.4
Spain	1.5	Brake and its Parts	3.0
Venezuela	1.3	Chassis with an Engine Incorporated	2.7
Netherlands	0.9	Electric Ignition	1.6
		Wiper and Illumination	1.0
		Equipment Controlling Liquid and Gas	0.9
		Pump	0.8
		Steering	0.8
		Bolt, Nut and Washer	0.8
		Wheel	0.7
		Suspension	0.6
		Measuring Equipment	0.5
		Spring	0.3
Others	6.8	Radiator	0.3

Total: US$ 602 million

(2) Foreign Direct Investment in Argentina

In the institutional framework of Mercosur, both assemblers and suppliers have to maintain the local contents ratio (only in Argentina until recently) and the balance of trade. Assemblers operating or to be located in Argentina asked suppliers trusted by their headquarters to invest near their plants. Multinational suppliers constructed a cooperative relationship between their affiliated companies in Argentina and Brazil; for example, Cibie Argentina with Cibie Brazil, Fabrica Argentina de Engranajes with ZF Brazil, and Hoesch Argentina with Hoesch Brazil.

Brazilian firms, many of which import Argentine capital goods, intermediates and materials and in return exports their products, were also invited as some large ones have satisfactory record of exporting to the US and European countries. For example, COFAP, the third largest Brazilian autoparts supplier (with sales of US$ 371.9 million in 1993), has bought 26% of the Perdriel share (see the next sub-section). The company also took 50% of the capital stock of the Indufren group, the largest autoparts group in Argentina, thereby also gaining participation in four member firms as well as access to sell its products through the Speedy outlet. Freios Varga, the ninth largest Brazilian supplier (with sales of US$ 186.3 million in 1993), has bought 25% of the Indufren brake manufacturer. Similarly, Nakata Autoparts was asked by Mercedes to produce in Argentina so that the local contents ratio could be cleared for a new model. It bought a local firm which had been delivering 100% of the products to Mercedes and decided to procure tube (for shock absorber) from a local supplier.

In some cases, however, the initial matching of two distinct manufacturing and management cultures has been conflicting. Attempts by Brazilian directors to introduce more flexible work practices and participatory programs have been resisted by highly skilled and politically-conscious unionized workers in Argentina. No Brazilian suppliers have yet installed a wholly-owned subsidiary in Argentina; this strategy has only been adopted by assemblers.[20]

5.4.3 Relationships with Assemblers

(1) From Vertical Integration to Disintegration

In Japan, assemblers are usually specialized in unit assembly and internal production of bodies, engines and transmissions, thus out-sourcing other components to autoparts suppliers. In Argentina, however, this division of labor oscillated in the 1980s and early 1990s.

In the economic crisis around 1980, GM and Citröen withdrew from Argentina, Chrysler sold its plant to VW, and Fiat and Peugeot merged. The Macri Group, local business tycoon, purchased the last (SEVEL) in 1982. VW merged with Ford to form Autolatina in 1987. The Antelo Group, another local business tycoon, bought Renault (CIADEA) in 1992.

[20] The opposite flow of direct foreign investment has not yet been clear. However, several Argentine suppliers visited by the research team expressed an interest in manufacturing in Brazil independently or jointly with multinational suppliers in response to assemblers' request.

Under the economic stagnation, autoparts suppliers also struggled to maintain economies of scale and to compete with expanding imports, especially from Brazil where Autolatina and SEVEL had a partner. This situation oriented them to increase production for after-market and deteriorated the quality of their products on the whole. In response, assemblers raised the level of vertical integration in order to control costs and quality more rigidly. SEVEL led the process, followed by Autolatina and CIADEA when each of them faced the market-share crisis. Suppliers remaining independent also tended to depend exclusively on a single assembler, as they suffered from cumbersome price negotiation for each delivery (twice a week) during the sharp inflation.

The case of CIADEA is unique in the sense that the initiative of vertical integration was demonstrated by the side of autoparts suppliers. The Antelo group, owner of 22 autoparts suppliers (Fric-Rot and Indufren among others), first bought Perdriel, autoparts production arm of Renault. In 1992, it joined forces with Cofap, aforementioned Brazilian supplier, to buy the Argentine subsidiary of Renault. Consequently, the Antelo group achieved certain degree of protection against imported autoparts.

However, it became clearly difficult to maintain vertical integration (and exclusive dependence) when the government decided to liberalize the trade of automobiles and autoparts. Under the new condition, exclusive supply to the single assembler could not guarantee the scale economies necessary for price competition. Moreover, two local licensees, SEVEL and CIADEA, were later forced to raise fund to finance the plant expansion, seeing the vehicle production rose once again. The Antelo group sold some autoparts suppliers (including Perdriel) and autoparts divisions of Renault to reduce its fixed capital and have enough cash flow to continue its expansion process.[21]

The trade liberalization and compensation also brought about new business opportunities. Assemblers established an autoparts subsidiary of the international scale which exports a large proportion of products to Brazil and the global market: e.g. Autolatina's Transax (transmissions) and Fiat's Cormec (engines and transmissions). Unlike traditional plants, they employed workers with higher academic qualification and trained them in Europe and Brazil.

[21] The two local business groups are extremely flexible in distributing their capital into different businesses. Once Fiat (and possibly Peugeot) decided to terminate licensing and instead to build a plant in Argentina, the Macri Group started to transfer their capital to independent autoparts suppliers.

Table VI-5-4-7: Labor Structure in an Old Plant and a New Plant

Educational Level	General Pacheco, BA	Transax, Cordoba
Elementary (mostly completed)	49%	6%
Secondary School		
Incomplete	26%	31%
Complete	19%	29%
University Degree		
Incomplete	6%	32%
Complete		2%

(2) Selection of First-Tier Suppliers

Although assemblers reversed the past tendency towards vertical integration and have started to encourage out-sourcing, not all the autoparts suppliers will benefit from this strategic change. Introduction of new models requires that suppliers as well as assemblers improve technology and quality control.[22] Taking this opportunity, assemblers attempt at evaluating and selecting only the fittest suppliers in order to control procurement more effectively.

According to the manual of Assembly G, for example, 18 features rearranged from ISO9000 are enumerated for the evaluation of suppliers (Table VI-5-4-8-(a)): five concerned with management (M) and 13 with product and process (P). Suppliers fulfill the questionnaire for an initial diagnosis. Evaluators then check several issues for each feature and give scores (0, 4, 6, 8 or 10) to each issue. The general score of the supplier is calculated in the following way:

(i) Ave. Score for M=(Total Score given to Features 1 to 5)/(No. of Issues)

(ii) Ave. Score for P=(Total Score given to Features 6 to 18)/(No. of Issues)

(iii) General Score={(Ave. Score for M)+(Ave. Score for P)*2}/3

[22] CIADEA itself was evaluated as Rank B by French Renault in 1994. If Rank A cannot be achieved by September 1995, the production of Clio is not allowed from March 1996.

Table VI-5-4-8-(a): Features Evaluated by Assembly G

M	P	Features
1		Management Responsibility
2		Principles and Auditing of the Quality Guarantee System
3		Economic Issues, Quality-Related Costs
4		Product Guarantee and Liability over Defective Products
5		Personnel Training
	6	Marketing Quality
	7	Product Specification and Design Quality
	8	Procurement Quality
	9	Production Quality
	10	Process Control, Material/Product Traceability and Verification Post
	11	Product Verification
	12	Control Method/Equipment Verification
	13	Control of Non-Conformity Products
	14	Corrective Measures
	15	Material-Handling, Storage, Packaging and Delivery
	16	Quality Documents Control, Quality Registries
	17	Statistical Methods
	18	Quality Control of Materials Commissioned from Clients

Source: Assembler G

The suppliers are then graded into four ranks based on their general score: A, A-B, B and C (Table VI-5-4-8-(b)). There should be no issues to which Score 0 is given. Suppliers may have different ranks for different products. While Rank A firms need no special action, Rank A-B firms should take minor corrections. In contrast, Rank B firms have to observe the prescribed corrective program strictly, and Rank C firms will no longer get order. Assembler G has currently 160 (potentially 200-220) suppliers, of which only 30-40 might remain. Instead, superior suppliers such as OEM subsidiaries will be added to organize a future group of suppliers consistent of about 60-80 suppliers.

Table VI-5-4-8-(b): Features Evaluated by Assembly G

Score	Rank	Evaluation	Future Business
90-100	A	Fully Satisfactory	
80-89.99	A-B	Satisfactory	depend on minor corrections.
60-79.99	B	Partially Satisfactory	depend on schedule observance.
-60	C	Unsatisfactory	will be cut off

Source: Assembler G

It is extremely important to point out that the move of Assembly G is not an exception (Table VI-5-4-9). The interview results suggest that most of the assemblers located in Argentina would like to reduce the number of first-tier suppliers. The latter are then expected to organize second-tier suppliers so that autoparts are delivered as a unit. In other words, autoparts PyMEs in Argentina can no longer deal with assemblers unless they immediately change the management style and attitude towards quality control.

Table VI-5-4-9: Reduction of First-Tier Suppliers

Assembler	No. of Suppliers			Rank	Suppliers	Comments
	Past	1995	Future			
A		150	80 for a new model	A	8	supply 30%. can export to the headquarters.
				B	50-70	supply 30%. need to obtain A within 2 years.
				C		will be cut off, but may remain if acquired by Brazilian capital.
B	2,000? in 1984	282	200	A	50-60	score over 75%. including many JVs and licensees.
	350 in 1994			non-A		(other ranks are not known.)
C	390 in 1980	190				some to be after-market specialists, but only a minor proportion.
D	390 in 1980	200				(has introduced a grading system, but ranks are not known.)
E		40-50	60 in 1996			
F		30				
G		160 (200-220)	60-80 30-40 new suppliers	A		score over 90.
				A-B		score over 80, need minor corrections.
				B		score over 60, need to observe G's prescription.
				C		score below 60. will be cut off.

(3) Guidance from Assemblers to Suppliers

Assemblers provide guidance mainly for Rank B suppliers to bring them up to Rank A. The diagnostic team, often jointly with the recipient supplier, identifies problems, organizes and facilitates workshops, provides a guideline, sets a target, diffuses best practices and ways of thinking and audits the progress. If the target is achieved, a long-term contract is signed. If short-term finance is needed, the assembler provides an advanced payment, for example. If long-term and large finance is necessary, it encourages joint venture or alliance with Brazilian suppliers, or ask the headquarters to introduce OEM suppliers for licensing as well as joint venture.[23] It may also tie the supplier to sell its products at a discount price. However, assemblers themselves would like to avoid capital participation.

Such guidance is conducted by a diagnostic team of four to eight members mainly from the Purchasing Department but joined by personnel of the Engineering, Production and QC Departments. However, the assistance does not have a long history, i.e. largely absent in Argentina until Protocol 21 and the Automotive Regime. As Argentine subsidiary of assemblers have not yet accumulated sufficient capacity to guide first-tier suppliers, experts are often invited from Brazilian subsidiaries (which can be their owners). More evaluators trained in Europe or European evaluators stay there.

Due to the insufficient guidance capacity, assemblers cannot assist all the rank B firms at once in need of assistance for corrective action. Suppliers are selected according not only to the general score of their QC performance but also to the importance of their products, the assembler's share in their sales,[24] possibility of import substitution and exportation, their production scale, investment ability, communication channels, and the cost of corrective actions. However, they are not discriminated by the capital origin (local, Brazilian or others).

5.4.4 Fund Availability, Quality Control and Technology Acquisition

This sub-section makes use of the IDCJ/KPMG questionnaire survey of autoparts PyMEs in Argentina, which has already appeared in Sub-Section VI.5.4.2. In response to the question about strengths and weaknesses, the respondents admit that their financial resources are the weakest point. R&D is also relatively weak. On the other hand, almost

[23] The use of OEM technology is sometimes compulsory.
[24] At the same time, however, diversification of the clients is encouraged.

all the suppliers find themselves strong in production skills, which seem to compensate for their relatively poor production facilities.

Table VI-5-4-10: Strengths and Weaknesses
(Number of the Respondents)

	Strength	:	Weakness
Production Skills	65	:	1
Organization	53	:	13
Information	45	:	21
Design	38	:	28
Production Facilities	35	:	31
R&D	28	:	38
Marketing	23	:	43
Financial Resources	15	:	51

Source: IDCJ/KPMG

When they are asked which government policy is desirable, financial support is understandably ranked high. However, the importance of support for technological acquisition and quality control is rather low. Self-image of autoparts PyMEs in Argentina can be simply summarized that they are quite confident in production but feel inferior in design and investment.

Table VI-5-4-11: Policies Expected to the Government
(in the order of importance)

1	Reduction of Tax/Pension Burden
2	Price Stabilization
3	Financial Support
4	Flexible Labor Market
5	Foreign Exchange Stability
6	Support for Technological Acquisition
7	Support for Quality Control and Productivity Improvements
8	Support for Export Marketing

Source: IDCJ/KPMG

(1) Fund Availability

Although most of the suppliers visited by the research team answered that they predominantly rely on internal reserves, 71% (47/66) of the respondents have managed to borrow from financial institutions according to the questionnaire survey. Even more surprisingly, 61% (40 firms) were funded for purchasing machinery and 27% (18 firms) for factory expansion, both of which are loans of the long-term nature, during this financial disorder and restructuring.

However, they experience difficulties in borrowing, in particular due to the high interest rate (could be 3.5% per month) and insufficient availability. In addition, lenders do not see the local autoparts sector very promising, as assemblers are trying to reduce the number of first-tier suppliers. Some of the suppliers visited by the research team expressed that a long-term sales contract (or a license of foreign technology) is a must

which guarantees depreciation of the expensive machinery. Successful companies also complained that the amount was often insufficient for renovation at the scale necessary in view of the regional competition.

Table VI-5-4-12-(a): Purposes of the Loans

	Suppliers	
Renewal of Machinery	40	61%
Working Capital	32	48%
Factory Expansion	18	27%
Trade Finance	12	18%
Inventory	10	15%

Source: IDCJ/KPMG

Table VI-5-4-12-(b): Difficulties in Obtaining Loans from Financial Institutes

	Suppliers	
High Interest Rate	32	48%
Scarcity of Financial Resources in the Financial Institutes	17	26%
No Difficulties	7	11%
Stagnant Prospect of the Automobile Industry	6	9%
Lack of Mortgage or Collateral	5	8%
Absence of the Guarantor	0	0%

Source: IDCJ/KPMG

Commercial banks and credit unions are the primary sources of finance. On the other hand, BNA, which arranges institutional finance for PyMEs, is even less important than crisis-haunted provincial banks. Only six suppliers have so far used the system: four for working capital, four for technological improvements, one for purchasing machinery, one for export finance and one for quality improvements (multiple answers). Another supplier visited by the research team said that the BNA loan was used for plant relocation. FONTAR, preferential finance for R&D, is criticized that the interest rate is excessively high and that the available amount is insufficient.

Respondents are fairly well aware of the special loans for PyMEs arranged by BNA and BICE. However, the schemes seem to offer no advantage or attraction as compared with other sources available on market. Above all, the procedure for such a loan is too cumbersome. BICE, providing a two-step loan for PyMES, evaluates the soundness of intermediary banks. Moreover, mediators have to take risks to guarantee the loan. Consequently, they do not wish to grant loans under this scheme, or if they do, charge a spread to a level close to the market rate.

Other financial means in Table VI-5-4-13-(a) include machine-tool suppliers and automobile assemblers. From the discussion during the field work, suppliers' credit seems to have been used more often than suggested by the questionnaire survey. For example, Supplier RR (135 employees) and Supplier GS (40 employees) presented the

cases of highly preferential treatment obtained from foreign (Spanish, Italian, and Swiss)[25] and local machinery producers (1-year grace period, 5-year repayment, and almost zero real interest rate). The interview also revealed that a couple of suppliers (with 135 and 200 employees respectively) procured capital from overseas financial market.

A local machine-tool builder (200 employees) argued that many of local autoparts suppliers cannot fulfill the conditions of the institutional finance. Instead, that company can provide suppliers' credit at a reasonable interest rate on the condition that 20% of the price should be immediately paid as a deposit and that the remaining should be repaid with 14-28 installments. For the machinery supplier, sales of repositioned machinery on a second-hand market would still make profit even if the customer went into default after paying the deposit and four to five installments. As the purpose of this credit is to raise the rate of operation by promoting sales, such factors as historical customer relationships are also taken into consideration.

Table VI-5-4-13-(a): Financial Institutions Granting the Loans

	Suppliers	
Commercial Banks	37	56%
Credit Unions	11	17%
Provincial Banks	8	12%
Banco de la Nación Argentina	7	11%
Financing Entities	2	3%
Others	2	3%

Source: IDCJ/KPMG

Table VI-5-4-13-(b): Reasons for Not Using the BICE/BNA Finance

(Total = 30 suppliers)

	Suppliers	
Lack of Advantage or Attraction of the Scheme	16	53%
Tight Conditions on the Mortgage, Guarantor, etc.	12	40%
Scarcity of Financial Resources in the Scheme	4	13%
Lack of Interest on the Side of Financial Mediators	8	27%

Source: IDCJ/KPMG

Table VI-5-4-13-(c): Financial Measures Expected as Institutional Support

	Suppliers	
Simplification of the Application Procedure	52	79%
More Financial Resources for Lending	51	77%
Looser Conditions of Mortgage and Collateral	26	39%
Trade Finance	25	38%
Establishment of the Loan Guarantee System	22	33%
Interest Subsidy	19	29%
Looser Conditions of Guarantors	17	26%
Equity Participation in PyMEs	5	8%
Others	3	5%
Not Necessary	2	3%

Source: IDCJ/KPMG

[25] Not all the suppliers can obtain suppliers' credit for imported machinery. If it is not available, they have to borrow from local private banks at a high rate of interest and take an exchange risk as well.

(2) Quality Control

Autoparts suppliers in Argentina were threatened to lose business with assemblers unless they are certified with ISO9000 or its equivalent designated by their customers. Among the questionnaire respondents, however, only one (foreign-affiliated firm) has so far got qualified. On the contrary, 17% (11/66) of them are not planning of acquiring it in the near future. The reasons for dispensing with the certificate are (multiple answers):

(i) increase in fixed costs (six firms)
(ii) increase in the cost of managing documents (five firms)
(iii) small benefit (two firms)
(iv) others (five firms), including:
  a. not requested from clients (priority given to continuous improvements for OEM suppliers and to customer satisfaction for after-market specialists.)
  b. crisis of the autoparts sector

None of the respondents replied that the procedure for obtaining it is too complicated.

According to Table VI-5-4-14, the design-related QC activities, although most lagging behind, have already been conducted at half of the respondents. This may show their levels of understanding about ISO9001, as these are the most difficult tasks before qualification. Among the interview collaborators, Supplier L (employing 150, but more than 1,000 employees in the entire group) initiated the manual preparation around the time of Protocol 21[26] and is now rapidly expanding its business, while a laggard will not be ready by 1997 as its plant lay-out has to be modified before qualification.

Table VI-5-4-14: Activities Required for ISO9001

Activities	Number	
Final inspection and testing	60	91%
In-process inspection and testing	59	89%
Inspection and testing of incoming goods	53	80%
Executive review of the quality system at the specified intervals	50	76%
Preparation of the documented procedures	50	76%
Maintenance of inspection, measuring and testing equipment	50	76%
Document which defines quality policy	49	74%
Preparation of the quality manual	49	74%
Control of non-conforming products	48	73%
Documentation of the procedures for implanting corrective action	47	71%
Document which defines the responsibility, authority, etc.	46	70%
Preparation of the quality plan	45	68%
In-house quality auditor	43	65%
Documentation of the procedures for controlling and verifying design	40	61%
Design verification to conform to user needs and requirements	32	48%

Source: KPMG/IDCJ

[26] However, ISO9000 was still expected in 1995 at the time of the interview.

Besides ISO9000, many suppliers are introducing continuous improvements such as monthly SPC (statistical process control) reports, and some are going as far as the TQC. A couple of the interviewees have been awarded with a national or provincial (e.g. Córdoba) quality prize.

Supplier P (140 employees) accepted a private consultant sent from one of its client assemblers. He introduced the 5s activity and arranged the cells system. The shopfloor was divided into cells, each of which were regarded as an independent plant responsible for production. Under the guidance of the consultant, the assembler and its subsidiary (from which P purchases forgings) participated in the experiments lasting for a week. Using the productivity data, the cell's leader, participants from the assembler and its subsidiary, and the consultant discussed in the workshop to identify problems, schedule problem-solving activities, and facilitate them through incentives. The assembler evaluates and scores the achievements and provides appropriate assistance for QC methods and toolings.

Although these experiments are becoming continuously managed under the internal quality committee which consists of seven members from Production, Procurement and QC Divisions and the top management, the TQC still needs external assistance and motivation. The autonomous improvements from the shopfloor do not seem to be sufficiently encouraged, as the production statistics are not open to the workers. Another supplier visited by the research team tries to diffuse the learnings from an AOTS seminar participant through internal training, but its business performance is in crisis due to the lack of steady order after borrowing extremely expensive local capital.[27]

Who helped PyME suppliers to improve their quality control? 65% (43/66) of the questionnaire respondents referred to clients. The Purchasing or Quality Assurance Department of assemblers and first-tier suppliers provided assistance for continuous improvement programs, drawing up a quality manual for ISO9000, training courses, quality inspection/auditing and suggestions at various levels. Suppliers sometimes dispatched their engineers for training at their clients.

55% (36/66) of the respondents hired external QC consultants during the last fiscal year. Many of the small suppliers sought support from independent professionals, particularly engineers. Unlike assemblers, however, their budget does not allow them to contract good specialists. A number of suppliers visited by the research team actually

[27] TQC activity of this supplier was highly praised by the JICA mission five years ago.

complained that they were too general and could not understand the internal affairs. Instead, they attempted to internalize the QC regime by employing experienced QC specialists. Supplier C (220 employees) employed one from Brazil, where ISO9000 is more widespread than Argentina. Similarly, others employed those with experience in assemblers or other suppliers. They were in charge of arranging internal training programs, providing lectures themselves, and drawing up the quality manual and proceeding. Some specialists can judge even the completion of preparation, but usually external consultants are called in for this final check.

In contrast, autoparts PyMEs have rarely relied on public institutions. Although several suppliers visited by the research team registered at INTI or IACC, they have never attended at the seminars, because it is believed that they are not practical. Evaluation of the SDP (Suppliers Development Program) was divided. Some say that the program is good, but that its progress is hindered by the lack of finance. Others doubt INTI's competence in quality control and training. In general, however, their expectation is not small. Public measures most expected by the questionnaire respondents are (i) training services, (ii) subsidy to consulting fee, (iii) information services, (iv) subsidy to training fee, and (v) assistance to in-house quality auditing.

(3) Technology Acquisition

The questionnaire made an inquiry to the sources of technological change at present and compared them with their importance expected five years later. In the next five years, technological efforts will be intensified on the whole (Table VI-5-4-15).

Suppliers' own efforts are currently of prime importance, and this prominence will not be changed in the near future. Supplier L, the largest as a group among those visited by the research team, builds press machinery internally. Supplier AZ (50 employees), after-market specialist, developed coiling machinery because machinery available on market was not appropriate for small-lot production of various products. On the other hand, Supplier RR argued that autonomous R&D cost too much for their production scale. Another supplier mentioned that internal minor modifications were active during the economic stagnation when new machinery could not be purchased.

Internal technological efforts not only generate ideas on the shopfloor but also seek information from various sources: assemblers, machinery producers, equity participants, international trade fairs and trade journals (not in the order of importance). Such information needs to be modified to adjust to smaller production scale or available feedstocks, for example. However, human resources necessary for such technological

change are not always well recognized. Supplier L is an exception which recruited over 30 fresh graduate engineers and brought them up internally.

The other significant sources of technology are foreign companies and clients. Their significance is expected to leap forward in the next five years. While desire of the suppliers to remain self-reliant is quite strong, many of them wish to form various kinds of foreign partnerships (mergers, joint ventures, technology licenses and strategic alliances).[28] Licensing was easier when multinational autoparts suppliers gave licenses of different technology or products to different Argentine suppliers. Supplier RR, for example, acquired four licenses from US and German OEM suppliers altogether. However, licensing is increasingly difficult because multinational suppliers began to review their strategy so that licenses are provided more selectively or they themselves establish a plant in Mercosur.

Government institutes and Argentine universities made little contribution to their technological acquisition. INTI is widely used for testing and certification, but a couple of suppliers expressed concern about its reliability even in these areas. Suppliers' attempts at establishing cooperative relationships with them may continue to be slow in the next five years.

Table VI-5-4-15: Route of Technology Acquisition

Route	Number	
Now		
Developed by their own efforts	36	55%
Acquired through cooperation with customer companies	11	17%
Acquired through cooperation with government institutes	1	2%
Acquired through cooperation with Argentine universities	1	2%
Acquired through cooperation with foreign companies	14	21%
Acquired through cooperation with consulting firms	5	8%
By other means (e.g. feedstock suppliers)	4	6%
Next Five Years		
Developed by their own efforts	47	71%
Acquired through cooperation with customer companies	35	53%
Acquired through cooperation with government institutes	8	12%
Acquired through cooperation with Argentine universities	6	9%
Acquired through cooperation with foreign companies	41	62%
Acquired through cooperation with consulting firms	12	18%
By other means (various partnerships)	9	14%

Source: KPMG/IDCJ

[28] Those who answered that they would acquire technology by other means pointed out these partnerships.

5.5 The Brazilian Autoparts Sector

5.5.1 Autoparts Localization

Details on the items localized by each assembler in Brazil were not available in the present research. GM do Brazil reportedly imported 15-20% of the autoparts in early 1994; in other words, the local contents ratio was 80-85% on average for all the vehicles. This is said to be typical for most of the assemblers at that time. The ratio is set lower for new models, since the global sourcing network is used to accelerate the introduction and development process. Some models newly introduced by GM initially recorded 70%, before progressively augmented. However, the figure is still higher than the "optimum" local contents ratio defined later. Table VI-5-5-1 is presented below to suggest a rough idea as to what kind of autoparts are made in Brazil.

Table VI-5-5-1: Autoparts Suppliers by Specialty

Product Category	Suppliers	Product Category	Suppliers
Stamping	129	Filters	24
Engine and its Parts	104	Lamps	23
Electricals	67	Transmission and Clutches	22
Machining Parts	61	Exhaust	21
Casting and Forging	60	Springs	20
Other Components	48	Control Cables	18
Plastic Components	47	Wheels	17
Rubber Components	46	Carburetor and Injection	16
Bolts and Nuts	43	Bearings	13
Electromechanicals	43	Iron Fittings	13
Suspension and Steering	41	Synthetic Components	12
Seating and Upholstery	34	Friction Linings	11
Finishing Components	28	Clutches	11
Brake and its Parts	24	Instrumentation	8

Note: 487 autoparts suppliers identified as many product categories as they apply.
Source: Sindipeças, Desempenho do Sector 1974/1994.

5.5.2 Structure of the Autoparts Sector

(1) Profile of the Sector

Thanks to the powerful government promotion, 1,500 autoparts suppliers had already been operating in Brazil in 1964. However, many PyMEs had to become specialized in the after-market, when the BIG 3 internalized component production in the late 1960s. The market share of spare parts expanded again in the early 1980s due to the slow-down of automobile assembly. Approximately 80,000 employees were dismissed from the autoparts sector in 1980. This time, large suppliers ate away the after-market

from PyMEs as well as redoubled their efforts at exporting to the more stable overseas market. Nevertheless, the autoparts sector as a whole had not experienced drastic restructuring by 1990, when there were reportedly still 2,000 suppliers.

Table VI-5-5-2: Transition of the Autoparts Sector since 1980

(thousand)

Year	Autoparts Market (%)				Idle Capacity	Number of	Automobile
	OEM	A/M	Exports	Others	(%)	Employees	Production
1980	70.7	18.4	5.8	5.1	20.8	278.6	1165.2
1981	65.0	21.6	6.2	7.2	33.2	198.4	780.9
1982	65.0	20.0	6.7	8.3	29.4	219.5	859.3
1983	62.8	22.7	9.2	5.3	30.1	211.0	896.5
1984	58.9	21.6	15.0	4.5	22.3	240.1	864.7
1985	60.3	22.5	12.7	4.5	19.8	260.8	966.7
1986	56.2	25.1	13.4	5.3	15.7	291.7	1056.3
1987	51.3	27.2	16.3	5.2	16.8	280.8	920.1
1988	60.3	21.3	13.1	5.3	17.0	288.3	1068.8
1989	59.7	24.8	10.2	5.3	17.8	309.7	1013.3
1990	57.7	26.0	11.1	5.2	25.7	285.2	914.5
1991	59.5	22.3	13.5	4.7	26.9	255.6	960.0
1992	60.1	20.3	15.1	4.5	27.8	231.0	1073.8
1993	61.6	17.5	15.7	5.2	19.8	235.9	1391.4
(1994)	60.0	17.5	17.0	5.5	15.0	235.0	1554.0

Source: Sindipeças, Desempenho do Sector 1974/1994.

The sectoral transformation emerging in the 1990s is quite different in nature from the previous crises. First, the Collor Plan introduced in March 1990 hit hardest upon PyME suppliers, which were de-capitalized overnight with no other source of finance available. Second, trade liberalization forced suppliers to compete with imports from industrially advanced countries. While 78,000 workers lost a job like a decade before, the number of suppliers also plummeted to about 750 in 1993 because those which treated the sector as a secondary business exited the market. Although high tariff protection was re-introduced for vehicles in 1995, the duty on autoparts was in contrast further cut down at the beginning of 1996. In addition, the real remains over-valued against the US dollar and have thus deprived local autoparts of price competitiveness.

The third factor of the structural change is a new type of relationships between assemblers and suppliers, to be discussed in Sub-Section VI.5.5.3. In order to introduce new models quickly and to make procurement control simple, assemblers are picking up a small number of first-tier suppliers, which are trusted to sub-assemble components for unit delivery. According to Sindipeças, the recent economic recovery has encouraged the re-entry of marginal suppliers to reach 1,000 firms in the summer of 1995. Out of these, 500 firms belonging to Sindipeças (200 OEM suppliers and 300 after-market specialists) are manufacturing autoparts as a principal product, which represent over 90% of the total sales of independent suppliers. The association forecasts that, despite of the lasting

growth of automobile assembly in Brazil, the number of first-tier suppliers will be reduced to 230 (200-250) within 2-3 years. In fact, the sector's average profitability had been minus or barely above zero between 1991 and 1994.

At present, about three-quarters of the Sindipeças members employ less than 500 workers (Table VI-5-5-3). As for the capital origin, 74.5% are entirely national, 5.2% majority national and 20.3% either total or majority foreign. However, the autoparts sector is marked by the dominance of large firms, under foreign ownership in particular (Table VI-5-5-4). Brazilian giants are also multinational, pursuing strategic alliance and even with an R&D center in the USA (Metal Leve) to accumulate technological capability.

Table VI-5-5-3: Size and Establishment Date of the Sindipeças Members

Employees*	Suppliers		Established**	Suppliers	
Up to 30	27	5.6%	Before 1939	18	3.7%
31-60	35	7.2%	in 1940-44	20	4.1%
61-125	73	15.0%	in 1945-49	30	6.2%
126-250	110	22.6%	in 1950-54	55	11.3%
251-500	112	23.1%	in 1955-59	80	16.4%
501-1000	68	14.0%	in 1960-64	65	13.3%
1001-2000	43	8.8%	in 1965-69	62	12.7%
2001-4000	14	2.9%	in 1970-74	57	11.7%
over 4001	4	0.8%	in 1975-79	37	7.6%
			in 1980-84	24	4.9%
			in 1985-89	18	3.7%
			in 1990-94	21	4.3%
Total	486	100%	Total	487	100%

*: July 1994.
**: October 1994.
Source: Sindipeças, Desempenho do Sector 1974/1994.

Table VI-5-5-4: Major Autoparts Suppliers in Brazil

(US$ million)

Company	Main Products	93 Sales	Control
Bosch	Electric Parts, Electronics	650	German
Cofap	Engine Parts, Shock Absorbers	377	Brazilian
Metal Leve	Pistons, Bearings	251	Brazilian
ZF	Transmissions, Power Steering	194	German
TRW	Steering Gears, Tie Rods, Arms, Ball Joints	169	US
Clark	Transmissions, Rear Axles	159	US
MWM	Diesel Engines	155	German
Varga	Brake System	151	Brazilian
Wapsa	Electric Parts	150	German
Allied-Signal	Brake System	118	US
Albarus/Dana	Universal Joints, Piston Rings, Clutches	118	US
Cummins	Diesel Engines	117	US
ATH		114	US
Rockwell Braseixos	Axles, Forged and Stamped Parts	111	US

Source: "Maiores e Melhores", Exame, 1993.

Due to the data shortage, the following refers to the entire autoparts sector in Brazil rather than PyME suppliers.

(2) Competitiveness in the Local Market

The local contents ratio and the items to be localized fundamentally depend on the competitiveness of local autoparts, although other factors,[29] including the local contents regulation and the tariff table, influence the decision. Figure VI-5-5-1 shows the "optimum" local contents ratio (i.e. the ratio calculated on the condition that only the price-competitive items are localized) in 1993 when the logistic cost from Europe is 8% and the duty is 20%. It means that Brazilian suppliers have competence to supply competitive autoparts worth 60% of the local contents under the tariff of 20%, but only worth 40% (or even lower with higher efficiency in logistics) if the tariff protection is removed.

Low wage rate is a significant advantage of Brazilian autoparts suppliers (Table VI-5-5-5). The share of labor costs in casting parts is as high as 35-50% against 5% in automobile assembly. However, the uniform pay rise in the automobile industry hit the autoparts sector harder, as the assemblers absorbed it more easily by introducing new models. Low-price energy is another advantage. Moreover, the sector's profitability, and the competitiveness of Brazilian autoparts, is highly sensitive to the production scale (Figure VI-5-5-2). The expanding automobile market can thus elevate the strength of Brazilian suppliers. On the other hand, the price of raw materials and feedstock is, although declining, still higher than the international level (Table VI-5-5-6).[30] These factors as a whole, together with some productivity improvements and the tax and margin cuts agreed in the Sectoral Chamber (see Sub-Section VI.5.5.5), brought about price reduction up to 30% between 1990 and 1993.

Table VI-5-5-5: Direct Labor Costs including Social Benefits

(US$/hour)

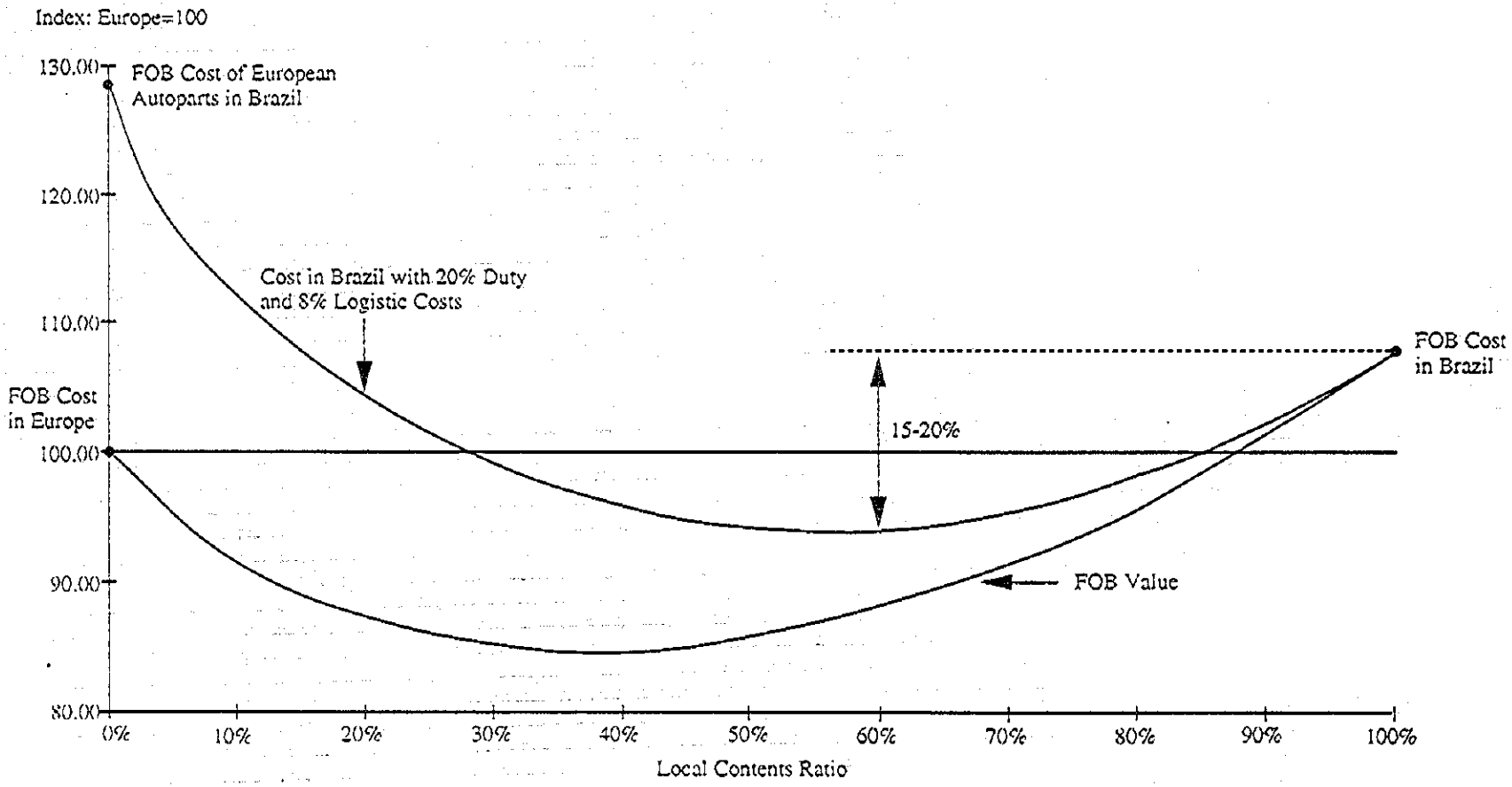
	Brazil	Germany	France	Italy	USA	Japan
Labor Cost	6	26	17	20	16	17

Source: Sindipeças/BA&H, 1994, p.15

[29] The business cycle in Brazil and the foreign exchange rate are two more examples. In the economic boom, when the locally installed capacity is in full operation, the ratio is likely to go down. Assemblers can switch procurement sources from appreciated countries to devaluated countries.

[30] Material costs are said to be a strength for casting, according to ABIFA (Foundry Association). On the other hand, ABIPLAST (Plastics Association) argued that material suppliers were a main source of quality problem, but smaller injection businesses could not put claims. The members welcomed the reduction of import duties, now 2%.

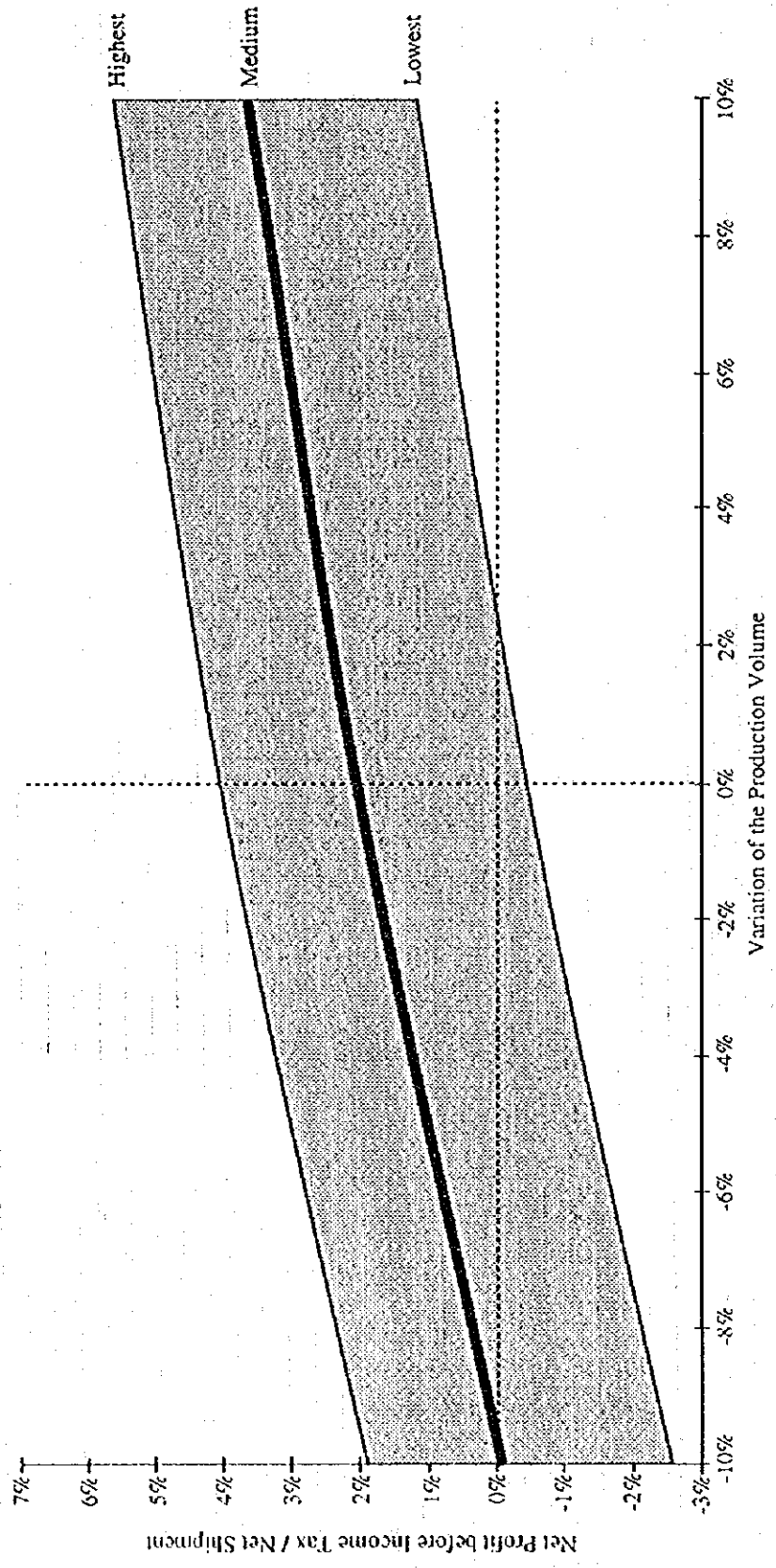
Figure VI-5-5-1: the Optimum Local Contents Ratio in 1993



<Methodological Note>
The lower curve shows how the total price of the entire autoparts (on the vertical axis) changes if the components are localized in the order of the price differential with the European products (from left to right). The upper curve shows the same after the 20% duty and 8% logistical costs are added to the European price. The total price of the entire autoparts hits the lowest when 60% of the components were localized. It should be notice that the total price of the entire autoparts is lower at this localization ratio in Brazil than in Europe. If the total price of the entire autoparts constitute 70% of the vehicle price, the local contents ratio is 72% (0.70*0.60+0.30=0.72).

Source: Sindipecas/BA&H, 1994, p.32

Figure VI-5-5-2: Sensitivity of the Autoparts Sector Profitability to the Volume of Automobile Production



Note: based on the total production of 1.4 million vehicles in 1993.
Source: Sindipeças/BA&H, 1994, p.21.

Table VI-5-5-6: Price of Raw Materials Compared with the International Level

Raw Material	Europe/Brazil
Cold Laminated Flat Steel FeP 04	0.90
Hot Laminated Flat Steel FeP 13	0.99
Bond Steel Bar	0.94
Carbon Steel Bar SAE 1040	0.81
Seamless Steel Tube SAE 101	0.91
Welded Steel Tube	0.59
Primary Aluminum (Ingot) 99.5%	1.22
Aluminum Bond AISi 132	0.79
Piece of Lead (Ingot) 99.99%	0.90
Electrolytic Cathode Copper	0.91
Zamak	1.19
Silver 999/1000	0.73
Copolymer Polypropylene 10% Elastomer	0.62
Copolymer Polypropylene 30% Tinsel + 10% Black Elastomer	0.63
AMS 42 Heat-and-Impact High Resistant Injection	0.56
Nylon 6.6 A-216 Natural	0.65
Nylon 6 Injection G2.5/3.0 Natural	0.69
Resin PVC Solvic 271	0.67
Termaloy (AMS + Polycarbonate)	0.53
Synthetic Rubber EPDM EP-27	0.72
Natural Rubber CEB2	0.49
Lubricant Basic Oil PS30-Bright Stock 140	0.48

Note: US$, Tax not included.
Source: Sindipeças/BA&H, 1994, p.17

(3) Export Performance

As was seen in Table VI-5-2-5, independent suppliers account for 61% of the autoparts exported from Brazil, while the rest is attributed to assemblers. It is said that, although 150 suppliers are involved in export business, the top 15 companies deal with three-quarters of what independent suppliers exported. There are some clues in the export performance showing remarkable competence of the Brazilian autoparts sector. According to Table VI-5-5-7, Brazil exports a much higher proportion to industrially advanced countries than Argentina, which has remained a regional exporter. The introduction of world cars during their lifetime in the US and Europe may reinforce this tendency, since assembly plants all over the world of the same brand can theoretically use components made in Brazil. VW nominated Brazil as one of the countries consulted for the "Global Purchase". Brazilian suppliers took part in almost 80% of the quotations all over the world, of which 67 firms were invited to visit the VW headquarters in Germany in 1994.[31]

[31] ABIFA (foundry association) and ABIMAQ (machinery association) pointed out that port handling and shipping costs are the major weakness for exporting from Brazil.

Table VI-5-5-7: Autoparts Export Structure by Destination
(1993, %)

Brazil		Argentina	
United States	40.6	Brazil	65.7
Argentina	22.2	Uruguay	6.6
Mexico	9.3	France	5.5
Germany	7.2	United States	4.5
United Kingdom	3.2	Chile	3.5
Chile	1.4	Germany	1.9
Uruguay	1.3	Paraguay	1.8
Italy	1.2	Spain	1.5
Venezuela	1.1	Venezuela	1.3
Paraguay	1.1	Netherlands	0.9
Others	11.4	Others	6.8
Total US$ 2,665 mil.	100	Total US$ 602 mil.	100

Source: Sindipeças, Desempenho do Sector 1974/1994 for Brazil, and Eco-Axix SA for Argentina

5.5.3 Relationships with Assemblers

(1) Vertical Disintegration

In Brazil, like in Argentina, vertical integration was a corporate culture of automobile assemblers during the economic instability. Insufficient scale and dispersed technical efforts deteriorated inefficiency of the internal autoparts production. However, the recent liberalization of trade has reversed this trend towards out-sourcing.

For example, GM do Brazil has been increasing the number of items to be externally purchased from 2,000 to 11,000 in 1994-95. Internal production of Mercedes was 70%, is 50% and will be 20-30% a couple of years later. VW is raising its out-sourcing ratio from the current 70%. Fiat do Brazil is even more advanced to champion the policy of "outward growth", which means maximum out-sourcing. In an extreme case, Fiat transferred 16 presses to Usiminas, its traditional supplier of steel sheets, in order to procure stamping parts. Usiminas has begun to weld some of them into sub-assemblies and eventually plans to deliver the entire body pre-assembled.

(2) Selection of First-Tier Suppliers

Vertical disintegration notwithstanding, the number of first-tier suppliers is rather declining as can be seen in Table VI-5-5-8. Assemblers prefer to receive sub-assemblies from a small number of first-tier suppliers, which are price competitive, demonstrate excellent product quality, have accumulated design capability to collaborate on the quick introduction of new models, and can share the task of controlling those below the second

Table VI-5-5-8: Reduction of First-Tier Suppliers

Assembler	No. of Suppliers			Rank	Suppliers	Comments
	Past	1995	Future			
Sindipecas Members	480 in 1990	500	230 (200-250) within 2-3 years	A	80-100	more than 750 employees. can export to the US and Europe.
				B	180	200-750 employees.
				C	250	less than 200 employees.
A	507 in Nov. 1993	435		A		score over 90.
				B		score over 70.
				C		score below 70.
B	510 in 1988 230 in 1994	180	100 final target			
C	600 in 1994	500	200-250 in 1997			
D	300 not specified	130				
First-Tier		145	70 final target	A		80% of the suppliers. 95% guaranteed.
				non-A		20% of the suppliers. strict guidance and follow-up necessary.

Note: not all the autoparts suppliers are Sindipecas members.

tier. It is too costly to support a large segment of PyME suppliers so that they might reach competitiveness beyond the local after-market.[32]

The pace of selection is varied between different assemblers; GM and VW are arguably doing so faster than Ford. They take the opportunity of introducing new models, which require more complex technology than old ones, for sifting out suppliers. It is no coincidence that Ford, reluctant to bring in new models, feels it less compelling to reduce the number of suppliers. The most progressive assembler in this regard is again Fiat. Another remarkable example of its unit delivery system is a medium-sized producer of dashboard control panel for Tempra, which receives 100 parts from 15 sub-suppliers.

Nevertheless, Brazilian autoparts suppliers still form a network rather than a rigid pyramid in general. They belong to different constellations depending on products and clients. A first-tier supplier of a certain component for Brand A may operate as a second-tier supplier of another for Brand B. Otherwise, suppliers may lose flexibility to survive economic turmoil when its sole client runs into trouble. One of the first-tier suppliers visited by the research team (shown in Table VI-5-5-8) insisted that double sourcing was still indispensable for important materials. For example, the mold-making for aluminum injection takes 5-8 months even if the supplier needs to be switched. In another case, an assembler negotiates price and quantity directly with all its suppliers, but unassembled parts are delivered to the first-tier suppliers, which have to manage the storage before the sub-assembly is ordered.

During the boom of 1993-94, problems of controlling too many suppliers became acute. In December 1993, GM's São José plant was working at its full capacity, and suppliers are often unable to keep up with the pace. As a result, about 15-17% of the vehicles were "crippled", i.e. assembled without parts which had to be added later on at a very high cost. GM is introducing a "pull system" of inventory management, i.e. JIT with some safety stocks. However, Fiat and VW are experimenting a more courageous approach to exploit on single-sourcing and unit delivery.

Fiat's J Program has been successfully attracting suppliers to its assembly site in the state of Minas Gerais and improved considerably its materials handling and logistics. Some of them are located inside its site, facilitating the JIT system and the delivery of more complete units. The aforementioned control-panel supplier, originally located in the state of São Paulo, has nearby installed a plant for sub-assembly and linked it on-line with Fiat. The lead time from order to dispatch is reportedly as short as two hours.

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[32] Another reason for single sourcing is transport efficiency in spacious Brazil.

VW's Modular System allows sub-assemblers of cabin, body and engine to locate within the space of its Taubaté plant. VW chooses just one reliable supplier responsible for the stable delivery of each module. The supplier has an access to preferential finance at the VW/BNDES rate if it intends to invest in the industrial estate nearby.

(3) Guidance from Assemblers to Suppliers

As was mentioned in Section VI.5.4, assemblers in Argentina introduced the supplier development scheme from their Brazilian parents/sisters and are still dependent on evaluators sent from Brazil due to lack of scale economies. Therefore, describing the system in some depth is probably pertinent here, as this might show a basic stance of Argentine assemblers as well.[33] In general, assemblers mix a carrot (consulting services) and a stick (increasing imports) to upgrade their suppliers quickly. However, the balance between carrots and sticks seems to be varied among them, e.g. between GM do Brazil and Autolatina.[34]

a) GM do Brazil

PMC (Program of Continuous Improvements) was introduced to assembly plants by its previous president, who had become familiar with shopfloor improvements as a managing director of NUMMI during the late 1980s.[35] In the São José dos Campos plant, meetings lasting several weeks to several months take place, comprising wage workers, managers and engineers.

PMC has been expanded to autoparts suppliers but in a less continuous way. The program, called OTIMO (Optimization of Time, Inventory and Labor), is a cells system, modified from PICOS in Europe and now applied to Argentina as OPTIMO. In this program, GMB sends a team of specialists to a supplier for a week of intensive work. They select one working area to serve as a pilot project, where indicators of production, inventory and costs are devised and analyzed. Next, problems such as lead time, production flow, plant lay-out, inventory structure, etc. are identified together with the supplier's staff. When corrective actions are effectively implemented in the area, the team leaves the supplier to carry on spreading changes throughout the plant.

As GMB offered these services free of charge, suppliers responded quickly. The program cost will be resumed by demanding price cuts in future purchases. By the end of 1993, GMB had conducted OTIMO at its 200 principal suppliers (half of the total, but

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[33] This part is mainly based on Posthuma (1995).

[34] According to Supplier N, Fiat's J Program enjoys the highest reputation among the suppliers. Unfortunately, however, the details were not available during the fieldwork.

[35] He was recently recruited by VW do Brazil to lead a similar program.

responsible for approximately 90% of its total purchases), plus some potential suppliers. It still has 150-200 programs in 1995, which are said to be increasingly self-reliant.[36]

b) Autolatina

Autolatina began encouraging suppliers to generate shopfloor improvements in 1992, but its approach is quite different from GMB. In the PI Program (later, Q1 for Ford and Q for VW), Autolatina makes autoparts suppliers to hire a consulting firm, instead of providing consulting services by themselves.[37] Although those who agree to follow the program receive the Preferred Supplier status (i.e. long-term contract), they have to pay the consulting fee, send a monthly report describing their performance on the 12 productivity indicators, permit the assembler to inspect their plants at any time and share the benefits with other suppliers by making presentations.

PI seems to center more on price reductions than on quality improvements. The assembler is pushing suppliers to realize the international benchmark price known from the database of its headquarters. As of mid-1994, it still allowed a 10% price margin for local suppliers against imports. They are removed from the supplier list when surpassing the margin of 30% above the benchmark and showing no signs of improvements. Nevertheless, international benchmarking in its strict sense would be extremely difficult, as far as plants in Brazil produce models of different (i.e. outdated) generation from those made in more industrially advanced countries.

133 out of the 500 suppliers (representing around 96% of the total purchases) had joined this program by mid-1994. Obviously, PyME suppliers are expected to face more difficulties than large ones in bearing the consulting fee. In one case, however, they have managed to get the preferential status by organizing a club. Autolatina orchestrated the collaboration of five PyME suppliers in the same production chain with a consulting firm and SEBRAE. After achieving significant improvements through SEBRAE's assistance, each of the PyMEs is now pooling US$ 5,000 every month to finance the fee for the ISO9000 certification.

It seems interesting to point out that there might be an incentive problem, too, because a number of suppliers sell their products to both GMB and Autolatina. The latter is in a position to enjoy a free-ride: in other words, it can purchase better and cheaper

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[36] Mercedes provides production facilities when the guidance is observed. Suppliers can pay back in kind, or Mercedes can retain the ownership of machinery.

[37] At the time of the interview, VW had 30 personnel in the Procurement Department in charge of identifying problems and facilitating their solution. However, "VW just puts pressure, but does not teach", according to one of the suppliers.

autoparts from suppliers supported by GMB. In fact, however, GMB demonstrates much better market performance than Ford.

(4) Co-operative Development

There are a number of subsidiaries of European and US suppliers located in Brazil. In their origin countries, they have stronger design autonomy than the Japanese style of design-in suggests. It is said that some of them still stick to products of three generations ago in Brazil. New-comer assemblers are struggling hard to make them accept their specifications because their production scale is not enough to request custom development.

The recent introduction of new models has attracted attention to technological capability of autoparts suppliers. First, timely model change requires quick design modifications so that assemblers' price and functional specifications, and local climate and road conditions, are accommodated into products feasible on the production facility of suppliers. Second, simultaneous assembly of world cars of the same generation could facilitate the export of components developed in Brazil to other assembly sites through the global sourcing network.

Consequently, an increasing number of local suppliers have acquired capability of detailed design to remain first-tier suppliers (see the next sub-section (3)). A major reason why assemblers desire the buy-out of Argentine suppliers by Brazilian capital is that the former will be able to concentrate on production (to clear the localization and compensation rule) while relying on the latter for development.

5.5.4 Fund Availability, Quality Control and Technology Acquisition

In addition to Sindipeças, four autoparts-related business associations were visited to grasp a general situation of PyME suppliers in Brazil: ABIFA (casting), FORJARIA (forging), ABIPLAST (plastics) and ABIMAQ (machinery). Their member profiles are as follows:

Table VI-5-5-9: Profile of the Four Associations

ABIFA		1,000 members	90% (PyMEs)
	Members can improve productivity without large investment. Besides dismissal and lay-out change, out-sourcing to smaller firms has become an important source of productivity improvements.		
FORJARIA		52 members	40% (small) 30% (medium)
	Exports are nearly dominated by the three largest firms: Krupp, Sifco, Acesita. First-tier suppliers will be reduced and be obliged to become second-tier. Nevertheless, the number of small firms is increasing. Large firms are vertically disintegrated into smaller units due to management difficulties. New PyMEs are also established through spin-offs of ex-employees, etc. These PyMEs tend to be specialized in the production of unique products or for segmented markets, leaving R&D and mold/die design in the hand of large firms. They contribute indirectly to the exports of sub-assemblies. For example, an exporter of suspension-axle unit is increasingly out-sourcing the components.		
ABIPLAST	6,000 firms in total	800 members (producing 90%)	45% (micro and small) 35% (medium)
	PyMEs cannot vend directly to set makers and assemblers and have a share of less than 10% of the export market. However, they have survived demand fluctuations by using their versatile machinery for timely products and markets.		
ABIMAQ		1,200 members	57% (micro and small) 35% (medium)
	PyMEs are specialized in the low-tech end, small equipment, sub-contracting, components, agricultural machinery and machine tools in remote areas. As a family business, they have difficulties in accepting M&A and in forming joint ventures.		

(1) Fund Availability

When vertical integration was sweeping over Brazil, autoparts suppliers also built necessary equipment internally. Trade liberalization has made investment in superior machinery indispensable to keep business with assemblers. Suppliers' internal reserve is not always enough to install the latest mass-production machinery to exploit on scale economies. Nevertheless, private banking loan has been limited to short-term working capital, whose interest rate is by now extremely high due to the high interest rate of government bonds and the financial transaction tax (IOF). During the interview, the bill discount rate was said to be as high as 7% per month. Table VI-5-5-10 indicates the examples of capital costs.

Table VI-5-5-10: Capital Costs

(December 1995)

Finance	Term	Real Interest Rate	
Hot Money	1 operational day	Monthly	3.8%
Overdraft	30-90 days	Monthly	3.8%
Term Loan	30-90 days	Yearly	34%
ACC (for export)	up to 180 days	Yearly	7.5-8.5% (US$)
ACE (for export)	up to 180 days	Yearly	7.5-8.5% (US$)
Import Finance	up to 360 days	Yearly	8.5-9.5% (US$)
Export Note	30 days in general	Yearly	20% (US$)
No. 63 Loan	over 90 days	Yearly	16-18% (US$)
Leasing	over 40% of the legal depreciation period	Yearly	20-27% (US$)
No. 4131 Loan	over 2 years	Yearly	16-18% (US$)
Parent-Child Loan	over 2 years	Yearly	negotiable
Debenture (FRN etc.)	over 2 years, but up to 3 years in practice	Yearly	LIBOR + 4-5%

Source: Bank of Tokyo

In such a money squeeze, BNDES-FINAME has been playing an important role in financing the fixed investment. BNDES administrates the sufficient resource of FINSOCIAL, social investment fund, to promote the local capital-goods industry. The local contents ratio to be qualified was over 70% but is now 60%. It is mainly used by medium and large firms, although the target borrower is PyMEs, due to bureaucracy (e.g. the minimum amount of lending is too large for small firms). Even so, the conditions seem to be less rigid than other public financial means.[38] In order to import costly machinery, suppliers' credit, supplemented with overseas institutional lending (e.g. German Ex-Im Bank) is very attractive, but eligible PyME suppliers are not many.[39]

(2) Quality Control

Brazilian autoparts suppliers have been much more actively involved in exporting to industrially advanced countries than Argentine suppliers. After the trade liberalization in the 1990s, QC has become important in the domestic market, too. Over 720 firms have obtained ISO9000 by June 1995, of which a majority[40] is reportedly automobile-related (ABIMAQ has 130 ISO-certified members, ABIPLAST 17, ABIFA 10, and FORJARIA none). Four firms are added to the certification list every day during the first half of 1995, and the government projects that 5,500 companies will achieve this recognition by the beginning of 1998. The three suppliers visited for the present research

[38] ABIMAQ told the research team that FINAME was provided at 24.3% per year with the maximum term of 5 years (exceptionally 8-10 years) at the time of the interview.

[39] Today, BNDES provides FINAMIN for financing machinery imports. According to Supplier C2, the interest rate is 12% plus inflation, and the repayment period is 4 years including the 2-year grace period.

[40] 500 firms according to Supplier C1.

(1400, 500, and 600 employees respectively) said that they would get ISO9000 between October and December 1995.

In addition to the basic requirements of ISO9000, suppliers are committed to various methods and activities to improve quality and productivity (Table VI-5-5-11). Supplier FK (European-US joint venture with 600 employees) added a Japanese element to invent the COPPIC Program (Conformity, Organization, Productivity, Punctuality, Inventory and Cost) after the European way introduced from its parent did not live up to expectation. Supplier C1 (500 employees) started the C1 2000 Campaign, "top-down TQC", from 1993 to break with the culture of family enterprises. Supplier C2 (258 employees) asked a drama company to show shopfloor workers a QC play in order to brainstorm them on the importance of QC.

Table VI-5-5-11: Quality and Productivity Census in 1994

(%)

Issues	Understanding	Implementation
Quality System		
ISO 9000 Principles	84	58
Quality Manual	88	70
Evaluation, Development and Certification of Suppliers	86	60
Quality Cost	78	52
Auto-Evaluation of Organizational Quality	82	60
Quality Control Tools		
Failure Mode and Effect Analysis (FMEA)	80	60
Quality Function Development (QFD)	58	34
Statistical Process Control (SPC)	86	64
Benchmarking	62	40
Problem Analysis and Solution	90	58
Taguchi Method	54	30
Essentials		
Just-In-Time	78	52
Cells System	80	60
Total Productive Maintenance	68	38
Value Engineering	66	38
Out-sourcing	80	56
Quality and Productivity in Services Administration	60	44
Organizational Development		
Education for Quality and Productivity	82	62
Participatory Administration	74	54
Philosophy of Quality and Productivity	80	60

Note: inquiry into 187 Sindipeças members: 101 suppliers with less than 400 employees, 58 with 401 to 1,000 employees, 25 with more than 1,000 employees and 3 unknown.
Source: Sindipeças, Desempenho do Sector 1974/1994.

As a source of assistance, suppliers seem to use a variety of information sources in Brazil: self-reliance (or internal employment of experts), local private consultants with practical experience, public institutes and universities (e.g. Fundacão Vansolini, USP's QC Foundation), and clients' programs. Opinions regarding the external consultants are

divided: Supplier N (1400 employees) employed external training consultants at monthly fees. They first educated the internal QC personnel, who then diffused the knowledge to the marketing, purchasing and production personnel at the level of division chiefs and supervisors. Consequently, the manual was being produced at each section. Supplier C2, which was in the midst of major restructuring and had digested no more than 30% of the ISO9000 schedule when visited, intended to hire consultants only for documentation.

Public programs and institutes for QC also received mixed comments. Public assistance is essential for PyMEs, as their needs for ISO9000 are urgent, but many of them cannot bear the costs. However, PBQP courses provided at SENAI and SEBRAE are not beyond general principals. Therefore, the aforementioned business associations are arranging sector-specific courses. For example, INP (National Institute of Plastics), established by ABIPLAST, the association of plastic-material suppliers and that of equipment producers, modifies and diffuses PBQP for the plastics industry. ABIMAQ is going to coordinate a quality management course by inviting SENAI lecturer, aiming at those which already completed the SEBRAE course.

Advice from customer assemblers are not always welcome, either. First of all, suppliers cannot cope with all of the client assemblers, as it costs too much or their requests are mutually contradicting. Second, technical ideas and specifications from the clients are often impractical on the shopfloor. Third, their recommendations on the quality management may not fit the corporate culture of suppliers.

(3) Technology Acquisition

PyMEs have been dependent on the design of their clients and on copying. In this age of trade liberalization, they need to introduce OEM technology or equivalent; otherwise, the customers can procure better and cheaper autoparts from overseas. However, multinational suppliers increasingly prefer to produce in Brazil rather than to license local firms. PyMEs also rarely conduct co-operative R&D with public institutes such as ITP, UNESP and UNICAMP, because PyMEs cannot transmit their needs precisely. The only exception is SENAI schools, which are training rather than R&D institutes at the high-school level. It is a pity that skilled workers trained there have not been well accumulated due to economic instability.

Larger suppliers are usually either foreign subsidiaries or licensees of OEM technology.[41] Partners were introduced by assemblers or, in the case of after-market,

[41] For example, it is said that the technology of ball joint is controlled by six firms (two in each of the US, Europe and Japan) which are interrelated through cross-licensing.

trading firms and distributors. Brazilian suppliers prefer German or Italian technology, because US assemblers also produce European models in Mercosur. Nevertheless, these firms conduct development internally, too, though not leading to radical innovations of the basic design.

According to Supplier N, assemblers bring in specifications of excessive quality but do not have a sense of production costs. To clear the price target, all the detailed engineering has to rely on N's experience. N has the Division of Mechanical Engineering with 60 graduates of universities and technical high schools, which internally built 85% of the installed machinery until recently. Today, N has established the R&D center, recruited university graduates only and sent them overseas for training. Supplier C2 employs 16 engineers for process development and 14 for product development. The latter adjust the products to the Brazilian climate in the laboratory for pilot development. Supplier FK holds two brands: one for those introduced from Europe and the other for local development.