

Local Models: Auto Parts Firms and
Industrialization in Brazil

by

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The Brazilian motor vehicle industry, established in the 1950s, is one of the great successes of the developmentalist Kubitschek era and a paragon of developing country industrialization. It brought modern production techniques to Brazil, notably mass production, and spawned new industries. As such, it apparently vindicates large-scale theories of Brazilian economic development -- state-led explanations and backward linkage analyses which focus on the role of the state and large, multinational firms. In one version of the argument, state apparatuses evolve according to the dictates of large-scale development. In an alternative, the unbalanced-growth effects of the large, foreign assemblers' investments promulgate backward linkages, in particular, the auto parts industry.

The motor vehicle industry was not commandeered by a strong state and its origins cannot be attributed to lumpy investments that generated backward linkages. Furthermore, mass production never materialized. The industry was the fruit of an alliance between small suppliers organized by their corporatist syndicate (Sindipeças) and state officials. It was characterized by hybrid practices combining elements of flexible- and mass-production, for example, cooperative assembler/supplier relations as well as general purpose machinery to produce both long and short runs.

The thesis divides the development of the Brazilian motor vehicle industry into four overlapping periods and traces the fate of the auto parts firms. The suppliers were highly successful in the first round (early 1950s to early 1960s) and persuaded state officials that the industry should be a "horizontal" one characterized by widespread subcontracting by assemblers as well as cooperative and long-term assembler/supplier relations. These men understood that they needed the help of the reticent assemblers who belittled the project, contending that national markets were too small and suppliers unprepared. The dreamers eloquently pleaded their case using the language of their detractors, the terminology of economies of scale and mass production.

Despite the small markets, state officials approved many assemblers' projects, and consequently, firms invested in general purpose machinery. Rigid laws mandating local content levels of 95 percent within five years and a prohibition on imports induced assemblers to offer suppliers long-term and single-source contracts as a means to encourage them to invest. Although the industry was described as mass production, hybrid practices prevailed -- assembler/supplier relations were long-term and investments were made in general purpose rather than dedicated machinery.

During the post-implantation period (early 1960s to early 1970s), the suppliers failed to consolidate the horizontal practices. Growth rates in the industry plummeted with the recession and political uncertainty, and the motor vehicle industry was singled out as the villain fueling inflation. Assemblers divested themselves of the costs of the horizontal practices by delaying payments to suppliers, using inventories instead of placing new orders, returning goods, cultivating new suppliers to play off against the existing ones, and vertically integrating production.

The suppliers' plight worsened with the military coup in 1964 which brought to the fore policy makers whose vision of economies of scale included mergers and export promotion. Many suppliers lost their mentors who merged with other assemblers in the late-1960s. Protection from imports, a cornerstone of the horizontal arrangements was also pierced. An export promotion scheme encouraged assemblers to export in exchange for access to foreign parts and machinery. Simultaneously, they extracted lower prices and improved delivery from suppliers by threatening to

import. Conflictive relations reigned as the assemblers intimidated suppliers. Furthermore, the assemblers continued to vertically integrate and consequently forced their suppliers to do the same.

The mergers and export promotion had put suppliers at a disadvantage vis-a-vis their assembler customers. During the following period (late-1960s to the late 1980s), inflation-fighting measures and restored protectionism opened avenues to create functional equivalents of the horizontal arrangements. Sindipeças (and other syndicates) facilitated the daunting task of gathering and compiling the price control information from firms and passing it on to state officials. In the process Sindipeças encouraged its members to create producer cartels.

Protection from imports was reinstated as the military, besieged by foreign exchange shortages and a floundering hold on power, more critically reviewed the assemblers' imports. On the domestic market, assemblers were inhibited from vertically integrating parts already produced by suppliers. About 50 suppliers managed to forge strong cartels and recreate a version of the horizontal conditions. Despite the restrictive trade practices, these firms were systematically the most innovative and investment-oriented.

In the fourth period (the late 1970s to the present) the suppliers who have set up strong cartels are among the leading Brazilian exporters. They extended their domestic, low-volume production strategies to the international market and pursued niches. The high levels of vertical integration permitted them control over price, quality, and delivery despite raging inflation, raw material shortages, and domestic recession.

Contrary to theories of autonomous state-led growth, tight cooperation between state officials and industrialists can encourage growth. This collaboration should lead to arrangements tempering cut-throat competition. Finally, the traditions of general purpose machinery and below scale production were not a sign of failed mass production, but an essential ingredient of the suppliers' successful export strategies.

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TABLE OF CONTENTS

List of Abbreviations.....	7
Local Models in the Brazilian Motor Vehicle Industry.....	8
Recasting State-led Development, Turning Points, and Industrial Organization in Brazil.....	27
1950-1964: The Horizontal Vision and Hybrid Organizational Practices.....	78
The Failure to Consolidate and the Unraveling of the Horizontal Vision.....	171
The Revanche: (Partially) Recreating the Horizontal Arrangements.....	247
Recipe for Exports and Competitiveness: Background and Strategic Decisions.....	344
The Horizontal Vision: Chimera or Blueprint for Industrialization?.....	388

ABBREVIATIONS

ADBID -- Association for the Development of Basic Industries
ALALC -- Latin American Common Market
Anfavea -- National Association of Vehicle Producers
BEFIEEX -- Special Financial Incentives to Exporters
BNDES -- National Bank for Economic and Social Develop
CACEX -- Export Office of the Bank of Brazil (formerly
CEXIM)
CBU -- Completely Built Units
CEXIM -- Import Export Bureau of the Bank of Brazil --
authorized imports but did not have power to
allocate foreign exchange
CDI -- Council on Industrial Development, later Commission
on Industrial Development
CDE -- Council on Economic Development
CIP -- Interministerial Price Control Board (formerly
CONEP)
CKD -- Completely Knocked Down
CONEP -- National Council on Prices
FIESP -- Federation of Industries of the State of Sao Paulo
FNM -- Fabrica Nacional de Motores -- state-owned producer
of trucks
GEIA -- Executive Group for the Automotive Industry
GEIMAC-- Successor to GEIA, includes other mechanical
industries.
GPI -- General Price Index
JIT -- Just-in-Time
MNC -- Multinational Corporation
OE -- Original Equipment
ORTN -- Government treasury bill
OTN -- Government treasury bill
Platform Base onto which engine, transmission, bodies, etc
are assembled.
PND -- National Development Plan
Sindipeças -National Syndicate of Auto Parts Producers
SPC -- Statistical Process Control
SMEs -- Small and Medium-sized Enterprises
SUMOC -- Superintendent of Money and Credit -- authorized
payments of foreign exchange
TNC -- Transnational Corporation (another term for MNC)
USP -- University of the State of Sao Paulo

INTRODUCTION

Local Models: Auto Parts Firms and Industrialization in Brazil

A harbinger of modernity, the Brazilian motor vehicle industry was to revolutionize the country by transforming backyard factories into efficient, mass producers. The industrialists, and state and corporatist group officials who struggled to implant the industry in the 1950s believed that, as in the United States, the motor vehicle industry would propagate modernity throughout the Brazilian economy and society -- creating avenues for new investment and training for entrepreneurs and workers. The Brazilian motor vehicle industry is considered one of the great successes of the Kubitschek era and a vindication of these visionaries' efforts to bring mass production to Brazil.

The implantation of the Brazilian motor vehicle industry also confirmed Gerschenkron's eloquent interpretation of industrializing in late-developing countries. As Gerschenkron explained, industrialization in these countries sprung from the "tension" between backwardness and the promise of industrialization. The "tension" drove the late-developers to create institutional arrangements capable of amassing huge amounts of capital and implanting the most technologically advanced production systems -- large-scale projects and mass production.

Accounts of Brazilian industrial development and the motor vehicle industry have adopted both of these

perspectives. Industrialization requires massive capital accumulation, and therefore, must be either state-led or propelled by large-scale actors. Simultaneously, industrial organization practices are perceived through the lens of mass production and the industry is judged a partial failure for having failed to attain it.

By focusing on the often overlooked role of the auto parts firms in the development of the Brazilian industry, this study found industrial development to be a consultative process between state and societal actors. These actors fought for a "horizontal" vision of industrialization based on cooperative relations between multinational assemblers and national suppliers which encouraged the latter's growth. The struggle for these cooperative relations and other industrial organizational practices are no longer seen as failed mass production, but rather innovative strategies with fortuitous outcomes -- a core group of internationally competitive suppliers.

I. Industrialization as Large-Scale Accumulation

Accounts of industrialization in Brazil assume that it is shaped by the need to accumulate massive amounts of capital (and modern technology). There are various arrangements that permit successful accumulation and investment. The principal ones emphasize either the role of the state, or alternatively, cooperation between the state and large-scale societal actors.

In both versions, bureaucrats' and industrialists' behavior is a reflection of the requirements of large-scale accumulation. There are also subvariants of these arguments that will be discussed in the literature review.

I.A. State-led Accounts

In the state-led accounts, the evolution of state apparatuses is described as a series of turning points bending to the dictates of large-scale economic development. The first turning point was the Vargas Era (1930-1945). The President wrenched control of the state from the coffee elite and, for the first time, permitted effective federal-state intervention in service of industrialization. One example is the steel industry, Brazil's first large-scale effort. Another is the corporatist system which created mechanisms for controlling labor.

The Kubitschek era was characterized as the second turning point. In a technically rigorous manner, executive groups generated plans to promote large-scale economic development. The third turning point was the military coup of 1964, which by suppressing popular demands created the stability permitting "deepening," the subsequent stage of large-scale capital accumulation. The fourth, the Second National Development Plan and the corresponding triple alliance among the state, multinational corporations, and elite national capitalists permitted the accumulation of

capital as well as technological know-how. These junctures represented successive increases in the institutional capacity of the state which responded to or permitted large-scale accumulation.

I.B. Cooperation between the State and Large-scale actors

Backward linkage analyses, for which the motor vehicle industry is considered a paragon, is another version of the large-scale argument. In these accounts the state encourages large-scale investments by societal actors. The motor vehicle industry, for example, was exceptional in promulgating backward linkage effects, the most well-known being the auto parts industry. This, in turn, demonstrated the validity of large-scale development and its unbalanced growth effects in Brazil, a la Hirschman and Gerschenkron.

Other accounts focus on the mix of inputs from the private sector and corporateness from state bureaucracies required for large-scale industrialization. The triple-alliance arrangements described above also could also be included in this category.

II. Revisionist Accounts: Repudiating Large-Scale

An examination of the emergence of the motor vehicle industry and its industrial organization practices which focuses on the auto parts firms, however, shows that they were not a backward linkage, but rather a prime mover behind the

implantation of the industry. Furthermore, even though officials and industrialists aspired to replicate the American experience of mass production/backward linkages, firms in Brazil produced at low volumes using general purpose machinery. These surprising results compel us to reexamine the conclusions for understanding not only Brazilian political economy, but development theory in general.

These findings are consistent with an emerging revisionist literature on Brazilian economic and political development. French and Cheibub have reformulated interpretations, respectively, of the history of Brazilian labor from 1930s to the 1950s, and of the 1964 coup.¹ They bring to light previously overlooked players or recast critical time periods to the point where political (and implicitly, economic) developments repudiate a predetermined structural logic of large-scale industrialization. French showed that the corporatist system was not an example of a state subterfuge used to lure labor into somnolence and then repress it. Furthermore, the *populisms* of the 1940s and 1950s were hammered out in political negotiations among workers, politicians, and industrialists at the local, state, and national levels. Cheibub examined different points during the 1961-64 interregnum to demonstrate how Goulart successively narrowed his possibilities for coalitions promoting social legislation, effectively bringing on the 1964 coup. By revealing the roles of previously overlooked social actors

(different groups of labor and local politicians) and breaking down previously accepted time periods, these scholars rejected the predetermined structural logic of large-scale development.

This study of the motor vehicle industry tracing the development of the motor vehicle industry from the perspective of the auto parts firms and their relations with their assembler customers builds on this body of work. It contends that the traditional accounts of industrialization as spearheaded by a highly competent and autonomous bureaucracy does not hold and that small-scale players were critical actors. Although state officials promulgated much of the legislation setting up the industry, they were unable to further their goals without the support of the small-scale, politically marginalized auto parts firms. These firms had to produce the parts necessary to get the industry rolling, contain the dissidents among them, and to reinforce the position of state officials within the intellectual and policy making circles.

Uncovering the central role of the suppliers in the establishment of the motor vehicle industry is one means of repudiating accounts of large-scale and state-led Brazilian industrialization. In a parallel manner, a look at the industrial organizational practices reveals that they were not an example of large-scale, mass production, but rather a constantly changing hybrid of mass- and flexible- practices. The hybrids reflected the auto parts firms' struggles to

organize their markets. Examining the industrial organization practices, therefore, as deliberate strategies pursued by auto parts firms and state officials belies the large-scale imperative. Simultaneously, it demonstrates that the hybrid organizational practices were not an example of failed mass production, but rather responses to markets and politics in Brazil.

III. Hybrid Industrial Organization Practices

My work draws on Piore's and Sabel's pioneering interpretations of industrial organization practices as socio-political constructions rather than the outcome of efficiency considerations.² By examining the political histories of regions of mass production and flexible-specialization, the authors contended that mass production was not inevitable and that it was efficient only under unique historical and political circumstances. To underscore the socio-political and contingent nature of industrialization, the authors constructed a dichotomy of industrial organization practices. On the one side, mass production, with dedicated machinery and rigid work rules supplied large markets characterized by homogeneous demand. On the other, flexible-specialization, consisting of groups of firms with skilled crafts people using general purpose machinery, begot an endless variety of goods to satisfy fragmented and constantly changing demand.

The strength of the authors' argument, however, is also

its limitation. By creating a dichotomy, the authors convincingly depicted the hitherto unthinkable: alternatives to mass production were not only persistent, but efficient. The dichotomy of mass production v. flexible specialization, however, expanded the very teleology that Piore and Sabel sought to destroy. Industrial development was seen as inevitable trajectory of either one or the other and overlooked the myriad of combinations of industrial organization practices. My work aims, like Piore and Sabel, to demonstrate the political and social embeddedness of production practices. Concurrently, I hope to show the decisive influence of the changing hybrid industrial practices in shaping production and export strategies, as well as collective action and industrial development.

IV. The Organization of the Dissertation

The first chapter of the dissertation is a literature review surveying views on industrialization in late-developing countries and in Brazil. The first section traces a core notion, whose earliest and best-known proponents were Adam Smith, and later Karl Marx. Both argued that large-scale industrialization was inevitable. These notions reappeared in Gerschenkron's account of late-developing industrialization, Hirschman's discussion of backward linkages, Nurske's accounts of large-scale investments, and other debates about "take-off" or the "big-push" of economic development. The second

section of this chapter traces these notions as they appear in social scientists' explanations of Brazilian economic and political development. In these accounts, political and institutional development responded to the "tensions" of backwardness and the needs of large-scale industrialization.

The remainder of the dissertation analyzed the unfolding of the Brazilian motor vehicle industry from the vantage point of the suppliers' "horizontal" vision. The small and politically marginalized auto parts firms formed an alliance with state officials to establish a horizontal motor vehicle industry in Brazil, one characterized by cooperative assembler/supplier relations, widespread subcontracting by assemblers, and long-term relations between assemblers and suppliers. The vicissitudes of these struggles repudiate a large-scale logic in statist and state/society development as well as in industrial organization practices. The study demonstrates: 1) small-scale players matter; 2) the standard periodizations of Brazilian development and statist development do not hold; and 3) industrial organization practices intentionally deviated from mass production. The development of the industry is divided into three overlapping periods from which different groups of suppliers emerge victorious. These victories shape the hybrid patterns of mass- and flexible-production practices that persisted in different forms over time and, in turn, shaped firms' industrial and political strategies.

IV.A. *Round I: A Horizontal Industry -- An Alliance
Between the State and Small Auto Parts Producers*

The second chapter covers the period from the early 1950s to the end of the implantation period in 1961. It recounts how the small and politically marginalized auto parts firms worked with state officials to establish a horizontal motor vehicle industry. Suppliers coined the phrase "horizontal" describe their vision. They successfully overrode the objections of the larger and more established suppliers, as well as the multinational assemblers.

Suppliers devised ingenious methods to generate and solidify the alliance with state officials. One of the most notable was their waving of the mass production banner. The notion of large-scale development was ingrained in state policy makers, the assemblers, and even the suppliers. Although the multinational assemblers were virulently opposed to producing in Brazil, the suppliers and state officials realized that the foreign firms were critical to setting up the industry. The assemblers, in an effort to undermine the suppliers' and state officials plans, underscored the hopelessness of ever reaching economies of scale in Brazil. The suppliers and state officials appropriated the assemblers' discourse: They argued that without protectionism and other incentives the industry would never achieve economies of scale.

Although players spoke the language of economies of

scale, very different practices emerged. The suppliers envisioned "horizontal" practices, cooperative and long-term relations with assemblers rarely found in mass production industries. The suppliers created an employers syndicate, Sindipeças, which fought for a horizontal industry with a combination of protected domestic markets and high-local content legislation. The assemblers, with limited recourse to imports and production requirements to meet in Brazil, became the suppliers' mentors and nurtured them with long-term and often single-source contracts.

Production practices deviated similarly from the mass production model. For example, there were over ten assemblers for a small market, and some assemblers produced more than one platform (basic model). Moreover, production levels never reached internationally-accepted economies of scale, although firms tried to extend production runs as much as possible. To accommodate the variety of platforms and low volumes as well as the diversity of production philosophies (assemblers were from the United States and various European countries) firms used general purpose rather than dedicated machinery. In summary, state officials were dependent on the small auto parts firms to bring the project to fruition and the cooperation led to hybrids of mass-production and flexible practices that have decisively shaped the development of the industry.

IV.B. *Round II -- The Failure to Consolidate the Horizontal Vision*

The third chapter of the dissertation, covering the post-implantation period from the early 1960s to early 1970s, examines the suppliers' failure to consolidate the horizontal vision and attributes this failure to contingent political and economic events -- the recession and political uncertainty culminating in the military coup. The assemblers took advantage of the end of the implantation period, the recession, and political uncertainty to push onto suppliers more of the burden of producing and investing. In response to economic uncertainty, the assemblers, and consequently the larger suppliers, abruptly canceled orders and delayed payments to smaller suppliers and vertically integrated production. They also ended many long-term and single-source practices as they tried to generate more competition among suppliers.

While during the pre-implantation period, the notions of large-scale industrial development provided a vehicle to articulate the demands of state officials and small auto parts firms, during the military regime these notions undermined the suppliers' position. Roberto Campos, the Finance Minister, encouraged mergers among the assemblers as a means to rationalize the industry and lower costs. The wave of mergers further destabilized the already shaky assembler-supplier relations as assemblers entered new market segments and

brought new home country suppliers. The stop-and-go credit restrictions, imposed by the post-1964 military government to reduce inflation, also facilitated the assemblers' efforts to push more of the burden of production onto suppliers. The assemblers justified vertically integrating production, by alleging that small firms were extremely weak and might not survive the recession. In this manner the assemblers reinforced the vulnerability of the small firms, initiated a vicious circle of vertical integration, and further undermined the horizontal practices.

Predominating, post-1964 views of economies of scale undermined suppliers in another fashion. Protection against imports, a keystone of their relations with assemblers, was pierced as the government adopted BEFIEX, an export promotion scheme which permitted imports in exchange for exports. The driving notion behind the export promotion scheme was to permit imports of machinery, raw material, and parts as a means of creating a virtuous circle: lower costs, higher exports, increasing economies of scale, further price reductions, and so on. Simultaneously, the assemblers used the threat of imports to force suppliers to lower prices and make other concessions.

IV.C. Round III -- Reviving the Horizontal Vision on a Limited Scale

The fourth chapter of the dissertation, covering the

period from the early 1970s to the early 1990s, portrays the suppliers' *revanche* as some suppliers used the corporatist syndicate and price controls to revive the horizontal vision. They created producers' cartels and mitigated the threats from BEFIEX imports and vertical integration by assemblers. The decision to control inflation via price controls forced state officials to rely on the syndicates to gather and compile data on firms' costs. *Sindipeças* used the opportunity to encourage firms to share information and create cartels. The cartels permitted suppliers to impose on assemblers a functional equivalent of the horizontal arrangements of the implantation period. By agreeing on minimum bids and negotiating among themselves production shares, the suppliers buffered the impact of market fluctuations, and created *de facto* long-term agreements. The cartels also permitted suppliers to charge their customers higher prices.

Other national events leading to a reinstatement of protection from imports and vertical integration that suppliers had enjoyed in the early years of the industry also played an important role in promoting the cartels. *Sindipeças* officials' increasing prominence as advocates of democratization posed another threat to the military's fracturing hold on power. Concurrently, foreign exchange shortages undermined economic growth and posed additional perils to military rule. The combination compelled government officials to cut back on foreign exchange expenditures, and

heeding suppliers' demands to block assembler imports became an expedient means of doing so.

Suppliers obtained additional protection from the perils of the domestic market. President Geisel, a member of the legalist tradition in the military, set in motion a plan to prepare Brazilian society for a return to democracy. He believed that fortifying civil society was one means of countering the rightist threat within the Armed Forces. *Resolução 63* (1979) inhibited assemblers from vertically integrating production, in effect creating more secure markets for suppliers. This measure brought larger suppliers one step further to reconstructing the horizontal vision. Smaller suppliers, however, while protected from assemblers, were still subject to the vagaries of their larger cohorts who continued vertically integrating parts that they had previously subcontracted.

Some suppliers were more successful at using cartels, newly-found import protection, and *Resolução 63* to forge long-term assembler-supplier relations. A hierarchy of suppliers crystallized. The peak was composed of the large firms who organized domestic competition and diminished international threats, and therefore forged solid relations with their assembler customers. As a general rule, firms that occupied the intermediate and lower echelons were less able to organize domestic competition. The hierarchy was decisive in shaping industry practices and performance.

In the realm of production, the complex mixture of mass- and flexible-practices persisted. Firms in the peak of the hierarchy developed cooperative assembler-suppliers relations which characterize flexible-industrial organization while the remaining suppliers were subjected to different degrees of the more conflictive and less stable market relations typical of mass production.

The difficulties smaller firms faced in organizing their domestic markets reinforced the vicious circle of vertical integration. After a decade and a half of limited financial assistance and playing the role of shock absorber for market downturns, the smaller counterparts refused to or could not undertake the investments necessary to turn them into reliable subcontractors. Large suppliers (and assemblers) were forced to continue and/or maintain high levels of vertical integration.

Finally, production practices continued to deviate from mass production. They were still too small to be considered economically efficient, and firms strove to maintain a large degree of flexibility to confront market fluctuations as well as the diversity of products and limited markets.

IV.D. The Horizontal Vision and Exports

The fifth chapter recounts how the hierarchy of suppliers shaped the assemblers' and suppliers' responses to the recession of the early 1980s. In 1981, sales of vehicles fell

by almost one-third from over 1,100 million units to under 800 thousand. The lack of economies of scale, high levels of vertical integration, and producers' cartels permitted a surprising surge of exports by suppliers in the peak of the hierarchy. They extended their domestic practices predicated on short runs and a diversity of products to their export strategies and aimed for niche markets. The high levels of vertical integration permitted them more control over costs and material shortages in an environment ravaged by inflation and price controls. High levels of vertical integration also allowed them greater opportunity to oversee quality and delivery. Finally, the producers' cartels promoted investments in quality as well as factory reorganization that mitigated the logistical problems inherent in high levels of vertical integration and therefore, permitted international standards of production.

V. *Reconstructing the Horizontal Vision?*

The conclusions put elements of this study of Brazilian industrialization in comparative perspective. The state/business cooperation that fueled the industry in Brazil was also found to be crucial to the success of industrial development in other sectors in Brazil and in ASEAN countries. Elements of the role of the state and private sector firms in cartels are examined in an effort to frame questions for further comparative analysis, particularly the means of

constructing durable market organizing arrangements that promote learning and competition. A comparison of the role of language in studies of industrialization reveals that it is more important in shaping coalitions around projects than actually instructing players on how to bring them about or how to act. Finally, the slim possibilities for widening the horizontal arrangements to include small suppliers is examined. The political uncertainty and high inflation undermine arrangements among firms, but also provide openings for new understandings that can lead to a new, more enduring horizontal vision.

ENDNOTES

1. The revisionist works are: French, John, The Brazilian Workers ABC Class Conflict and Alliances in São Paulo, Chapel Hill: University of North Carolina Press, 1992; and Cheibub, Argelina. "Political Coalitions in Brasil [sic], 1961-1964: Democratic Alternatives to the Political Crisis," Unpublished PhD Dissertation, Department of Political Science, University of Chicago, 1987 (forthcoming in Portuguese, Rio de Janeiro: Paz e Terra).

2. Piore, Michael and Charles Sabel, The Second Industrial Divide Possibilities for Prosperity, NY: Basic Books, 1984.

CHAPTER 1

Recasting State-led Development, Turning Points, and Industrial Organization in Brazil

The Brazilian motor vehicle industry was described as mass production by the state officials and industrialists who set it up. Its hybrid-industrial organization practices and cooperative assembler-supplier relations were, however, common to factories producing many different goods at low volumes, which require "flexible," practices contrary to those found in mass-producing industries. Why did state planners and industrialists describe their project as implanting mass production although they deliberately created legislation, markets, and production practices geared to lower volume production? Unraveling this paradox has implications for analyzing Brazilian development and for understanding firm and industrial organization.

The first finding is that accounts of Brazilian industrialization focusing on the state or state/business cooperation are overly-determined by the logic of large-scale. Business and state cooperation is central to successful industrial development, as many traditional accounts acknowledge, but it does not follow the structural requirements of large-scale accumulation. In the case of the motor vehicle industry, the language of mass production was a means to articulate the cooperation between industrialists and state officials, not a specific plan for setting up the industry.

A second contention is that the hybrid industrial organization practices that persisted in different mutations throughout the history of the industry emerged from the struggle between the industrialists' visions of modernity and the compromises made to realize them. The language of mass production legitimized the unorthodox industrial organization practices needed to prepare the suppliers to assume the responsibilities of producing. It is the divergence from mass production that decisively shaped the development of the industry.

Industrialists, and state and corporatist officials in Brazil believed that implanting the motor vehicle industry was a means to bring modernity to Brazil. The state officials had visited factories in the United States and other countries. Dazzled by mass production, they had closely studied issues such as industry and factory organization, and yearned for the experience and training it would offer Brazilian suppliers.

The alliance between Brazilian suppliers' and state officials was the germ of fragmented markets, general purpose machinery, and cooperative assembler-supplier relations. It was a means to overcome the opposition of foreign assemblers to the industry as well as a means of priming Brazilian firms. The term "horizontal," coined by suppliers and state officials in the early 1950s, outlined their plan -- implanting a motor vehicle industry in Brazil characterized by widespread, long-term subcontracting and cooperative relations between foreign

assemblers and domestic auto parts firms. The idea of the horizontal industry was remarkable because of its departure from the coveted notion of mass production and because of its persistence in shaping the suppliers' struggles for more solid and cooperative assembler-supplier relations.

The term horizontal fell into disuse, but the ideas prevailed. The suppliers failed to consolidate the cooperative assembler/supplier relations much beyond the implantation period, nonetheless, they doggedly pursued the horizontal vision. They sought more stringent protectionism and more highly regulated assembler-supplier relations. Although generally unsuccessful throughout the 1960s, the suppliers and their syndicate, Sindipeças, insisted. During the late 1960s and 1970s, suppliers took advantage of opportunities -- price controls, foreign exchange shortages, and cries for redemocratization -- to press their case for more highly regulated assembler-supplier relations. Some suppliers were successful and managed to create a functional equivalent of the implantation period arrangements. Suppliers who forged some form of producer cartel, a version of the horizontal blueprint, became not only the more successful firms in their sector, but national leaders as well.

In the same manner that the politics driving the implantation of the industry led to cooperative assembler-supplier relations, they also led to hybrid organizational practices. State officials coveted economies of scale, but in

the mid-1950s approved many assemblers' projects despite very small markets. Firms were condemned to using general purpose machinery and manufacturing below optimum scale. These characteristics persisted throughout the history of the industry, even though production volumes increased significantly in later decades. When firms began looking to export markets, they extended their domestic strategies to international markets. They focused on niches because they were prepared to produce at lower volumes that did not interest higher volume international competitors.

The persistence of the horizontal vision forces a profound rethinking of Brazilian economic development. Typically, industrialization in Brazil is seen as large-scale and articulated, if not undertaken, by the state whose institutional and administrative capacity grew in tandem with the dictates of mass production.

The state-led accounts have venerable origins. Adam Smith and a century later, Karl Marx, portrayed history as the inevitable process of specialization in production technology toward the attainment of ever higher levels of mass production.¹ Scholars studying late-developing countries noted that they industrialized (or needed to industrialize) faster than their predecessors, whether to alleviate persistent poverty or avoid falling farther behind their more industrialized neighbors. A generation of scholars, often development economists, focused on the large-scale capital

requirements and the role of the state in guiding accumulation. Brazilian social scientists contributed to and adopted these interpretations of development.

I. The Origins of State-Centered Accounts of Brazilian Economic Development

The origins of the large-scale accounts are in Adam Smith's and Karl Marx's discussion of the division of labor. Ever increasing specialization in machinery and work tasks led to higher levels of productivity. Both Smith and Marx identified increased productivity in the same manner: Workers became more dexterous at their task because they only did one; they dedicated more time to producing because they did not waste time switching; and they perceived opportunities to devise more efficient tools and machinery.² As the division of labor progressed, and workers and machines became more specialized, the scale of industrialization increased and goods were produced more efficiently and cheaply. Simultaneously, whether as a result of the demise of feudalism, the destruction of guilds, and/or colonization, markets expanded, absorbing the growing quantity of goods. Although Smith and Marx differed as to the motor force behind the division of labor as well as its impact on society, they agreed as to the mechanics of the process and the inevitable surmounting of barriers restricting the size of markets.³

II. Development Scholars -- A Contemporary Version of Large Scale

Both Smith and Marx described the division of labor as a gradual process taking place over many centuries. Scholars of developing countries surmised that developing countries could benefit from their predecessors' experiences and accelerate industrialization, usually considered synonymous with economic development. Two influential currents of thought solidified during the 1950s, one advocating balanced growth, and emphasizing planning, and the other unbalanced growth. Unlike Smith and Marx, both currents depended upon the state to coordinate and accelerate growth.

II.A. *Balanced Growth*

Rodan-Rosenstein advocated "the big push," Ragnar Nurske, "balanced growth," and Rostow, "the take-off."⁴ All presupposed the inevitability of large-scale accumulation which after a certain threshold permitted, or forced, countries to embark on multiple and mutually interactive investments. Implicitly or explicitly, the state played a role as accumulator and planner, guiding or even carrying out the necessary investments. The ventures propagated jobs, goods, and a mutually reinforcing and virtuous circle of development.

Prebisch, a founder of the Economic Commission on Latin America, was another influential pioneer in studies of

economic development. He focused on the international constraints to economic growth, most importantly a secular decline in the terms of trade for developing countries' primary product exports. Industrialization was the only means to overcome the strangulation of the international system. Although not well-articulated until the early 1960s, his clarion for industrialization, via judicious protectionism, planning, regional markets, and anti-cyclical policies that promoted mass production, could only be state-led: "It is the State, for the most part, that must determine what is best to be done and how to do it, and must make large-scale investment."⁵ He and his team of economic planners worked closely with Brazilian planners and industrialists from the 1950s on.⁶ Prebisch's influence was profound and his focus on the international systems and its constraints was the intellectual precursor to the Dependency schools of the 1960s and 1970s.

II.B. *Unbalanced Growth*

The planning and coordination inherent in balanced growth, however, were overwhelming. How could the investments be properly timed, the labor and inputs prepared, and the appropriate goods produced? Perhaps such coordination was not really necessary. Gerschenkron, an economic historian, analyzed the experiences of "late developers," among them Germany and Russia.⁷ He rejected the notion of predetermined

and gradual stages of industrialization as postulated by Marx and implicitly, the orderly process described by advocates of balanced growth. Rather than pass through predetermined stages, the "tension of backwardness" led late-developers to devise innovative institutional arrangements that could amass huge amounts of capital, lead to large scale investments, and enable countries to leapfrog stages and catch up to their industrialized counterparts. In the case of Germany these institutions were universal banks, in Russia they were investments in heavy industry and transportation on the part of the state.

Hirschman, the father of "unbalanced growth," and a revered development theorist and practitioner, acknowledged that Gerschenkron had correctly explained how late developers catch up and that late development occurs in a series of "big spurts."⁸ The "tension of backwardness," however, according to Hirschman, had to be more clearly specified.⁹ He operationalized it as backward and forward linkages. Large-scale investments would "induce attempts to supply through domestic production the inputs needed in that activity."¹⁰ This "unbalanced growth" would stimulate further investments, and thus economic and industrial development.¹¹

The post-war debates in development economics rejected the gradualism on which early interpretations of industrialization were based. Rather, they focused on the role of the state as planner or initiator of large-scale

investments and generator of the surpluses as a means of accelerating growth. These concepts were adopted and refined by Brazilian social scientists as they analyzed their national experiences.

III. Perspectives on the Developmentalist Brazilian State: The Evolution of State-led Development

The conviction that mass production was the path to industrialization underpins accounts of Brazilian development. Typically, the advance of mass production is conflated with strides in the administrative capacity and autonomy of the state, enabling it to ignore or neutralize collective action by self-interested groups in civil society. The state apparatuses evolved in a series of turning points or initiatives reflecting the dictates of large-scale development. Other accounts have brought civil society back in, but like the state-led accounts, portray the relation between societal and state actors as a reflection of mass production or heavy investments.

The Vargas Era (1930-1945), the developmentalist Kubitschek presidency (1956-1961), the post-1964 military government, and the triple-alliance are the turning points in a cumulative process of increasing statist (institutional) capacity permitting or responding to large-scale accumulation of capital and technology. Alternative accounts bring into their analyses of the turning points, large-scale civilian actors such as Brazilian elites or multinational corporations.

III.A *Revolution of 1930*

The Revolution of 1930, when Getulio Vargas wrested power from the landed oligarchy, is the great divide. Before 1930, the political hegemony of the cohesive coffee elite over the state was a political barrier to the deepening of the budding industrialization process.¹² After 1930, the incipient rationalized bureaucracies decisively triggered large scale investment in steel and other raw materials and laid the basis for the statist corporatist system.

Agreement is widespread that the first Vargas presidency laid the bases for a centralized and rationalized state capable of spearheading large-scale industrialization. Its many contributions include social services, labor courts, civil service requirements, a multitude of planning organizations at the national (Administrative Department of Public Service) and sectoral levels (steel, textiles, railroads, etc.), offices to deal with foreign exchange and foreign trade, and the corporatist system for articulating labor and capital.¹³

At issue then are not the centralizing capabilities of the state, but rather how they developed. These arguments take various forms. In the "external shock as catalyst" versions,¹⁴ the trade interruptions beginning with WWI and culminating in the Great Depression of 1929 jolted the state into new-found autonomy, or at least freed it from the clutches of the coffee elite. Industrialization is a story of

unintended but fortuitous Keynesian pump-priming. The state, captured by coffee exporters, protected them from the devastating losses associated with the Great Depression. Unable to borrow abroad as it had in the past, it resorted to printing money and compensating for the macroeconomic consequences (deterioration of the terms of trade, domestic inflation) by restricting imports rather than devaluing. The story of how the state managed to transform the unintended consequences of its pro-coffee policies into new-found autonomy and sustain its drive to industrialize is assumed rather than explained, although at least one author attributes it to state autonomy achieved by the authoritarian Estado Novo.¹⁵

A similar version of this argument presents not a decadent and defeated coffee elite, but rather a Brumarian imbroglio stemming from the crisis of 1929. The state responded to the requirements of destabilizing capitalist growth by raising itself above the fray and consolidating itself into a strong central authority capable of generating the checks and balances among the declining (coffee and agriculture) and emerging social groups (industrialists and secondarily, labor).¹⁶

III.B. *The Executive Groups of the Kubitschek Era*

By the 1950s, the rationalized and technocratic state, replete with executive groups and other means of bypassing the

porkbarrel legislature, propelled the private sector into capital and durable goods production, the next step in large-scale development.

Works on the 1950s extrapolate the nascent tendencies of the post-1930 state into flawed autonomy, as the state judiciously managed political demands and acquired technical knowledge. State structures such as the corporatist legislation or the arcane budget and populist policies isolated (or constrained) political forces and permitted large-scale development initiatives during Vargas' second administration and Kubitschek's term. Martins emphasized the state-articulated ties between elites and MNCs, as well as investments guided by state technocrats. He contended that the clamor from nationalists and workers were initially forestalled by nationalist policies vis-a-vis Petrobras and later by pro-labor Goulart's election as vice-president. Brasilia, the modern capital city that was built in record time diverted the public and Congress from close scrutiny of industrialization policies. In other words, a balancing act neutralized political pressures, allowing the state to guide large scale industrialization.¹⁷

Benevides' and Lafer's accounts of the Kubitschek years are similar.¹⁸ Responding to the country's need to produce capital goods, Kubitschek rearticulated the rural sector/worker (PSD/PTB) party alliance, with the promulgation of the 30 point target plan to develop infrastructure, basic

industry, and consumer goods. He circumvented clientilistic politics by taking advantage of the arcane budget process, by resuscitating Vargas' industrial subcommissions, and by creating new ones to circumvent bureaucratic morass. Although Congress appropriated global amounts of funding, the executive groups/working groups were effective because they were responsible for allocating the funds to specific ends.¹⁹ Political pressures were thus contained and unable thwart the rational, technical decisions made by the state. Other accounts focus almost exclusively on the state and its apparent insulation from civil society, granting the technical groups leeway to implement rational policies.²⁰

JK's islands of planning, executive groups, and developmentalist ideology, were sufficient to guide the import-substituting-industrialization through the phase of basic industry and durable consumer goods (steel, cement, cars) and limited infrastructure, such as electrical energy and highways.²¹ Industrialization, however, had to go even deeper and the state reformulated itself to meet the challenges. Bureaucratic-authoritarianism was the response to the turbulence of populism and administrative shortfalls.

III.C. Deepening in the 1960s and 1970s

By the 1970s, the large-scale industrialization paradigm had fused with the sophisticated versions of the Dependency Approach. In clearest exposition, O'Donnell asserted that the

requirements of industrial deepening dictated the imposition of an authoritarian state.²² Evans' seminal study of the triple-alliance explicated the state-articulated comprised of state-owned enterprises, the national bourgeoisie, and foreign capital. The autonomous state negotiated arrangements in the long-term interest of national capitalists, whether or not they realized it.²³ By advancing large-scale manufacture, it simultaneously loosened the constraints of the international system, a la Gerschenkron, nudging Brazil from the periphery to the semi-periphery (Evans:1979). Nunes and Geddes argue that by the mid-1980s the state had become so autonomous, that it escaped political control.²⁴

IV. Bringing Civil Society Back In: "Autonomously Embedded" Accounts of Brazilian Industrial Development

Recent accounts focus more explicitly on the balancing act between the autonomous state and its reliance on civil society for information. While agreeing that the Brumarian-like situation permitted the growth of state capacity and autonomy in the 1930s, some contended that groups in civil society either maintained or acquired important roles. Diniz purged the national bourgeoisie of its subordination to traditional interests, while Draibe pointed to the plethora of overlapping and sometimes ineffectual institutions as testament to the state's social character and relative, rather than absolute, autonomy. Alternatively, since export receipts

continued to be a principle source of revenue, others argued that the rural elite could not be defeated, but merely relegated to a less prominent position. Despite the more prominent role for society, these social scientists assumed that the nature of state/society cooperation facilitated large-scale industrialization.²⁵

Recent scrutiny of the Vargas Era suggests that it may not have been a major turning point. Topik demonstrated that during the new Republic, 1889-1930, the federal state had very interventionist policies in the financial, railroad, and industrial sectors.²⁶ While he questioned the widely accepted turning points of Brazilian development, he ultimately fell back on mechanistic, and often unsubstantiated, accounts of class dominance, in other words, a version of large-scale explanations to explain pre-1930s intervention.²⁷

Font brilliantly demonstrated that the path to state autonomy via the taming of coffee did not start in the 1930s because the coffee oligarchy had lost control of the Brazilian state as early as the first decades of the 1900s. Rather, the vibrant small-scale coffee, textile, and food producers provided the capital, markets, and labor Brazil's first industrialization spurts. Although divesting the coffee elite of its leading role, the understudy was transfigured by the large-scale model of development:²⁸

By involving itself in the commercial production of crops which the *fazenda* had hitherto largely ignored, the

alternative agrarian economy generated new sources and forms of accumulation and commercialization, as well as of town-country relations, labor systems, and land tenure....With the provision of cheap raw materials, food supply, markets, manpower, and even savings, this contributed to the centralization of surplus appropriation by larger intermediaries (Font:108, emphasis mine).

Font discovered the vitality of small-scale growers but presumed that their capital accumulation was subsequently funneled to alternative large-scale intermediaries.

Parallel arguments can be made about the Kubitschek era. While most accounts focused almost exclusively on the state and its apparent insulation from civil society Leopoldi also attributed an important role to civil society. This role however, was constrained by the dictates of large-scale development since the national bourgeoisie *a priori* lost out to large-scale multinational capital.²⁹

Evans and Haggard explicitly recognized the important contributions of societal actors but concluded that unless a proper balance was struck, states were overrun by rent-seekers. They attributed Brazil's splotchy record during the 1980s to inappropriate patterns of embeddedness in civil society or to the relative lack of state autonomy.³⁰

Evans' discussion of predatory and developmentalist states, is predicated on the need for large-scale Gerschenkronian/Hirschmanian types of intervention (Evans:1989:567-68). Evans refined Hirschman's concept of backward and forward linkages by specifying more clearly the process by which the state discovered and directed, or

undertook, investment opportunities. According to Evans, to be successful, the state had to be "autonomously embedded." On the one hand it had to have a corporate identity that gave bureaucrats clear rules and worldviews (Evans:1985,1989). On the other, it needed information from industrialists and other elites, which implied some degree of embeddedness in civil society, as is the case in Japan (Evans:1989:574). Brazilian bureaucracies, however, subject to the vagaries of the Executive's will, were too weak to withstand politicized demands (1989:577-78). The bureaucracies became too embedded, or at least improperly embedded, and their links to constituents ad hoc and personalized, leading to unsuccessful developmental policies.

Haggard's comparison of the East Asian Newly Industrialized Countries (NICs) with the Latin American NICs, Brazil and Mexico, asked why the former were more successful at implementing export led growth (ELG) strategies than the latter. Haggard retained the state-led aspects of industrialization, but wavered on the emphasis on large-scale.³¹ The East Asian NICs were blessed by historical accidents including the division of their countries, land reform, institutional innovations by the government that bypassed the normal legislative and bureaucratic channels, and corporatist institutions that controlled labor and other societal groups. Institutional development permitted state officials to defy or preempt societal demands and implement

ELG. Import substituting industrialization (ISI) in Brazil and Mexico began earlier and lasted longer, thus inhibiting the state's ability to insulate itself from societal demands which led to a prolongation of ISI regimes and the resulting inefficiency (below-optimum- scale and lack of competition).

In these accounts, relations between state and civil society were defined in function of the needs of large-scale development. If the state perceived and acted upon large-scale development initiatives than it was autonomous or autonomously embedded. If it did not, then it had insufficient institutional capabilities to contend with the societal onslaught of collective action or individual demands.

V. The Large-Scale Argument and Views of the Brazilian Motor Vehicle Industry

The large-scale industrialization paradigm has been especially pervasive in accounts of the Brazilian motor vehicle industry. In the "backward-linkages" version of the large-scale argument, the unbalanced-growth effects of the motor vehicle industry were singled out for promulgating backward linkage effects, the most well-known being the auto parts industry. This in turn demonstrated the validity of large-scale development in Brazil, a la Hirschman and Gerschenkron.³²

In these accounts, the state and/or the large MNC assemblers drove the industry. Shapiro, in an account that she has since revised, argued that despite multiple obstacles,

the state, motivated by the future benefits of backward and forward linkages, undauntedly pursued the implantation of a motor vehicle industry.³³ The omniscient state juggled many political and economic constraints and managed, intentionally or fortuitously, to turn them into assets. Foreign exchange shortages, limited budgetary control and policy tools, splits between the military and political elites, middle class pressures, local capital and MNC demands were played one off the other, thus permitting the implantation of the industry and its attendant backward linkages, principally the auto parts sector. Moreira Franco's state-centered account portrayed an omniscient state that clearly prioritized its goals and achieved a proper balance between administrative centralization and executive decentralization.³⁴ In a preview of the post-1974 triple-alliance arrangements, Martins portrayed the state as articulating the nexus between national and international capital (1976:407-444).

In another version of the argument, large-scale actors called the shots. Guimaraes' periodization of the motor vehicle industry reflected the assemblers' strategies or convergence between the state and the assemblers, particularly with regard to setting up the industry and in later periods, product diversification and exports. This interpretation has become the standard for analyzing the industry.³⁵

In a related version, the state and MNC assemblers (and some MNC parts firms) not only drove the industry, but

dominated the predominantly national small and medium-sized auto parts firms, condemning them to mere subsistence rather than growth.³⁶ The dominance of MNCs in the assembly sector and the important role of MNC capital in the parts sector has led analysts to posit two (non-mutually exclusive) arguments to explain MNC assembler control of the industry. The first was that the parts sector was completely dominated by the MNC assemblers because the MNCs were foreign, large, and used foreign technology to dominate the small suppliers who have little access to high technology.³⁷

The second view of assembler control focused on industrial structure. This view stated that with the exception of the few large multinational and national auto parts firms, the MNC assemblers created a cartel that monopsonistically dominated the parts sector through purchasing and control of other aspects of production such as design. Francisco de Oliveira's and Maria Angelica Travolo Popoutchi's³⁸ analysis concluded:

The structure of the vehicle sector in which the auto parts sector (composed of a large number of firms) supplies an assembly industry composed of only eight transnational firms, restricts much of its room for acting on the problem [vertical integration by suppliers] given the relation of dependency that it has with regard to the assembly sector (Oliveira and Papoutchi:212).

The two arguments are inextricably intertwined, in large part because of the prevalent view that assemblers dominated the industry.³⁹

Most accounts of the development of the motor vehicle

industry accepted the notion of large scale development as a given, and therefore, identified the MNCs and the state as the key players in explaining the development of the industry. Small and medium-sized auto parts firms were ignored or a priori downtrodden by the MNCs, not only because they were small, but because many were owned by politically marginalized immigrants. They could only be a backward linkage effect and not the driving force behind the implantation of the motor vehicle industry and many of its industrial organization practices.

Although the assemblers played suppliers off one another to extract lower prices, the reality is much more complicated. A weekly Brazilian financial publication astutely noted that the assemblers were often more dependent upon the parts firms than the other way around:

Huge multinational companies like GM, whose sales are over 100 billion dollars a year in their worldwide operations, at times depend on the good will of a producer in the periphery of Sao Paulo to maintain their production schedules of vehicles. As GM depends upon a single supplier for more than 50 components, other large assemblers are literally in the hands of auto parts producers that maintain an oligopolistic or even monopolistic market position. In other words, one cartel submits itself to another cartel.⁴⁰

These observations characterizing the industry are prescient. The suppliers were pivotal in establishing and shaping trends in the motor vehicle industry in Brazil. Although usually portrayed as backward linkages spun off from or as subservient to the assembly industry, the suppliers were the key negotiators in establishing the motor vehicle industry

and their demands were fundamental in shaping the role of the state and the rules of the industry. The alliances between the state and the auto parts producers were among the most important elements in shaping industry trends throughout its history, for example, the initial division of labor between MNC and national capital, and assemblers and suppliers; as well as the cooperative assembler/supplier relations characterized the industry. By cultivating the alliances and astutely using them to forge policy the suppliers in many ways established and shaped the incipient industry in their image. Furthermore, even when the suppliers lost many contacts in the state in the mid-1960s they continued to shape industry trends. The lost battles led to a weakening of the small parts firms, thus initiating a seemingly unstoppable trend of vertical integration.

This analysis identifies the critical role that the small auto parts suppliers played in establishing the motor vehicle industry, usually cast as the paragon of large-scale industrialization in Brazil. Industrialization was not led by an autonomous state, but rather, guided by deep-seated cooperation among the state and societal actors. These findings complement and expand on recent revisionist interpretations of Brazilian development.

VI. Revisionist Accounts of Brazilian Development

Emerging revisionist accounts of Brazilian

industrialization undermine the concept the structural logic pervading most accounts of Brazilian political and economic development. French argued that corporatist policies, rather than subduing labor, at key moments, actually facilitated its mobilization. A corollary argument is that the corporatist legislation did not respond to the needs of large-scale industrialization, but rather to conflicts defining the role of Sao Paulo and labor in national politics during the Vargas regime, and later, competition among local politicians as they fought for workers' votes. To prove his point, French traced the unintended and unpredictable outcomes of labor struggles during the 1950s, which at times were repressive, but at other times supportive of improved working conditions and strikes.

The labor legislation of early 1930s according the trade unions legal status as "consultative organs" was a stratagem by Vargas and his revolutionary, but unconsolidated, government to gain a foothold in Sao Paulo and counterbalance the opposition planters, industrialists, and their bases.³⁵ It was also an attempt to marginalize the more radical Anarchist and Communist elements in the incipient labor movement.³⁶

Vargas' pro-industrialization commitment during the repressive Estado Novo period (1937-45) drove a wedge between Paulista industrialists and the state's fading coffee elites. The labor policies which culminated in a Mussolini-esque corporatist system, however, did not pander to industrialists

who sought enterprise-based rather than state-controlled unions. During the populist period of the 1950s (which French referred to as *populisms*), local, state, and even national politicians gave workers municipal funds to sustain strikes logistical support to help them organize, and other types of protection. These advances were punctuated by periods of repression. By referring to these various periods as *populisms*, French implicitly rejected the standard accounts of turning points as a reflection of the large-scale imperative.

VI.B. *The 1964 Coup*

The 1964 coup has also been scrutinized. Serra's seminal article delinked industrial deepening from the coup installing a bureaucratic-authoritarian regime.³⁷ Industrialization could not have caused the coup because significant deepening had occurred during the 1950s, the decade *preceding* the coup, and it recommenced only in the 1970s, a decade *after* the coup. Secondly, the policy makers were not concerned with promoting industrial deepening, but rather "efficiency" which was based on ideas of comparative advantage (imports from and exports to the international markets) rather than the more autarkic vision of import-substituting-industrialization. Finally, the "triumphal extravagances" of the Medici regime (the trans-Amazonian highway and the Niteroi River bridge) were anything but examples of increasing allocative efficiency. Although Serra convincingly delinked bureaucratic-authoritarianism from

deepening, he maintained a large-scale view of Brazilian industrialization.³⁸

Cheibub's analysis of the period preceding the coup not only corroborated Serra's arguments that there was no rationale of large-scale capital accumulation impelling the coup, but went even further, divesting it of any imperative. Her sophisticated counterfactual reconstructing the tortured path of failed alliances pushing social reform during Joao Goulart's term, in effect, stripped the coup of any inevitability. Cheibub claimed that from the beginning of his parliamentary mandate, Goulart, a pro-labor protege of Vargas, should have turned his back on the radical reformers and leftists, his natural allies, so that he could court the anti-labor industrialists and the moderate landed elite. Instead, he straddled the fence, at times adopting more centrist positions and at others falling back on his old constituencies.

At issue is whether his Vargist legacy precluded an alliance with anti-Vargas industrialists and the landed elite. Cheibub daringly resurrected the debates surrounding the issues of the period -- reinstating the presidential system,³⁹ the abortive attempts at land reform, and macroeconomic reforms. She constructed a convincing counterfactual arguing that an alliance between Goulart and his traditional adversaries was possible and did not materialize because of Goulart's vacillation toward his

traditional constituencies and opponents.⁴⁰

VI.C. *The Kubitschek Era*

Without explicitly stating it, the revisionist discussion of Brazilian industrialization contended that the various turning points in state-development, if they occurred, did not respond to the dictates of large-scale industrialization. The corporatist policies of the *Estado Novo* did not lull the labor force into quiescence, nor did it pander to industrialists. It also provided labor opportunities to improve working conditions and strengthened their organizational drives.⁴¹ In a like manner, the 1964 is an example of lost opportunities as Goulart ignored or improperly responded to openings from past opponents.

This dissertation, examining the establishment and development of the motor vehicle industry looks at Juscelino Kubitschek's tenure, often portrayed as the second turning point in Brazil's industrial trajectory.⁴² By incorporating the auto parts firms into an analysis of the origins of the industry, the auto parts sector becomes, not a backward linkage effect of large-scale investment, but rather a prime mover. Furthermore, the process of implanting the industry was not guided by groups of technically competent state officials. Although the state promulgated much of the legislation setting up the industry, it was dependent upon the support of the small-scale, politically marginalized auto

parts firms to bring the project to fruition. By integrating these findings into a growing body of revisionist literature I hope to peel away large-scale notions, and reveal the importance and unpredictability of societal/state cooperation. While the revisionist discussion purged Brazilian development of its large-scale imperative, it said little about another facet of the same argument -- industrial organization.

VII. Industrial Organization

By definition, state-led accounts of Brazilian industrialization presumed that mass production was the flip side of state autonomy. The state's increasing autonomy promoted large-scale industrialization, that is mass production of various consumer goods, production of basic inputs such as steel, and later capital goods. Although the state was sufficiently autonomous to implant the industry, it frequently fell victim to bad policies and excessive politicking, or the legacy of shortcomings in managerial and labor know-how. As a result, studies of industrialization in Brazil and throughout Latin America described factories as plagued by insufficient production scale, and therefore, condemned to inefficiency, high costs, and other ills.⁴³ Studies of industrialization led to contradictory assessments. One in-depth, comparative study of the metalworking industry in five Latin American in the early 1980s concluded:

Continuous production lines constitute a 'mode of production' whose history in Latin America is relatively brief. The amount of know-how accumulated with respect to management of this type of organization of production is therefore still modest, and difficulties of various kinds are encountered. For example, as the result of an over-diversified output mix, a continuous production line designed to produce a flow of highly standardized items is often used in Latin American countries to manufacture short series of relatively differentiated productions, so that substantial economies of scale are lost through an increase in the number of stops, in machinery preparation time and in dead time arising out of any change in the production plan.

It may be said that there are few cases in which the factory lay out was originally designed for continuous production of an only slightly diversified output mix, or a single individual product, so that immediate and full advantage could be taken of the economies of scale proper to this mode of organization of production.⁴⁴

Even subsidiaries of multinational corporations often operated with a more diversified output mix than their parent firms and used production processes which, although modeled on the parent firm, were much less automated and dedicated.⁴⁵ Why did firms use these contorted and inefficient production methods?

In many cases the decision to broaden and diversify the output mix seems to have been associated with: (i) the limited size of the domestic market; (ii) recessions at the level of the economy as a whole, reflected in slumps in demand on the specific markets served by the firm under consideration; and (iii) the entry of new competitors into the market.⁴⁶

In other words, firms were criticized for developing innovative production techniques that dealt with the peculiarities of their markets because these innovations deviated from mass production.

While small scale production in developing countries was considered an example of failed models, recent studies in

industrialized countries have accepted the persistence of small-scale production and even held it up as a model for industrial renewal, a "second industrial divide." In a pioneering account, arguing against teleological notions of efficiency, Piore and Sabel argued that large-scale industrialization in the United States became predominant not because it was inherently more efficient, but because relationships between large corporations, the state, and labor led to a stabilization of mass markets.⁴⁷ Under these particular conditions, large-scale mass production could thrive. The stabilization of markets, however, did not occur in many regions of Europe, for example in many industrial districts in Italy, Germany, and Japan.⁴⁸ Although these regions showed variations on the theme, they were an example of flexible specialization, an alternative, and given current fragmentation of markets, superior, form of organizing production:

Flexible specialization is a strategy of permanent innovation...based on flexible--multiuse equipment; skilled workers; and the creation, through politics, of an industrial community that restricts the forms of competition to those favoring innovation. For these reasons, the spread of flexible specialization amounts to a revival of craft forms of production that were emarginated at the first industrial divide (Piore and Sabel:17).

Studies undertaken in Italy, Germany, and Japan subsequently emerged confirming and refining the concept of flexible specialization.⁴⁹ Underlying these stories lay the hope, that confronted with new conditions such as market

fragmentation, the regional and institutional arrangements that underpin flexible specialization can be replicated, or that functional equivalents can be forged.

Piore's and Sabel's conception of the second industrial divide recast the debate on industrial organization as a process with equally plausible alternatives. Yet it was fiercely criticized as scholars, particularly in the field of industrial relations, contested the alleged craft-like aspects of flexibility. Some argued that firms' quest for flexibility was tantamount to a new stage in a continual process of deskilling, speeding up tempo of production, and otherwise dehumanizing the workforce.⁵⁰ Other studies pointed to the multitudinous definitions of flexibility with respect to labor: one definition stressed functional flexibility, or the "abolition of borders among professions." Others were numerical -- the ability to shed workers during downturns and the ability to increase their numbers during upturns.⁵¹ Others focused on its exclusionary character, alleging that women and unprotected workers absorbed the brunt of the new flexible practices.⁵² All implied that the convergence between flexible production and skill-intensive, craft-like work definitions was the exception rather than the rule.

Parallel critiques of flexible-specialization arose from the managerial/factory organization perspective. Flexibility can mean high volume production but shorter life-cycles or no change in products and their life-cycles themselves, while the

machines and work tasks are changed to lower overhead costs and machine downtime. Storper and Salais⁵³ identified different combinations of flexibility and rigidities which in turn reflected firms' markets and competition as well as their strategic choices.⁵⁴ For example,

...the firm producing a dedicated product tends to face uncertainty because demand is limited to a few clients ("localized"). Since the product is also standardized, however, there is pressure to routinize the production process and for price competition to be dominant. In its pure form, then, this model suffers from strong internal tensions. The localized nature of demand implies that there is an ongoing struggle to get the product to its market and thus a tendency toward over-production, which is exacerbated by the pressure to use a production process relying on economies of scale in order to meet the price competition associated with standardization. To cope with these competing pressures, units will tend to combine two very different forms of flexibility. Their internal flexibility consists in making a group of products which exploit different market niches (as they are dedicated products), while planning for occasional capacity adjustments; they oversize their capital equipment to some extent, anticipating a certain amount of downtime, and they attempt to achieve flexibility in labor inputs (temporary workers, variability of hours, etc). It not [sic] uncommon, however, to find external flexibility in this group as well, in the form of capacity subcontracting (Salais and Storper:18; emphasis mine).

While Salais and Storper portrayed the hybrids as strategic decisions by firms, other studies identified examples of the juxtaposition of flexible and inflexible practices as inefficient and failed models, that, despite their deficiencies, were able to persist. Jaikumar described one case of failed flexibility in his comparison of American and Japanese firms' use of flexible manufacturing systems:⁵⁵

The U.S. firms used FMSs the wrong way--for high volume production of many parts at low cost per unit. Thus the annual volume per part in the United States was 1,727; in Japan, only 258 (Jaikumar:69).

Jones found new hybrids: Many Japanese firms restricted the operations of their FMSs to adapt them to volume production while simultaneously delegating wide responsibilities to workers and supervisors. He found firms in the United States and Italy had developed their particular arrangements.⁵⁶ Others, such as Elger and Fairbrother, asserted that flexibility has led to "a redrawing of the frontiers of accommodation and control rather than the establishment of cooperative work relations" as both management and the unions sought to impose their prerogatives.⁵⁷

Best presented an enlightening critique of the Piore and Sabel's work:

The weaknesses of Piore and Sabel's analysis are related to its strengths. First, instead of extending their critique of a single organizational imperative to allow for a variety of possible organizational forms they stop short by distinguishing between only two possible types of production systems: mass production or flexible specialization. The result is a narrowing of production organizations to one of only two possible types and a historical perspective of recurring industrial divides between one and the other; Piore and Sabel risk replacing one immanent logic with another and losing the contingent dimension to economic and economic policymaking institutions.⁵⁸

Sabel has also come to similar conclusions.⁵⁹ But rather than collapse the multitude of combinations into a taxonomy, he accepted the (perhaps infinite) multiplicity and superimposition of strategies and organizational practices, which he labeled hedging. Hedging, he contended, has at least

two functions. On the one hand, it is a means of constantly revitalizing and reinforcing learning and monitoring. Here he described hierarchical systems that partially transformed themselves into decentralized units:

...production in a system of collaborative manufacturing is both a means of learning how to make things better and a way of learning how to select and monitor partners. The transformation of central technical staffs into quasi-independent companies serves the same double end. The rotation of managers through different jobs in different operating units is a variation on this theme. It forms a corporate elite that is good at monitoring complex tasks because of the variety of tasks it has learned and that has learned the importance of learning through its diverse experiences in monitoring (Sabel:pp. 33-34).

On the other hand, hedging simultaneously reduced risk in investment:

Looked at from afar, therefore, the technologies deployed in a flexible economy will seem to be an assortment of hybrids, with only loose associations between types of equipment and types of production. Looked at from the inside, however, any one of the hybrids or selected clusters of them will appear to result from the application of straightforward principles of technical choice under uncertainty to a limited set of equipment types, all more flexible than traditional mass-production machinery and more productive than the repertoire of traditional flexible machines (Sabel:41).⁶⁰

Hybrid industrial organization practices superimposing many logics of production have been the rule, rather than the exception within developing countries. Yet it is only recently, and arguably, only after scholars in industrialized countries have recognized the persistence of hybrid organizational practices, that developing country experiences are no longer seen as "failed mass production" or autarkic

"small is beautiful/appropriate technology." These experiments can be seen as they are: pioneering attempts to deal adapt imported technology to very different market circumstances. Recent comparative studies of labor organization in Brazil and Mexico suggest that the hybridness, combined with traditions of less than militant unionism, may permit a organization that is as efficient as that of its industrialized country factory counterparts.

Shaiken and Herzenberg compared engine production in a Mexican subsidiary and an American plant of the same U.S. company.⁶¹ There were differences in the number of models produced on each line and the age of the plants, but both produced the same engine with similar transfer lines. Because of the flexibility of the workforce, the Mexican plant surpassed the American plant in productivity in engine head machining. It matched the American plant in machining engine blocks, although it performed less well than the American plant in cam- and crank-shaft machining. Flexibility in deploying labor, particularly managers, was one reason for the surprisingly strong performance of the inexperienced Mexican subsidiary.

In another study of an American engine transplant in Northern Mexico, also by Shaiken, he found that four years after the plant was established, unlike in many industrialized country factories with flexible technology, job rotation continued to be widespread:

Consequently, while in theory the team decides how often workers rotate, the actual practices varies considerably by area, with some area managers putting more emphasis on rotation than others. In the body shop, for example, most teams formally rotate jobs every two months, but on some teams workers will rotate jobs every few hours. In the stamping area, teams rotate jobs about every three months, but some critical jobs are on a six-month rotation. In final assembler, teams in bottleneck areas may not rotate at all, which managers admit can cause worker resentment.⁶²

One reason for the flexibility in the Mexican workforce as well as the expectation that it would remain, was the lack of union militancy. A North American manager in a subsidiary engine plant in Mexico explained:

There are no hassles with the union when you try to enforce something that is new to the operator, but is written down. These people are less resistant -- they want to do the work. they have a totally different attitude. Up north, the foreman always has a concern about possible retaliations if you force somebody to do this, even if it's in the contract....You're always concerned about the knife in the back, so to speak. He you don't have to worry about any of that. The people just work.⁶³

Elizabeth Silva revealed similar findings in her comparison of Ford at stamping, painting, and assembly operations in Ford's Sierra plant in Dagenham, England and Escort plant in Sao Bernardo, Brazil.⁶⁴ Productivity in Brazil often matched or surpassed the Dagenham plant.

This theoretical foray into recent developments in industrial organization literature suggests that hybrid practices are the rule rather than the exception. Concepts such as mass-production and flexibility are ideal types rather than definitive descriptions of factory organization. Furthermore, factory organization is constantly moving as

firms experiment with new methods of producing and dealing with customers, suppliers, labor and management. Implicit, but not well explicated, in this view of industrial development is the process by which firms and sectors adapt foreign models to their own particular circumstances, whether these models emanate from other firms, industries, sectors, or countries.

In the Brazilian motor vehicle industry, the domestic suppliers and state officials looked to American mass production and used its terminology, particularly the notions of economies of scale, to legitimate their project and convince the skeptics in the state and the society at large. Yet industrialists and state officials knew that the American practices would have to be adapted to Brazilian realities. Suppliers would need help getting started and should have guaranteed long-term contracts and other assistance from assemblers. In turn, the state would have to convince and coerce assemblers to provide this assistance via high local content laws and protected markets that foreclosed imports.

The results were practices using general purpose machinery to produce low volumes, and not mass-production, even though the officials and industrialists persisted in describing them as such. The language became a means of articulating diverse groups with intersecting but different professional experiences into networks and alliances behind the project.⁶⁵ It was not a blueprint telling these

industrialists how to set up their factories. The shared language and the everyday political machinations in implanting the industry created among these men understandings and expectations of mutual support and the courage to experiment with different models. The hybrids changed, yet they marked the development of the industry and in turn shaped the auto parts firms' export strategies and their ceaseless struggle to reinstate their vision of assembler-supplier cooperation.

The language of mass production proved a two-edged sword and was one element in the suppliers' defeat of the mid-1960s. Yet suppliers kept alive their unrequited promises of assembler-supplier cooperation of the implantation years. Over time, the suppliers' expectations of cooperation and state support became embodied in legal institutions as well as networks of state officials, corporatist officials, and industrialists who worked out mutual understandings or "gentlemen's agreements." The corporatist system codified a relation of mutual dependence whereby the corporatist group depended upon the state for recognition and exclusivity, but in turn, it negotiated and delivered compliance among its members. Sindipeças marshalled support and information from its members. The state officials, in turn, strove to promulgate legislation and practices to promote supplier and industry growth. Suppliers and state officials, in public statements and private conversations, constantly alluded to the mutual responsibilities and cooperation. The development

of the industry is told from the vantage point of the suppliers' visions, struggles, and compromises. The surprising outcomes of the tight cooperation between auto parts firms and state officials and the analysis of inter-firm and factory organization repudiate structural interpretations of Brazilian industrial development.

ENDNOTES

1. This discussion of Smith, Marx, Gerschenkron, and other developmental economists explicates ideas in Michael Piore and Charles Sabel, The Second Industrial Divide Possibilities for Prosperity, NY: Basic Books, 1984, see in particular, chapter 3. For a similar interpretation relating to developing countries, see Charles Sabel, "Changing Models of Economic Efficiency and their Implications for Industrialization in the Third World," in Development, Democracy, and the Art of Trespassing, Notre Dame: Kellogg Institute Series with Notre Dame Press, 1986.

2. Adam Smith, An Inquiry into the Nature and Causes of the Wealth of Nations, NY: Arlington House, 1966, Book I, Chapter 1. Karl Marx, Capital, Chapter XIV: Sections 2,3.

3. Smith focuses on people's inherent tendency to truck and barter which, without political interference, would lead to growing markets, an important factor permitting the division of labor. Marx sees larger markets and production for exchange as factors permitting the division of labor, but focuses more on how the forces of production themselves give rise to a further division of labor (Marx: Intro to Preface; Capital, Vol 1, Chap 15). While Smith sees the division of labor as emancipatory, Marx sees it as exploitative. Nonetheless, both authors depict a process in which political and social institutions are molded in the image of the continuing division of labor.

4. For an overview of arguments in the history of economic development thinking, see Gerald M. Meier, Leading Issues in Economic Development, NY: Oxford University Press, 1984. The articles analyzed for the discussion of "balanced growth," came from this volume. They are:

Albert Fishlow, "Empty Economic Stages?", Economic Journal, Vol 75, No 297, March 1965, pp. 112-116, 120-125 in Meier, pp. 94-101.

Paul N. Rosenstein-Rodan, "Problems of Industrialization of Eastern and South-Eastern Europe," Economic Journal, June-September 1943, pp. 204-7; "Notes on the Theory of the 'Big Push'" in Howard S. Ellis, ed., Economic Development for Latin America, NY: St. Martin's Press, 1961, pp. 57-8, 60-62, 65-66 in Meier, 361-65.

Ragnar Nurske, "The Conflict Between 'Balanced Growth' and International Specialization," in Lectures on Economic Development, Istanbul: Faculty of Economics and Faculty of Political /sciences Ankara University, 1958, pp. 170-76 in Meier, pp. 373-76.

W.W. Rostow, "The Stages of Economic Growth," Economic History Review, August 1959; The Stages of Economic Growth, Cambridge, 1960 and The Economics of Take-Off Into sustained Growth, London, 1963.

Also see, G. Haberle, ed., Equilibrium and Growth in the World Economy: Economic Essays by Ragnar Nurkse, Cambridge, MA: Harvard

University Press, 1961, in particular, p. 137.

5. United Nations, Toward a Dynamic Development Policy for Latin America, NY: United Nations, 1963, p. 62. For early discussions on the constraints to developing countries inherent in the international system, see two articles written by Prebisch in the late 1940s, "El desarrollo economico de la America Latin y algunos de sus principales problemas," and "Crecimiento, desequilibrio, y disparidades: Interpretacion del proceso de desarrollo economic," both in La obra de Prebisch en la Cepal, ed. Adolfo Gurrieri, 1982, pp. 99-247.

6. One example of the tight cooperation between CEPAL and Brazilian policy makers is United Nations, The Economic Development of Brazil Analyses and Projections of Economic Development, II, NY: United Nations, 1956. Cited by Baer, 1965, p. 64. Also see Gordon and Grommers, p. 123.

7. Alexander Gerschenkron, "Economic Backwardness in Historical Perspective," in Economic Backwardness in Historical Perspective, 1962. Originally published in 1951.

8. For works development the theoretical and applied use of the concept of linkages, see citations in Albert O. Hirschman, "A Generalized Linkage Approach to Development, with Special Reference to Staples," in Economic Development and Cultural Change, Vol. 25, Supplement, 1977, pp. 67-98.

For examples of this type of analysis, Hirschman cites James Kurth, "Industrial Change and Political Change: A European Perspective," In David Collier, ed., The New Authoritarianism in Latin America, Princeton, NJ: Princeton University Press, 1979.

Stephen G. Bunker, "Staples, Links, and Poles in the Construction of Regional Development Theories," in Sociological Forum, Vol 4, No. 4, 1989, pp. 589-610.

Helen Shapiro, op cit.

Peter Evans, "Generalized Linkages in Industrial Development: A Reexamination of Basic Petrochemicals in Brazil," in Alejandro Foxley, M.S. McPherson, G. O'Donnell, eds., Development, Democracy, and the Art of Trespassing: Essays in Honor of Albert O. Hirschman, Notre Dame, In: University of Notre Dame Press, 1986, pp. 7-26.

Shapiro and Evans, in particular, grapple with the problem of revealing the explicit mechanism that operationalizes the backward and/or forward linkages.

9. Albert O. Hirschman, The Strategy of Economic Development, New Haven: Yale University Press, 1958, pp. 8-9.

10. Ibid, p. 100.

Hirschman realized that the political and social structure in which the investment was embedded had important consequences for the

development of the linkage (1967;1968;1971;1977). See, Albert O. Hirschman, Development Projects Observed, New Haven: Yale University Press, 1967.

-----, A Bias for Hope, New Haven: Yale University Press, 1971
-----, 1977.

MNCs could stimulate fiscal linkages because states were more likely to tax foreigners than nationals (Hirschman:1977). Tribal and ethnic divisions stimulate economic development in some regions or industries to the detriment of others (1967:139-147). Hirschman cites transportation systems in Nigeria as an example. Railroad projects were undermined because the trucking industry in one region was controlled by a powerful ethnic group. Industrialists are frequently immigrants who do not wield sufficient political power to obtain incentives for industrial deepening incentives (1971:97). Whether or not a particular industrialist has sons may affect his propensity to vertically integrate into new and related activities (1977:113).

11. Critiques of Hirschman's accounts have been emerging along the lines of those he made about Gerschenkron. Some accept the notion of backward and forward linkages stemming from large-scale investments (unbalanced growth), but suggest that the mechanism operationalizing the "big spurts" be more clearly specified (Evans:1986; Shapiro:1989). These authors do not debunk the large-scale model, but rather conclude that the role politics must be explicated to understand how linkages spread. A second critique also acknowledges the validity of the linkage paradigm, including the role of large-scale industrialization, but insists that it must be used much more restrictively, and questions its validity for non-industrial projects located in hinterlands such as extraction and agriculture. See Stephen G. Bunker, "Staples, Links, and Poles in the Construction of Regional Development Theories," in Sociological Forum, Vol 4, No 4, 1989, pp. 589-610.

Hirschman himself began to show some doubts about the appropriateness of a large-scale linkage concept in orienting development projects quite early on (1967:184). He later elaborated these doubt more explicitly in (1991). I chose to focus on the large-scale aspects of his argument because 1) he did not explicitly renounce it until recently and concludes that it does explain industrial development in Brazil, at least during the 1950s (1971:95); and 2) it has influenced generations of development economists, social scientists, and planners in development organizations and developing countries.

12. See Warren Dean, The Industrialization of São Paulo, 1880-1945, Austin: University of Texas Press, 1969; and Wilson Suzigan, Indústria brasileira: Origem e desenvolvimento, São Paulo: Brasiliense, 1986.

13. One of the best accounts of the multiplicity of organizations created under the first Vargas administration as well as subsequent administrations is Sonia Draibe, Rumos e Metamorfoses Estado e

industrialização no Brasil: 1930/1960, Rio de Janeiro: Paz e Terra, 1985.

14. The "external shock" as catalyst argument parallels Smith and Marx not only by accepting the importance of large-scale industrialization, but also downplaying the role of the mechanism triggering the industrialization process.

15. Celso Furtado The Economic Growth of Brazil A Survey From Colonial to Modern Times, Berkeley: University of California Press, 1966. Furtado's account is a economic one based on aggregate economic variables such as money supply, exchange rates, and he made only token efforts to explain why the state implemented one macro-economic policy as opposed to another. Nonetheless, it is the model for this version of the argument. For a similar account, see Maria Conceicao de Tavares, A substituição do capital financeiro, 1982, p. 60.

For an account of how the authoritarian nature of the Estado Novo permitted a rationalization of the state bureaucracy, see Barbara Geddes, Economic Development as a Collective Action Problem: Individual Interests and Innovation in Brazil, Ann Arbor, University of Microfilms International, 1986.

16. Francisco Weffort, O populismo na política brasileira, SP: Brasiliense, 1978, p. 120. On this point, Draibe also cites Francisco Weffort, "O populismo na politica brasileira," in Celso Furtado, et. al., Brasil, Tempos Modernos, Rio de Janeiro: Paz e Terra, 1968.

Celso Furtado, Análise do "Modelo" Brasileiro, SP: Civilizacao Brasileira, 1982. In this later account, Furtado more explicitly points to the political forces behind the state's decisions. The state, between about 1930 through 1960 is relatively autonomous. By 1960, the state is again in the clutches of civil society, but this time the industrialists (20-37).

Luciano Martins, Pouvoir et développement économique Formação et évolution des structures politiques au Brésil, Paris: Editions Anthropos, 1976. Martins explains that the revolution of 1930 reflected the emergence of an incipient industrial elite trying to accommodate itself to a disintegrating agricultural oligarchy. The role of the state in setting up the corporatist system and a populist discourse is critical to the success of the transition (106-124).

17. See, in particular, Martins:137-148.

Draibe focuses on state planning organs such as the National Economic Council. She states that once these organs were established, even neutral or anti-industrializing Executives such as Dutra could not eliminate them, thus permitting the state to resume its accelerated industrializing under Vargas (second term) and Kubitschek. The state structures respond to the needs of modern, large-scale capitalism. Nonetheless, to be fully utilized, they require a forceful and supportive executive. In other words,

they are not immune to the rise and fall of political support. Benevides focuses on the executive groups as the source of state autonomy. The embryo of these groups began under Vargas second government and they were expanded during the Kubitschek years. (Martins:Chps.6-9;Draibe:1985; Benevides:1979)

This argument is similar to one made by Chalmers Johnson MITI and the miracle: the growth of Industrial Policy, 1925-1975, Stanford: Stanford University Press, 1986 and Daniel I. Okimoto Between MITI and teh Market: Japanese Industrial Policy for High Technology, Stanford: Stanford University Press, 1989. The success of Japanese economic development responds to a Janus-like state apparatus. Some ministries, particularly agriculture and their links to the LDP buffer the efficient technocratic bureaucracies from undue political influence and permit them to promote development.

Martins, Draibe, and Benevides all focus on state structures to explain how the relative autonomy of the state permitted the continuation of the large-scale industrialization project initiated in the 1930s.

18. Among the most frequently cited works about the Kubitschek era are: Maria Victoria de Mesquita Benevides, O governo Kubitschek Desenvolvimento econômico e estabilidade política, Rio de Janeiro: Paz e Terra, 1979, 3rd ed., and despite its never having been published, Celso Lafer, The Planning Process and the Political System in Brazil A Study of Kubitschek's Target Plan--1956-1961, Unpublished PhD thesis, Graduate School of Cornell University, 1970.

19. Lafer's version is slightly different. Through various discretionary mechanisms, JK was able to allocate funds to the Target Plan, thus ensuring over 40 percent of its funding. Lafer also argues that rather than try to implement a head-on reformation of the administration, JK opted for more piecemeal efforts in the form of executive groups (Lafer:117-132). Geddes agrees that the power and efficacy of the executive groups lay in their independent budgets, high quality personnel, and autonomy from the exective, under Kubitschek. In her account, it would appear that Goulart was too short-sighted to respect the delicate balance. He began using both the groups and funds for patronage (Geddes:1986).

20. Barbara Geddes, "building "State" Autonomy in Brazil, 1930-1964," in Comparative Politics, January 1990, pp. 217-235.

21. For an evaluation of the Target Program, see Clóvis de Faro and Salomao L. Quadros da Silva, "A decada de 50 e o Programa de Metas," in O Brasil de JK, Rio de Janeiro: Editora da fundacao Getulio Vargas, CPDOC, 1991, pp. 44-70.

22. See Guillermo O'Donnell. Modernization and Bureaucratic Authoritarianism: Studies in South American Politics, Berkeley, CA: Institute of International Studies, University of California,

Politics of Modernization Series No.9, 1973. For an in-depth refutation of the thesis, see: Jose Serra, "Three Mistaken Thesis Regarding the Connection between Industrialization and Authoritarian Regimes," in The New Authoritarianism in Latin American, Ed. David Collier, Princeton, NJ: Princeton University Press, 1979, pp. 99-164,

23. Peter Evans, Dependent Development: The Alliance Multinational, State, and Local Capital in Brazil, Princeton: Princeton University Press, 1979.

24. Edson de Oliveira Nunes and Barbara Geddes, "Dilemmas of State-led Modernization in Brazil," in State and Society in Brazil Continuity and Change, Boulder: Westview Press, 1987, pp. 103-146.

25. Eli Diniz, Empresário, Estado e Capitalismo no Brasil: 1930-1945, Rio de Janeiro: Paz e Terra, 1978. In an insightful literature review Danes reveals the weakness of "dichotomous analysis" which is so prevalent in Brazilian social science and historiography. She states that Brazilian social scientists tend to view the Brazilian state in a dichotomous manner: either completely autonomous or completely captured by special interests in civil society. Authors focusing on state autonomy include Simon Schwartzman and Luciano Martins. Diniz examines a more recent trend in Brazilian social science which focuses on institutions in understanding the articulation between civil society and the state, an approach which qualifies the dichotomous approach mentioned above. Authors using this approach include Maria do Carmo Campello de Souza, Luiz Werneck Vianna, Wanderley Guilherme dos Santos, Flavio Wanderley Reis, Fernando Henrique Cardoso, Philippe Schmitter, and Guillermo O'Donnell. Diniz claims that although these authors recognize the dynamism of civil society they still downplay the role of the national bourgeoisie (25-31).

Draibe uses a Poulantzian framework to refine accounts that exaggerate the unity and autonomy of the Brazilian state. See Draibe, op cit.

Francisco de Oliveira, "A Economia Brasileira: Crítica a Razão Dualista," in Estudos Cebrap 2, Sao Paulo: Editora Brasileira de Ciencias Ltda, October 1972, pp. 3-82. In this view, the 1930s marks the transition from rural hegemony to an urban-industrial base. Populism and the corporatist legislation overlay this transition. The state promulgated decrees that created conditions for lower wages and labor control. The transition, however, did not eliminate the rural elites whose export receipts were important. Rather the old elites were subordinated to the state and the requirements of industrialization as evidenced by the legislation preserving the rural mode of primitive accumulation. This interpretation disputes the unitary view of coffee-elite hegemony but adheres to the notion of large scale development. Changes in the mode of production require large scale capital investment and foster class-conflict between the agrarian and industrial elites. As the capitalist mode of production advances,

the interests of the industrial bourgeoisie become preeminent, albeit not hegemonic. (Oliveira:33-37;Love:1989?).

Diniz also cites Edgard Carone, A república Nova 1930/1937, SP: DIFEL, 1974, pp. 92-83; Boris Fausto, A Revolução de 1930, SP: Ed. Brsilense, 1979, pp. 23; 29 to 38; Warren Dean, A Industrialização de São Paulo, SP: DIFEL, 1971, p. 196 and 208.

26. Topik, 1987.

27. Leff also notes that the state was interventionist well before 1930, for example it helped industry during the credit crunch of the 1890s (op cit, pp.32-33). He also notes that coffee had lost power over the Brazilian state well before 1930, as Font argued (Leff, op cit, pp. 9-34). In neither example is Leff's work convincingly demonstrated.

28. Font uses the terms holistic and unitary (Font:89) to describe accounts portraying the coffee elite as united, hegemonic, and in control of the transition to industrialization.

29. Maria Antonieta P. Leopoldi, "Crescendo em meio a incerteza: a politica economica do governo JK (1956-60)," in O Brasil de JK, ed. Angela de Castro Gomes, Rio de Janeiro: Editora Fundacao Getulio Vargas/CPDOC, 1991, pp. 71-99. Specifically, the national bourgeoisie was defeated by legislation favoring the latter promulgated under the neoliberal Cafe filho government. Despite strident protests by local capitalists, the legislation was not rescinded by Kubitschek.

30. Evans, Peter. "Predatory, Developmental, and Other Apparatuses: A Comparative Political Economy Perspective on the Third World State", Sociological Forum, Vol 4, No 4, Dec, 1989, pp. 561-587.

Stephan Haggard, Pathways to the Periphery: The Growth of Politics in the Newly Industiralizing Countries, Ithaca: Cornell University Press, 1990.

31. Haggard's account of why export-led growth is superior to import substituting industrialization is never explicitly stated. At some points it reflects the large-scale industrial organization argument (1990:15,17,40,263). Curiously, he makes reference to the success of small scale industrial organization in some export sectors in Taiwan and Hong Kong, yet never discusses its implications for successful industrialization.

32. See Helen Shapiro, op cit, 1989 and Werner Baer & Issac Kerstenetsky, "The Brazilian Economy," in Riordan Roett, ed., Brazil in the Sixties, Nashville: Vanderbilt University Press, 1972, pp. 105-146.

33. In her forthcoming book Shapiro dropped the explicit emphasis on state planners guided by the large-scale imperative. However it remained implicit in the analysis of state-TNC bargaining. Furthermore, by continuing to almost exclusively focus on the either the state or the MNC subsidiaries, she perpetuates the large-scale interpretations of Brazilian economic development. I refer to her since-revised thesis because it is one of the most thoughtful accounts of the large-scale, state-led interpretations, see Shapiro, op cit, 1988.

For an economistic interpretation of backward and forward linkages in the Brazilian economy and its motor vehicle industry, see Werner Baer and Isaac Kerstenetsky. "The Brazilian Economy," in Brazil in the Sixties, Ed. Riordan Roett, Nashville, TN: Vanderbilt University Press, 1972, pp. 105-146.

34. Wellington Moreira Franco, A nacionalização de veículos no Brasil, Masters thesis, University of Sao Paulo, n.d.

35. Eduardo Augusto Guimaraes, Acumulação e Crescimento da Firma Um Estudo de Organização Industrial, Rio de Janeiro: Zahar Editores, 1982, pp. 131-170. Guimaraes states that the industry came to be in Brazil because state legislation coincided with European expansion, which in turn was a reaction to U.S. expansion of motor vehicle production in Europe. The success in negotiating export legislation in the late 1960s and early 1970s was the result of similar circumstances. The legislation coincided with trends in the international division of labor.

For a similar view on the importance of the division of labor in exports see, Maria Cecilia Borghi Crissiuma, "Reestruturação e Divisão Internacional do Trabalho na Indústria Automobilística: o Caso Brasileiro," Master's Thesis, São Paulo: Fundação Getúlio Vargas, 1986.

For a similar account regarding the development of the motor vehicle industry in Mexico, Douglas C. Bennett and Kenneth E. Sharpe, Transnational Corporation Versus the State: The Political Economy of the Mexican Auto Industry, Princeton, NJ: Princeton University Press, 1985. Bennett and Sharpe credit the state with recognizing and navigating the oligopolistic industrial structure. The nature of competition associated with this type of industrial organization requires forcing one player to accede to state goals which in turn forces the others to follow suit.

Levy, et. al.

36. Eduardo Augusto Guimarães, Acumulação e crescimento da firma Um estudo de organização industrial, Rio de Janeiro: Zahar Editores, 1982, pp.131-170.

Maria Cecilia Borghi Crissiuma, "Reestruturução e divisão

internacional do trabalho na indústria automobilística: O caso brasileiro, Unpublished master's degree thesis, Fundação Getúlio Vargas, Escola de Administração de Empresas de São Paulo, 1986.

Also see, Rhy Jenkins, Transnational Corporations and the Latin American Automobile Industry, Pittsburgh, Pa: University of Pittsburgh Press, 1987 for an account of the Latin American Motor Vehicle industry in this perspective.

37. José Roberto Ferro and Roberto Venosa, "A evolução do setor automobilístico no Brasil,"

-----, "Subordinação e dependência: a mudança tecnológica no ramo de autopeças,"

José Paulo C. Vieira and José Roberto Ferro, "The issue of survival of small and medium and auto parts firms,"

All of the above are in Pequena Empresa, Vol 2, O Comportamento Empresarial na Acumulação e na Luta pela Sobrevivência, SP: Brasiliense and Conselho Nacional de Desenvolvimento Científico e Tecnológico, 1985.

38. Francisco de Oliveira Maria Angélica Travolo Popoutchi, El Complejo Automotor en Brasil, Mexico DF: Editorial Nueva Imagen, S.A., 1979. p. 212.

39. For a similar comparative analysis of Latin American motor vehicle industries, see Rhys Jenkins, Transnational Corporations and the Latin American Automobile Industry, Pittsburgh: University of Pittsburgh Press, 1987.

40. Mario Watanabe and Tatiana Petit, "A Poeira erguida pelas Carrocas ainda não baixou," in Exame, Feb 21, 1990, 46-53.

Ventura Dias states that Berhman comes to similar conclusions regarding Latin American motor vehicle industry in various countries. Jack N. Berhman, The Role of International Companies in Latin American Integration (Autos and Petrochemicals), Committee for Economic Development, 1972, Lexington Books, Massachusetts, pg. 130.

35. French presumes a "cohesive upper class of capitalist planters industrialists, and their solidly structured mass base within the state" (French:53). Font's discussion of a fragmented coffee sector that was frequently in opposition to the industrialists is a more convincing argument (Font:1990).

36. In this regard, the measures were only partially successful. Although the Anarchist movement faded, tactical alliances emerged between the Communist and the more centrist movement.

37. José Serra, "Three Mistaken Theses Regarding the Connection Between Industrialization and Authoritarian Regimes," in The New Authoritarianism in Latin America, Princeton, NJ: Princeton University Press, 1979, pp. 99-164.

38. Serra described the potential role of consumer durable production in reviving growth in Brazil in the mid-1960s, a path that the military government could have taken:

This potential for accumulation derived from a variety of sources: the volume of the productive capacity already installed in the consumer durables sector; its degree of monopoly; and the possibility of benefiting from significant increases in the product-capital ratio by means of utilizing external economies and economies of scale in general, as well as through its strong linkage effects in relation to the urban economy (Serra:131-32).

39. When Jânio Quadros unexpectedly resigned in 1961, pro-labor and leftist vice-president, Joao Goulart was in China on a foreign policy trip. Factions of the military were opposed to his taking power, but they were overturned by a coalition of Congresspeople from throughout all political parties and the legalist wing of the military. See Cheibub for an account of these deliberations.

40. The mild proposals for land reform debated during the Parliamentary regime (1961-1963) had widespread support among traditionally opposing factions. The proposals were undermined because the radical left eschewed piecemeal reforms in the hope that under the to be reinstated presidential system Goulart could commandeer more wide-reaching redistributive measures. Goulart tried to keep all his options open, and sometimes paid token support to moderation, and other times to the radical left. He ended up alienating both and his ineffectual regime was ended by the 1964 coup.

41. The work of Topik and Font (op cit) should also be cited here. As Topik demonstrated, state intervention was significant before the Vargas Revolution. Secondly, as many in the large-scale imperative school state, the *raison d'etre* of the first Vargas period cannot be attributed to controlling the coffee planters because they had lost control of the state well before the 1930s.

42. Benevides' book is considered the definitive account of the Kubitschek period (Benevides:1979). One question she addressed is how JK managed to maintain a democratic government although the previous presidents had been ousted, or almost ousted by the military. She concluded that there was a convergence of interests between the military and JK regarding economic growth. Simultaneously, the military was coopted with important posts in

the government. She revised this account to portray a much more interventionist military and subsequently less stable democracy in her article, "O governo Kubitschek: a esperança como fator de desenvolvimento," in O Brasil de JK, Angela de Castro Gomes, ed, Rio de Janeiro: Fundação Getúlio Vargas/CPDOC, 1991, pp. 9-22.

43. Insufficient scale is a leitmotif in almost all accounts of industrialization in developing countries. See, Katz, Behrman, Baranson, Baer, all op cit.

44. Jorge Katz, "Technological change in the Latin American Metalworking Industry Results of a Programme of Case Studies," in Cepal Review, April 1983, pp. 85143.

45. Ibid, p. 102.

46. Ibid, p. 115.

47. Piore, Michael and Charles Sabel, The Second Industrial Divide Possibilities for Prosperity, NY: Basic Books, 1984.

This account explicitly argues against the large-scale imperative and the more contemporary accounts of the Smith/Marx vision of industrialization discussed above.

Implicitly, it argues against Williamson's markets v. hierarchy approach where firms seek to minimize transactions costs. See Oliver Williamson, Markets and Hierarchies Analysis and Antitrust Implications, NY: Free Press, 1975. It is unrealistic to assume that fiat, or hierarchy, can necessarily achieve the same outcome as market, and therefore, that these are the only choices a firm faces. See Mark Granovetter, "Economic Action and Social Structure: The Problem of Embeddedness," in American Journal of Sociology, Vol 91, 1985, No 3, pp. 481-510.

Secondly, Piore and Sabel describe different versions of flexible-specialization and the critical role of extra-firm organizations. There is no room for such organizations in Williamson's dichotomy. Thirdly, as Helper notes, uncertainty and opportunism are not given as individual firms' actions can mitigate both thus making parts of transaction costs endogenous. See Susan Helper, "An Exit-Voice Analysis of Supplier Relations," in R. Coughlin, ed., Socioeconomic Perspectives, M.E. Sharpe, 1990.

In a later version there is still little room in analysis for extra-firm arrangements. Furthermore, the status of asset specificity is ambiguous, at times it is an independent variable and other times a dependent one. See Oliver E. Williamson, The Economic Institutions of Capitalism Firms, Markets, Relational Contracting, NY: The Free Press, 1986.

48. Herrigel states that regions in West Germany, such as the Bergishes Land around Remscheid, Solingen and Wuppertal, the metal working and textile industries of the left bank of Rhine, the bulk of industries in Wuerttemberg, Siegerland, and the Blackforest are prosperous regions that have followed industrialization

trajectories very different from the large-scale one set forth by Gerschenkron and later accepted as the standard view of industrialization in Germany (Herrigel:17).

49. See David Friedman, The Misunderstood Miracle Industrial Development and Political Change in Japan, Ithaca, NY: Cornell University Press, 1988.

Gary Herrigel, Industrial Organization and the Politics of Industry: Centralized and Decentralized Production in Germany, Unpublished Ph.D. Dissertation, MIT, Department of Political Science, 1990.

50. Mike Parker and Jane Slaughter, Choosing Sides: Union and the Team Concept, Detroit: Labor Notes, 1988.

51. Anna Pollert, "L'entreprise flexible: réalité ou obsession?" in Sociologie du travail, Vol 31, No 1, 1989, pp. 75-106.

52. One study in the service sector, the mail-order industry in Britain, see Steve Leman, "Gender, Technology and Flexibility, in Fordism and Flexibility Divisions and Change, edited by Nigel Gilbert, Roger Burrows, Anna Pollert, New York: St. Martin's Press, 1992.

53. Robert Salais and Michael Storper, "One Industry, Multiple Rationalities: Flexibility and Mass Production in the French Automobile Industry", Working Paper, Graduate School of Architecture and Urban Planning, University of California, Los Angeles, 1990.

54. The variety of market/competition that firms faced included different kinds of market fluctuations (predictable and uncertain), type of competition among firms (price v. quality); length of production run; degree of standardized v. specialized products; nature of customer (specific or generic); described various types of change in demand: fluctuations in quantities produced or in the type of goods produced.

55. Ramchandran Jaikumar, "Postindustrial manufacturing," in Harvard Business Review, November-December 1986, pp. 69-75.

56. See, Bryn Jones, "Flexible Automation and Factory Politics: The United Kingdom in Comparative Perspective," in Reversing Industrial Decline? Industrial Structure and Policy in Britain and Her Competitors, Ny: St. Martin's Press, 1989, pp. 95-121.

57. Tony Elger and Peter Fairbrother, "Inflexible Flexibility: A case Study of Modularisation," in Fordism and Flexibility Divisions and Change, ed. Nigel Gilbert, Roger Burrows, and Anna Pollert, NY: St. Martin's Press, 1992, pp. 89-106.

58. Best, Michael. The New Competition Institutions of Industrial Restructuring, Cambridge, MA: Harvard University Press, 1990, p.9. I also credit Consuelo Cruz with this idea. She had recognized it before either she or I had seen it so articulately written in Best's account.

While Best describes different forms of flexibility, which he calls the "New Competition," he is unable to explain the very terms in which he frames the debate, the strategic decisions of firms.

59. Charles Sabel, "Moebius-Strip Organizations and Open Labor Markets: Some Consequences of the Reintegration of Conception and Execution in a Volatile Economy," in Social Theory for a Changing Society, ed. by Pierre Bourdieu and James s. Coleman, Boulder, Colorado: Westview Press, 1991, pp. 23-61.

60. Sabel has also dropped that assumption that flexibility goes hand-in-hand with revitalized forms of craft production (Sabel:41-46).

61. Harley Shaiken with Stephen Herzenberg, Automation and Global Production Automobile Engine Production in Mexico, the United States, and Canada, San Diego: Center for US-Mexican Studies, University of California, San Diego, 1987.

62. Harley Shaiken, Mexico in the Global Economy High Technology and Work Organization in Export Industries, Center for U.S.-Mexican Studies University of California, San Diego, Monograph Series, 33, 1991, p.57.

63. Harley Shaiken with Stephen Herzenberg, Automation and global Production Automobile Engine Production in Mexico, the United States and Canada, Center for U.S.-Mexican Studies, University of California, San Diego, Monograph Series, 26, p. 62.

64. Elizabeth Bortolaia Silva, Refazenda a fábrica fordista, São Paulo: Editora Hucitec, 1991.

65. I thank Consuelo Cruz for her insights on this issue.

CHAPTER 2

1950-1964: The Horizontal Vision and Hybrid Organizational Practices

Fukuichi Nakata, an adventurous repairman in the Japanese Merchant Marine, immigrated to Brazil in 1929.¹ Like many Japanese families before him, he and his family joined relatives who had come to work in the agricultural estates in the interior of the state of Sao Paulo. Although Fukuichi was forced by circumstances to dedicate himself to agriculture, in his spare time he harkened back to his metalworking, producing kitchen and farm utensils.

In 1947, Fukuichi and his family moved to the city of São Paulo where they rented a small house, and under a corrugated steel roof in the backyard set up a factory to produce kitchen and farm utensils. They named the factory Irmaos Nakata (Nakata Brothers), which was later shortened to Nakata. The factory diversified and in 1952 began machining fasteners and other small parts for GM. After motor vehicle production began in 1956, Nakata began supplying to other firms, including part of a valve for VW. By the early 1960s, VW decided that Nakata should produce its tie rods. To this end, VW arranged for a meeting between Nakata and a German supplier, Enrenreich, in the hope that the latter would agree to a technology licensing agreement.

Although it had a large state-owned steel mill, cement and textile factories, and produced limited capital goods,

Brazil was considered an industrial backwater by Americans, Europeans, and even many of its own citizens.² Foreign auto parts suppliers had little knowledge of Brazil and were reluctant to risk their reputations by licensing their technology in such a distant country and apparently foolhardy endeavor. Before leaving for Germany, the VW engineer accompanying the Nakatas took a picture of a small Brazilian factory. In the meeting with Enrenreich, the engineer stated that the factory, rather than the Nakata family backyard, housed the production facilities. The German firm agreed to license the technology and today Nakata is one of the 20 largest suppliers in Brazil.

In homage and in gratitude to VW, Fukuichi's new factory, constructed a few years later, was a miniature of the VW factory in Brazil. Fortunately, the austere exterior was counterbalanced by a beautiful Japanese garden and a few peacocks that lived on the factory grounds.

Nakata's and other suppliers' fates were dependent upon the assemblers, and as the assemblers subcontracted more parts, the suppliers grew. Nonetheless, it is incorrect to conclude that the auto parts sector was a backward linkage effect of the motor vehicle industry. Since the early 1950s, despite the assemblers' protestations, the suppliers tirelessly lobbied for the implantation of a horizontal industry, that is, an industry characterized by high levels of subcontracting and cooperative assembler/supplier relations.

It is important to note that the suppliers' horizontal industry meant lots of subcontracting *by assemblers*, and had no such standards for suppliers. In other words the vision foresaw a role for assemblers as mentors, but there was comparable idea for inter-supplier relations.

The suppliers embarked on a two-pronged strategy in their quest for widespread and organized (rather than exclusively price-based) subcontracting. Their tactics were deployed in response to macroeconomic and sectoral openings. They sought protection from the international market with legislation that prohibited imports of goods already produced in Brazil. Simultaneously, on the domestic front, they sought organized markets and cooperative assembler-supplier relations via protectionism, rigid local content laws, and understandings among firms that the suppliers sector would be the domain of national firms. The suppliers correctly gauged that this combination of measures would force the reluctant assemblers to nurture the fledgling auto parts firms.

The combination of legislation and understandings shaping the development of the motor vehicle industry was not always what the suppliers foresaw. Rather, it emerged as a result of negotiation, compromise, and contingency as the suppliers, assemblers, and state officials pursued their sometimes divergent visions of the industry. Notwithstanding, the suppliers were quite successful -- they created markets for themselves and obtained tutelary support from the assemblers.

The foreign assemblers taught suppliers how to set up their factories and what to produce, provided them with long-term and often single-source contracts, and introduced them to foreign sources of technology. Often blustering and overbearing American and European engineers from the assemblers became enthusiastic and dedicated mentors to suppliers, willing to take risks, break rules, and drastically modify the sacrosanct practices of the parent firms to help the small suppliers. Throughout the late 1950s and 1960s, stories like that of the Nakata's were repeated many times, although the firms were typically owned by immigrants from Italy, Spain, Portugal, and other European countries, rather than Japan. While the Nakatas demonstrated their gratitude more poignantly than most, a strong sense of camaraderie developed among suppliers and assemblers.

Suppliers, whose role is overlooked by large-scale theories of industrial development, were the fulcrum for launching Brazil's motor vehicle industry and shaping its horizontal production philosophy. The suppliers' tactics and strategies were multifaceted and tightly intertwined with the institutional, ethnic, and ideological fabric of the country. Suppliers took advantage of foreign exchange shortages to seek protection from imports and eliminate the perils from international markets. Domestically, they sought legislation requiring high local content. The suppliers created corporatist institutions and cultivated pro-industry networks

within the state and civil society. They also adopted the language of the assemblers who, resisting the project, claimed that economies of scale would be impossible to reach in Brazil.

Despite the rhetoric and technical language focusing on economies of scale, industrial organizational practices were a mix of mass- and flexible- production practices. State officials elected not to restrict the number of assemblers in the market or the number of models that they could produce. The combination of small markets, diversity of producers, and the proliferation of platforms (basic models) led to low volume production and investment strategies based on general-purpose machinery. The general purpose equipment was used in a mass production manner. The suppliers produced stocks of parts and then inventoried them until they were needed, in part a response to the assemblers' long lead-times in ordering. Even though suppliers lengthened production runs by producing for inventory, they were still well below optimum scale. While runs and factory organization diverged from mass production, the Brazilian and American systems did have one characteristic in common. As a general rule, assemblers gave detailed plans for producing a part and consequently suppliers took little initiative.

Assembler/supplier relations, however, were typical of more flexible production systems. The relations were usually cooperative and based on long-term and often single-source

arrangements, which is considered an important competitive advantage among many Japanese assemblers today. The suppliers in Brazil created a unique environment -- assemblers taught them production techniques in a nurturing environment that predated such cooperative practices elsewhere, even in Japan. Considering that the majority of assemblers in Brazil were organized along mass-production lines in their home countries, this combination of practices is quite notable.

This chapter focuses on the suppliers' quest, from the early 1950s through the early 1960s, to implant a horizontally organized industry. The first section will present a brief overview of the corporatist system and some of its implications for industrial organization practices. The second section will focus on suppliers' tactics in the early 1950s, the years preceding the legislation that established the industry in Brazil. It will examine how the smaller suppliers, who were typically devoid of government contacts and not part of large industrial groups, used the syndicate and other institutions, to begin carving out for themselves delineated and secure markets. The first successful battle culminating in Aviso 288, passed in 1952, granted suppliers protection from imports. Simultaneously, the suppliers sought to organize competition on the domestic front through a series of incipient understandings, or agreements among the players: market segments (assembly and supplier) would be delegated to national, multinational, and state capital; subcontracting

would be prevalent when the industry was implanted; and foreign suppliers would not be allowed in segments where Brazilian producers already supplied sufficient volume for the market.

The third section of the chapter focuses on the implantation stage of the industry (1956-1961) and the suppliers' efforts to solidify the incipient understandings. During this phase, suppliers vied for high local content legislation and more concrete assurances from the assemblers and state officials that subcontracting would be prevalent. These measures effectively secured markets for the suppliers and created assembler/supplier relations whereby the assemblers nurtured the suppliers and encouraged their growth. Many of the guidelines, legislation, and understandings, however, were in place before Juscelino Kubitschek created the executive and technical groups that oversaw the implantation of the industry.

While this heyday period of supplier influence lasted little beyond the implantation stage (for the majority of suppliers), it demonstrated that the supplier industry was not the result of backward linkages stemming from large investments in assembly, as industrial development theory would contend. Rather, the small and precariously surviving suppliers managed to forge links to state officials and assemblers to establish the motor vehicle industry and practices conducive to supplier growth. Furthermore, this

period laid the foundation for future periods of hybrid production systems combining elements of mass- and flexible-production which shaped the industry's development and future strategies.

I. A Brief Overview of Brazilian Corporatist System and the Possibilities for Organizing Markets

The following is only a brief overview of the origins of the corporatist system.³ The focus is primarily on the tools which firms and syndicates have at their disposal to organize markets, a critical role of syndicates that is rarely addressed in the literature.⁴

The Brazilian corporatist system of interest representation was set up during the authoritarian Estado Novo, under President Vargas (1937-1945). It was loosely modeled on its Italian predecessor created by Mussolini. The corporatist legislation, implemented over several years in the the thirties, divided Brazilian society into two roughly parallel pyramidal structures. Labor and capital were organized into corresponding and hierarchical systems of confederations at the national level; federations at the state-level; syndicates at the sectoral and regional levels, for example textile producers, auto parts producers, machinery producers, all of a particular region.⁵ At the regional level, labor was organized according to function, for example, electrical or metalworkers of a particular municipality.

The syndicate was usually described as a type of official lobby group. The principle of "syndical unity," at the heart of the corporatist system, recognized the syndicate as the exclusive representative of its group.

Although a syndicate is the only representative of its class (group) that is legally recognized by the state it is no foregone conclusion that a syndicate will be a legitimate representative of its members and an effective negotiator between the government and the firms. In the case of the motor vehicle industry, more specifically auto parts and assemblers, the interest groups' efforts to become high profile representatives of their members and command respect within the government were successful. Because the motor vehicle industry became so important in Brazil and because Sindipeças, the suppliers' syndicate, and Anfavea, the assemblers' association, were good at public relations, they carved out more visible positions for themselves in comparison to their peers and were more likely to get an audience with important state officials. When the corporatist system organizing capital was created in the late 1930s, capital fought and won the right to create associations or interest groups that were parallel to the syndicates, but whose budget and officers were not regulated by the state. Firms in a sector that wanted an interest group were required to create a syndicate. In addition to the syndicate, they may also have decided to create an association. The syndicates, by law,

were responsible for negotiating labor issues. Most other matters could be handled by either the syndicate or the association.

In many aspects, however, the two forms of representation were almost indistinguishable from each other.⁶ Both entities usually shared office space, personnel, and executives in addition to coordinating their lobbying and other efforts. Because associations were not under strict oversight by the Ministry of Labor, they could collect and disburse funds more easily.⁷ This facilitated lobbying efforts and gave associations more freedom to provide or sell additional services to their members. Ideally, in addition to the required syndicate, a sector would also create a parallel association to gain more flexibility in lobbying and providing services to its members.

Although in the ideal case, firms chose to create both forms of organization, the auto parts suppliers did not create an association until the early 1980s, and until then relied exclusively on *Sindipeças*. It was difficult enough to organize the many small auto parts firms into the required syndicate, much less to create an additional association. Some argue that because the supplier sector was perceived of as a bunch of small and national firms, and because they restricted their organization to the syndicate, the suppliers may have actually gained sympathy among state officials by restricting their organization exclusively to the syndicate.⁸

Even when Abipeças, the suppliers' association was created in the early 1980s, the suppliers continued to rely primarily on Sindipeças for public relations and contacts with government officials.

The assemblers probably chose to focus their efforts on the associational form because it was relatively easy to organize a small number of wealthy and predominantly foreign companies.⁹ Sinfavea, the assemblers' syndicate, functions only during official labor negotiations. The specific form of corporatist group, however, did not have any preordained or necessary impact on the outcome of events.

I.A. The Role of Syndicates in Organizing Markets

The syndicates could potentially play an important role in mitigating threats from imports and organizing competition on the domestic market. The main instrument for protection from imports was the National Similar Law which had been passed in 1890 but undergone revisions regarding its interpretation.¹⁰ When a firm presented a request for an import license, CEXIM, which authorized imports (but did not have the power to allocate foreign exchange), first passed it along to the appropriate syndicate for approval or veto. For example, if a firm wanted to import machinery, the petition for the import license was routed to the Machinery Producers' syndicate which circulated it among interested member firms. Firms often declined to contest the import. Alternatively, if a firm produced the good or wanted to produce it, it would try

to block the import. There was no hard and fast rule to determine whether CEXIM would honor the veto. The levels of foreign exchange and contacts in the bureaucracy were among the deciding factors.

Another means of organizing competition was to "discipline" the market, or keep out multinational newcomers if Brazilian firms were producing the product. The syndicates frequently lobbied the Industrial Development Council, a federal council, to reject potential competitors' applications for exemptions from import taxes or other benefits. Before acting on the petition, government officials visited the firms that would be affected by the newcomer. Sindipeças¹¹ set up appointments and may have provided the government officials transportation to the firm. It also helped coach the firm on how to present its case to the government official (Interview with syndicate official). As seen by the spate of new MNC firms in the 1960s, the syndicate was not always successful.

During the 1950s and early 1960s, the syndicate did little to regulate relations among individual firms. Infrequently, firms agreed among themselves to restrict themselves to non-competing product lines. These arrangements usually were decided with no intervention from the syndicate. During these early years, the syndicate did little to avoid price wars among its members.

In addition to overseeing the National Similarities procedures and striving to keep out newcomers, the syndicate

lobbied on behalf of its member firms in the different ministries and bureaucracies (import-export office, National Development Bank, Tariff Commission, Price Control Board). It also collected data for members to help them with their investment and expansion decisions; devised industrial relations strategies; helped firms evaluate cost and price data for the price control board; participated in creating industry standards; offered legal and export advice and support; and communicated with other syndicates on issues of mutual relevance.¹²

I.B. Gentlemen's Agreements

One final practice that became increasingly prevalent and was usually worked out with the help of the syndicate was the "gentlemen's agreement." These agreements, written or verbal, were understandings among the sectors (and sometimes individual firms) on initiatives to resolve problems. For example, in the 1970s, the assemblers wanted to expand production and in a gentlemen's agreement, promised long-term contracts to suppliers who undertook complimentary investments. Another gentlemen's agreement tried to smooth the impact of market fluctuations for suppliers -- either via sector-wide discussions or coordination among specific firms. The agreements may have also have included the government, which promised to reserve the supplier sector for national firms. Although they had no legal backing, gentlemen's agreements were widely used in the motor vehicle industry.

II. 1951-1956: Preliminary Boundaries of the Horizontal Industry

Although the official decision to create a motor vehicle industry was made in 1956, much of the groundwork surrounding the decision and the organizational practices in the industry had been laid in the preceding years. The struggles took place within the context of foreign exchange shortages and raging debates about the role of the state in industrialization.

At the end of War World II, Brazil was flush with foreign exchange and maintained an overvalued exchange rate. The surplus was short-lived and by 1948 import restrictions were again in place, only to be lifted again in early 1951. Foreign exchange fluctuations and sea-changes in legislation threatened the livelihood and existence of firms producing in Brazil.

The reversals in foreign exchange regulations stemmed not only from the balance of payments situation, but also vituperative debates, initially articulated in the 1930s, which positioned neoliberals, led by the economist Gudin, against those advocating a dirigiste state with protectionist and even entrepreneurial functions, led by the entrepreneur Simonsen. By the 1950s, the neoliberal and dirigiste positions were threads holding together two or three loosely knit camps of intellectuals, entrepreneurs, and government officials. Intellectuals had a central role in forming these

groups around common ideas of state, inflation, the role of multinational corporations in the Brazilian economy, or simply shared experiences such as regional affinities or past collaboration in various official commissions, among them ECLA and various joint commissions with the United States.¹³

Some of these intellectuals were members of government executive committees or officials in the corporatist groups.¹⁴

The suppliers took advantage of the foreign exchange shortages to press their case for protection. Simultaneously, they cultivated contacts and integrated themselves into the dirigiste network of policy makers and intellectuals who were central to shaping the legislation and practices in the motor vehicle industry. Foreign exchange shortages presented opportunities for suppliers, working with the dirigiste groups, to pursue their horizontal visions.

II.A. *Sindipeças: Divisive Beginnings*

The Brazilian auto industry was characterized by the rather unusual situation in which the supplier industry predated the assembly industry. The trade disruptions associated with the Depression and World War II presented opportunities for local firms to produce replacement parts for completely-knocked-down vehicles (CKDs) that Ford, GM, and International Harvester had been importing and assembling since the 1920s and completely built units (CBUs) that other

American and European assemblers exported from their home countries and distributed through Brazilian representatives.¹⁵

By 1952 there were approximately 160 supplier firms that usually produced replacement parts as well as other products.¹⁶ The replacement parts included batteries, castings, gaskets, springs, fasteners, gears, glass, pistons, to name a few. The parts were not original equipment but rather copies used as replacement parts, usually done in makeshift backyard production facilities under quasi-artisan processes. The auto parts were usually made-to-order. The firms invested little. For example, Stevaux, a gasket producing firm imported cork from Portugal; cut it into layers, and with stencils, hand cut the cork to produce the gaskets. Castings producers usually used individually constructed sand molds. As a general rule these firms were started by Portuguese, Spanish, Italian and other European immigrants with metal working skills. The majority had little formal education, few government contacts, and few ties with fellow auto parts producers.

The see-saw of foreign exchange regulations that prevailed after World War II threatened the livelihood of small firms servicing the replacement markets.¹⁷ While the import restrictions were in place, the assemblers or import representatives would occasionally order replacement parts from the small firms. If the restrictions were lifted,

however, some assemblers would, apologetically, cancel their orders. One supplier of pistons, Metal Leve, who had agreed to release Ford from its contractual obligations when import restrictions were lifted stated that gesture initiated a fruitful relationship with Ford.¹⁸ Most small firms, however, could not afford to, or were angry about carrying the onus of cancelled orders. The fragility and dependence of the suppliers' future growth on foreign exchange regulations and assembler beneficence became increasingly clear.

In 1951, a few supplier firms realized the importance of organizing themselves and decided to set up a lobby group within the existing corporatist legislation. They needed to protect themselves from "the lack of an adequate industrial policy, the intermittent inundation of the internal market with its exaggerated imports and their consequences" (Gattas:44). The syndicate's main weapon in their battle to block imports was the law of national similars.

Although the suppliers were fighting to secure their markets, their motives in creating the syndicate and lobbying for protection from imports cannot be attributed exclusively to material considerations. Suppliers also sought to establish themselves as respectable citizens in a self-deprecating society that was conscious of its economic backwardness or where many groups were openly hostile to state-promoted industrialization.¹⁹ The auto parts producers had to argue their cases to state officials who espoused

liberal ideologies and sectors of the public that were skeptical that Brazilians could produce autos. In establishing the industry, the suppliers were reaffirming their role in forging a modern nation.

Although Gattas and a few suppliers had been throwing around the idea of creating an association, a chance encounter infused the endeavor with new enthusiasm. Gattas went to a lecture on forging at the Engineers Club in Sao Paulo and ran into an old friend and colleague, Mammana Neto, who had lived in the same city in the state of São Paulo and had been Gattas' flying instructor years before. Furthermore, both had worked at developing civil aeronautics in Brazil. The past relationship between the two created an important and energetic partnership to form the association (Gattas:54).

Yet not all suppliers heeded the call to form a corporatist syndicate.²⁰ Those that had good government contacts and could easily cut through extensive bureaucratic red tape to obtain import licenses for raw materials, machinery, and intermediate goods objected to setting up the syndicate.²¹ They were reluctant to allow their competitors to have the same facilities in importing. Emotions were raw during the marathon meeting to create the syndicate and a filibuster was defeated by one vote. The objections of the opposing firms were finally overruled, and the syndicate was established in 1951 (Gattas:58-59). It was recognized by the Ministry of Labor as the official syndicate for auto parts

producers in 1952.

Once Sindipeças, the National Syndicate for Producers of Auto Parts and Other Similar, was created, however, the very issue that made some firms oppose the creation of the syndicate, their clout with government officials, now made them key players. The syndicate was dependent upon government contacts. Those with contacts were often chosen to represent the suppliers, which in turn may have reinforced the links between the well-connected firm and the government officials, to the detriment of less established firms.

The costs of participating in the syndicate, furthermore, were not equally spread. Larger firms, with more directors and/or family members to spare could more easily withstand the cost of sending someone to participate fully in the syndicate activities. A position on the syndicate directorate was time-consuming, but could be rewarding. Contact with government officials through the syndicate provided firms with advance information as well as contacts with officials that helped expedite tangled bureaucratic procedures. These contacts led to more timely decisions and in some instances even to loans or other financial benefits and gave firms a channel for suggestions about upcoming legislation. Finally, there was also a psychological aspect. Some firm representatives found it rewarding that their suggestions were incorporated into legislation, while others enjoyed meeting with high government officials, attending official functions as a representative of

a sector, and being quoted in the media.

Despite the differences among the suppliers, those who played important roles in the early years of the Sindipeças were frequently referred to as the "pioneers." The term belied an incipient division between "ins" and "outs" which grew in later years.²²

Although this account focuses on Sindipeças, the National Association for Vehicle Producers (Anfavea), the assembler firms' association was also a key player. One early participant in Anfavea recounted that when foreign exchange reserves were cut in the 1950s, the government called together the assemblers and importers in Brazil. The government stated that it had allocated an amount of foreign exchange for motor vehicle and CKD imports, but would leave it up to industry participants to divide it up among themselves. In the meeting to divide the quota, the firms also decided that it would be prudent to create an industry association.²³ Anfavea was founded in 1955 and its syndicate counterpart was created and received recognition by the Ministry of Labor in 1956.

II.B. *Between Assembler Recalcitrance and Supplier Optimism: The State and Visions of Mass Production*

The suppliers were the first group to organize themselves with the intent of lobbying for production of motor vehicles in Brazil. The state, however, was acting along similar lines. In 1952, during his second term (1951-54), this time as a democratically elected president, President Vargas²⁴ created a series of sectoral subcommissions to coordinate

industrial development.²⁵ The Subcommittee of Jeeps, Tractors, Trucks, and Automobiles was to assess opportunities for motor vehicle production in Brazil.

Vargas' support for the industry has yet to be fully explained given that his only real interest appears to have been tractor production.²⁶ Nonetheless, in addressing the issue, Vargas responded in part to the pressures of the cash-rich middle class starved for scarce imported goods; middle-class disgust with the corruption linked to import licenses; and the fear of the foreign exchange shortages that might emerge as the existing fleet of vehicles was replaced (Martins:408;Almeida:13).

The Subcommittee was headed by Commander Lucio Meira, who had previously evaluated the experience of the state-run National Engine Factory (FNM) which, by 1948, had been converted from airplane engine production to truck production under license from Alfa Romeo.²⁷ Meira described how his efforts were shaped by understandings of the backward linkage effects of industry:

...[A]ll my idle hours were dedicated to reading books, reports, and magazines that talked about the subject [industrialization]. I studied the situation in the United States and saw that one of the principle causes of the country's superb economic condition was the motor vehicle industry which, reverberating on other sectors, unchained a growing wave of progress. Increasingly convinced that industrialization of the country was necessary, I struggled to promote it.²⁸

The Subcommittee included engineers, economists, and other professionals who were sympathetic to, or belonged to,

the group advocating some version of the dirigiste platform.²⁹ Roberto Campos advocated economic planning, with a minimal role for other types of state intervention. Tulio Araipe, the head of FNM believed that the state should be more interventionist and could provide competition to keep the private firms honest.³⁰ Uniting these men was the belief that the path to industrialization was one of "burning stages" in the development process by promoting industries with linkage effects. The motor vehicle industry was an ideal industry for this purpose but, at a minimum, the state would have to play an important supervisory role. These visions of development predated and informed those articulated by Rodan-Rosenstein, Gerschenkron, and Hirschman (Shapiro:74-6,79; Sola:138).

Although key state officials sympathized with the idea of implanting motor vehicle production, they did not know how to proceed without information from the private sector. The Subcommittee met once every two weeks and asked representatives of state agencies, private firms (both multinational and national), or officials of corporatist groups to be non-salaried advisors to the Subcommittee. The members were invited by Meira when he needed information (Moreira Franco:39).

The Subcommittee's first contacts were with Ford and General Motors. Both companies had been assembling vehicles in Brazil since the 1920s, but were virulently opposed to

producing there. They and other assemblers continually attempted to derail efforts to implant the industry. The assemblers, who either imported and assembled CKDs or had import operations run by local businessmen, conveyed to the Subcommittee their fears of corruption, favoritism, general governmental incompetence, and the inability of the auto parts firms to support full-scale production (Orosco:9-10;Almeida:27-28;Martins:409).³¹ While expropriation was not a real danger, the foreign firms used the raging debates about the nationalization of foreign-owned oil refineries as part of their tactics expressing their objections to investing and producing in Brazil.³² In the Subcommittee minutes of the May 14-15, 1952 meeting, Meira expressed his frustration:

We always had the consideration to question the firms' representatives about their plans, about what incentives they needed from the Government in order to launch the automotive industry in Brazil. We made it a point to emphasize that the government's objectives were to install this industry or launch it and questioned what kind of collaboration we could expect from these firms. The answers were the same: almost none. I have the impression that no foreign automobile company has an interest in producing 100 percent in our country and only will do it when compelled (cited in Martins:411).

The American and European firms used different techniques to convey their recalcitrance to the Brazilian officials overseeing the negotiations. The American firms stalled in the hope that the issue would die down. In part, this tactic stemmed from the tight rein exercised by their home country offices. The American assemblers responded to the subcommittee members' queries as to what they needed to begin

producing in Brazil: "We can't do it. Orders from Detroit" (Orosco:44). Some of the American firms,³³ particularly Ford, went over the subcommission members' heads to try to convince President Vargas as to the folly of producing vehicles in Brazil. The assemblers coordinated public relations campaigns in some of the largest newspapers in Rio and Sao Paulo. They also invited the Subcommission members to their factories in the United States and bombarded them with lectures detailing the technical, financial, and mechanical aspects that precluded successfully producing in Brazil (Moreira Franco:40).³⁴ The visit of Subcommission members sponsored by the American firms, one of the few Meira had already made to the U.S. to research issues related to motor vehicle production, only served to strengthen his resolve to implant vehicle production in Brazil.³⁵

Arguably, the American tactics backfired. Although Brazilian officials and suppliers were frustrated and even disgusted with American recalcitrance, they never questioned American technological superiority or the desirability of setting up the Brazilian industry around American assemblers.³⁶ By insisting on the importance of economies of scale, the vaunted American assemblers were central to establishing its legitimacy and preeminence. The national firms and state officials recognized the opportunity and invoked the language of the Goliath to bolster their case for protection. Without protection, they claimed, they would

never achieve economies of scale. American terminology legitimized the suppliers' struggles.

While the American firms deployed technical concepts and stressed the mercurial and clientilistic character of the Brazilian government, the European firms (Mercedes Benz,³⁷ Austin Morris, VW were initiating talks) used other tactics. European firms relied more on Brazilian representatives, often local notables, who understood how to navigate through the bureaucracy and give the impression that the home offices were giving serious thought to the Subcommissions questions.³⁸ Although the European firms appeared more willing to discuss the possibility of producing in Brazil, they too used underhanded ploys, at least in the Subcommittee members' eyes (Orosco:10;43-7). Like their American counterparts, some of the European firms tried to circumvent the Subcommittee by presenting their projects directly to President Vargas. They petitioned for import licenses and exemptions from foreign exchange deposits³⁹ and proposed to invest the proceeds of the local sales to finance production facilities (Moreira Franco:42). The proposals flagrantly violated the stated goals of the Subcommittee and existing Brazilian legislation which reserved exemptions for equipment entering as investment, an important means of industrializing under foreign exchange constraints.

While the Subcommittee had taken the initiative in contacting the assemblers, the parts suppliers had to let the

Subcommission know that they existed, were organized, and worth consulting. Gattas recounted that Sindipeças officials read about the Subcommission in the newspaper. Potentially it was very important to the new syndicate and in March 1952, the directors sent the chairperson, Commander Lúcio Meira, a telegram. One month later, the Association had received no response to its telegram, but wanted very much to meet with Subcommission members. Jokingly, Sindipeças officials decided that since Mammana Neto, the then vice-president of the Association had commandeered airplanes while he was a pilot, he had something in common with Commander Meira, a Navy official.⁴⁰ The telephone call led to a fruitful period of communication and cooperation among these state officials and members of Sindipeças. The suppliers advised the state officials as to their needs and made suggestions regarding legislation and other issues related to the industry.

Once Sindipeças members had been invited as advisors to the Subcommission they became part of the dirigiste network of state officials and intellectual activists struggling for state-promoted industrialization. In conjunction with the Subcommission officials, they cultivated contacts with key personnel in other important government offices such as SUMOC, which authorized foreign exchange expenditures, and CEXIM, which authorized imports. Men such as Sydney Latini (SUMOC) and Eros Orosco (CEXIM) had either worked together in on various bi-lateral commissions with United States to initiate

planning and foster economic growth in Brazil, or were disciples of those who had worked on the commissions.⁴¹

II.C. *The Birth Certificate of the Industry: the Horizontal Vision Haltingly Takes Shape*

During the first few meetings over the course of 1952, the auto parts producers, with members of the National Confederation of Industries (the highest group representing industrialists in the corporatist pyramid) argued that contrary to the assemblers' claims, motor vehicle production in Brazil was possible. Gattas (castings producer, particularly brake drums) and Mammana Neto (piston producer), respectively president and vice-president of Sindipeças, demonstrated that the assemblers ordered more parts from suppliers when they could not import them. Mammana Neto explained to the Subcommittee:

The goodwill of the assemblers is directly related to the difficulties they have with foreign exchange. It is a thermometer. If they had unlimited amounts of foreign exchange, the national parts industry would not have the conditions to survive.⁴²

The syndicate proposed a plan protecting producers in Brazil from imports (of products currently produced or that could be produced); eliminating domestic consumption taxes; prohibiting imports of completed vehicles and even CKDs, unless they were stripped of parts produced in Brazil. This measure was a means of forcing the assemblers to help suppliers.

The syndicate was largely successful in gaining

protection of domestic markets. Aviso 288 (August 19, 1952) prohibited the imports of over 100 types of auto parts produced in Brazil. It also restricted CKD imports to those without parts produced in Brazil. Suppliers' petitions for protection from imports would be reviewed every six months and the Aviso list would be amended accordingly.

When the Aviso was promulgated, the assemblers complained that the poor quality of domestic parts would ruin the cars. Pointing to the example of oil filters, one of the newly protected parts, Meira countered their complaints:

We do not want bad oil filters; we know that they create problems. It is up to you [assemblers] to force the national producers to increase their quality. Or alternatively, encourage the large American and European filter producers to come to Brazil.⁴³

Given that large foreign suppliers were uninterested in the Brazilian market, the assemblers were forced to take the former option.

The politics behind the Aviso gave an example of the complicated alliances driving the industry. The Aviso split the private sector, the government officials, and the auto parts producers themselves. Importers, assemblers, and other opponents of the measure began vitriolic press campaigns to discredit the auto parts industry and pressured the neoliberal members of Bureau of Export and Import of the Bank of Brazil (CEXIM) and the Superintendent of Money and Credit (SUMOC) to lobby against the measure.⁴⁴

In internal correspondence with their parent company,

Ford executives in Brazil proclaimed the Aviso a victory, as they had forestalled the more drastic proposals calling for the immediate creation of a motor vehicle industry. Yet they insisted that Ford would soon have to initiate production in Brazil. The parent company did not understand the intense pressure bombarding the subsidiaries.⁴⁵

Even among the auto parts firms, the immediate beneficiaries of the measure, there was no full consensus. Firms with contacts in government were not interested in rocking the boat, jeopardizing the protection they had already won, or creating new competitors among themselves. Their fears were partially realized as the Aviso led to the creation of a few hundred new parts firms (Martins:412).⁴⁶ For many small firms with scant or non-existent government contacts, the syndicate's efforts to establish the motor vehicle industry was their only chance of survival. The syndicate had to fight many of its own members but managed to contain the dissidents and support the measure. Moreira Franco recounted:

Some auto parts producers, those who had the most interest in executing the measure, also tried to diminish the intensity of the imposed restrictions. The Subcommittee, nevertheless, managed to contain them with the support of the Association of Auto Parts Producers, which on all occasions, including in the press, favored this measure or an even stronger version (Moreira Franco:44).

Disagreement also abounded in government circles. Export and import licenses were under the jurisdiction of the CEXIM,⁴⁷ linked to the neoliberal group and considered by

some to be the puppet of MNCs. The Bureau had accepted too many import petitions given its foreign exchange budget. The timing was right and lent credence to the suppliers' avowals. CEXIM, the agency that normally spurned arguments for state-promoted industrialization, bowed before the combination of foreign exchange constraints and arguments supporting the Aviso (Moreira Franco:45-48). CEXIM agreed to protect the auto parts producers but insisted that due to international commercial agreements, the prohibition on imports of CKDs had to be delayed one year. Eight months later, however, this decision was rescinded. A pro-industry director was appointed to CEXIM and promulgated Aviso #311, which restricted CKD imports to those stripped of some parts (Moreira Franco:47-9). In other words, the main barrier to protection for suppliers were the attitudes of key government officials who either did not believe in protection for nascent industries and/or had ties to foreign firms.

By October 1952, President Vargas approved the Subcommission report. This report, considered the "birth certificate"⁴⁸ of the industry set the stage for the suppliers' horizontal concepts. Based on interpretations of international practices, the assemblers would eventually produce about 45 percent of the weight of the vehicle and suppliers would produce the rest.⁴⁹ The Brazilian industry would be horizontally organized, meaning that the assemblers would produce some of the key components of vehicles, such as

engines, but that the majority of parts would be subcontracted to suppliers, thus ensuring them a future of bountiful orders.

The report concluded that under current conditions there was an insufficient market to justify producing nationally as well as a lack of skilled labor, technicians, and raw materials. Nonetheless the industry should be gradually implanted and promoting the development of the auto parts sector should be the first step (Moreira Franco:37). Therefore, by the end of 1952, more than three years before Juscelino Kubitschek came to power, many of the understandings framing the implantation of the motor vehicle industry were in place.

Sindipeças had maneuvered well and been blessed with good luck. The guidelines emanating from the report ensured the suppliers a pivotal role in impending national production. Preparations for the imminent implantation of the industry were predicated on strengthening the supplier sector.

The Subcommittee members believed that the motor vehicle industry was the keystone of a modern Brazil (Shapiro:Engines:115). Although they had contacted the assemblers, their endless stonewalling pushed the state officials into the suppliers' camp. The officials' grasped at the suppliers' assurances that in exchange for protection, they would soon have the capacity to support production of vehicles in Brazil. Although many state officials, including some that supported infant industry industrialization, doubted

the suppliers' assertions, the foreign exchange constraints helped convince them.

The "birth certificate" not only provided suppliers with new markets, but lay the foundations for long-term and organized subcontracting arrangements. It advocated delegating responsibility for spheres of production. The assembly sector was assigned to the MNC assemblers and national capital (possibly with state aid) with the understanding that the former would predominate. The MNCs were granted such a central role, not because the autonomous state decided that such an arrangement would be beneficial, but because the Brazilian suppliers renounced the sector. When asked if they would undertake assembly operations, and even take over the state-owned Fábrica Nacional de Motores (FNM) with state financing, the auto parts producers emphatically stated that they had neither the expertise for the task nor the funds.⁵⁰

While the suppliers were willing to forego assembly, they insisted on reserving the supplier sector for national capital. In the horizontal vision MNC assemblers subcontracted much of their production to a thriving national parts sector (Moreira Franco:8; Almeida:29; Gattas:150). The horizontal philosophy did not exclude MNC capital from the supplier sector, but rather was grounded in an understanding that the supplier sector would be predominantly national.

The suppliers successfully extracted promises that they

would predominate in the parts sector, yet these understandings also represented a convergence of strategies. The notion of a horizontal industry supported suppliers' aspirations, but it also reflected the assemblers' reluctance to invest in Brazil. By relying on suppliers, the assemblers could diminish their investments in Brazil, at least until they better understood the business climate.⁵¹ MNC suppliers, furthermore, were by and large not attracted by such a risky venture.⁵²

Foreign exchange shortages, and convergence of interests among national suppliers, MNC assemblers, and state officials were perhaps necessary, but insufficient to pave the way for horizontal industrial organization. Sindipeças' tactics were central to promulgating the practices. Assemblers had consistently argued against implanting the industry in Brazil because there were insufficient economies of scale. State officials and suppliers agreed with the assemblers but argued for a more dynamic conception. Suppliers contended that a horizontal industry would provide them with the markets they needed to attain scale. To this end, they allied themselves with the dirigiste members, particularly in the Subcommission, and cultivated new supporters in the auto parts sector. The veneer of economic efficiency overlaid competing aspirations and visions of the industry, yet it blossomed into a common language and ideas solidifying the diverse dirigiste, pro-industry coalition.⁵³ The assemblers' denunciation of the

industry, based on insufficient economies of scale, ironically, was correct. The combination of small markets, many producers, and many platforms gave rise to hybrid organizational practices combining elements of flexible- and mass-production. This will be discussed later.

A final definition emerging from the Subcommittee deliberations limited the role of the state in vehicle production. The officials in the Subcommittee were against the idea of the state taking on the role of producer or "acting as a businessman" (Moreira Franco:6;Shapiro:80-81,96-97). Rather, the state was to coordinate and encourage the private sector with fiscal, exchange, tariff, and other incentives as well as provide the necessary infrastructure (Moreira Franco:6). Nonetheless, despite members' of the subcommittee wishes to the contrary, the flailing FNM continued to play a role as assembler, albeit marginal. The state firm was not liquidated or privatized, despite its financial onus to the government, because President Vargas wanted it to play a role.⁵⁴ Although Vargas was successful in keeping the FNM alive, it was virtually sabotaged by other governmental organs. BNDES annual reports from the mid-1950s to the early 1960s discussed the Bank's reluctance to fund such an unprofitable and ill-managed venture.

The suppliers were slowly attaining their goals, but they were not yet faits accomplis. Protests by importers, assemblers, and other sectors of civil society continued to

rage⁵⁵ as those who opposed establishing the industry tried to circumvent Aviso 288 by pressuring CEXIM to permit disallowed imports and to improperly grant them low-cost exchange rates.⁵⁶ The Subcommittee, often unsuccessfully, strove to counter these pressures by complaining to CEXIM officials and invoking the weight of the Subcommittee report and President Vargas' explicit support (Moreira Franco:47).

While the suppliers kept up pressure on the legislative and administrative fronts, they also extended their theater of operations. In January 1953, Sindipeças organized the first trade show for its members, with a total of 145 firms presenting their wares. Gattas' evaluations of the show dwelled on the positive foreign exchange impact of the sector as well as the fact that it developed without government subsidies or other incentives except for Aviso 288. His most poignant remarks, however, emphasized the suppliers' quest for status and recognition and their vision of a modern Brazil:⁵⁷

That legion of industries installed itself in the Airport Santos Dumont [site of the trade show], to reveal its identity, fight for recognition for its efforts, reclaim a place in the sun and to affirm its collaboration in installing something transcendental: the national automobile industry (Gattas:116).

The suppliers, however, could not rest. Hardly had the ink dried on Aviso 288, when battles on foreign exchange legislation resurged. Again, the suppliers in conjunction with their allies in the state began their maneuvering to mitigate the damage. This time, the outcome was more promising. Instrução 70 (October 1953) instigated a five tier

exchange system and auctions to buy foreign exchange.⁵⁸ The cheapest exchange rate category was reserved for essential items such as agricultural imports, raw materials, and pharmaceutical products. The most expensive was reserved for luxury items. Auto parts imports were put in the middle category, which while not granting them the highest level of protection, did provide some. The battle to retain a spot in the middle exchange category raged over the following years.⁵⁹

In one round, in November 1955, opponents of the national auto parts industry once again attempted to diminish protection for auto parts by shifting them to a lower exchange category. They were thwarted, but this time by an alliance between Sindipeças and the Motor Vehicle Producers Association (Anfavea).⁶⁰ A joint rebuttal recommended that truck cabins be put in the cheapest (1st) exchange category while other auto parts remain in the third, recommendations which came to pass a few months later (Gadelha:12-13;Gattas178-9). This first joint lobbying effort between the assemblers and the auto parts firms probably reflected the assemblers' perception that production in Brazil was inevitable and in exchange for graciously recognizing this, they could gain goodwill.

In another attempt to solidify hard fought ground, the auto parts producers and key Subcommittee members attempted to transform the Subcommittee from a working into an executive group that could eventually approve some

implantation policies and thus solidify hard-won, but still precariously instituted gains. The Executive Commission for the Automobile Material Industry (CEIMA) was approved by President Vargas in June 1954. Located in the Finance Ministry, it would have seven members, each one representing the following agencies: CACEX (formerly CEXIM), BNDES, Technological Institute, as well as members of the private sector.⁶¹

Vargas' death⁶² in 1954 put an end to the CEIMA proposal and under the President Café Filho government (1954-1955) little was done to promote the motor vehicle industry. The Subcommittee was disbanded and its report was shelved. Furthermore, the supplier firms' ally in the Subcommittee, Commander Meira, was posted in the Northeast, where he could exercise little influence.

Regardless of whether the Café Filho period is described as a caretaker government or a short-term one that implemented the most orthodox stabilization program in Brazil to date,⁶³ there was little executive support for the industry and the suppliers barely managed to hang on to their fledgling gains. One issue meriting comment is Instrução 113, passed in 1955. The measure permitted foreign investors to import machinery without foreign exchange deposits, provided they accepted in lieu of payment, a percentage of stock in the firm for whom the machinery was destined. This measure encouraged Brazilian firms to seek foreign partners. Furthermore, Instrução 113

permitted national firms to import machinery at the foreign exchange rate set by the market or at a fixed rate (both rates were lower than many categories in the existing multiple exchange system and allowed the firms to avoid the higher price of the auction) if they could arrange financing abroad for a minimum period of at least 5 years.

Instrução 113 was widely used by motor vehicle companies. Over half of all Instrução 113 financing under Kubitschek, US\$200.7 million of a total of US\$ 419 million is attributed to the motor vehicle industry. A little under one-half of that amount, US\$ 86 million was used by suppliers.⁶⁴ Since it was almost impossible for small national firms to attain financing abroad, the bulk of this influx can probably be attributed to MNC suppliers as well as joint ventures between Brazilian and MNC firms. As a result, many national firms who could not or were unwilling to find foreign partners (the auto parts producers were the most vocal) complained that the Instrução discriminated against them.⁶⁵

Instrução 113, however, consolidated into one law various regulations that had already existed under Vargas. The main difference between this measure and previous legislation was that under the former, the bureaucratic process of approval was shorter (Madureira de Pinho Neto:54). Furthermore, the primary motivation for MNC auto parts firms that established themselves in Brazil were not the benefits conferred by Instrução 113, but the protected markets, the same ones that

protected the national producers (Gordon and Grommers:28,29,33,57).⁶⁶ In other words, the suppliers' strategy to seek protection from imports by creating a market reserve gave them a haven against international competition, but simultaneously generated competition from new firms in Brazil and later from MNC suppliers who sought to set up operations in Brazil.

By the of Vargas' tenure, suppliers had painstakingly forged the legislative base and agreements with state officials that the emerging industry would hold a key role for suppliers. During Cafe Filho's term, however, their hard fought gains were threatened as they were increasingly subjected to loose applications of protectionist legislation. Furthermore, suppliers lost their most eloquent and influential advocates in the bureaucracy. It is likely that suppliers' complaints about Instrução 113 were in fact complaints about emerging competition from MNC suppliers who were given incentives to set up joint ventures with Brazilian firms, weak enforcement of other protectionist legislation, and their declining access to the bureaucracy. Under the Cafe Filho government, the momentum was slowing and the unconsolidated victories were increasingly under threat.

III. 1956-61, *The Implantation Stage: Horizontal and Hybrid Practices*

As in the previous years, the suppliers were a motor

force reversing the lethargy of the Cafe Filho years and putting back in gear the stalled implantation project. As the suppliers' vision of industry organization and cooperative assembler/supplier relations evolved and solidified, it demonstrated characteristics of the Toyota system, currently regarded as a "best practice" model of competitiveness. Yet the suppliers' ideas predated Toyota's practices and certainly were very different from those existing in the US and most European assemblers at the time.⁶⁷

Cooperative assembler/supplier relations vary somewhat among assemblers in Japan, but they are a central aspect of a complex manufacturing system whose competitiveness is based on frequent model changes and high quality.⁶⁸ The suppliers in the system are organized in a series of tiers with the assemblers at the top. The first tier is composed of "systems" suppliers that design and supply the assembler with complete braking, steering, suspension, seating systems, to name a few. The second tier suppliers design and produce parts of the system, and the third and fourth-tier are often family-owned, backyard operations that are highly automated, and supply the smallest parts. Subcontracting, rather than vertical integration is the norm.

Cooperation is maintained because there are commonly accepted procedures for determining prices, according to Womack et. al.⁶⁹ Because suppliers share with assemblers proprietary information about costs, the process of setting

prices and establishing a formula for cost decreases over the life of the model is less divisive. In this manner, there is more time and trust to cooperate on design and manufacture (Womack et. al.:155). Suppliers do much of the design work, and contracts usually last for the length of the model run, rather than year to year. Furthermore, assemblers give suppliers advance notice of changes in volume and if the changes will be prolonged, the assemblers help the suppliers find additional work. Assemblers often have two suppliers, not to drive down prices, but to keep pressure on firms to produce high quality.

The system is fueled by the kanban, or just-in-time system. Suppliers deliver to assemblers "just-in-time," often enough parts for only a few hours of production. Diminishing inventory levels forces producers to manufacture high quality products to avoid stoppages on the assembly line and also to keep production volume as constant as possible.

Clearly the Brazilian suppliers' horizontal blueprint divergenced from the Toyota system, as sketched above. For example Brazilian suppliers did not have design capabilities. Nonetheless, like the Toyota system, the Brazilian suppliers foresaw the crucial role for long-term assembler/supplier relations characterized by high levels of cooperation. Considering that the model for the Brazilians was the American Fordist system in which contract terms were frequently short-term, conflictive, and almost exclusively price-based, the

divergences are notable.

The Brazilian suppliers continued their two-pronged struggle. They fought to reinforce protection which was under fire by those who opposed the industry. This meant contesting efforts by importers, assemblers, and consumers to circumvent the protectionist legislation. This struggle spilled over to the second flank, geared to establishing organized and long-term assembler and supplier relations on the domestic market.

The first step was to diminish the threats from foreign competitors. Many national suppliers feared MNC competition. They correctly believed that an assembler would be more willing to work with a subsidiary of a supplier firm it worked with in the United States. They also feared the relative ease with which the MNC subsidiary could raise foreign exchange, bring in new machinery, and gain access to scarce capital in Brazil. The national suppliers hoped that the understanding regarding the market reserve for national firms would secure space for suppliers and create an environment conducive to their growth.

The suppliers sought not only protection from imports and MNC newcomers, but also protection from cut-throat domestic competition. They correctly predicted that high local content legislation would lead to long-term contracts, and probably single-source arrangements between assemblers and suppliers.⁷⁰ While these long-term arrangements would not be explicitly legislated by the state, the suppliers

understood that government pressure on the assemblers to teach and work with suppliers would be an important factor in creating and sustaining them.⁷¹ In this sense, the Brazilian suppliers' horizontal blueprint predated these arrangements in many Japanese assemblers.

Finally, although state officials, assemblers, and suppliers spoke in the language of mass production, organizational practices were very different. On the one hand, relations between assemblers and suppliers were cooperative. On the other, all firms procured general purpose machinery to attend the multitude of production philosophies, products, and customers. This will be addressed in more detail below.

III.A. *Inauspicious Beginnings*

During Juscelino Kubitschek's (JK) campaign for president in 1955, intermediaries arranged a meeting for him with Commander Lucio Meira. Meira described the work the Subcommittee had conducted and in a campaign speech later that afternoon JK tested the idea of creating a motor vehicle industry in Brazil. After so many years of import rationing, the public response was emphatically approving and JK committed himself to the project (Moreira Franco:55).

JK's campaign emphasized the need for Brazil to industrialize. Although elected with only a plurality and taking office with the aid of a preventive coup, JK (1956-

1961) quickly embarked upon an exhilarating process of consolidating his support. He promulgated a thirty-point investment plan with emphasis on infrastructure needs such as energy and transportation. Brazil was to industrialize rapidly: "Fifty years in five." Motor vehicle production, however, was goal number 27 of a total of 30, a rather inauspicious beginning:

The proposal to produce vehicles nationally did not gain the same enthusiasm from the technical team that elaborated the government's proposal as it did in the political arena....There persisted a generalized sentiment of disbelief in the capacity of the productive apparatus to carry out the requirements of an industry such as the motor vehicle industry. It was not without reason that this point was placed as Goal #27, which was not part of the priority scale (Moreira Franco:55-6).

The motor vehicle experience was not only going to revolutionize Brazil's economy, but also its bloated bureaucracy. GEIA was a pilot project, involving members of the ministries and bureaucracies involved in decisions such as officials from SUMOC, CEXIM, as well as the National Development Bank (BNDES).⁷² Approval of a project or a measure by a GEIA official constituted approval by the official's bureaucracy, thus streamlining decision-making.⁷³ The group was headed by the former Subcommittee head, Lúcio Meira, who was now an admiral. The private sector was not included as it had been in the CEIMA proposal.⁷⁴

As in the days of the Subcommittee, progress in setting up the industry was undermined by intra-bureaucratic struggles, even in GEIA itself. Relations among GEIA members

deteriorated so much that JK decided to send a letter reprimanding the GEIA members obstructing the group (Moreira Franco:67). The letter demonstrated his commitment to the project despite skepticism within the economic team. Ironically, although many within JK's inner circle doubted the feasibility of the industry it turned out to be one of his crowning accomplishments and a symbol of Brazil's rise to modernity.

Dissidents in Congress were successful in watering down the project to implant motor vehicles. Led by Bilac Pinto, an opponent of Kubitschek, Article 59 permitted limited imports of passenger cars and facilitated imports of parts. As Shapiro explained, the legislation created uncertainty by generating doubts as to whether the market reserve would prevail (Shapiro:Engines:133-136). This may have strengthened the resolve of the already uncooperative assemblers to keep investments to a minimum.

JK was inaugurated at the end of January, 1956. Personnel were allocated to the different sectors in the 30 goal development program according to priority, and work on the motor vehicle project, which was low on the list, did not begin until April. But once the team was in place, the working group had to develop and submit a plan, the first for a venture of this magnitude with foreign capital, within a mere 30 days. Meira, the former head of the Subcommittee and Orosco, a former CEXIM official were in the working group,⁷⁵

and this continuity in personnel facilitated meeting the deadline. Discussions were by no means smooth, however, as opponents of the industry -- importers, detractors of state planning, and allies of foreign capital -- tried to slow the implantation process. The deadlines approached and the final report was written in only six hours and included many appendices from previous studies (Orosco:55-6).

The report was the basis of Decree No. 39412 (June 1956) founding the motor vehicle industry. With few modifications, the report operationalized the principles and understandings that the auto parts suppliers and state officials worked out in 1952. It recommended that the motor vehicle production be progressively, but rapidly nationalized. Given the backdrop of skepticism surrounding the project, this meant that assemblers would try to minimize their investments and, therefore, subcontract from suppliers who were already in Brazil (at the time few foreigners wanted to come). The suppliers' horizontal dreams were materializing. The high levels of subcontracting by assemblers, furthermore, would permit suppliers to reach economies of scale.

Although the assemblers had to obtain approval for their projects, they would be able to determine how they would meet the nationalization schedules, i.e. what parts they would begin subcontracting or producing themselves (Orosco:56-71). In the end, the decision regarding which parts were subcontracted hinged upon the philosophies,

strengths/weaknesses and strategies of the various firms, and previous relations among firms. By refusing to dictate the nationalization schedules for specific parts, the state also conveyed to assemblers and suppliers that no particular suppliers were to be favored.

The report also ensured assemblers the freedom to choose the vehicles that they would produce, and although the state might discriminate among types of vehicles, i.e. trucks v. cars, it would not discriminate among different models within a similar category, i.e. diesel v. gasoline engines. Permitting a proliferation of platforms and models was the first step in precluding the emergence of mass production in Brazil.

The report generously estimated the investment and working capital needs to signal to foreign capital its central role in the industry. In defining labor, infrastructure, and other needs, the government signaled its readiness to provide the necessary education, roads, and other services. Finally, the creation of an Executive Group for the Automobile Industry (GEIA), like the CEIMA proposal aborted by Vargas' death, was to speedily approve projects based on objective requirements and procedures. The government, in other words, intended to establish clear expectations, rules, and incentives and to allay the fears of favoritism and government incompetence expressed by the MNC assemblers (Orosco:67-69).

The report led to Decree No. 39412 (June 1956) which

founded the motor vehicle industry; established foreign exchange benefits, subsidies, and import duty exemptions; and created the Executive Group for the Motor Vehicle Industry (GEIA).⁷⁶ Many of the incentives available to assemblers and auto parts firms predated the implantation period and were available firms in all sectors. The incentives, as described by Shapiro, included:⁷⁷

Instrução 113, which permitted foreign firms or joint ventures exemptions from exchange cover (deposits of foreign exchange necessary to cover the import) for capital goods imports registered as foreign investment.

Subsidized exchange rates for the amortization and interest payments of imports financed by foreign loan.

Foreign exchange quotas for importing parts that were not yet produced in Brazil. These were available to assemblers.

Exemptions from import and consumption taxes for imported equipment.

Very limited financing from the National Bank of Economic and Social Development (BNDES).

Many of the incentives were largely unavailable to small, national suppliers. It was difficult for Brazilian suppliers to gain loans abroad and therefore, they could not benefit from what were essentially subsidized loans. Domestically subsidized loans from the BNDES were scarce and very few loans were granted to the auto parts sector. The suppliers, therefore, were confined to using their own capital, or limited to expensive domestic commercial loans to invest and expand. In some cases, however, they received help from assemblers. This will be discussed on the section on

assembler/supplier relations.

Suppliers that could not or refused to create a joint venture with a foreign firm were denied access to Instrução 113 benefits. The legislation clearly gave national firms an incentive to associate themselves with foreign firms. It is important to qualify that many national firms refused to associate themselves with multinational capital or know-how. As the story of the Nakata family illustrated, with the help of the assemblers, it was possible for even a tiny firm with little infrastructure to enter into agreements with foreign suppliers. Cofap and Metal Leve, currently the first and third ranked suppliers in Brazil, both embarked upon joint ventures in their early years. Cofap associated itself with an American firm Monroe, and Metal Leve with a German firm Mahle. The national firms eventually bought out the foreign partners and the foreign firms set up alternative operations in Brazil, but were never able to surpass their former proteges. Many of the Brazilian firms that associated themselves with foreign capital and know-how understood that this was a means of gaining access to assemblers and even tempering the threat from these foreign firms. They understood that it did not automatically lead to the subordination of the national firm to the foreign partner.

There is no question, however, that the structure of incentives partially undermined the nationalist wing of the auto parts firms that argued for domestic technology. In some

cases, the national firm bought out the foreign partner. Frequently, however, the national firm was purchased by the foreign firm partner when it realized that the Brazilian market was a profitable one. In these instances, the incentives undermined some of the understandings supporting the horizontal vision.

III.B. *Local Content and Regulating Assembler/Supplier Relations*

Suppliers fought not only for protection from imports, but also organized domestic markets. To this end, they struggled for understandings regarding production spheres and lobbied for strict local content laws that virtually forced assemblers to mentor and care for their suppliers. The understandings regarding spheres of production hammered out in the "birth certificate" report were largely respected as the industry was installed. MNC capital was to predominate in assembly and national capital in the supplier sector. These loosely drawn boundaries circumscribed the role of state as producer to the flailing FNM.⁷⁸

An even more dramatic and innovative means of ensuring space for growth and learning were the stringent local content levels, which became the bases for cooperative assembler/supplier relations. The GEIA decrees quickly promulgated rigorous local content laws requiring that 95 percent of the weight of the vehicles be produced in Brazil

within 5 years.⁷⁹ This did not mean that suppliers produced 95 percent of the weight of the car, but rather that 95 percent of the weight of the car had to be produced in Brazil whether it be by assemblers or suppliers. Nonetheless, state officials hoped that the assemblers would produce approximately 45 percent of the weight of the vehicle in-house and subcontract the remainder.⁸⁰ GEIA chose to measure nationalization in terms of the weight of the vehicle, rather than the cost, because it felt that it would be easier to regulate (Shapiro:1988:116).

TABLE 2.1
LOCAL CONTENT SCHEDULE

DUE DATES	TRUCKS	JEEPS	LIGHT TRUCKS/ UTILITY	PASSENGER
12/31/1956	35%	50%	40%	
7/1/1957	40%	60%	50%	50%
7/1/1958	65%	75%	65%	65%
7/1/1959	75%	85%	75%	85%
7/1/1960	90%	95%	90%	95%

The laws, again, reflected a convergence of postures. The five-year period reflected JK's need to quickly consolidate support and the state officials yearning to bring the industry to fruition. Given the opposition in Brazil, they perceived the urgency and accelerated the project, to the "point of no return."⁸¹

The role of the suppliers in establishing the local content legislation, schedules, and industry organizational

practices, cannot be underestimated. Sindipeças officials had worked hard to establish the syndicate's credentials as a reliable representative. Gattas and other syndicate officials frequently drove long distances to introduce themselves to auto parts firms and tell them about the syndicate. By being able to inform state officials as to the status of the sector as well as by being able to contain opposition (as it contained dissidents among the auto parts in the battle over Aviso 288), Sindipeças established its legitimacy and reliability.

It was no accident, then, that the local content schedule followed Sindipeças' estimates of the sector's capabilities. For example, by 1956, Sindipeças documented that firms in the sector could produce the following parts (percentage weight of the vehicle in parentheses):

TABLE 2.2
Auto Parts and Their Corresponding Weight
(in Percent of an Average Truck)

<u>Auto Part</u>	<u>% Weight</u>
Tires and tubes	9.55
Springs and Accessories	8.56
Battery	0.98
Cabin and upholstery parts	10.51
Bumpers and trim	1.99
Wheel and break parts	6.50
Other miscellaneous parts	1.31
TOTAL	39.40

The total local content of the "average truck" that could be produced in 1956 was approximately 39.40 percent.⁸² The

local content levels for truck production were legislated at 35 percent, in other words, about what suppliers claimed that they produced.⁸³ Suppliers' estimates of their capabilities were ambitious, if not unrealistic. They still did not produce manual transmissions, cam and crankshafts, clutches, bearings, and other important parts. In the race to fulfill the local content requirements, moreover, quality was sometimes sacrificed. Nonetheless, the tactic of optimistically assessing syndicate members' capabilities worked.

The combined strategies of protectionism, rigorous local content legislation, and a plethora of producers and platforms, led to hybrid organizational practices where aspects of mass production systems combined with those of cooperative assembler/supplier relations.

III.2. *Many Producers and Small Markets: The Bases for Hybrid Organizational Practices*

Although state officials spoke of bringing mass production to Brazil, their decisions created the base for hybrid production system combining elements of mass- and flexible- production. GEIA officials wanted Ford and GM to be at the hub of the mass producing industry in Brazil. Dating from the days of the Subcommittee, state officials tried to negotiate with them (and other assemblers) and to offer them incentives and assurances of government support in exchange

for investing. The assemblers, however, continued to drag their feet. Ford submitted its scantily-articulated proposal by telex only hours before the deadline.⁸⁴ Ford and GM ultimately decided to limit themselves to truck production, a more marginal role than GEIA had envisioned. Some European firms tried to circumvent the regulations either by importing vehicles and using the proceeds to finance manufacture in Brazil or by bargaining for lower local content requirements and diminishing the resources from the parent firm. GEIA officials, fearing a spate of similar proposals, stood firm and denied these firms special status.⁸⁵

It is not clear why GEIA approved 17 motor vehicle projects for an estimated market size of 100,000 vehicles.⁸⁶ On the one hand, GEIA officials, reflecting the concerns expressed by the reluctant assemblers and fear that few firms would agree to the conditions, wanted (and needed) to demonstrate that they did not set up arbitrary rules and did not favor particular firms. On the other hand, GEIA officials wanted Ford and GM to be the center of the industry. The officials felt that they were bringing the premier international firms which not only brought the most modern practices, but bestowed legitimacy on the endeavor. Firms were given as long as one year to submit their proposals. Although a sufficient number of projects, given the market estimates, were approved well before the deadline, GEIA may have respected it in the hopes that better projects would come

along. Finally, GEIA members felt that the producers (predominantly MNCs) knew more about the market and producing automobiles than did GEIA members. After all, the MNCs were spending their own money. Therefore, it was the MNCs' and not GEIA's responsibility to decide who should enter the market.⁸⁷

Fortunately, only 11 of the 17 approved projects came to fruition. The implanted projects included: Ford (trucks), GM (trucks), International Harvester, Mercedes Benz (trucks), FNM (trucks), Scania Vabis (trucks), Simca (passenger car), Toyota (jeeps), Vemag (jeeps and passenger cars), VW (van and passenger car), and Willys Overland (jeeps and passenger cars).⁸⁸ Willys, Vemag, Mercedes Benz, Simca, and FNM were joint ventures with Brazilian capital. The remaining firms were 100 percent foreign-owned subsidiaries.

Economies of scale for a model run at the time were considered to be between 100,000 to 600,000 units per year depending upon the operation (assembly, engines and other power train parts, body stampings).⁸⁹ Therefore, given the estimated market size of 100,000 for the first five years of the industry, although only 11 assemblers finally decided to produce in Brazil, at best, they could be expected to produce an average of less than 10,000 vehicles each, well under the minimum calculations for economies of scale. Moreover, GEIA officials decided against regulating the number of platforms/models. Therefore, the 11,000 vehicles must be

divided among different platforms. Although GEIA officials dreamed of implanting mass production in Brazil, by approving so many assemblers and neglecting to regulate model runs they precluded the very strategy they so desired. GEIA justified its decision by stating that there would be an industry shake-out that would eventually create a oligopolistic structure and longer model runs.⁹⁰ Given the costs related to bankruptcies and mergers, it is not clear why GEIA did not approve a smaller number of firms to diminish the disruptiveness of the eventual shake-out on auto parts firms and workers that would be laid off.

The combination of a large number of producers and a small market forced assemblers to seek low-volume production techniques, a real challenge for American firms:

The real problem initially was not getting the money but finding the right people and the know-how of producing at small volumes, which was alien to companies planning model runs in the millions of vehicles. It was not easy to gear their activities to some 18,000 trucks year. These included a full range, not as complete as in the United States, but from one to six and eight tons.⁹¹

By 1964, the largest model run was the VW Beetle which reached 65,500 (this figure includes over 11,500 vans and 2,000 Kharmann Ghias which were produced on the Beetle platform). The next largest run was Willys' midsized car Aero Willys which reached 15,000 units in 1964. Willy's Jeep production reached 15,000 units per year and both GM and Mercedes Benz produced truck platforms that surpassed 10,000 units.

Most firms' production runs per platform, however, were

less than 10,000 units (Anfavea statistics). Considering the then prevalent notions of economies of scale, it is clear that Brazilian firms produced very small runs. Furthermore, each platform supported one to three models which meant that some parts, for example seats or different options were produced in much lower runs.

Baranson's discussion of Argentina could also be applied to Brazil:

Little or no effort has been made to standardize vehicle elements on bodies, chassis, engines, transmissions, electrical equipment, or brake and clutch systems....

Production volumes in Argentina are low by world standards, which means that Argentine plants can only afford equipment that must be used for a variety of purposes in order to minimize capital costs per unit of output. This results in considerable downtime on equipment. For example, heavy body dies for presses have to be changed for the several successive short runs of the 20 to 30 body panels in each passenger car or truck model. Low-volume equipment (single station, multi-purpose less-automated equipment) is used wherever possible for the manufacture of components and parts. For example, portable welding equipment and riveting guns are used for body assembly, rather than the heavier automatic equipment used by assembly plants in Detroit.⁹²

Despite limited efforts in Brazil to gear machinery to low volume production, idle capacity in Brazil was high, often over 50 percent.

The experience in Brazil differed significantly from other countries captivated by the allure of mass production and economies of scale. Hitler, in the 1930s embarked upon a crusade to build an inexpensive "people's car." Despite some limited similarities in the background conditions in Brazil

and Germany, which, fortunately, did not include National Socialism, but did include foreign exchange shortages and executive commitment to the project, the Volkswagen project doggedly pursued mass production practices:

The Volkswagen was from the first designed to be mass-produced on Fordist lines...The huge plant and the import of numerous expensive single-purpose machine-tools from the US (using much scarce foreign exchange) resulted in massive start-up costs which were heavily subsidised by DAF and had very uncertain prospects of return (emphasis mine).⁹³

Other countries sought economies of scale by limiting the number of assemblers or limiting the number of platforms/models. Mexico limited the number of models per assembler.⁹⁴ Australia required minimum production before an assembler could produce an additional model. The Korean government assigned one assemblers to each of a limited number of market segments.

The proliferation of assemblers and platforms in Brazil also shaped suppliers' investment strategies. GEIA approved projects from the US, German, French, Japanese, and Swedish assemblers for both car and truck production. The suppliers became familiar with many assemblers' production philosophies and learned, not always willingly, to produce many different parts at relatively low volumes. A report prepared by Willys Overland for the Parliamentary Subcommittee investigating the high price of motor vehicles in Brazil stated:

The standardization of technical norms has been a factor in reducing costs in industrialized countries. The Brazilian motor vehicle industry was implanted in Brazil with the support of companies from different countries.

Because of this, each factory adopted the technical norms used in its country of origin. In this manner, various technical standard were used [which] suppliers complain about. Usually, certain types of material and components cannot be supplied to different factories only because of small variations in the required technical standard. The respective suppliers find themselves in the position of producing reduced batches of these materials only for the requirements of a particular assembler. The standardization of technical norms will permit, therefore, that the production of certain materials and components used by the assemblers will be done with economies of scale (emphasis mine).⁹⁵

Suppliers were required to have equipment that could accommodate a large variety of tooling.⁹⁶ Although it is difficult to interpret the exact meaning of the data, the Delft survey reported that 50 percent of the firms' machinery was general purpose, particularly in machining (Delft, 44-46).⁹⁷ Furthermore, consistent with the horizontal conception of the industry, supplier firms were generally not highly vertically integrated. About half of the firms subcontracted operations such as superficial and thermal treatments, quality tests, and balancing.⁹⁸ S o m e suppliers set up production in a very flexible manner. Instead of doing many operations in one step, production was broken down into multiple steps so that tools and dies could do many operations and produce a variety of products. For example, Irlemp devised a system where by the ends of the filter housing which hold the filter in place were stamped in two operations. One stamp did the outer ridge which held the outside filter and the second did the inner ridge that supported the inside filter. Although the operation took

longer, almost any combination of sizes could be combined in the filter housing, thus permitting the firm flexibility in design and volume without massive investments in dedicated machinery.

The practice of extending production runs beyond what was immediately needed reflected a variety of factors. One reason that suppliers tried to use general purpose machinery in a mass production manner was that their assembler mentors taught them the importance of economies of scale. During the late 1950s, few firms were concerned about being able to quickly change over tooling. Rather, they strove to create economies of scale. Therefore, although the machinery was flexible, firms tried to use it in a mass production manner, that is to produce as long a run as possible.

A more pressing reason was the lead-time in ordering parts. In theory the suppliers were supposed to be able to plan production well in advance because the assemblers ordered fixed amounts of parts for three months and provisional amounts for the next three months.⁹⁹ The assemblers often kept up to three months of parts in stock in their factories. Suppliers responded to the ordering system by producing a large batch of parts that would be stocked until they were assembled and/or ready to be delivered to the assemblers. Then the tooling would be changed to produce large stocks of the next order. In this way, firms could avoid time-consuming tool and die changes and down-time on machines. The suppliers

would produce for their customers needs and the suppliers themselves would, like the assembler customers, stock parts.

Although firms in the Brazilian motor vehicle industry had devised production practices that were more flexible than the American assemblers and Volkswagen had in their home countries, industrialists, MNC firms, and state officials in Brazil persisted in interpreting their actions through the Gerschenkron-ian lens of mass production.¹⁰⁰ Neither the process of setting up the industry, in which small supplier firms played a central role, nor production practices, which had an underlying base of flexibility despite some resemblance to mass production, fit the large-scale directives for late-developing countries. Despite the veneer of mass production, the underlying flexibility, low-volume capacity of the sector has influenced suppliers' strategies to this day. They consider flexibility one of their essential strengths and an integral part of their export strategy (Interviews with various suppliers).

III.C. The Heart of the Suppliers' Vision and Hybrid Practices: Cooperative and Long-Term Assembler/Supplier Relations

Once the decree requiring that vehicles be produced in Brazil was passed, all producers rolled up their sleeves and worked together. In many ways, the assemblers were in the hands of small and fragile local firms whom they needed to meet the stringent local content laws. The assemblers brought executives and managers from their home countries and these

men were the suppliers' principal instructors on setting up factories, quality control, and administration.

The paucity of suppliers made a bidding system unrealistic. To reach the high local content levels of 95 percent in five years, assemblers realized that the supplier sector would have to grow and improve its quality. Long-term contracts were the easiest way to encourage the necessary investments. Typically the assembler and supplier entered into an implicit "single-source" and long-term contract where the supplier supplied as much as it could of the assembler's needs in the particular product. The assemblers also introduced Brazilian suppliers to foreign firms to obtain licenses, technical assistance, or create joint ventures, as VW did for Nakata. The assemblers sometimes financed production and acquisition of machinery by small supplier firms with advance payments or even lent money to firms.¹⁰¹

The assemblers scrambled to recruit firms from many areas. The purchasing agents had to convince the (potential) suppliers that it was worth making new investments or diverting old ones to auto parts production. VW gave financial assistance to a supplier Polimatic which produced plastic parts and small electrical parts so that it could purchase a technology license from Messmer (Ventura Dias:73). When a director from Willys moved to Brazil, he went to buy furniture and took the opportunity to recruit the firm for seat production (Interview with Teperman director). Metagal

produced jewelry, but slowly began diversifying as assembler orders for stamped parts, siding, bumpers, and mirrors grew. Today the firm is a top Brazilian exporter.¹⁰² These firms were offered long-term contracts by assemblers.

The process of teaching the suppliers to set up production was not always smooth. The assemblers had to painstakingly teach suppliers who had severe quality problems and high costs. While the suppliers' quest for protectionism and efforts to eliminate cut-throat domestic competition gave some firms breathing space to invest and learn, other suppliers took advantage of conditions to reap profits with no intention of reinvesting and improving. Most suppliers, however, looked up to their assembler mentors and to this day reminisce about the early days and the close relations they had with assembler personnel.

Although suppliers submitted bids to assemblers, the process was in part pro forma, and contracts were arranged more informally in conversations. An executive of a medium-sized supplier who was active in Sindipeças explained: "We had a system of single-source suppliers before anyone else."¹⁰³ Ramiz Gattas, described the system:

GEIA on one side, assemblers and auto parts producers on the other, formed the national motor vehicle pact. Between the assemblers and auto parts industries, referred to in the legislation respectively as contractors and subcontractors, in fact, there was no contract. It was unnecessary, because GEIA and its legislation were the contract. GEIA was the guarantor of the system. This was the fundamental consensus that should be preserved and perfected. From the fundamental principle of a horizontal system flowed [this corollary]:

No overlapping of investments so as to maximize the utilization of all idle capacity and production factors,... (Gattas:207; Emphasis is author's).

The local content laws and the shortage of good suppliers were important in the emerging system of "Japanese-type" assembler/supplier arrangements, but as Gattas states, GEIA's involvement in the industry was also an important factor. Although the projects submitted to GEIA did not include specifics as to what supplier would produce which parts, these matters were decided in private conversations of which GEIA was kept abreast, in part to demonstrate that the project could be executed. "Gentlemen's agreements" emerged whereby investments by the parts firms would be guaranteed in unwritten, long-term contracts by assemblers.¹⁰⁴ As a result of this process, GEIA implicitly oversaw these agreements among the firms which made them de facto long term contracts. These unwritten practices were the principle means by which the government fostered the horizontal vision of the industry (Interview with Gattas).

Yet there was another aspect to these single-source, long-term arrangements which organized domestic competition. According to Gattas, the cooperative assembler/supplier relations were predicated upon the state rejecting projects from new competitors. In most cases, this referred to MNC suppliers who needed state approval to gain access to incentives to set up operations. National suppliers were more threatened by their MNC than emerging national competitors

because the foreign ones came at the behest of their assembler customers in the U.S. In exchange for setting up in Brazil, the foreign supplier was often promised a fixed percentage of all the assemblers' purchases of a particular component.

The issue, however, was more complicated than a black and white struggle between MNC v. national capital. Foreign suppliers were often wary of coming to Brazil and sought Brazilian partners to diminish the risk. Some Brazilian suppliers calculated that a joint venture with a foreign suppliers would build up their credibility with assemblers. One former executive of Ford explained that the assembler virtually required the supplier to obtain a foreign license.¹⁰⁵ Some Brazilian firms, however, believed that a technology license could be a means of keeping out possible competitors. Furthermore, in some cases new foreign suppliers did not understand how to operate in Brazil and, even though they were promised a percentage of an assembler's business, they were unable to meet their quota.¹⁰⁶

Because everyone had to work together to fulfill the local content requirements, relations among the suppliers and the different assemblers do not appear to have varied significantly. Willys is perhaps an exception in its relatively greater reliance on Brazilian suppliers for some design work but may in part be attributed to its phasing out of production in its home base, the United States (Orosco:Table 14,Appendix). In general, however, the

assemblers (at least the US and German ones) and suppliers appears to follow the American model where upon initiating production, the assembler passed out a design and asked for pro-forma bids.¹⁰⁷ The practice of providing suppliers with designs was necessary because they did not have the technology to produce the parts, but it also reflected assembler home country practices.¹⁰⁸

Not surprisingly, the suppliers' demands for keeping out new foreign competitors as in the earlier years, were justified in terms of efficiency and economies of scale. In 1967, in testimony before a Parliamentary committee investigating the prices of vehicles, José Mindlin, a well-reputed businessman and syndicate official and executive of Metal Leve, a national piston manufacturer, stated that the assemblers' practices of diversifying suppliers made investments risky.¹⁰⁹ The implication was that a system of single-source suppliers or at least long-term contracts would create a more stable investment climate for suppliers who in turn would be able to sell more reliably and cheaply to the assemblers, a version of the economy of scale argument.

Curiously, while Metal Leve was espousing the benefits of economies of scale, its encounter with mass production on the factory floor had failed. At the behest of an assembler, Metal Leve had purchased a machine to mass produce pistons (the unfinished piston went in one end and a complete piston of one variety came out the other). The machine was

considered a disastrous investment due to its lack of flexibility. The firm needed to produce smaller volumes. To do so on the automated machine required time consuming changes and long periods of down time on the machine (Interview with plant engineer). The notions of economies of scale were so ingrained, that even when experiments with dedicated machinery failed, the terminology persisted.

A final ingredient in the single-source arrangements was the sense of mission and camaraderie that existed among the many assemblers and suppliers. Brazil was one of the first developing countries to initiate national production. Successes such as Nakata's where the assemblers bent the rules to help their proteges helped solidify the ties among the assemblers and the supplier firms and reinforce the long-term supply arrangements.

Harmony and single-source contracts, however, were not omnipresent. Some competing suppliers often fought each other to establish leadership in their market segment. In the early sixties, Mammana Neto felt that his piston firm, CIMA, was being forced out of the market by another larger piston maker. Mammana Neto claimed that the firm was charging prices that were below costs for the pistons that both firms supplied. To defend itself CIMA created an accounting system that exactingly calculated the costs of its different products. Through this accounting system, CIMA discovered exactly which products it was being undercut and by how much.

Mammana Neto decided on a vigorous defense. He called on the purchaser at Willys (at the time the largest producer of cars) to negotiate a reallocation of orders. Armed with supporting data, he suggested that Willys purchase from the other firm all of the products that it was selling below cost and shift to CIMA a share of the pistons produced exclusively by the other firm which was charging higher prices. The purchaser at Willys thought the whole episode was very funny and agreed to some of Mammana Neto's suggestions. This incident is an example of the good relations prevailing between the assemblers and the auto parts firms. It also demonstrated the gamut of tools used by firms the importance of tactical maneuvers to establish themselves. Although CIMA survived for another few years, by the early 1970s, it was purchased by a huge German piston maker, Mahle.

III.C.A. Cracks in the Visions

The suppliers had painstakingly forged organized markets among themselves and their assembler customers through protectionist legislation and high local content regulations. But these long-term and cooperative practices did not last much beyond the implantation period, the subject of the following chapter. The long-term single-source arrangements between assemblers and suppliers inhibited collective action among the latter and is one reason Sindipeças limited its role to lobbying governmental officials rather than adjudicating

disputes among its members.

Strategic decisions regarding market segments also shaped assembler/supplier relations. Although American firms were favored in Brazil, their refusal to produce cars at this time cost them dominant market share in later years. VW quickly gained a following with the Brazilian consumer, and by the 1970s had captured over 70 percent of the market. VW, which had achieved higher economies of scale than the other assemblers, was more prone to imposing arms-length, conflictive, market relations with its suppliers.

The arrangements were also undercut by helter-skelter national tax and investment legislation not specific to the motor vehicle industry. Instrução 113, for example, permitted foreign investors to import machinery without foreign exchange deposits (which had to be bought in auctions) or in the case of a joint venture, the foreign investor could accept repayment in the form of shares in the firm. In some instances it forced national firms to create joint ventures or it may have given the MNC partner in a joint venture the upper hand as its percentage of the firm's capital increased vis-a-vis its partners' (Gordon and Grommers:41-5). The gentlemen's agreement that the supplier sector should be composed of national capital was built on shaky foundations.

A second problem was the tax system. Until 1967 Brazil had an ad valorem tax system that added a little over 7 percent to the price of each intermediate good. In an

industry such as the auto industry where there were many intermediate transactions among firms, the tax effectively provided an important incentive to vertically integrate. State officials understood that the ad valorem tax could compromise the "horizontal" principles underlying the establishment of the industry. Ventura Dias quotes Latini, a top GEIA official, commenting on the tendencies toward vertical integration as early as 1958:

In some cases, the motor vehicle producer has exhibited some tendency to produce some parts instead of buying from sub-contractors...It is possible that in the future some companies in the sector of car components will be created technically and financially linked to the car producers. This would frustrate the idea of a real horizontal integration not just industrial [sic] but technically and financially.¹¹⁰

Furthermore, although the state intended to reserve the auto parts sector for national capital, it did not exclude new auto parts projects by MNCs only because they were MNCs. Assemblers asked home country suppliers to set up operations in Brazil, and while these suppliers did not want to produce in Brazil, they felt obligated to do so to protect their home country markets. As a result, many of these suppliers entered in joint venture or licensing agreements (Gordon and Grommers:56-58). Once they better understood the market they may have tried to set up operations by themselves by either buying out the local firm or setting up operations by themselves when the agreement ran out. By the early 1970s (and probably earlier) almost one-half of the largest 100 auto parts firms were foreign and they represented approximately 60

percent of capital (Ventura Dias:71).¹¹¹

IV. *Lost in the Translation: The Allure of Mass Production and the Implantation of Hybrid Practices*

Received social science theory would suggest that the supplier industry in Brazil is one of the vibrant backward linkages emerging as a result of the successful implantation of the motor vehicle industry. In fact, the supplier industry predated the assembly industry and despite the precariousness of small suppliers the implantation of the motor vehicle industry can in large part be attributed to their efforts. Supplier firms organized themselves; created a syndicate, Sindipeças; and cultivated alliances with state officials which spanned the Subcommission years (1952-1954) and the later GEIA period (1956-1961). Protecting themselves from imports that periodically their suppliers' markets during the early 1950s was their first goal, but the suppliers soon sought to establish a horizontal industry characterized by organized competition and a prominent role for them.

High local content laws, the crux of the suppliers' blueprint for the industry, paved the way to creating a horizontal industry where assemblers would produce the principal parts of the vehicles (engines and stampings, for example) and subcontract the rest to a thriving national parts sector. The suppliers' lobbying was successful because they organized themselves and constantly kept pro-industry state officials abreast of developments in their sector,

particularly the number of firms in the sector their production capabilities. Sindipeças judiciously used this information during the early 1950s to lobby for protection when foreign exchange shortages presented opportunities for changing import regulations, and they used it again, when the legislation for implanting the industry in Brazil was being developed. The very rigorous local content levels and horizontal notion of the industry was predicated upon suppliers' views of what they could produce.

The process of cultivating alliances in the state was not easy. There were splits in civil society, with importers, assemblers, and others pressuring the bureaucracy to facilitate imports of cars and components. State officials, intellectuals, and entrepreneurs were loosely articulated into competing neoliberal and dirigiste groups. Finally, there were splits in among the aut parts firms themselves along the neoliberal and more dirigiste positions, as well as those who feared new national competitors against those who saw safety in numbers. The activists in Sindipeças, however, kept the dissidents in line which helped convince state officials that they could count on the suppliers to make serious efforts to meet investment and production needs for the industry. Admiral Meira paid tribute to pivotal role of suppliers' tactics in a 1962 speech welcoming Ramiz Gattas to the presidency of Sindipeças:

In one and another [of you], I recognize the loyal and courageous guerrillas that, in the uncertain moments of

the beginning of the implantation of this industry, around 1951 and 1952, helped me conquer the obstacles that, at each moment, threatened the success of the endeavor that we were launching. We had our eyes fixed on industrial progress and the economic emancipation of Brazil (Gattas:346).

Not only can the implantation of the motor vehicle industry be in large part attributed to efforts by suppliers, but so can many of its organizational practices which led to a unique combination of mass production and flexibility. The notion of a horizontal industry within a protected national market led to very concrete measures in which assemblers extend to suppliers conditions conducive to growth, investment, and learning. These measures included de facto long term contracts; assistance from assemblers in foreign technology tie-ups, and in acquiring equipment; and at times the provision of working capital. The assemblers did not do this gratuitously, but were coerced and rewarded by the rigid protectionist and local content legislation as well as the importance of staying on good terms with state officials in GEIA. Furthermore, everyone involved in setting up one of the first motor vehicle industries in Latin America was infused with enthusiasm and excitement which also generated cooperation.

Suppliers, assemblers, and state officials persistently described their goals and efforts in the terminology of mass production. State officials had articulated notions of "burning stages" and leapfrogging to catch up to industrialized countries (Shapiro:1988:176). These notions

preceded Gershenkron's eloquent discussion of the "tension of backwardness" as the impulse for institutional arrangements permitting countries to amass large amounts of capital, and in "big spurts" adopt mass production technology. Despite the large-scale vision, however, GEIA approved seventeen projects for assembly, eleven of which came to fruition. Because each assembler produced at least one platform, the industry was condemned to low volume production. Given that the estimated market size at the time was quite small, the same state officials that struggled to implant mass production in the form of a motor vehicle industry, precluded its emergence.

State officials were not the only ones to paradoxically interpret their actions in light of mass production. Suppliers also invoked the doctrine of mass production to justify their supplications for protection not only from international competition, but also from domestic competition. Without protection from imports and without long-term and/or single-source arrangements, suppliers argued that they would never attain economies of scale.

Interpreting their goals and needs in terms of mass production is particularly interesting given the suppliers' investment strategies. The precariousness of their markets in the early fifties, and the diversity of assemblers in Brazil after 1956, as well as the uncertainty related to implanting the industry led suppliers to invest in general purpose machinery, which they used in a manner reminiscent of mass

production. Considering that state officials frequently visited these firms as part of the process of approving petitions for import licenses and duty reductions, it is surprising that everyone described as mass production what was really a curious hybrid of mass and flexible production techniques.

Suppliers invoked the doctrine of mass production to justify protection, but also to describe their activities. State officials espoused the terminology of mass production, but approved many assembly operations given the small size of the Brazilian market, and were well aware of suppliers investment strategies and their factory organization practices. Mass production was a construct solidifying the alliances between suppliers and pro-industry state officials and bestowing meaning and legitimacy to their modernizing goals and efforts. The irony of the large-scale arguments is it that their strength lay in the assemblers' success with mass production strategies in their home countries, to which they repeatedly pointed in inveighing against establishing production in Brazil. The Brazilian motor vehicle industry grew in the interstices of visions of mass production, and the tactics deployed by suppliers, state officials, and assemblers, to realize their dreams.

ENDNOTES

1. The end of Japanese-Russian War of the early 1900s led to waves of Japanese emigration over the following decades. Many poor Japanese went to Brazil to work on the coffee plantations of the Sao Paulo elites. The terms of the contract were pernicious. The coffee plantation owners advanced the Japanese emigrants' the price of their tickets which was to be paid back by the workers. However, it was almost impossible for the workers to avoid a spiral of debt. They had to buy their goods from the plantation stores which charged excessive prices. Furthermore, the plantation owners often cheated the workers out their wages. Many workers literally escaped to the city of Sao Paulo, which was their only chance of improving their economic situation.
 2. For two accounts of industrialization in Brazil in the early 1900s, See Warren Dean, The Industrialization of São Paulo, 1880-1945, Austin: University of Texas Press, 1969; and Wilson Suzigan, Indústria brasileira: Origem e desenvolvimento, São Paulo: Brasiliense, 1986.
 3. For an interesting account of the emergence and formation of the corporatist system see: Maria Antonieta P. Leopoldi, Industrial Associations and Politics in Contemporary Brazil: The Associations of Industrialists, Economic Policy-Making and the State with special reference to the period 1930-1961, St. Antony's College, PhD Thesis, 1984.
 4. The literature on the corporatist groups tends to focus on the lobbying of the syndicates rather than the efforts to organize markets. For quasi-pluralist accounts of corporatism in Brazil, see:
 - Raul Boschi, Elites industriais e democracia, Rio de Janeiro: Edições Graal, Ltda, 1979.
 - Diniz, Eli and Renato Raul Boschi, Empresariado Nacional e Estado no Brasil, Rio de Janeiro: Forense-Universitaria, 1978.
 - Schmitter, Philippe, Interest Conflict and Political Change in Brazil, Stanford, CA: Stanford University Press, 1971.
 - Velasco e Cruz, Sebastião, et al., PMEs e Relações Interindustriais: Um Estudo Sobre a Indústria Automobilística e o Setor de Autopeças, Unpublished Report of Cebrae/Iuperj Agreement, Dec. 1981.For a Marxist explanation of corporatism see, Francisco de Oliveira, "A economia brasileira: crítica a razão dualista," in Estudos Cebrap 2, São Paulo: Editora Brasileira de Ciências, Ltda., October, 1972, pp. 3-82.
- One account that touches on the question of the corporatist groups and industry organization is Warren Dean's account of industrialization in Sao Paulo in the early decades of the century. Textile firms were predominant at the time the corporatist legislation was passed although other manufacturing firms existed. The textile firms used the syndicate to lobby for protection against imports. Simultaneously they tried to create barriers to

entry to new competition by lobbying for a prohibition of new equipment imports. See Warren Dean, op. cit.

Many of the syndicates' activities that Dean describes continue today, although one long-time participant in different corporatist groups suggested that no one could foresee how important and powerful some of the syndicates would become.

5. For a discussion of the political and philosophical views of some of the creators of the corporatist system see, Evaldo Vieira, Autoritarismo e Corporativismo no Brasil: (Oliveira Vianna & Companhia), São Paulo: Cortez Editora, 1981.

The majority of social science literature on the corporatist system has dealt with the labor unions. See Erikson, Humphrey, Kenneth S. Mericle, "Corporatist Control of the Working Class: Authoritarian Brazil Since 1964," in James M. Malloy, ed. Authoritarianism and Corporatism in Latin America, Pittsburgh: University of Pittsburgh Press, 1977, pp. 303-338.

See footnote nos. 3 and 4 for a discussion of the employers and producers corporatist groups.

6. The Ministry of Labor collects and disburses funds which are a percentage of sales of all firms that belong to the group. Typically a representative of the Ministry of Labor will tally the results of elections. Oversight of elected officials has been much more pervasive and repressive (particularly during the some periods of the military regime) in the labor corporatist groups.

7. Associations could also accept members who did not produce the products or provide the services of the members. For example, a machinery producer may decide to belong to an association of consumer goods producers to get advance notice of projects or more information on industry trends. The machinery producer could not belong to the consumer goods syndicate. Because associations can expand their membership and membership fee are not regulated, they can collect more money than their syndicate counterpart.

8. Interview with Mammana Neto, one of the principle Sindipeças activists and owner of CIMA, a piston producing firm.

9. There is a body of social science literature which explored the hypothesis that the association, because of its voluntary nature, represented a shift from corporatism to pluralism, as it exists in the United States. The studies concluded that it is not. See Schmitter, op cit, Diniz and Boschi, op cit.

The assemblers have created a very strong association, the National Association of Vehicle Producers (Anfavea), which has a much higher profile than the National Syndicate of Vehicle Producers (Sinfavea). Anfavea can raise more money than Sinfavea because it can charge for courses or services that the syndicate cannot offer. In addition, an associations' members' yearly contributions are not set by law. Furthermore, members do not all have to be specifically from the same industrial segment. Anfavea

for example includes diesel engine producers such as MWM and if it wanted to (to make better alliances with other sectors or earn more membership dues) it could allow machinery producers or other firms as members. Anfavea is also less restricted in its spending. It rents an office in Brasilia and provides lunches and other forums for conversations between state officials and association officials. A syndicate, by law, cannot do any of the above activities.

10. See, Topik, Steven. The Political Economy of the Brazilian State, 1889-1930, Austin: University of Texas Press, 1987, p. 133. In the early 1900s, it was revised and called the "Register of Similar Products (1911)." Local producers desiring protection petitioned for recognition before a commission. If successful, tariffs exemptions and reductions on imports of competing goods were prohibited (Gordon and Grommers:13).

11. It is very probable that syndicates in other sectors took similar measures to (try to) protect their members.

12. See Roteiro de Serviços, Sindipeças and Abipeças. n.d.

13. For a discussion of the various groups of técnicos, see chapters 2 and 3 of Lourdes Sola, The Political and Ideological Constraints to Economic Management in Brazil, 1945-1963, Sommerville College, 1982, Unpublished PhD thesis.

See also, Kathryn Sikkink, Ideas and Institutions Developmentalism in Brazil and Argentina Ithaca: Cornell University Press, 1991.

14. The intellectuals were less formally involved with political parties (Sola:129).

15. Ford (1919), General Motors (1925), and International Harvester (1926) imported and assembled CKDs. There were also a few distributors of European and American vehicles.

16. There are many discrepancies in the number of firms existing at the time. Gattas' data on number of existing firms are contradictory. On pp. 497-502 he lists approximately 160 firms that existed by 1952. On page 93 he states that by mid-1952 320 auto parts firms existed. The discrepancies are partially due to the fact that the list is of firms in Sao Paulo and not in other cities. This is unlikely to account for the difference of over 150 firms. See Ramiz Gattas, A industria automobilística e a 2a revolução industrial no Brasil, São Paulo: Prelo Editores, 1981.

Moreira França states that there were 250 in 1952. He source is a report, Indústria Automobilística Brasileira, November 1963, pg. 36 (Moreira Franco:15). Regardless of the discrepancies, it is clear that many of the firms produced replacement parts in an artisan-like fashion in their backyards. See Wellington Moreira Franco, A nacionalização de veículos no Brasil, Unpublished

Master's Thesis, University of Sao Paulo, n.d. This thesis is based on interviews with Admiral Meira, Sydney Latini and other participants.

17. Foreign exchange shortages and other economic issues are frequently seen as among the prime enabling factors in explaining the implantation of the motor vehicle industry in Brazil. While foreign exchange shortages certainly helped state officials and auto parts producers pushing for the industry to make their case to reluctant state officials, in themselves they cannot directly translate into the impetus for developing motor vehicles in Brazil.

In the foreign exchange version of the origins of the industry, the state responded to economic imperatives, particularly pressing foreign exchange shortages and other secondary factors (Orosco:22; Shapiro:68). By the late 1940s and early 1950s motor vehicle- and parts imports outstripped petroleum and wheat imports, traditionally the largest expenditures of foreign exchange in Brazil and represented an severe drain of foreign exchange. A secondary factor to which the state responded included the growing transportation needs related to economic growth. Alternative transportation solutions such as railroads were in great disrepair and would require spending that the state budget could not afford, therefore providing yet another impetus pushing the state to create a motor vehicle industry which would be financed primarily by infusions of foreign capital. Furthermore international loans to finance the railroad and other infrastructure projects were unavailable as President Vargas had run into problems with the World Bank (Shapiro:1988:83-89).

These accounts, however, provide only some of the conditions that led to the implantation of the industry. For example, motor vehicle and related imports accounted for approximately 10 to 15 percent of total imports from 1947 to 1952 the government could still attempt to save foreign exchange by promoting the development of other sectors. Agriculture for example, and particularly wheat products which would have saved approximately 7 to 14 percent of foreign exchange expenditures, and much less investment would have been required. There is no overwhelming reason why motor vehicles would save more foreign exchange than other endeavors.

Finally, Shapiro's enumeration of the reasons motor vehicles were chosen over railroads does not explain why of President Kubitschek's (JK) 30 developmental goals that made up the cornerstone of his administration, the first, electric energy, the second, nuclear energy, and the fourth and fifth related to petroleum were all to be financed by state investments. Furthermore, many members of JK's economic team disagreed as to the desirability and feasibility of producing motor vehicles in Brazil and as a result motor vehicle production was goal #27 of 30, reflecting their lack of conviction (Wellington Moreira Franco:55-56;Orosco:57).

18. Interview with José Mindlin, president of Metal Leve.

19. In describing negotiations with his banker, Gattas, the president of a castings firm and founder of the auto parts syndicate would tell the banker that his firm produced parts for stoves. Why did Gattas not mention auto parts, the firm's principle activity? "If I would say that we produce auto parts, nothing doing; and he [the banker] would start doubting our mental health" (Gattas:54).

20. At the time, there were about 100 auto parts firms, although not all the firms sent representatives to the meeting. The spokes people of the sector were quite articulate, but there were also many firms that were owned by immigrants with little education and little inclination to actively participate in the founding and setting up of the syndicate.

21. Interview with Mammana Neto; Gattas:59-60.

22. Not all of the founders of Sindipeças continued to play prominent roles. Some of the activist founders were later edged out of syndicate activities. Some of these firms stagnated which has generated resentment. Sindipeças periodical public recognition of the "pioneers" is partially an attempt to diminish resentment and generate solidarity among supplier firms with very different economic and political interests.

23. Interview with Ribeiro Branco, former Ford manager and son-in-law of the company's Brazilian president.

24. At the end of the repressive Estado Novo period (1930-1945) when Vargas was a virtual dictator, he laid the bases for a democratic comeback. He created two parties, a labor party, Partido dos Trabalhadores Brasileiros (PSD), and a social democratic party, Partido Social Democrata (PTB), from which he hoped to generate electoral support to win a future presidential election. Skidmore explains that the party bore no resemblance to European social democratic parties but rather most closely resembled political machine parties. The PSD was the party of traditional politicians in rural areas rather than middle-class opposition (1967:56).

25. While Vargas is frequently portrayed as a rabid nationalist and/or very pro-industry, Skidmore's characterization of him as a pragmatist is perhaps most accurate. Bresserman Vianna contends that Vargas was closer to the orthodox position in economic development -- he pursued orthodox stabilization policies and adopted nationalist industrial policies only when foreign firms refused to support his plans for developing certain sectors of the economy (Bresserman Vianna:1990).

Industrial initiatives under Vargas which are frequently characterized as nationalist were face-saving reformulations of initial projects. Vargas was fully aware of foreign exchange constraints and believed that foreign capital was necessary to

overcome them (Skidmore:94;Madureira de Pinho Neto:164). Vargas pushed for government ownership of the steel industry only after the United States Steel Corporation refused to invest in the industry in Brazil (Skidmore:96). Similar events transpired before the nationalization of the petroleum industry. Vargas contacted the Shell Group itself as an intermediary for other large petroleum companies. They stated that they were not interested in investing in oil exploration (Bresserman Vianna:1987:123 and ffs. 530,531). Regarding Vargas' position on profit remittances by MNCs, Bresserman Vianna argues that 1) it was a negotiating stance to speed up a loan from the United States; and 2) it was a means of not penalizing MNC capital that was contemplating investments in Brazil vis-a-vis MNC capital that was already installed in Brazil, and finally that it did not diminish the flux of MNC investment (Bresserman Vianna:1987:84,124). Conceivably, in maintaining the flailing state-owned FNM Vargas may have been considering it as a future bargaining pawn. Furthermore, in maintaining the firm Vargas also paid lipservice to the nationalist currents in Brazilian politics (Shapiro:97-98).

26. Martins cites Moreira Franco's interviews with Lucio Meira (1976:407).

27. The FNM project had funding from the US government and was part of a plan to diversify sources of production during the war. By the time production finally was underway, the engine was considered obsolete. After WWII, the facilities were converted to truck production under license from Fiat.

28. "A semente: almirante de pé na tabua," in Quatro Rodas, Vol 6, No 66, January 1966, pp. 48-54.

29. For a more detailed description of these técnicos see Lourdes Sola:1982. Sola describes two groups of tecnicos, nationalist and cosmopolitan, who had common educational, professional, and regional affiliations. The nationalist técnicos advocated a very interventionist role for the state in production of raw materials and provision of infrastructure and were less sympathetic to foreign capital. The cosmopolitan group was more sympathetic to foreign capital and supported state planning but was opposed state production. The groups also held different views on the acceptability of inflation.

30. Shapiro interview with Araipe, February 1985, Sao Paulo (Shapiro:87,ffn.81).

31. See Eros Orosco, A indústria Automobilística do Brasil, Unpublished report, Rio de Janeiro, July 29, 1961. Orosco was a member of GEIA and participated actively in the early years of lobbying for the industry.

See also Jose Almeida, A implantação da indústria automobilística no Brasil, Rio de Janeiro: Fundação Getúlio

Vargas, 1972.

32. There was a current in Brazil advocating expropriation of foreign-owned refineries, but the crux of the debate was whether or not the government should own the petroleum industry. By 1953, a joint public-private company, Petrobras, was created, but no wells were expropriated and foreign firms were permitted to distribute.

33. Other firms producing products of American origin include Varam (Nash), Vemag (Studebaker) and Brasmotor.

34. Orosco described another of Ford's tactics. Until 1960, Ford's official name in Brazil was Ford do Brazil S/A. The name, however, was deceptive. S/A denominates, anonymous society or a corporation. This apparently was consistent with the existing regulations requiring foreign firms in Brazil to sell stocks to the public. The Subcommittee members, in 1960, discovered that the S/A in the title referred to South America and not to the status of Ford's holdings in Brazil (Moreira Franco:41). GM appeared slightly more receptive to producing in Brazil (Shapiro:213).

35. Interview with the former head of São Paulo-based CEXIM office, the Brazilian import agency of the Central Bank, Mr. Haenel (January, 1987).

36. GEIA officials had high hopes that Ford would play a central role in the industry. As Ford continued to stall, GEIA officials became impatient (Shapiro, Engines, pp. 149-150 manuscript).

37. Mercedes Benz produced trucks and its goals were more consistent with those of the Subcommittee.

38. See Shapiro:Engines:110-114 for an account of home office recalcitrance regarding producing in Brazil.

39. Some imports required a deposit of foreign exchange equal to the amount of the import.

40. See Gattas:79-80.

The importance of personal contacts cannot be underestimated. The Brazilian Association of Authorized Dealers was created in 1984. One of its first tasks was to send a questionnaire to the 3,600 dealers throughout the country. The questionnaire asked them who they knew and what kind of relationship they had with the President, Vice-President, Ministers, senators, federal representatives, governors, state representatives, mayors, and alderpersons at the different levels of government. This was to be the basis of the Association's new national lobby effort (S. Stefani, "Organizar um "lobby" politico nacional, o objetivo da Abreve," in Gazeta Mercantil, Sept 21, 1984).

Samuels (1990) states that the government relations personnel

in the assemblers often spend over 50 percent of their time meeting with government officials. See Barbara Samuels, Managing Risk in Developing Countries, Princeton: Princeton University Press, 1990.

41. See Sola and Sikkink for a discussion of the subcommissions networks.

42. Shapiro cites Mammana Neto, in Subcommittee minutes, May 7, 1952 (Shapiro:77). Although Shapiro documents the syndicate's efforts to lobby state officials for protection and attributes the very important Aviso 288 to supplier efforts, she still maintains that the supplier sector was a backward linkage effect of the implantation of the motor vehicle industry in Brazil.

43. "A semente:", op cit., p.49.

44. Martins cites Franco's interviews with Latini and Meira in August, 1970 (Martins:412). Also see Gadelha, p. 6.

45. Regarding Ford's claim that Aviso 288 was a victory, Shapiro cites Executive Communication to Henry Ford II et. al. from Arthur J. Wieland, Vice-President, Ford International, January 23, 1953. Acc. AR-67-6, Box #2, Ford Industrial Archives, Redford, Michigan (Shapiro;Engines:108-9).

46. The sector had already begin to attract the attention of important business groups in Brazil: including the Villares, Klabin/Lafer, Lanari, Simonsen, Barcellos Correa/Simonsen, Vidigal, Aliperti, Brasmotor, Vemag/Novo Mundo groups (Gadelha:17). Some of these firms were among those who were against extending sector-wide protectionism.

47. CEXIM did not actually allocate the foreign exchange.

48. Orosco stated that the Subcommittee did little in concrete terms. He believed that its main accomplishments were limited to maintaining the issue of motor vehicle production as politically salient, as well as providing moral support for the auto parts producers (Orosco:41). Orosco is correct in emphasizing the important role that some Subcommittee members played in giving the suppliers encouragement during this confusing and chaotic period. He appears to underestimate, however, the extent of the understandings and definitions of the future industry that were laid out during the period.

49. In a speech in 1957, Meira stated that a study of international practices revealed that the assemblers rarely produced more than 45 percent of the weight of the vehicle. Lúcio Meira, "A indústria do automóvel no Brasil," in Revista do Conselho Nacional da Economia, Vol 6, No. 48, Nov/Dec 1957, pp. 41-47.

Almeida described the horizontal vision of the industry as one in

which the assemblers would produce the parts that characterize the car, i.e. skin and engines, and they would subcontract the rest to auto parts firms (Almeida:8-9). Although in many ways the Brazilian planners looked to the U.S. and Europe (VW and Renault) for a model, this notion of subcontracting did not exist in the home country industries. See Womack et. al. for a description of how these European industries had very successfully absorbed the mass production-high levels of vertical integration model of the American assemblers. See James P Womack, et. al., The Machine the Changed the World, NY: Rawson Associates, 1990, p. 234-5.

50. Gattas:82; Martins, pg.410; Moreira Franco:6-7; Shapiro:1988:1,96,112.

51. Interview with João Paulo Dias, one of Ford's first Directors of Purchasing.

52. There were a few MNC suppliers already in Brazil. Goodyear was one example.

53. While the state agreed to a division of responsibilities where the MNCs would predominate in assembly and domestic capital in the supplier industry, it also wanted to encourage Brazilians to develop assembly firms. Again, the notion of economies of scale was used by state planners in a manner to foster national industry. Smaller Brazilian assembly industries would eventually be merged to create one large assembler, capable of competing internationally (Moreira Franco:8).

54. Moreira Franco:7;Shapiro:95-96.

See Shapiro for an account of the role of the FNM. Shapiro also mentions that the military controlled FNM and were reluctant to relinquish it. Furthermore, a 100 percent Brazilian-owned venture, although state-owned, provided valuable public relations for the struggling industry (Shapiro:92-8).

55. Importers, some assemblers, some industrialists, and neoliberal state officials coordinated campaigns to overturn or ignore the legislation protecting the industry. One tactic was to publicize motor vehicle accidents, particularly if they were caused by faulty parts, i.e. brakes, made in Brazil (Gattas:195).

56. Brazil had import restrictions, a five-tiered exchange rate (described in a later section), as well as auctions to gain access to foreign exchange.

57. Gattas' account of the development of the industry is entitled, The Automobile Industry and the Second Industrial Revolution in Brazil. The title underlines the sense of mission and importance that he attributed to the suppliers' and assemblers' roles in setting up the industry.

58. The auctions were a means of saving scarce foreign exchange and an important source of revenues for the federal budget. Firms or individuals who wanted to import would have to buy foreign exchange in auctions. The starting price was that of the category in which the good was placed. For example, anyone who wanted to import auto parts would have to bid for foreign exchange and the starting price would be that of third exchange rate tier, as described below.

59. Importers and distributors were always battling to facilitate auto parts imports. In October 1954, approximately one year after the five-tiered exchange rates were implemented, the importers and distributors successfully lobbied for Instrução 107 which switched auto parts imports from the middle (3rd) to cheapest (1st) exchange rate category, thus substantially diminishing protection. Sindipeças took the initiative and mounted a counter-lobby in CACEX. Approximately one month later, in November 1954, auto parts for engines (sleeves, pistons, and pinos) were switched back to the middle exchange category (Gadelha:10-2;Gattas 174-5).

60. Assemblers at the time included Ford; General Motors; International Harvester; Vemag S/A 1945; Fabrica Nacional de Motores (1951); Willys Overland do Brasil S/A (1952); Volkswagen do Brasil (1953); Mercedes Benz do Brasil (1953).

61. Orosco stated that the CEIMA group was very "timidly" defined so as not to encroach on the turf and responsibilities of other bureaucracies (Orosco:51).

62. Vargas committed suicide in 1954. His suicide is credited with saving Brazilian democracy during the 1950s because the anti-Vargas forces in society and in the military had been planning a coup that would have taken place except for the suicide. See Benevides' interview with JK in Maria Victoria de Mesquita Benevides, O Governo Kubitschek Desenvolvimento econômico e estabilidade política, Rio de Janeiro: Paz e Terra, 1979, pp. 290-1.

63. Skidmore:1967:143-162;Madureira de Pinho Neto:156.

64. Shapiro, Engines, pp. 184-191.

65. Auto parts firms also complained that they were discriminated against in another matter. They were only permitted to import used machinery when they had a joint venture with a foreign firm. Otherwise they were forced to buy new, more expensive machinery (Gattas:165-68).

66. See Lincoln Gordon and Engelbert Grommers, U.S. Manufacturing Investment in Brazil: The Impact of Brazilian Government Policies, 1946-60, Cambridge, MA: Harvard University Press, 1962.

67. For a detailed historical account of the Japanese supplier industry, see Toshihiro Nishigushi, Strategic Dualism: An Alternative in Industrial Societies, unpublished PhD thesis, Faculty of Sociology, Nuffield College, University of Oxford, 1989.

68. The following discussion based on James P. Womack, Daniel T. Jones, and Daniel Roos, The Machine that Changed the World, New York: Rawson Associates, 1990; Toshihiro Nishigushi, "Strategic Dualism: An Alternative in Industrial Societies," Unpublished PhD dissertation, Nuffield College, Oxford, 1989.

69. Womack et. al. described the common tenets for setting prices, denominating the competitive assembler as the "lean" one:

...the lean assembler establishes a target price of a vehicle and then, with the suppliers, works backwards, figuring how the vehicle can be made for this price while allowing a reasonable profit for both the assembler and the suppliers.

To achieve this target cost, both the assembler and the supplier use value engineering techniques to break down the costs of each stage of production, identifying each factor that could lower the cost of each part. Once value engineering is completed, the first-tier supplier designated to design and make each component then enters into mutual bargaining with the assembler, not on the price, but on how to reach the target and still allow a reasonable profit for the supplier. This process is the opposite of the mass-production approach to price determination (Womack, et. al.:148).

70. At least in the areas that Brazilian firms felt they could supply for the market in sufficient quantities.

The Japanese industry started with protected markets in 1936. By the late 1970s under pressure from the United States and other countries, the market for motor vehicle imports was opened. The combination of good products and tight relationships between the OEMs and the suppliers, however, has effectively kept vehicle imports low and excluded most foreign suppliers from competing in Japan.

71. The Japanese suppliers also tried to pressure the state to receive better payment periods from suppliers (Nishigushi:124-132).

72. The embryo of GEIA was the Executive Commission Motor Vehicle Material (CEIMA) created as a result of the Subcommission's work a few months before Vargas' death in 1954 (Moreira Franco:51-52).

73. The GEIA members included CACEX, who would issue import licenses for equipment and auto parts not yet produced in Brazil; CAMBIO would carry out the necessary exchange rate operations; SUMOC would allocate foreign exchange; the BNDE was the weak spot in the process as its funding decisions had to be approved by its administrative council which often delayed GEIA decisions

(Orosco:69). In 1957 a representative from the Minister of War, the Council on Tariff Policy, and the Agricultural Ministry (1959) were added.

74. CEIMA was the precursor to GEIA that was aborted by Vargas' suicide.

75. Other members included Roberto Campos, Ignácio Tosta Filho, Guilherme Augusto Pegurier, Américo Cury (Shapiro:105,ffn 1).

76. See Shapiro, op cit., for an interesting evaluation of the subsidies and incentives granted to assemblers as well as a cost-benefit analysis of their economic impact.

77. The bulk of the discussion on incentives is based on Shapiro, Engines, pp. 70-73. She calculated that the total subsidies equaled US\$ 201.45 or 48 percent of total investment of US\$ 418.35. Shapiro stated that because of the high sales and advalorem rates, the industry was ultimately self-financed (Shapiro:Engines,210-217).

Suppliers continued to receive protection from imports under Aviso 288. GEIA reviewed projects submitted by assemblers and auto part firms in two weekly sessions, and the list of auto components that would merit import protection, under the Aviso was revised every six months.

[The typical proposal presented a history of the firm, a description of its production facilities, a detailed account of its proposed project, and a petition for import duty reductions, loans and/or guarantees or other state assistance. The proposals consistently emphasized the amount of foreign exchange that would be saved as well as the project's contribution to national learning.]

78. The reasons for maintaining the FNM rather than selling it to the private sector are discussed on pp.

79. Later decrees increased local content to 100% with a one-percent tolerance for automobiles and a two-percent tolerance for trucks. See Kenneth Mericle, "The Political Economy of the Brazilian Motor Vehicle Industry," in The Political Economy of the Latin American Motor Vehicle Industry, Cambridge, MA: MIT Press, 1984, pp. 1-40.

At the time the participants were debating whether they should also develop a plan for tractor production. They decided to drop the project because the agricultural interests were opposed to it and the auto parts sector was already stretched to capacity (Shapiro:103-4; Orosco:76).

80. See footnote 49.

81. Shapiro used the words of Lúcio Meira and Sydney Latini (Shapiro:Engines:pp.114-115). Only Japan had gone about creating a national industry. Foreign capital was banned from the assembly sector. Interestingly, this experiment was not a model for the Brazilians, although the assembler/supplier relations in both countries showed some similarity.

82. The figures come from Orosco, p. 74.

Gadelha cites a 1957 report which states that there were about 900 auto parts firms: Metalworking - gears, crowns (coroas), springs, axles, shock absorbers, rings, locks, and others (430); Cork, asbestos and paper for break pads, gaskets (13); rubber for mats, belts, tubes (62); electric material (wires, rotors) (29); glass and mirror (12); batteries (13); tires and tubes (9); Fluids, paint, varnishes, grease, oils, polishers (39); body parts (161); accessories (wrenches, air pumps, radios (68); semi-finished products (steel, cast parts) (53); assembly of parts (14) (Gadelha:15). She states that these firms represented a local content levels of approximately 30 percent, although there were wide differences. FNM trucks, for example, had already reached local content levels of 54 percent of weight (Gadelha:13).

83. Meira made a similar observation regarding the calculation of local content levels Meira, op_cit, p. 45.

84. Interview with Ribeiro Branco, one of Ford's first engineers. He helped design Ford's first plant. He was also the son-in-law of Humberto Monteiro, Ford's first president.

85. VW, for example, was one of the first assemblers to agree to produce in Brazil and in effect, forced the other to follow suit. It alleged, however, that because of special engineering characteristics, it deserved exemptions from domestic content legislation (Shapiro:202). Shapiro cites memos attached to VW's proposal to GEIA. She also recounts a somewhat similar attempt to subvert the process by Simca. JK had visited the Simca factory arranged by an engineer in the National Steel Company whose daughter had married an engineer in Simca. JK suggested that the firm set up operations in Brazil and possibly in Minas Gerais, JK's home state. The company wrote a letter to JK stating its intention to produce in Minas Gerais. In the meantime, GEIA was formed. Simca argued that since its letter predated the formation of GEIA and JK had approved the project, the Simca project fell outside the purview of GEIA (Shapiro:205). In another example, VW attempted to link up with a high profile Brazilian concern, Monteiro-Aranha, to facilitate obtaining financing in Brazil. Among many problems that the BNDES had with the proposal was that the foreign exchange rate was too low, thus overestimating the amount of foreign exchange needed as well as the value to VW's equipment. The proposal was not financed (Shapiro:206-209).

86. Orosco states that estimates of market size for new vehicles in 1960 was 100,000 (Orosco:4).

Almeida states that market size from 1960 to 1964 for trucks was 56,000 unites per year. Passenger car estimates for 1959/63 were 60,000. That brings the total estimate to 116,000 during the period (Almeida cites Confederacao Nacional da Industria, Analise e perspectivas da industria automobilistica, Rio de Janeiro, 1959, pp. 10-11. I assume that these estimates include station wagons and jeeps.

For a fascinating detailed account of GEIA's tug-of-war, see Shapiro:Engines:114-164. She clearly demonstrates the pressures from Kubitscheck, the Congress, the various assemblers that bombarded GEIA.

87. Shapiro cited Sydney Latini who, a decade later, justified the decision to approve so many assemblers in Brazil:

...in a regime of free enterprise it seemed that we should authorize all the producers that, through the projects submitted to GEIA, fulfilled the minimum requirements. In principle, we admitted that by definition, these manufacturers should know the market better than we did, should know more about automobiles and should take care with the money that they were going to invest because it was theirs.

Sydney Latini, Testimony before the Parliamentary Inquest Commission for the Verification of the Cost of the National Vehicle, October 26, 1967, GEIA Archives. (Shapiro:Engines:126-7).

88. Projects that were approved but later abandoned include: Rover (jeep); Fabral (passenger car); Romi (passenger car); N.S.U. (passenger car); Industrial Nacional de Locomotivas (truck); Borgward (passenger car); Chrysler-Willys (passenger car) (Shapiro:135).

89. Baranson estimated economies of scale to be 120,000 unites per year for assembly operations, 240,000 for engine and other power train parts, and 600,000 for body stampings. See, Jack Baranson, Automotive Industries in Developing Countries, Baltimore, MD: The Johns Hopkins Press, 1969, p. 29.

White calculated economies of scale to be 250,000 units. Lawrence White, The Automobile Industry since 1945, Cambridge: Harvard University Press, 1971.

Shapiro's bibliographical research on the subject found that Joseph Bain in his book Industrial Organization (New York: John Wiley, 1968, pp. 284-287) estimated economies of scale at 300,000 units per year. Maxcy and Silberston, The Motor Industry, pp. 75-98) estimate optimum scale for production at 100,000 for assembly; 100,000 for casting; 400,000 for machining engines, and up to 1,000,000 for stampings. These estimates are cited in Helen Shapiro, "Automobiles: Trade and Investment Flows in Brazil and Mexico," Paper presented at Harvard Business School, December 1-3,

1991, p. 57, ff. 26.

90. Interview with GEIA official.

91. J. Wilner Sundelson, "U.S. Automotive Investments Abroad," in The International Corporation A symposium, Charles Kindleberger, ed. Cambridge, MA: MIT Press, 1970, pp. p.245.

92. Baranson, op cit, pp. 46-47.

93. Steven Tolliday, "Thinking the German Miracle: Volkswagen in Prosperity and Crisis, 1939-1992," The Business History Seminar: Competition and Industry Structure, Fall 1991, p. 7.

94. See Douglas C. Bennett and Kenneth E. Sharpe, TNCs and the State: the Political Economy of the Mexican Auto Industry, Princeton: Princeton University Press, 1985.

95. Report by Willys Overland for Parliamentary Commission Investigating the High Price of Motor Vehicles in Brazil. Read by Deputy Emilio Gomes, [Relator] of the Commission, October 10, 1967, 580/40.

The practice of different standards and different parts existed not only among different companies, but also within the same company operating in different countries:

...[O]ne of the practical problems facing implementation of a Latin American integration program is the variation in specifications for ostensibly similar models produced in Latin American countries: a pickup[truck labeled the Ford F-100 is produced in Argentina, Brazil and Mexico and is assembled in other countries, but the body and mechanical components differ....One home office interviewee estimated that it would take three to four years just to standardize his firms's Latin American specifications before substantial regional trade could begin...

See Russell Martin Moore, Multinational Corporations and the Regionalization of the Latin American Automotive Industry: A Case Study of Brazil, NY: Arno Press, 1980, pp. 156-157.

96. Regarding the issue of standards mentioned above, Mr. Vasconsellos, owner of an auto parts suppliers stated that the multiplicity of measurements and standards required suppliers to make important investments in tooling. See Mr. Vaconsellos' testimony, Parliamentary Commission Investigating the High Price of Motor Vehicles in Brazil, October 10, 1967, p. 580/40.

97. Machines were generally purchased from national producers (Delft:47). About 45 percent of the machines were semi-automatic, while the remainder were manual (Delft:51).

98. About 30 percent of the firms subcontracted these operations because they believed that another firm could do it more cheaply. The remaining 70 percent because they did not have equipment, space, capital to invest, know-how, or did not have the capacity to make it economical (Delft:55).

99. In practice, as suppliers later complained, the assemblers changed orders, even the fixed ones, frequently and with little notice.

100. For example, GEIA officials frequently visited the suppliers as part of the process of assessing new projects or petitions for tax exemptions, and were well aware of the production and investment practices.

101. Delft:192

102. Anne Posthuma interview with Manager of Export Department, Metagal, 1988.

103. Interview with Rossi, owner of Acil, and early Sindipeças activist.

104. Long term sourcing agreements in response to the needs of a new industry as well as state protection of local entrepreneurs also occurred in South Africa. See Jack N. Behrman and Harvey W. Wallender, Transfers of Manufacturing Technology Within Multinational Enterprises, Cambridge, MA: Ballinger Publishing Company, 1976.

105. Former Director of Procurement, Ford, Joao Paulo Dias.

106. Karl Schmitt (KS), a German piston firm, came to Brazil in the 1960s and set up operations by buying up CIMA, Mammana Neto's firm. Although it was promised 50 percent of VW's contract, it could not gear up quickly enough to meet demand. As a result, Metal Leve were not hurt by the new entrant (Interview w/). Mammana Neto partially blames Metal Leve's competitive practices for KS's entry. Mammana Neto states that had Metal Leve and CIMA cooperated, there would have been no room for KS.

107. This discussion is based on Womack et. al., op cit. For a more complete account see chapter 6.

Despite variations among companies, it is possible to identify "American" and "Japanese" production systems. The logic of each of the systems has important implications for assembler/supplier relations, more adversarial in the American system and more cooperative in the Japanese. In the American system of mature mass production, the assembler, often without having consulted any supplier, generated the designs and plans for components. An assembler designed virtually all parts of the subsystem, for example all the parts of a seat and the assembler coordinated the

assembly of the seat before it was mounted on the vehicle. The drawings for the various parts were then distributed to suppliers for bids. Suppliers frequently submitted unrealistically low bids to gain the contract with the hope that they would receive various price increases at later dates, based on design changes or inflation.

As the prototype and later production stages progressed, problems emerged. They were detected late, in part because the assembler coordinated the subassembly and therefore missed many problem within the system itself (before it was mounted on the vehicle), for example, incompatibility of parts and materials. When problems emerged, they were considered the responsibility of suppliers and the assemblers gave them little help, either technical or financial. To cover the additional costs of correcting the problems, suppliers asked for price increases. To combat price increases, once the problems were ironed out, assemblers added additional suppliers who did not have to pay for expensive development and repair costs and therefore could submit lower bids. If production volumes fell the supplier was stuck with excess production and if production volumes fell far enough, the assembler may have begun producing in-house what was previously subcontracted, to diminish its idle capacity. Suppliers were stuck with investment and labor costs. Throughout the 1950s and 1960s, this system dominated.

More cooperative relations reigned among Japanese assemblers and suppliers. Suppliers participated in designing the components almost since the inception of the car, and one supplier coordinated a subsystem, i.e. brakes or seats. As a result, there were less problems when the sub-system was mounted on the vehicle in the initial production runs. The participating suppliers were typically the suppliers producing for the assemblers' other models. There were clearer rules for determining prices and sharing profits. The assemblers worked with suppliers to devise realistic prices and a realistic schedule of price reductions over the life of the component, which is a de facto long-term contract for the supplier. The just-in-time delivery system kept a more even production schedule and assemblers tried to give suppliers advance notice of changes. If production volumes were expected to remain low, the assembler helped the supplier look for more business.

In Brazil, the assembler/supplier relations during this period presented a curious mix of the two types described above. Assemblers left little to the initiative of suppliers in terms of product design, in part because that was home country practice and in part because the suppliers needed assistance and instruction. The nurturing relationship between assemblers and suppliers manifested itself not only in excellent communication and accountability of the assembler to the supplier, but also in long-term contracts. Contracts were frequently on a single-source basis. This is remarkably similar to practices by Japanese assemblers.

This hybrid system responded principally to conditions in Brazil, although it was influenced by home country practices.

While the period of cooperative relations between suppliers and assemblers was short-lived, it demonstrates that industry practices in Brazil were not a foregone conclusion or the result of the inevitable march of economic efficiency.

108. The Delft survey of small and medium enterprises found that 57 percent of the medium enterprises produced according to a design supplied by the assembler. Only 45 percent of the small firms did.

About 10 percent of all firms perfected the design. Approximately 10 percent of firms did their own designs (Delft:63).

109. Shapiro cites Mindlin's testimony in the Parliamentary Commission (Shapiro:265).

110. Vivianne Ventura Dias, The Motor Vehicle Industry in Brazil: A Case of Sectoral Planning, MA Thesis, Department of Planning, University of California at Berkeley, 1975: 78. She quoted Sydney Latini in a Lecture printed by the Secretaria Técnica, GEIA, 1958: 10.

111. At this time there were well over 1000 auto parts firms but only about 350 were members of the auto parts syndicate. They represent about 90 percent of the sector's sales (Interviews with Sindipeças officials).

CHAPTER 3

The Failure to Consolidate and the Unraveling of Cooperative Assembler-Supplier Relations

The ringmaster in the circus was trying to make the elephant cry. He told the elephant about his poor mother who had died a painful death. He also told the elephant that his brother was suffering the ravages of a terminal illness. Even the story of the untimely death of his little daughter brought no response from the elephant. The exasperated ringmaster asked for a volunteer from the audience to try to make the elephant cry. One man offered. He descended from the benches, entered the arena, and whispered something into the elephant's ear. Large tears began to roll down the elephant's wrinkled skin.

The incredulous ringmaster asked the man what he had told the elephant to make him cry. The man answered, "I told him that I was a supplier for Ford."¹

The suppliers struggled to consolidate the gains of implantation period (1956-1961) and its horizontal tenets, but failed. During the implantation period, the combination of protectionism, high local content requirements, and common understandings regarding the division of labor of multinational, state-owned, and national firms had forced assemblers to encourage the suppliers' learning and growth. After the implantation period, assembler-supplier relations became more mass-production- and market-like. One activist in Sindipeças described the assembler-supplier relations of the implantation period as the first case of industry-wide single-source supplier arrangements. The post-implantation years were jokingly described by another Sindipeças activist as worthy of making an elephant cry.

The suppliers' arduous efforts to institute the

horizontal vision were gradually eroded in the post-implantation period. When local content levels were reached in the early 1960s, it became clear that the motor vehicle industry was not a passing fancy of utopian state planners and quixotic auto parts suppliers. The assemblers began cultivating new national and foreign suppliers, shortening contract periods, pitting supplier firms against each other to extract lower prices, and increasing levels of vertical integration, thus undermining the existing assembler-supplier relations. Because projects had been implanted and local content levels reached, the state no longer oversaw industry practices as closely as before. The tensions generated by the establishment of the industry eroded the web of understandings and legislation underpinning horizontal practices.

The shift in assembler-supplier relations from cooperative to more mass production-like was a gradual process that responded not only to the end of the implantation period, but in large part to a series of contingent events which opened up opportunities to change the rules governing production practices. The end of the implantation period coincided with economic recession, high inflation, and political uncertainty. While suppliers pleaded for new rules to meet the challenges of the post-implantation period, assemblers wanted to divest themselves of the costs of nurturing suppliers, particularly given the unfavorable economic climate. They began pushing onto suppliers much of

the burden and costs of fluctuating markets by delaying payments and cancelling orders, and using up existing inventories. Furthermore, by pitting supplier firms against each other and vitiating the long-term and single-source contracts, the assemblers managed to shift onto suppliers much of the risk related to new investment.

The final blow to the horizontal practices of the implantation period came with the military coup in 1964. Its macro-economic policies combined with the government-promoted industry shake-out provided assemblers with opportunities to push onto suppliers more of the costs of producing. Over the next years, the government made appeals to the notions of economies of scale in public statements, initially to encourage mergers among assemblers and later to justify credit and export policies. By encouraging a wave of mergers, officials hoped to rationalize the industry and lower costs. Curiously, however, they did not regulate the number of platforms produced after the mergers, thus losing an important opportunity to increase production runs.

The events proved costly for small and medium-sized firms, some of which did not survive. In response to new car launches of the mid- and late-1960s and firm failures, assemblers began increasingly vertically integrating production thus creating new uncertainties for suppliers and further undermining the horizontal practices. The assemblers usually vertically integrated low-technology parts produced by

smaller firms.

Firms that failed were family firms with no heirs who saw little future for themselves. Although Sindipeças understood the particularities of the bankruptcies, it nonetheless, launched public campaigns denouncing the threats of widespread "denationalization" and "verticalization." The corporatist group's efforts were limited to lobbying and ineffectual campaigns in part because the single-source relations between the assemblers and suppliers of the implantation period blocked the latter may have blocked effective collective action.

Suppliers' gains ebbed not only on the domestic market. Protection from imports, a cornerstone of the complex arrangements conditioning the horizontal arrangements was also pierced. New export legislation, which reflected notions of economies of scale, encouraged assembler exports in exchange for easier access to imports and additional incentives. Export promotion policies beginning in the early 1970s rewarded assemblers even greater leverage over suppliers by permitting imports of auto parts. As in the pre- and implantation periods, struggles over industry practices were articulated around contrasting notions of economies of scale.

In many respects, during the 1970s, organizational practices resembled mass production: assembler-supplier relations were market-like; firms were vertically integrated and stockpiled parts to increase production runs; and

relations between suppliers and assemblers were conflictual. However, although platform runs grew from about 10-15,000 units a year to over 40,000 but as high as 90,000 units, and the industry was producing over one million vehicles per year by 1979, suppliers continued to opt for more general purpose machinery to attend the diversity of platforms for both cars and trucks.

The first section of the chapter describes how within the success of the implantation period lay the seeds of deteriorating horizontal arrangements. The second section discusses the decisive impact of political uncertainty and economic recession on the shaky assembler-supplier relations. The third section discusses the point of no-return for the horizontal practices: the military coup which with its large-scale conceptions of efficiency encouraged a profound restructuring of the industry. The fourth section discusses the erosion of protectionism, the cornerstone of the suppliers' horizontal practices, as they existed in the implantation period.

I. Weakening the Foundations of the Horizontal Practices

By 1961, the Brazilian motor vehicle industry had proved that it was here to stay. Over 133,000 cars and trucks rolled off the assembly line. There were well over 1,000 suppliers struggling to establish themselves.² Over half of them were small firms (less than 110 workers), and about one-fifth were

medium-sized (111-550 workers).³

The horizontal arrangements of the implantation period -- protected domestic markets; common understandings as to the respective domains of multinational, state, and national capital; high local content levels; and state tutelage -- forced the assemblers to nurture the suppliers so they could rapidly gear up production and meet the stringent requirements. Assemblers offered suppliers long-term (five to ten-year) and frequently single-source contracts, introduced them to foreign sources of technology; imported and lent them machinery; and gave technical assistance in setting up production and quality control facilities. The suppliers won the battles setting up the horizontal arrangements,⁴ but they had to tame the threats associated with success and consolidation.

I.A. The Demise of State Tutelage

The state was central to the creating horizontal arrangements. It protected suppliers and also created conditions that forced assemblers to care for suppliers. When GEIA officials granted approval for assembler product launches in 1956 and 1957, it was understood that they included long-term verbal agreements among assemblers and suppliers. Therefore, without directly matching assemblers and suppliers, GEIA oversaw assembler-supplier relations. The relationships between suppliers and assemblers were also reinforced by foreign exchange quotas for importing parts and raw material

that were not yet produced domestically. The combination of severely repressed demand and foreign exchange quotas essentially created a system of rationed market shares.⁵ Assemblers could not produce cars beyond the number of imported parts, although if they accelerated the nationalization schedule in one heavy part (local content was measured by weight) they had more availability of foreign exchange (Guimarães and Gadelha:9).

The end of the implantation period signified not only that the industry was here to stay, but that many of the bases sustaining the horizontal practices were weakened or destroyed: local content levels had been reached, foreign exchange constraints eased, state tutelage had dwindled. Once the projects were implanted, they no longer needed approval from GEIA. Moreover, once local content levels were reached state tutelage was not as vigorous. Quotas had also expired and access to foreign exchange was not as constraining. Assemblers could aim for larger market shares and in the process it is possible that suppliers also began competing among themselves to gain access to new and larger orders from assemblers.

I.B. Assembler/Supplier Relations and Obstacles to Collective Action

The specter of new entrants and changing rules also threatened the horizontal arrangements. Until 1961, assemblers needed to convince and entice suppliers to invest

and produce to meet the high local content requirements. They offered them guaranteed purchase agreements to help defray the risks of investments and producing. Towards the end of the implantation period, and afterward, assemblers began pressuring suppliers to increase quality, probably without offering as many guarantees as they did at the beginning of the implantation period.⁶ In some cases, this may have required more investments in better machinery and laboratories. It is possible that some suppliers were reluctant to continue investing in quality control and other investments without the contract guarantees of assemblers.

Although the local content requirements were not always met (on average firms reached 78 percent local content although the goal was 92 percent)⁷ the accomplishments of the assemblers, and even more spectacular, those of the suppliers, attracted new firms who sought entry and threatened the existing assembler-supplier relations. In 1951 when Sindipeças was created, there were 106 auto parts firms. In 1956 when the implantation period began, there were 700 firms. In 1959, half-way through the implantation period, there were 1,200 firms. In 1964, there were 1,600 auto parts firm.⁸ Close to half of these firms confined themselves to the less demanding replacement markets, rather than supply to the more demanding assemblers. Nonetheless, the degree of competition among suppliers had heated up.

Another peril to the horizontal arrangements came from

the specter of new assembler entrants. In 1956, Ford, in a decision that both disappointed and irritated GEIA officials, had decided to restrict its production to trucks. By 1958 Ford decided that it had erred and that it would like to begin producing cars.⁹ Shapiro reported that it was concerned about preserving dealer loyalty and losing ground to other competitors. It petitioned GEIA for incentives and permission to begin producing a passenger car that shared an engine and other components with its trucks, but Ford wanted to produce it at lower than legislated local content levels. Although permission was granted, GEIA refused to grant Ford foreign exchange and import incentives because it had submitted its proposal well after the 1957 deadline. Confronted with GEIA's refusal, Ford presented new and more attractive proposals where it successively agreed to take on more foreign exchange expenditures and granted other concessions.

Ford's request confronted GEIA with a dilemma and divided its members, according to Shapiro. When the industry was being planned, industry supporters envisioned a thriving industry around Ford and GM, the premiere international assemblers. Although it is not clear why, GEIA ultimately chose to deny Ford access to benefits. One reason may be that GEIA tried to head off similar requests from other assemblers. Perhaps GEIA followed Admiral Meira's suggestion that it should hold out and bargain for more concessions, for example Ford should incur a greater percentage of foreign exchange

risk, procure machinery locally, and add local equity participation. It is likely, furthermore, that GEIA members and even President Kubitschek took a certain delight in denying Ford its request considering that it had refused to produce cars four years earlier based on the inadequate conditions in Brazil.¹⁰

Yet Ford persisted and garnered support for its cause. It won the backing of Sindipeças, but it is probable, that Sindipeças itself was split.¹¹ The president and many of its officers had close ties with Ford. Other officers, such as Gattas, who propounded a more nationalist line probably opposed Ford's proposal and its potentially destabilizing effect on existing assembler-supplier relations. Although its subsequent requests were again denied, Ford's efforts to move into car production were a warning signal to suppliers that if the rules were changed regarding market sectors, so could those regarding the entry of foreign suppliers. The other assemblers such as Willys, Simca, VW, and Mercedes Benz may well have been worried by Ford's petition, but they ultimately expected it to win (Shapiro:Engines:153,ffn 90). In 1964 Ford ultimately gained permission to produce passenger cars when the pro-foreign capital military government came to power.

The success of the industry bred new tensions that weakened the foundations of the horizontal practices. It is difficult to differentiate the impact of the end of the implantation period from the subsequent recession on the

demise of cooperative assembler-supplier relations. The economic and political uncertainty that coincided with the end of the implantation as well as the nature of the horizontal assembler/supplier relations inhibiting collective action among suppliers accelerated the deterioration which may not have advanced under conditions of high or constant levels of growth.

II. Assemblers' Maneuvers: Using the Recession and Political Uncertainty to Impose More Mass-Production-Like Practices

The implantation period ended as economic and political uncertainty were on the rise. In 1961, the charismatic Janio Quadros was elected with high hopes of curbing the excesses of corruption and inflation of the Kubitschek era. With his ascension, suppliers lost their most prestigious and committed advocate, President Kubitschek.

Seven months after he took office, in a ploy to enhance his power in the fractious political climate, Quadros tendered his resignation. He miscalculated and his uncontested resignation, after some political shuffling and a near military coup, brought to the presidency the pro-labor vice-president. Goulart, who had served as Vargas' Minister of Labor, was widely mistrusted by the anti-Vargas and conservative sectors of the military and civil society. Although the legalist solution prevailed and Goulart was installed as president, his tenure was ensured only because

anti- and pro-Goulart forces forged a compromise to change the then existing presidential system to a parliamentary one as a means of diluting Goulart's power. Goulart was able to do little. Even when the system reverted to a presidential one, his economic plans and efforts at reform were continually stalled.¹²

The suppliers lost not only their powerful advocate, but much of the prestige and networks that they had painstakingly cultivated. In a bureaucratic reshuffling in 1962, GEIA, which had overseen the implantation of the motor vehicle industry and developed a network of contacts throughout the bureaucracy, lost its direct link to the Executive. Rather than reporting directly to the President of the Republic, it was now under the aegis of the Ministry of Industry and Commerce. The reshuffling diluted GEIA's decision making power and prestige.¹³

Economic policies vis-a-vis business and the motor vehicle industry became increasingly ad-hoc, although the industry continued to receive some special treatment from the government. Access to credit was restricted by the government in an effort to slow inflation.¹⁴ Since long term loans were virtually unavailable and the stock market in Brazil was not well developed,¹⁵ national firms who had no parent company to inject periodic infusions of working capital were particularly vulnerable.

Yet Goulart and his advisors recognized the hardships

facing national firms including the auto parts sector. One automobile executive that lobbied Finance Minister San Thiago Dantas looked kindly upon national firms or foreign firms with national stockholders. Dantas told the foreign firms that they should ask their parent firms for help.¹⁶ The sympathetic attitude toward national capital was also extended to the auto parts firms (Gattas,358). In addition, the government initiated special fiscal and credit programs, including a reduction of sales taxes on consumer durables.

Despite the palliatives toward national firms, the economy fared poorly and the motor vehicle industry even worse. From 1962 to 1965, annual growth in the economy at large fell from over 5 percent to less than 3 percent (Baer and Kerstenetsky:107). Annual production levels in the motor vehicle industry from 1962 to 1963 fell approximately 10 percent (from 191,000 to 174,000 units) and barely recovered in the following years. Excess capacity in the assemblers from 1961 to 1964 was approximately 35 percent in car producers and about 65 percent in truck producers (Shapiro:288). VW, whose principal product (the Beetle) was produced at high volumes, was an exception. It had full capacity utilization and was profitable throughout the period.¹⁷ Other car producers who produced more expensive medium-sized and large cars had significant levels of excess capacity.

During the implantation period, the assemblers had been

the mentors and protectors of the auto parts firms. In the post-implantation period, plagued with high levels of idle capacity and losses, the assemblers tried to shed themselves of this role. The problem was compounded because there were more suppliers. The assemblers therefore pushed more of the burden of market downturns onto suppliers, by playing suppliers against each. Suppliers themselves, were also undercutting each other. The Delft survey reported that 36 percent of the small and medium firm used lower prices to gain market share (Delft:194). These suppliers had virtually no cartel or other market organizing arrangements which the survey attributed to the individualist attitudes of the firm owners (Delft:174).

Anecdotal evidence suggests that other firms used novel and dramatic means of undermining their competitors. In some cases, firms tried to establish their position as market leaders by buying out or using other means to eliminate competitors. For example, one shock absorber firm secretly purchased its competitor, to avoid detection by the assemblers. Another example, described in the last chapter, was the exchange between the piston manufacturers. One tried to subvert the other by taking out patents on public domain designs and underpricing it. The injured firm countered by contacting the purchaser to redistribute the low-margin products. Suppliers, to little avail, tried to use Sindipeças to lobby government officials and keep out new entrants. ¹⁸

Beyond these efforts there was no systematic campaign, and Sindipeças efforts were not always successful.

The suppliers begged for rules to "discipline the consolidation and the expansion of the industry" (Gattas:1981:375-6). They wanted to maintain organized domestic markets and to protect themselves from potential foreign competition in the form of the incipient Latin American Common Market (ALALC). In 1963 GEIA, with the support of Sindipeças and Anfavea, presented a report to President Quadros making specific proposals. The report appealed for:

- 1) securing the nationalization [understood as national production by national firms] of vehicles, which was the basis of the implantation of the industry;
- 2) promoting the progressive nationalization of equipment by creating Brazilian models;
- 3) restricting imports of parts to those that were very difficult to manufacture locally;
- 4) avoiding the proliferation of new firms which would generate idle capacity and increase inflation. Rather existing firms should be supported so that they may increase their production lines;
- 5) keeping to a minimum the negative effects of ALALC on efforts already achieved in Brazil (Gattas:376).

The report pleaded for measures to solidify the organized markets of the implantation period. It reflected a nationalist current among many of these suppliers who sought to slow international technology transfer and to create room for Brazilian technology. The nationalist Gattas was now president of Sindipeças. He and Mammana Neto (owners of SMEs)

and probably some the assemblers with national stockholders saw, in a more autarkic policy, nonetheless justified by creating economies of scale, a means to solidify markets (Interview with Mammana Neto). Generally however, even the less nationalist suppliers believed that excessive model diversification was a threat because it was essentially an invitation to foreign suppliers (Gattas:376). In 1964 and 1965, versions of these demands were presented by GEIA's successor yet they were continually ignored (Gattas:389).

Sindipeças also took matters into its own hands to meet the challenge of the assemblers' plans for the Latin American Common Market (ALALC). The syndicate organized sectoral groups composed of suppliers producing similar products. They devised among themselves proposals for "complementing and integrating in a non-violent rhythm" (Gattas:364-367), in other words a formula for eliminating the threats related to common market integration. Assemblers and suppliers both within countries and across borders disagreed about the shape and content of the common market, essentially condemning the project. The activism of the Brazilian suppliers was one of the reasons behind the failure of the common market, at least in motor vehicle trade.¹⁹ In the late 1960 and early 1970s these groups became nuclei around which collective action was organized.²⁰

Although state support for the industry was on the wane, there were countervailing tendencies. The industry downturn

reflected not only political uncertainty and recession, but also the low incomes of the majority of the population and therefore, small markets (Guimarães:139).²¹ Yet new marketing schemes were spontaneously emerging and they eventually became important means of stabilizing demand for vehicles. In 1961, a group of employees at the Bank of Brazil decided to create cooperatives to facilitate automobile purchases by employees. Variations on these consórcios evolved and proliferated. Groups of buyers made monthly payments toward car purchases and received at least one car per month. They drew lots to see who took the cars that month and even those who received them continued to make monthly payments until all the cars had been paid for and delivered.²²

The consórcios were so successful that some assemblers such as Willys and in the 1970s, Chrysler and VW, created their own. One estimate suggests that in 1966/67, there were 760,000 participants which represented 5.5 times the annual production of cars.²³ In 1968, the beginning of a six year period of economy-wide growth, 70 percent of the production was sold through consorcios.²⁴ The consorcios became important means for producers to stabilize demand and insulate assemblers, and therefore, suppliers from the vicissitudes of the market fluctuations and the costs associated with launching new models.²⁵

The limited state support for the industry and the

emerging consórcios were insufficient to offset the economic and political confusion and the historically high levels of inflation, reaching an annualized rate of 100 percent in 1964. Although eventually vindicated, the motor vehicle industry was increasingly targeted as the principal villain fueling inflation (Gattas:357). The accusations and innuendos were so serious that in 1967 there was a parliamentary investigation to determine, among other things, the reasons behind the high prices of vehicles. The accusations fueled the assemblers efforts to push a greater share of the cost and uncertainty of producing vehicles onto suppliers. Public accusations of poor quality and high prices levelled against the auto parts firms were part of this battle.

Prices in the Brazilian motor vehicle industry were approximately two times those of the United States or other industrialized countries.²⁶ The high costs were consistently attributed to taxes, as well as the poor quality and lack of scale in parts firms. Taxes were certainly part of the story. Bergsman estimated that indirect taxes (value added taxes collected at the point of sale of every item including intermediate goods for production) accounted for an average of approximately 35 to 50 percent of the ex-factory cost, the cost of the vehicle when it leaves the factory (Bergsman:128). Shapiro's estimates of approximately 20 percent for cars and 10 percent for trucks are somewhat lower and probably more reliable.²⁷

The poor quality and lack of scale of the auto parts producers were also frequently cited as a leading cause of high prices. The assemblers invoked these arguments when they were accused of charging exorbitant prices (Parliamentary Commission). Studies of the industry concurred. Baranson showed "that the major element contributing to the high costs of vehicle manufacture in Latin America is local procurement of materials and parts, which are either protected or carry high import duties" (Baranson:1969:39). Based on 1967 data from an American vehicle manufacturer and taking light trucks as a proxy for passenger car production, he calculated that locally procured parts and components were responsible for between 79 and 83 percent of higher costs when compared to the United States (Baranson:1969:36-39).²⁸ Almeida came to similar conclusions and blamed the high levels of local content. "The speed with nationalization occurred explains a significant portion of the high costs of national vehicles" (Almeida:44-45).

Assemblers, with both their profit margins and reputations under attack, saw in these confused times an opportunity to continue eroding the horizontal rules of production and to shed more of the burdens of the implantation period. Beginning in the mid-1960s, possibly as early as 1963, by implementing some of the practices of their parent companies, they strove to push onto suppliers the burden of fluctuating markets in an effort to alleviate their cash-flow

problems and to extract lower prices. The assemblers delayed payments to their suppliers. They returned parts that had been ordered, often alleging bogus quality defects. Furthermore, the assemblers used their inventories to save on cash outflows. As a result, they cancelled orders for which suppliers had ordered raw materials and hired workers. A few months later, when the market improved, the assemblers would order not only to meet the requirements of assembling vehicles, but also to replenish inventories. Suppliers were stuck with the costly burdens of firing, rehiring, and retraining. The new practices represented a sea-change from the implantation years, when assemblers had frequently helped small firms by financing the acquisition of machinery with advance payments and guaranteed contracts (Interviews).²⁹

As the assemblers began pushing the burden of cyclical adjustment onto suppliers, they also sought better quality and lower prices by diversifying their supplier base, another change from the predominantly single-source arrangements of the implantation period. One supplier recalled that this change occurred as early as 1965.³⁰ This was probably part of Ford's and GM's attempts to prepare themselves for producing passenger cars. The president of GM of Brazil explained to the Parliamentary Commission investigating the price of vehicles: "...For each item that we buy we try to establish at least two and when possible three suppliers for each part, in the hope that we create competitive conditions

to reduce costs."³¹ One supplier stated that the OEMs cultivated second sources by offering new suppliers 20 percent more than they were paying the original supplier and then turning around and threatening the latter to lower prices or lose market share to the new supplier. After about 1965, then, a new element in assembler-supplier relations emerged as assemblers deliberately and systematically used price competition among suppliers. The assemblers threatened suppliers either by cultivating new suppliers and/or vertically integrating production.

Yet the assemblers' allegations surrounding the high cost of procured components was also a tactical ploy to divest themselves of the burden of nurturing suppliers. The suppliers were making important inroads and were not the only factor behind high prices. Bergsman reported a small American assembler estimated that the higher prices of procured components was responsible for about only a 20 percent increase in the cost of the vehicle. He stated that for a large assembler, the differences would probably be smaller. Furthermore as early as the 1960s, there were pockets of competitiveness in the supplier sector. Bergsman stated that one large Brazilian supplier indicated that the average cost of components made in Brazil was 15 percent less than the export price of the same components in the home country (if the free exchange rate is used) (Bergsman:1970:129). Shapiro stated that components as a percentage of costs of producing

vehicles fell from about 44 percent in 1962 to about 34 percent in 1968 (Shapiro:291).³²

Even Baranson, who attributed over two-thirds of the higher costs to suppliers, qualified his remarks. Among developing countries, he considered Brazil the best source area for the price and quality of purchased parts because "Brazilian automobile manufacturers have had a longer period to develop suppliers, improve quality, and reduce costs (Baranson:1969:39). Although the assemblers were paying higher prices compared to imports, in exchange, they had suppliers who were close at hand and capable of addressing problems that arose and adapting foreign models that were built in Brazil. This issue was not trivial. When model many adaptations had to be made including using local materials, for example, metals and foam for seats. Often mistakes had to had to be corrected. Executives from American assemblers recognized the superiority of the Brazilian supplier sector over their Mexican and Korean counterparts, even today (Interview with Executive from Latin American division, GM, Miami).

The final reason behind high vehicle prices was diseconomies of scale stemming from too many producers and small markets (Baranson:69). Production volumes were low by international standards. By 1967, before the industry shake-out, with the exception of VW's Beetle, no platform surpassed 15,000 units (The Beetle reached almost 95,000 units).

Furthermore, idle capacity led to high prices as the fixed costs were spread among a small number of products.³³ Yet at the same time that Baranson pointed to the lack of economies of scale, he recognized that alternative production methods render the concept nebulous.³⁴ Assemblers, at production levels as low as 20,000 units, suffered little from diseconomies of scale:

Given the fact that the assembly line machines are more general purpose than specific, it is possible to handle different models on the same assembly line, reducing the scale economies of enlarged production once a sufficient production volume [sic] is reached. The economies of scale in assembly operations are reached at 60,000 units and probably exhausted at 100,000 units--not necessarily all of the same model. Given the lower labor costs in Brazil and Mexico, one U.S. affiliate has reported that, with an annual volume of only 20,000 vehicles, assembly costs there exceeded U.S. levels by only 6 per cent. This was accomplished by substituting labor and general purpose tools for some of the specialized tools (such as welding jigs) used in the United States. Such substitutions reduce the significance of economies of scale in assembly (emphasis mine).³⁵

It is likely that suppliers had lower levels of idle capacity than did assemblers. Suppliers generally produced for a few assemblers. Given the diversity of producers and production philosophies (there were both car and truck producers from Europe and the United States) suppliers tended to use general purpose machinery.³⁶ Suppliers could diversify their markets, produce for the after-market, and eventually also diversify production to completely different segments, for example, kitchen appliances.

Certainly, suppliers needed to improve on both cost and quality. Their contribution to the high price of vehicles in

Brazil cannot be ascertained with precision. It is likely, however, that the assemblers' complaints were a means of justifying their practices of shifting onto suppliers the burden of market fluctuations.

The adoption of more market-oriented relations between assemblers and suppliers was not a foregone conclusion but rather one of many responses to deteriorating economic conditions in Brazil. With steady growth and no recession or inflation, it is unlikely that practices would have changed so dramatically. Furthermore, there is no necessary reason to believe that the parent company practices regarding assembler-supplier relations would have necessarily been replicated in Brazil. Subsidiaries had to continually adapt or forego parent company practices to adapt to local conditions. For example, after 1967, Ford began producing a derivative of a Simca model. Rather, it is likely that as the economic recession worsened, the assemblers looked for responses and decided that parent company practices of pushing the burden of market fluctuations onto suppliers were one solution. If economic growth had not soured, the suppliers' visions of cooperative relations with their assemblers clients could probably have been achieved.

II.A. *The Final Blow: The Military Regime and New Interpretations of Economies of Scale*

The final blow to hopes of state tutelage and the assembler-supplier relations that existed during the

implantation period came with the military coup, in which a pro-foreign capital interpretation of economies of scale decisively won out over the horizontal (and the nationalist variant) espoused by auto parts firms. Inflation fighting measures fell disproportionately on national firms, among them auto parts firms. Furthermore, the understanding that new entrants would not enter the Brazilian market was clearly ignored by the government. Finally, the assemblers gained leverage over their suppliers as the result of export incentives that sought to create greater economies of scale for firms in Brazil and in the process permitted greater imports of parts.

Although frequently portrayed as inevitable -- the political image of requirements of capital accumulation or simply the dictates of economic efficiency³⁷ -- the coup and its subsequent policies were resolved through political struggles with uncertain outcomes. Revisionist discussions of the 1964 coup suggest either that it could have been avoided, and its policies were, at best, not predetermined.

By identifying the different points during the Goulart administration when there were possibilities for reformist actions, Cheibub suggests that Goulart's downfall can be attributed to inept political strategies that alienated both labor and moderate reformers, his natural allies.³⁸ In the same manner that the coup was not inevitable, Skidmore suggested, neither were its policies:

The policy-making chaos was so great and confidence so low that the crisis could only be met by a government armed with extraordinary powers. Both Right and Left were increasingly aware that the economic challenge was too great for any government that could have been elected in the deeply divided political atmosphere of early 1964. From this political deadlock the Right emerged victorious in the struggle to establish authoritarian rule."³⁹

With the coup, the Janus-like apparition of economies of scale reared its head, as it had in the pre-implantation and implantation periods. In the early 1950s, assemblers had invoked the lack of economies of scale to bolster their case against producing in Brazil. Suppliers appropriated their arguments to justify protectionism. If given the chance, suppliers alleged, they would achieve economies of scale and reduce costs.

The 1964 coup brought to the fore policy makers whose vision of economies of scale wrought disruption on the already unraveling relations among firms. The post-1964 economic policy was aimed at correcting prices, slowing down inflation, and restoring confidence to attract foreign investment.⁴⁰ Finally, the government aimed to modernize its administrative institutions and state-owned enterprises.⁴¹ The repercussions of this multi-faceted program reverberated throughout the economy, including the motor vehicle industry.

The administrative reform led, in 1964, to the creation of a new CDI (*Commission on Industrial Development*, previously Council). Executive groups such as GEIA were reorganized into sectoral groups embracing a larger number of industries.⁴²

Gattas complained that the new CDI unconditionally conceded incentives to both assemblers and suppliers, despite the high levels of idle capacity (often reaching 50 percent). Furthermore, the reshuffling of personnel made even more remote the collegial cooperation between the private sector and the government which typified GEIA and which the industry pioneers promoted as a model for industrial policy (Gattas:411).

The economic stabilization program which began in 1964, based on the prevailing diagnosis of excess demand, led to restrictive credit policies. Beginning in late 1965, firms who could not get access to cash to ride out the recession or found themselves paying high real interest rates which previously had been negative (because of inflation), were driven to bankruptcy or selling their firms, at times to MNCs.⁴³ Gattas reported that bankruptcies and firm restructurings (similar to Chapter 11 in the United States) of all firms tripled or quadrupled from the 1964 to 1970 period as compared to 1960 to 1963 period).⁴⁴ It is not clear how many auto parts suppliers failed, but small domestic firms were hit harder than MNC supplier firms who access to credit and working capital from their parent.

Although the credit restrictions created difficulties for firms in the motor vehicle industry, there were mitigating circumstances. In an effort to buffer the impact of the recession on the motor vehicle industry the National Savings

Bank (Caixa Economic Federal) in 1965 financed the sale of compact cars with no options, the most well-known being the VW beetle ("Pe de boi" -- the cattle's foot).⁴⁵ Consumer taxes were also significantly reduced.⁴⁶ These measures led to a six-fold increase in sales over the next months although the incentives did not help many auto parts firms who supplied accessories or parts for the upscale models.⁴⁷ Finally, as mentioned above, consórcios helped maintain some levels of sales.⁴⁸

Nonetheless, as growth continued to be unpredictable throughout the mid-1960s, the assemblers, consistent with their home country practices, continued to push the burden of cyclical adjustment onto suppliers. From 1963 to 1965, growth was low and erratic for industry standards. Production increased 5 percent in 1963 and 1 percent in 1965, from 174,000 to 185,000 units. From 1965 to 1966, production jumped 22 percent, from 185,000 to 225,000 units, in large part a reflection of the government's lenient measures toward the industry. From 1966 to 1967 production again stagnated and grew less than 1,000 units.

Suppliers eloquently described the problems that faced them and fought for assembler-supplier relations that protected them and fostered growth. In his 1968 inauguration speech as President of Sindipeças, Jose Mindlin of Metal Leve, pressed the assemblers to recognize their mutual fate with auto parts firms, particularly with regards to the

difficulties related to verticalization, market fluctuations, and excessively harsh price negotiations:

...the motor vehicle industry...had a beneficent and multiplier effect on the auto parts industry, leading to the emergence of new factories, allowing for the introduction of new technology and the creation of millions of new jobs. Between the two sectors, a fruitful liaison and an almost total interdependence emerged, which brings in its wake, numerous problems, whose solution is only possible through permanent, reciprocal comprehension.

The principal problems which the sector faces are: the troubles of verticalization of the terminal sector, the need to perfect the programming of orders to avoid abrupt fluctuations in production and price increases, fair prices that do not allow the decapitalization and denationalization of the sector, negotiations in ALALC [the Latin American Common Market] for the development of a regional market, and finally, the need to expand and perfect dialogue with the motor vehicle area -- assemblers and suppliers -- and these with the Public Power (cited in Gattas:435-36).

The vice-president of Sindipeças, Rossi, explained how vertical integration hurt suppliers not only financially, but also their reputations as responsible and competent firms:

The greatest problem for auto parts firms is the lack of regular orders by the assemblers. Any fall in market demand for cars led to sharp cuts in orders for parts, cuts that were larger, percentage-wise, than the fall in demand. While market demand was low, the assemblers would use their stocks they had in the factory. As soon as the market normalized, the assemblers would immediately ask the auto parts firms to produce for production as well as replacement of stock. This generated high costs for the supplier firms. During market downturns the auto parts firms had to play idle employees and idle machines. During the upturns, the auto parts firms had to pay overtime which lowered productivity....The result of all this is a false image that the auto parts sector is not accompanying the development of the automobile industry.⁴⁹

Regarding the issue of new entrants and particularly foreign firms, Rossi added that it inhibited economies of

scale in the supplier sector and led to inflation and a drain on reserves of foreign exchange:

...another thing national industry cannot accept is that a foreign firm compete in a sector where Brazilian industry demonstrated that it is capable of meeting quality, quantity and price.

The establishment in the country of a factory with foreign capital in these conditions...would divide the market, therefore, eliminating economies of scale, with a consequent elevation of costs, in addition to sucking our reserves [of foreign exchange] gained at great effort.

It is important to underline not only that verticalization brings economic types of problems to the national firm, but also the implantation of foreign industry in sectors that are well supplied.⁵⁰

Suppliers and some assemblers sought state support in addressing these problems.⁵¹ In the 1967 Parliamentary Commission Inquiry on the Price of Vehicles, suppliers argued that assemblers' practices generated uncertainty and higher prices and therefore required the auto parts firms to charge higher prices. Normally assemblers placed an order for three months and a provisional order for the following three months. Suppliers complained that assemblers often drastically changed their provisional orders, and worse, they also changed the fixed, shorter-term orders.

One solution informally discussed between some Sindipeças and Anfavea officials was that the assemblers would place their orders for one year and guarantee that 70 percent of them would remain intact. The suppliers would be responsible for stockpiling the remaining 30 percent in the event of a downturn. If production fell below 70 percent, however, then

the material would be put in general warehouse and the related costs would be paid by the government, either by the Bank of Brazil or another official entity. The firms pointed to the social benefits from eliminating peaks and troughs in employment.⁵² The idea had was never officially proposed to the government, perhaps because some suppliers thought it was unrealistic.⁵³

Since contacts with state officials were proving ineffective, suppliers stepped up their public campaigns. The accusations of "verticalization" and "denationalization" by Sindipeças and supplier firms, however, were more a means to pressure the state to regulate assembler-suppliers relations than an exacting description of events. "Verticalization" was portrayed exclusively in terms of a struggle between national supplier firms vs. multinational assemblers. It was defined as vertical integration by the multinational assemblers, although larger suppliers were simultaneously vertically integrating operations that they had previously subcontracted to smaller suppliers. The indictment of "denationalization," also took on novel connotations. It was broadly defined as either the outright purchase of national firms by foreign firms, the establishment of a new foreign firm in a segment where Brazilian firms already produced, or imports by assemblers. As we shall see in later evidence, these public campaigns and statements by Sindipeças were more warning signals and tactics to gain state support than an accurate

description of events.

While the suppliers sought to salvage their horizontal conception of the industry, Finance Minister Roberto Campos⁵⁴ pursued another. As early as 1964, he exhorted firms, in the name of efficiency, to consider mergers to lower unit costs of vehicles.⁵⁵ This was consistent with Campos' view of Brazilian capitalists: fixated on small volumes and high prices, and averse to competition.⁵⁶

In 1967, the awaited industry shake-out began and some assemblers entered new markets, bringing their home country suppliers with them. The number of assemblers dropped from eleven to eight and the assemblers with a high percent of national capital were absorbed by multinational subsidiaries. Ford was finally granted permission to produce passenger cars and acquired Willys to jumpstart its operations. Simca was bought by Chrysler in France and therefore Chrysler entered the Brazilian market. VW's purchase of DKW-Vemag reflected the tightening of credit in Brazil, the government's pro-merger stance, and VW's acquisitions in Germany.⁵⁷ GM, like Ford, also decided to begin producing cars. The state-owned firm FNM was sold to Alfa Romeo which was acquired by Fiat, although it was not clear that Fiat would eventually begin producing cars, which it did in 1976. The diversity of producers, nationalities, and products persisted despite the attempts to rationalize the industry.⁵⁸ Although the number of assemblers dropped, the number of producers per

segment remained the same because assemblers produced a wider gamut of products. The number of car producers remained at four (until 1976) and all of the companies that produced cars also produced trucks. Yet despite discourse on economies of scale, the state once again neglected to take advantage of an opportunity presented by the industry reorganization to achieve economies of scale by diminishing the number of platforms per producer.⁵⁹

By defining product diversity and scale based on platforms, I have chosen the broadest definition and therefore represented the scale achieved by Brazilian producers in its most favorable light.⁶⁰ For example, it includes in one category, two cars that had very different bodies but shared the same platform. Alternatively, the platform may have supported a luxury and an economy model which shared the same bodies, even though the engines, transmissions, and other major parts were different. These variations were also included in the same category.

There is also a technical rationale for measuring scale by platform. The platform is the most expensive and complicated part of designing a new vehicle. If a new vehicle can be based on an old platform, an assembler saved countless hours of design and fine tuning. One engineer who had been at Willy's and later at Ford, stated that building a new model around an existing platform was always foremost in the engineers' mind.⁶¹ This is likely to have been true for the

other assemblers.

It is particularly appropriate to use the platform as a measure of production volumes in Brazil. Diminishing the cost of new tooling has always been a major preoccupation of the assemblers in Brazil. Therefore, frequently a new model was built on an existing platform. Not only was the platform the same, but the assembler would use the front of an old model and make a new rear as a means to further save tooling costs.

As seen in Table 3.1, before the wave of mergers, there were six car producers.⁶² With the exception of Willys, each produced one platform, although each platform frequently supported a range of models. Willys produced two platforms. The total number of platforms was eight and average volumes were low. Only VW surpassed 100,000 units per platform. The other producers, FNM, GM with the Veraneio, Simca, Vemag, and Willys rarely surpassed 15,000 units per year. I do not have the information on platforms for truck producers, and certainly many models were built on the same platform. FNM produced heavy trucks, but volumes were similarly low. Ford and GM produced both small and heavy trucks. International Harvester produced medium and heavy trucks. Mercedes medium and heavy. Scania produced heavy trucks and Toyota light trucks. Volumes in each category rarely reached even 10,000 units.

After the wave of mergers, the number of assemblers dropped from eleven to eight. Assemblers were less

specialized and frequently produced both cars and trucks. After the shake out, the number of car producers remained the same. The number of platforms, three, four, and five years after the shake out was six (down from eight). By year six, the number of platforms had attained its pre-merger levels, hardly a major rationalization. Average production per platform did increase significantly. By 1970, VW reached over 200,000 units on the Beetle platform. Through the 1980s, Ford surpassed average volumes of 85,000 units with the Corcel and GM over 90,000 its popular Chevette and over 50,000 on its Opala.

After 1973 there was a round of new platform and model introductions, some of which were based on American and European models, but others had undergone so many iterations in Brazil that they bore little resemblance to the original models. For example, in the shake-out, Ford ended up with a derivative of a Simca model which it transformed into its best selling Corcel. In 1976 a new assembler, Fiat, entered the passenger car segment. Fiat embarked upon a VW-like strategy of producing a small platform with a low-end, high volume model and some variations as well as a range of trucks. The truck market also changed as Volvo entered the market, also in 1976.

It would appear that GEIA, which in 1956 predicted an eventual shake-out, had been vindicated in its policy of approving seventeen assembler projects.⁶³ The shake-out, however, had little to do with GEIA's vision of efficiency scale, but rather the recession and the assemblers' attempts to eliminate competitors (Shapiro:230;Guimaraães;Ventura Dias:52). Shapiro observed:

the most efficient of the original competitors were not necessarily the ones to survive. The American firms became important players only once other firms tested the market. Once Brazilian growth potential was assured, they committed themselves to car production" (Shapiro:225).

Furthermore, the wave of mergers did not per se lead to a rationalization of the industry. There was no major rationalization of platforms. Although higher volume

production eventually materialized, it can be attributed to the lenient credit policies of the post-67 government rather than the industry shake-out inspired by notions of economies of scale.

The wave of mergers, however, did destabilize the assembler-supplier relations of the implantation period. As Gattas recalled, hundreds of these firms were not given sufficient warning or financial support to reconvert their factories (Gattas:425). These suppliers lost contacts and allies in their customers' purchasing departments which had taken many years to cultivate. For example, Gattas owned a firm that supplied almost exclusively to Willys (most suppliers diversified their customer base). It is not clear why he did not begin supplying for Ford. Perhaps his nationalist rhetoric troubled the assembler. Gattas' firm almost went bankrupt but managed to squeak by retreating to the replacement market. Other firms were not so lucky and folded or sold their operations. If the suppliers could get a foot in the new door, they had to rebuild alliances and learn new practices. Assemblers also took the opportunity of the market restructuring to generate more competition among suppliers and, by threatening to drop them, pressure them to lower costs.

The suppliers strident complaints about "verticalization" and "denationalization" became more acute. Sindipeças continued to demand for its members (or at least some of

them), enforcement of long-term, stable contracts, including an end to the assemblers' practices of shifting the burden of adjustment in market demand onto suppliers. Suppliers also demanded a loosening of new credit and a prohibition on new MNC entrants. As the Sindipeças campaign progressed, it successfully broadened the definitions of "verticalization" and "denationalization" to include any type of encroachment upon suppliers' markets by assemblers, whether it was production of parts, purchases of supplier firms, imports, new entrant suppliers, or production of parts by supplier firms owned by the assemblers, for example, Philco (owned by Ford).⁶⁴

The campaign glossed over divisions in the Brazilian supplier industry. Fluctuating orders by the OEMs affected some firms more than others, but did affect the firms of elected Sindipeças officials. The fight against newcomers also affected larger firms more than smaller firms. MNCs usually sought government approval to set up production and typically sought to enter high value-added sectors which, as a general rule, were inhabited by larger firms. For example, despite the attention Sindipeças officials gave to fluctuations in orders by the assemblers, it was probably not a sector-wide problem. The Delft report concluded that "Alterations in programming from the OEMs can affect one or another firm in particular, but are not sufficient to hurt the entire auto parts sector" (Delft:198). Not only were market

fluctuations not a sector-wide problem, but the report also suggested that the SMEs expected them:

As a general rule, auto parts firms, medium and small, accept the irregularities in the rhythm and volume of production. The variations are not very appreciable and it is not possible to assess these oscillations in a satisfactory manner, because these firms do not have production control departments and cost analysis. To a certain degree, the irregularities in the production of autoparts are considered normal and predictable. The producers in this sector adapt themselves to the conditions of instability in the market and assume that in the event that the assemblers retract their consumption, the after-market is sufficient to absorb it....Given that raw materials are bought "from the hand to the mouth" [at the last minute] according to needs, there is no large immobilization of capital in raw material during periods of market downturn (Delft:165).

The firms also assumed that they would recuperate the losses related to recessions during the peaks (Delft:166). The SMEs were well adapted to deal with market fluctuations because, as mentioned above, their machinery was usually general purpose. Furthermore, whether by luck or design, the firms were not highly vertically integrated. Only about half of the firms were completely vertically integrated (excluding raw material purchases).⁶⁵

Despite the apparently global nature of their campaign decrying widespread "verticalization," the suppliers were not successful in extracting from the state the conditions for more stable relationships from the assemblers -- including arrangements to stop the assemblers from pushing the brunt of cyclical downturns on the suppliers; the rejection of new applications for MNC firms in the sector; or special lines of

credit for smaller firms.

Sindipeças' failure forced individual firms to rely even more on their particular contacts in state agencies and other official entities as well as with commercial banks, thus reinforcing existing differences among suppliers. The issue of fluctuations in orders, for example, was solved by individual "gentlemen's agreements" between assemblers and suppliers (Interview with Metal Leve executive).

As Ford and GM geared up to car production, they encouraged their suppliers from the U.S. to come to Brazil and attempted to develop new local suppliers. They sought to create multiple supply sources, consistent with their home country production philosophy.⁶⁶ Simultaneously, a few assemblers acquired Brazilian firms and vertically integrated some operations previously done by suppliers. It is not clear if the assemblers took these actions because supplier firms could be bought cheaply (due to the credit crunch); because they were afraid that the small firms would not be able to ride out the recession; because the assemblers had excess capacity. The operations that were vertically integrated were usually not technically sophisticated and auto parts firms claimed that OEMs would vertically integrate only when they had excess capacity.

There is no definitive data on vertical integration and "denationalization" by assemblers. While both occurred, I argue that suppliers understood their restricted nature.

Nonetheless, the suppliers chose to portray them as widespread threats as a stratagem to gain leverage over the assemblers. The figures on vertical integration by assemblers are poorly documented and use various definitions which confound comparisons. Ventura Dias' research shows that in 1958, during the implantation period, Willy subcontracted 60 percent of its components and produced 12.5 percent, while the remainder was imported (Ventura Dias:69). Ford subcontracted between 30 and 40 percent of its components for trucks and produced between 10 and 12 percent. GM subcontracted 23.5 percent and produced 20.5 percent. Mercedes Benz purchased 20 percent and produced 37 percent. Behrman's research in the late-1960s shows diverging practices -- VW bought 54 percent of its components and Toyota purchased 80 percent (Behrman:1972:131). Another study states that in the mid-1980s, assemblers bought about 45 percent of their components and 65 percent of the value added.⁶⁷ My research and interviews, over the course of 1986-1989, shows that the assemblers are more highly integrated than their parent firms and levels of vertical integration may reach as much as 70 percent of value added (excluding raw material purchases).

The data on denationalization, or foreign purchases of national firms, is similarly poorly documented. The 1967 Parliamentary Inquiry revealed that 16 large transportation-related firms were "denationalized" (Doellinger and Cavalcanti:132).⁶⁸ The following is a partial list of some

of the large "denationalized" firms of the period.

TABLE 3.2

TRANSPORTATION-RELATED FIRMS PURCHASED BY MULTINATIONAL FIRMS

<u>Acquired Firm</u> <u>By</u>	<u>Acquired</u>
Metalurgica Forshed (Forjaria S. Bernardo S.A.)	
Volkswagen	
Varan Motor S.A.	Simca-
Chrysler	
Willys Overland (53% national)	Ford
Bongotti S.A.	Willys-
Ford	
Máquinas S. Francisco, S.A.	Willys-
Ford	
Alburus S.A.	Spicer
Equiel -- Cia Nacional de Equipamentos Elec. Bosch	
Wapsa	Grupo
Suico(Bosch)	
Terral S.A.	
MasseyFerguson	
Minuano S.A. (R.G. do Sul)	
MasseyFerguson	
Saturnia S.A.	Ray-O-Vac
Mazzam S.A.	Eutectic
D.L.R. Plásticos do Brasil	Heluma
Fábrica Nacional de Motores	Alfa-
Romeo	

Source: Moniz Bandeira:99.

The list of denationalized firms is not as dramatic as it might appear. The ailing FNM was a state enterprise that had never been profitable despite successive infusions of government capital, and even the state officials setting up the motor vehicle industry in the 1950s wanted to liquidate the firm. The acquisition of Willys by Ford probably reflected events in the U.S. and not in Brazil,⁶⁹ and the acquisitions by Willys-Ford occurred when Willys was predominantly a national firm.

Yet there is no question that foreign capital was coming to Brazil under different terms. A U.S. Senate Subcommittee investigation surveyed MNC subsidiaries in Brazil and Mexico. It revealed that during 1951 to 1960, five motor vehicle-related firms installed themselves in Brazil by creating new firms while only one bought a Brazilian firm. During 1961 to 1965 none of the firms in the sample set up operations in Brazil. From 1966 to 1970 the model of setting up operations was inverted. Six firms went into Brazil by acquiring existing firms and only one firm created a new firm in Brazil.⁷⁰ Gadelha's analysis of large supplier firms also showed increases in the presence of foreign capital. None of the firms were identified by name in either survey so it is likely that there is some double counting. Eleven large suppliers were in Brazil before 1955. During the implantation stage, 19 came. After 1967, another five firms established themselves. During the implantation and successive periods, some foreign suppliers that had supplied licenses and technical assistance bought part of or all of the Brazilian suppliers. By the early 1960s some up and coming suppliers such as Alburus (transmission parts and axles), Amortex (shock absorbers and clutches), Filtros Mann (filters) had been purchased by their licensors or foreign partners, respectively Dana, Tilterwerke Mann and Hummell, and Sacks GmbH.⁷¹

Yet another factor contributing to uncertainty for suppliers was jockeying for market share among assemblers as

the American ones moved into new segments. Ford and GM were trying to break into the passenger car market dominated by VW. To defend itself, like the suppliers, VW used a multiplicity of tactics. When it acquired Vemag it asked for permission to import dies at beneficial exchange rates so that it could launch a new model. Ford, who was already producing its own dies and even exported them to its plants in Argentina, vehemently opposed VW's request.⁷² Ford was about to acquire Willys and it did not want further competition from the already dominant VW.

Despite suppliers' tactics to attract the attention and tutelage of the state, they were unsuccessful in establishing new rules to protect themselves from the vicissitudes of erratic growth and the industry shake-out. The assemblers pushed onto suppliers more of the costs and risks of production, and relations became more mass-production-like practices with little resemblance to the implantation period practices.

II.B. *The "Second" Coup, New Interpretations of Economies of Scale, Pierced Protectionism*

The suppliers' predicament only worsened as the new government relentlessly pursued new visions of economies of scale. In a "second" coup in 1967⁷³ that defeated Castello Branco's pretensions to return government to civilian hands, a new military leader, Costa e Silva, took the reins.⁷⁴

Delfim Neto headed the new economic team and he made new diagnoses and applied new remedies based on notions of economies of scale, for the economic ills plaguing Brazil. In the process the suppliers' protection from international markets waned even further.

According to Delfim Neto, after 1966, inflation was the result of cost-push, rather than demand pull factors. Restrictive credit policies, rather than working to contain inflation, were actually fueling it by increasing the cost of capital.⁷⁵ Through more lenient credit policies, a practice that had already begun under Campos,⁷⁶ Delfim Neto strove to reignite economic growth and rein in inflation by creating larger markets and thereby fostering economies of scale. Between 1968 and 1974 anywhere from 50 to 75 percent of all financing for consumer goods was used for motor vehicle purchases.⁷⁷ Credit periods also increased from a maximum of 12 months in 1968 to 24 months in 1969, 30 months in 1972 and 36 months in 1973 (Guimaraes, 110).⁷⁸ The impact of the increase on consumer credit on the motor vehicle industry was impressive. Total production grew from 280,000 vehicles (cars and trucks) in 1968 to 750,000 in 1973 to 1,000,000 in 1978, a 250 percent increase in one decade.

While between 1968 and 1974, the "miracle years," real gross domestic product grew at a annual rate of over 11 percent, the motor vehicle industry was growing almost twice as fast at a rate of 22 percent. The motor vehicle industry

was a leading sector propelling economy-wide growth. Suppliers were subjected to more mass-production like relations by their customers and were also competing among themselves, yet the steadily increasing volumes buffered some of the negative impact of more market-like firm relations (Interview Mammana Neto).

The growth of the miracle years generated demands for imports of capital goods and raw materials. These imports grew from almost 6 percent of GDP in 1967 to 9 percent of GDP in 1973 and almost 14 percent in 1974, although at the time they were covered by foreign loans.⁷⁹ The growing thirst for Brazilian imports of capital goods and raw materials coincided, on the one hand, with the threats to American assemblers on their domestic markets from the VW beetle and inexpensive Japanese imports, and on the other, Ford's expansion plans on the Brazilian market.⁸⁰ To preempt unfavorable import restrictions and bolster its competitive position in Brazil, Ford reformulated an agreement with the Mexican government made in the late 1960s, and proposed an export promotion scheme.

By the late 1960s, Ford decided to launch the Maverick to compete with GM's Opala. It wanted to offer customers the option of buying either four or six cylinder engines and proposed building the four cylinder ones in Brazil and importing the larger ones. It committed itself to exporting millions of dollars of engines and other components over a

decade. In exchange, it wanted to import one-third of the value of its exports in machinery and parts which could be used both for exports and production on the domestic market. More concretely, the Ford proposal sought the right to import \$1.00 worth of goods for every \$3.00 of goods exported; a series of long term tax credits as well as permission to import equipment, tooling, and machinery, and finally, access to credit on favorable terms (Criumssima:134-135; Appendix1).

The government used Ford's idea as a guidelines for turning its disparate export incentives into a more coherent national export incentive program. The program was called BEFIEEX, Special Financial Incentives to Exporters.⁸¹ Under the program, in addition to the above incentives, firms were entitled to exemptions from import duties and the IPI on imports linked to exports. Furthermore, firms could reduce local content requirements by increasing exports (now calculated at 85 percent of total value rather than 99 percent of the weight of the vehicle). Finally, the legislation compensated for overvalued exchange rates and probably provided a slight subsidy.⁸² As previous incentives were gradually suspended over the next two years, exporting became a prerequisite to producing competitively in the Brazilian market. The BEFIEEX legislation was essentially tailor made for Ford and the automobile industry but it became the industrial policy for the motor vehicle sector after the early-1970s and a means of underwriting the costs of expanding

or modernizing a plant. It also returned firms to profitability.⁸³ By 1978, approximately 40 percent of all BEFIEX contracts went to the assemblers, and they, among all firms, negotiated the most favorable terms.⁸⁴ BEFIEX-related imports for assemblers were generally duty-free while other firms received reductions of only 50 to 75 percent. The contracts were geared to and more favorable to large-volume producers.⁸⁵ By the end of 1980, exports by the motor vehicle industry, including automobiles, parts, accessories and other transportation equipment climbed to 50 percent of all BEFIEX export commitments. The motor vehicle industry was responsible for almost 60 percent of the total investment under the BEFIEX program.⁸⁶

The period of the BEFIEX negotiations was a divisive one for assemblers and a low point in their negotiating strength. The negotiations took place soon after the wave of mergers and the assemblers were fighting among themselves to establish the rules that would shape their production strategies, such as VWs' request to import dies and Ford's opposition. The assemblers, with the exception of Ford, opposed BEFIEX, but once it was passed they essentially had no choice but to sign a contract. GM, the last firm to sign up, was repeatedly pressured by the government.

Although weakened by internal divisions, the assemblers presented a united front and strongly opposed Fiat's proposal to begin passenger car production, which had been on the table

since the mid-1960s. They lost when in the early 1970s, after bitter negotiations that pitted the federal government against the state of Minas Gerais, Fiat was granted permission to produce cars.

Curiously, when the assemblers, with the exception of Ford, were offered BEFIEEX incentives to achieve economies of scale, they initially spurned the offer. Finally conceding, they discovered additional benefits. Imports could be used to force suppliers into offering better sales and delivery conditions. Effectively, the legislation of the early 1970s designed to create economies of scale in the marketplace, further threatened suppliers' domestic market arrangements. Protection was pierced and assemblers gained leverage over suppliers.

During the late 1960s, Sindipeças actively participated in the negotiations between the Ford Motor Company and the Brazilian government regarding export incentives. The president of Sindipeças at the time, Jose Mindlin, described some of the informal negotiations. Mindlin told Ford and the government, "We cannot sign a blank check." He stated that Sindipeças would not agree to imports unless firms were given time to reconvert their factories. Ford wanted to include any part on the import petition and Sindipeças tried to invoke the national similars legislation⁸⁷ which granted it the right to review the petition and to veto imports that hurt member firms. Sindipeças claimed that if it were not allowed to do

so, the assemblers would import one product for six months and then another for another period, thus weakening suppliers. Mindlin stated that the then president of Ford said not to worry, Ford would not be importing pistons, produced by Mindlin's firm, or axles produced by Vidigal Filho, the Sindipeças vice-president's firm. The Sindipeças officials insisted that the negotiation was not a question of an individual firm's well-being, but rather a global principle.

A gentlemen's agreement to this effect was reached, and as a result suppliers initially supported the BEFIEEX legislation. Suppliers understood that Sindipeças would distribute the assemblers' BEFIEEX import petitions to interested suppliers for their review and possible veto. Everyone accepted that a veto did not mean that the auto parts firms would flatly refuse the assemblers their desired imports, but rather that in order to obtain permission to import the parts, the assemblers would have to concede something to the affected auto parts firm. For example, a brake firm might allow the assemblers to import a certain type of brake in exchange for better terms on an existing domestic contract or shorter payment periods. If the assemblers felt that the supplier was obstinate, they would call the syndicate officials and have them pressure the reluctant supplier. In effect, the gentlemen's agreement was a means for suppliers to better control their markets, rather than a blanket intention to prohibit all imports.

To reinforce the agreement, the suppliers successfully lobbied for a resolucao or law reiterating the horizontal principles upon which the industry was founded. In 1972 the Council for Industrial Development in conjunction with the BEFIEEX legislation, directed the assemblers "to orient themselves in the direction of a horizontally integrated structure" (Art. 7 of Res. 20, 1972). The legislation was intended as a signal to the assemblers that the initial precepts of a horizontal industry that had informed the implantation of the industry were still valid.

Suppliers reported that although the petitions were routed through Sindipeças their recommendations were not heeded by the Council for Industrial Development (CDI) or Cacex, the import-export office of the Bank of Brazil. The assemblers were granted permission to import under BEFIEEX even though the syndicate wanted to block the imports. Since the resolucao did not carry any punitive sanctions, it did not work.⁸⁸

There are no good assessments of the actual negative impact of BEFIEEX on the suppliers during the early years. Gadelha states that imports of auto parts as a percentage of assemblers purchases increased.

TABLE 3.3

IMPORTS OF AUTO PARTS BY ASSEMBLERS
AS A PERCENTAGE OF Sindipeças MEMBERS' TOTAL SALES
 (1972-1978 in US\$ millions)

<u>Year</u>	<u>Imports OE and A-M</u>	<u>% total sales(*)</u>
1972	16.3	NA
1973	42.5	NA
1974	98.4	3.9
1975	135.3	4.9
1976	124.1	3.8
1977	143.5	4.2
1978	178.9	4.0

(*) % of total sales = Percentage of total sales of members of Sindipeças.

Sources: Gadelha:36 -- Her information is from Anfavea; Exchange rate from Conjuntura Economica, various years; total sales from Sindipeças yearly statistics. The percentages for 1972 and 1973 are not available because Sindipeças did not publish statistics on total sales before 1974.

Clearly imports increased in absolute terms, about 600 percent from 1972 to 1974. Yet total imports represented at most 4.0 percent of total sales from 1974 to 1978 with the exception of 1975 where imports increased to 5 percent of total sales.

It is more likely that suppliers were publicizing and embellishing their woes as a warning to the state that preemptive action should be taken. Once again, suppliers launched accusations of "verticalization" and "denationalization" to shore up their negotiating position. The syndicate published a report detailing 15 types of parts including door and window handles, stamped parts, injected plastic parts, radiators, that had been vertically integrated

by assemblers as well as others that were in danger of being completely vertically integrated.⁸⁹ Most of these parts were not high technology components.

Yet comments by syndicate officials suggest that once again, verticalization and denationalization per se were not the issues. In 1974, Vidigal Filho, the president of Sindipeças stated:

I do not think that the intention of the assembly sector is to vertically integrate production. Furthermore, excellent communication exists among auto parts industries today and there is a lot of collaboration in supplying information. The dialogue is frank and open and the concern of the two sectors [assembly and auto parts] is the arrival of new firms.⁹⁰

The problem was that the assemblers were not respecting the "gentlemen's agreement" granting long-term contracts in exchange for investments on the part of suppliers:

What is most worrisome is not the deed [vertical integration] but the tendency that it could become generalized. This is happening because the assemblers are not abiding by the agreement -- not juridic but moral - signed in 1974 with the auto parts firms.

In this gentlemen's agreement, the assemblers agreed to buy equipment from national firms that had invested in tooling or equipment necessary for production. This agreement was to last at least 6 to 8 years, the time considered necessary by the national industry to amortize expenses, by including a percentage in the price of the good.⁹¹

In addition to assembler malfeasance, "verticalization" was caused by high finance costs and the particular circumstances of family firms that had run out of heirs. One decade later, the then president of Sindipeças, Fannuchi, reflected on the early and mid-1970s:

The problem...is that firms get to the end of the year with profits that are lower than financial expenses. Without a doubt a very discouraging factor.

This discouragement...is dangerous in the sense that it coincides with the fact that a good part of national firms are family firms that are precisely at a critical moment of passing the firm from the father to the son or the son-in-law. It is enough that a foreign firm make a good offer and the owner decides to exchange his problems of working capital, low profits and raw material for two or three apartments, a ranch and some money with interest. The tendency towards denationalization already happened...at the beginning of this decade [1970s] when the great 'boom' of the automobile industry occurred. At that time, many businessmen preferred to sell their firms to foreign firms to escape the need to double or triple their production. All the firms were goods ones, the majority being cases where there were no sons to whom the firm could be passed" (Stefani:Sept 29, 1976).

To briefly anticipate the discussion of the following chapter, the fates of their family members were decisive in shaping the future of SMEs. When the growth of the industry required that firms invest to increase production capacity, some family firms, particularly those without heirs, decided that the risk was not worth the effort. This attitude stemmed not only from the intimate link between the family and the firm, but also by the shabby treatment that suppliers received from assemblers. Therefore, while there were a multiplicity of causes, the firms without family members to take over operations were the most likely to fail. Although Sindipeças officials and suppliers understood the logic of SME failures, they skipped the details to lend urgency to their appeals to the state. Once again, the cries were tactical more than factual.

Although the cries against "verticalization" were loud,

they were directed exclusively at the assemblers and not the large supplier firms that were also vertically integrating. The vertical integration on the part of suppliers, for which there is no published data, can only be culled from these firms' accounts. They explained that they began producing parts in-house because they could not get what they needed from their suppliers or the prices were too high. The vertical integration by large suppliers served to widen the split between large, and small/medium firms. As the large firms which were highly vertically integrated continued to slightly increase levels of vertical integration, they became more and more independent from their suppliers and their interest in ensuring stable markets for the smaller firms correspondingly declined.

III. *Conclusions - It Looks Like Mass Production*

Most accounts of the Brazilian motor vehicle industry are predicated on the large-scale production paradigm. They usually extrapolated from the period beginning in the mid-1960s where suppliers increasingly undertook more of the risks of producing, and assumed that this had been standard practice throughout the history of the industry. In this view, the assemblers played the dominant role in establishing the industry and its production practices relegated suppliers to mere subsistence. The implantation period arrangements between suppliers and assemblers, where

the latter nurtured the former, were either ignored or seen as a blip on the screen.

The definitive blow to the implantation period arrangements came from the military coup rather than a predetermined logic of efficiency. The military government's pro-merger and export promotion policies, themselves the product of struggles articulated around notions of economies of scale and failed supplier tactics, weakened existing assembler-supplier relations. Furthermore, by lowering protection, the policies granted assemblers leverage to force more of the costs and risks of production onto suppliers.

The notions of economies of scale and mass production argument proved to be the double-edged sword they were during the pre-implantation years. Despite the state's relentless pursuit of economies of scale, however, and the wave of mergers that it provoked, no efforts were made to reduce the number of platforms produced. While the industry mergers did not lead to a major rationalization of productive capacity, the credit policies of the government stimulated demand and led to higher volume production.

During the post-implantation period phase, organizational practices in the Brazilian motor vehicle industry approximated mass-production practices in the United States. Relations between assemblers and suppliers were oriented more by the market rather than long-

contractual agreements, as was the case during the implantation period, and relations between suppliers and assemblers were conflictive. Furthermore, firms were highly vertically integrated, a reflection of the assemblers' successful efforts to push the cost of market fluctuations onto their smaller suppliers.

The shift to more mass-production-like arrangements reflected the failed tactical strategies of suppliers and the inhospitable economic climate. The horizontal arrangements of the implantation period were characterized by long-term and cooperative assembler/supplier relations. They were predicated on the combination of protected markets, high local content requirements, and common understandings regarding the confines of multinational, local, and state-owned firms.

The suppliers won horizontal arrangements, but paradoxically lost. The delicate configuration strained as the industry grew. The industry vaunted its achievements, and new firms, local and multinational, sought to set-up operations. The assemblers sponsored many of these multinational entrants and offered them long-term contracts, furthering threatening established suppliers. Moreover, once local content levels were met, assemblers no longer needed to entice suppliers with long-term contracts, and they correspondingly diminished their technical and other types of assistance. These tendencies were compounded by

the profound political and economic crises that beset the country.

Suppliers sought to counter these destabilizing events. They demanded state protection with public campaigns decrying vertical integration and denationalization by assemblers. Suppliers used the language of economies of scale, the language of nationalism, and the language of universalism that masked the differences between the large and SME suppliers. With the exception of ad-hoc measures granting more access to credit, the suppliers' efforts to induce state protection vis-a-vis the assemblers failed. The horizontal visions of tight and individualized links between assemblers and suppliers inhibited collective action. The latter were ineffective at working together to stop the assemblers shifting to suppliers the brunt of market fluctuations.

Notions of economies of scale thwarted suppliers in another manner. Ford sought incentives to expand production runs within individual countries facilitate trading among its subsidiaries. It also wanted to launch new products and protect its market share in Brazil. The two coincided and Ford's proposals were converted into Befiex and the de facto industrial policy for the industry. Although the other assemblers protested the imposition of BEFIEX, once they signed on, they used it to threaten suppliers with imports and extract more favorable contract conditions and lower

prices.

In terms of production volumes, the industry also advanced down the path to mass production. Production volumes increased from less than 15,000 units per platform to an average of 40,000 but as high as 90,000 units, and the industry was producing over one million vehicles per year by 1979. Firms tried to organized their factories according to mass production -- as much of the factory as possible was organized with dedicated machinery and production lines. In terms of organizational practices, however, suppliers continued to maintain implantation period practices. They continued investing in more general purpose machinery to meet the diversity of platforms for both cars and trucks. A very large part of their factories was organized according to the logic of flexibility -- machinery was general purpose and used to produce a large variety of parts.

In summary, assembler-supplier relations in the post-implantation period increasingly resembled the conflictive and market-oriented relations of mass production. While assembler-supplier relations moved in the direction of mass production, industrial organization practices remained predicated on general purpose machinery. The advances down the path to mass production were not inevitable, but rather reflected the suppliers' failed tactical strategies. Once the industry was established, new suppliers proliferated, and local content levels were reached, it was easier for

assemblers to pressure suppliers to lower prices.

Furthermore, assemblers wanted to push onto suppliers more of the costs of production, thereby defending themselves from accusations that they fueled inflation. By lowering the prices they paid to suppliers, the assemblers hoped to recover lost profits, and lower their own prices. They were successful, in part because suppliers did not collectively defend themselves. Yet, had growth levels continued and the pressures of inflation been lower, it is not clear that the assemblers would have pressured suppliers to the extent that they did.

As the delicately orchestrated system of the implantation period unraveled, suppliers' expectations increasingly became unfulfilled promises. These unfulfilled expectations become the basis of new tactical maneuvers by suppliers to rewrite the rules of production and revive the security of assembler-supplier relations reigning during the implantation period. These tactics and their results will be described in the next chapter.

ENDNOTES

1. Story told by the president of a large national supplier firm.
2. The Delft Report, an in-depth survey of small and medium parts suppliers done in 1965 and 1966 provides a description of the sector some years after the implantation period. The research sample came from an Industrial survey of the state of Sao Paulo, including the municipalities of Santo Andre, Sao Bernardo, Sao Caetano, Osasco, Diadema, Guarulhos, and Maua.
The report is named after the a University in Delft, Holland. I do not know why the Dutch researchers came to Brazil.
At the time, as now, there were clear distinctions between large, medium, and small firms. In its sample of 489 auto parts firms, the Delft report classified 1 percent as small artisan-like firms with 7 or less workers.
3. The Delft survey reported that small firms with less than 110 workers represented 63 percent of the total. Medium-sized firms with 111 to 550 workers represented 21 percent. Large firms represented 3 percent of the firms.
The Delft Report focused on small- and medium-sized firms (SMEs) and found that about 75 percent produced mechanical products; about 17 percent electric parts; and about 1 percent produced rubber, plastic and estofados. The percentage of firms that produced products is taken from a random sample of 112 SMEs which was 368 firms representing about 30 percent. Almost all of the medium-sized firms supplied to the assemblers. About half of the small enterprises did so. The remaining firms supplied to the after-market (replacement market). The replacement market is usually made up of large and small distributors and repair shops. About 45 percent of all small and medium-sized firms (SMEs) were members of Sindipeças, 29 percent of the medium-sized firms and 33 percent of the small firms (Delft:35,39). The remainder were either affiliated with another syndicate, for example rubber goods producers or were not affiliated with any syndicate.
4. See the Bilac Pinto efforts to dilute the local content legislation: Almeida:1972:35-37; Also see Shapiro:
5. There is a very limited discussion of this point in Jose Almeida, A industrial automobilística brasileira, RJ: FGV, 1972, p. 38-39. Also see Helen Shapiro, State Intervention and Industrialization: The Origins of the Brazilian Automotive Industry, Unpublished Dissertation, Yale University, 1988, p.177,220. (Forthcoming in Cambridge Press).
6. Interview with Guilardi, Director of Irlemp.

7. The calculations are made from data provided by Almeida, p.48. There is a discrepancy with Gattas's figures. He stated that local content reached 98 percent by 1960 (Gattas:339).

8. The data are from Gattas:378 and 339.

9. Ford made good profits in Brazil in 1957 and 1958. In 1959 and 1960 results were mediocre and in 1961 the company lost money. Despite mediocre results, Ford decided that it was time to expand operations in Brazil. Mira Wilkins and Frank Ernest Hill, American Business Abroad Ford on Six continents, Detroit: Wayne State University Press, 1964, p. 417.

The bulk of the account on Ford's efforts to break into the passenger car market are based on Shapiro:Engines:151-164.

10. Moniz Bandeira, Carteis e Desnacionalizacão (A experiência brasileira: 1964-1974) Rio de Janeiro: Editora Civilização Brasileira, 1979, pp.98-99.

11. Shapiro reports that Sindipeças supported Ford's petition (Shapiro:Engines:162).

12. See Skidmore:1967, and Cheibub:1987. See also Dos Santos, Wanderley Guillerme, The Calculus of Conflict: Impasse in Brazilian Politics and the Crisis of 1964, PhD dissertation, Stanford University, Ann Arbor: University Microfilms International, 1979.

13. Sydney Latini, SUMA Automobilística, Vol.1, Rio de Janeiro: Editora Tama, Ltda, 1984. The reshuffling was the result of the compromise to bring Goulart to power in exchange for creating a parliamentary system.

14. Instrução 235, SUMOC (Gattas, 357).

15. For a description of the lack of capital available at the time see, Mario Henrique Simonsen, "Inflation and the Money and Capital Markets of Brazil," in The Economy of Brazil, ed by Howard S. Ellis, Berkeley: University of California Press, 1969, pp. 133-161.

16. Interview with Ribeiro Branco for a description of the meetings between Dantas and suppliers.

For a discussion of the credit policies of the period, see Marcelo de Paiva Abreu, "Inflação, Estagnação e Ruptura: 1961-1964," in A Ordem e o Progresso, Cem anos de Política Econômica Republicana 1889-1989, Rio de Janeiro: Editora Campos, pp. 197-212. Abreu explains the shift to more lenient credit policies of mid-1963 from the restrictive first semester policies as the result of

Dantas' realization that they had been overly restrictive. He cites *Jornal do Brasil*, March 10, 1963 which in turn was cited by Wells.

17. Shapiro obtained the data from the Congresso Nacional, Relatório da Comissão Parlamentar (Shapiro:290).

18. Sindipeças, by arranging interviews and transportation for government officials who were investigating new entrants' petitions tried to forestall permission for new firms (Interview w/Sindipeças officials).

19. For an account of the different ALALC plans and counterplans see Russell Moore.

20. Interview with Rossi, long-time Sindipeças activist and co-owner of Acil.

21. Werner Baer and Isaac Kerstenetsky, "The Brazilian Economy," in Brazil in the Sixties, Riorden Roett, ed, Nashville: Vanderbilt University Press, pp. 135. Shapiro suggests that firms may possibly have overinvestment (Shapiro:221).

Guimaraes and Shapiro argue that repressed demand was satisfied (Guimaraes:180-184; Shapiro:1989:297).

22. They continued to make monthly payments and given inflation, it was not until everyone received their cars that buyers knew the final purchase prices. Consorcios were later adopted by other producers of consumer durables such as TV producers.

23. (Guimaraes and Gadelha, 108-110. G. & G. cite Pécora and Leal, "Base Econômica" in Association of Brazilian Motor Vehicle Distributors(eds.), A garantia do consumidor e as relações entre produtor e o distribuidor de veículos automotores no Plano de desenvolvimento brasileiro, 1976, pp. 103-4.

24. Guimaraes (p. 188, fn.#19) figures on the percentage of consorcio sales comes from Secretaria de Economia e Planejamento do Estado de São Paulo, Aspectos estruturais do desenvolvimento da economia paulista: Indústria automobilística, Sao Paulo, 1978, p. 134. After many abuses, in 1972 consorcios came under tight state control.

25. "Estao renascendo os consorcios de automoveis, in Exame, January/February 1975, pp. 41-49.

26. Joel Bergsman, Brazil Industrialization and Trade Policies, New York: Oxford University Press, 1970, p. 128.

Baranson's calculation is slightly different. Baranson calculates that the ex-factory cost of light truck manufacture at 2.5 times US costs in Argentina, 1.7 times in Brazil, and 1.6 times in Mexico. He states that cost differences for passenger cars are

about the same. See Jack Baranson, Automotive Industries in Developing Countries, Baltimore Maryland: The Johns Hopkins Press, 1969, p. 35.

Almeida estimates that vehicle prices in Brazil were 2.7 those in the United States (Almeida:1972:83).

27. Shapiro estimated that, in 1962, indirect taxes accounted for 17 percent of the ex-factory price of automobiles and 10 percent for trucks. In 1964 they accounted for 23 percent and 11 percent for trucks. Based on Almeida's raw data, she also calculated taxes as a percentage of consumer sales prices from 1962 to 1968 and found that they varied from a low of 32.5 percent in 1962, to a high of 39.7 percent in 1966. Shapiro, p. 277.

In 1970, Bergsman estimated that indirect taxes account for between 35 and 50 percent of the difference in ex-factory prices (Bergsman:128).

28. In Brazil tires, batteries, engine fluids, and flat glass were responsible for a 21 percent increase over the price in the United States. Shock absorbers and small stampings account for 9 percent. Forging, casting, and machining of engine, axle, or transmission parts accounts for between 22 and 36 percent of the increase depending how much is made-in-house or subcontracted. The engine and drive-line[?] foundry is responsible for 21 percent of cost increases if made in-house and 5 percent if subcontracted. Wheel drums, brakes, and axles are responsible for about 24 percent of the cost increase. The low number is based on the lowest make/buy options; the higher number, the most expensive make/buy options. The calculation does not include sheet metal, responsible for 49 percent of the increased cost, and assembly, responsible for 15 percent of the increased costs (Baranson:36-39).

29. In an interview, one supplier described the change in assembler-supplier relations as more "business-like (Interview with Mammana Neto)."

30. Interviews with Mammana Neto, owner of CIMA, and Abraham Kasinski, owner of Cofap.

31. Shapiro cites testimony from Damon Martin Jr., President of General Motors do Brasil, Testimony before the Parliamentary Inquest commission for the Verification of the Cost of the National Vehicle, 11 October, 1967. (Shapiro:Engines:260). Shapiro also cites Almeida who in his interviews discovered that some assemblers considered three suppliers per parts as the minimum required to protect themselves from monopsonistic practices. Shapiro cited Jose Almeida, A indústria automobilística brasileira, Unpublished manuscript, Rio de Janeiro: Fundação Getúlio Vargas, Instituto Brasileira de Economia, Centro de Estudos Industriais, 1969, p.110.

32. The prices of vehicles were also dropping. By 1968, prices were one-third 1961 levels. From 1968 to 1978 prices dropped by one-third again (Guimaraes:170).

33. By the late 1960s, idle capacity in automobile producers was over one-third and for truck producers between 75 in the early 60s and 40 percent in the late 60s. Shapiro p. 288 cites Almeida's unpublished figures.

It averaged about 40 percent per year from 1957 to 1968 and hit a high of 57 percent in 1961 and a low of 31 percent in 1966. Only VW was producing at full capacity, and truck producers were often running at high levels of idle capacity.

Shapiro demonstrated that as production rose and idle capacity declined, prices fell (Shapiro:287a-c). It is unclear, however, why these trends were more notable in truck rather than car production.

34. Baranson is unable to explain how a low volume producer such as Volvo can be internationally competitive (Baranson:38:fn11).

35. Jack Behrman, The Role of International Companies in Latin American Integration: Autos and Petrochemicals, Lexington, MA: Lexington Books, 1972, p. 141. The appendix from which this quote was taken was written by James Fox.

36. (Delft, 44-46). Machines were generally purchased from national producers (Delft:47). About 45 percent of the machines were semi-automatic, while the remainder were manual (Delft:51).

In the early 1960s, the original assemblers were still producing. Cars were produced by American, Willys, and European firms or under european licenses, VW, Vemag, Simca, Renault. Trucks were produced by Ford, GM, Mercedes-Benz, Saab-Scania, Alfa Romeo, Willys, VW. Toyota had a tiny percentage of the market and produced a Land Cruiser and small truck, probably on the same platform.

37. For an in-depth refutation of some of the economic-determinist accounts of the coup see, Collier, The New Authoritarianism in Latin American, Princeton: Princeton University Press, 1979.

Dos Santos attempts to present an account of the coup based on structural variables. He argues for the inevitability of the coup given the context of a highly polarized system, instability of coalitions, and elite turnover led to a fragmentation of resources among polarized actors which in turn led to decisional paralysis (Santos:14,41). Yet the final straw, according to Santos is Goulart's failed attempts to gain support, hardly a structural variable:

"To consolidate parliamentary support, however, Goulart would have to satisfy conservatives that both he and his followers,

particularly his brother-in-law, Leonel Brizola, would refrain from any attempt at tearing apart traditional Brazilian political institutions, and would respect Constitutional channels of policy-making. On the other hand, in order to retain leadership of the large leftist spectrum, he would have to be increasingly outspoken against Congress. We will see in the next section how this two front war against Parliament and against competition from the extreme left helps explain governmental instability during the Goulart administration" (Santos:190).

"Already isolated from the right Goulart also found himself isolated from the center and only weakly supported on the left. Continued ministerial reshuffling only increased the suspicion of the center and of the left and the sole net result was to bring Brazil's government closer to administrative chaos than at any time in the entire post-1946 period" (Santos:218-219).

Dos Santos, Wanderley Guillerme, The Calculus of Conflict: Impasse in Brazilian Politics and the Crisis of 1964, PhD dissertation, Stanford University, Ann Arbor: University Microfilms International, 1979.

Cheibub states that in a later work comparing the Brazilian and Chilean cases, Santos drops the structural variables and identifies radicalization as the explanation for the coup (Dos Santos:1982). Cheibub faults dos Santos on his claim of inevitability. She states that because he treats the 1961-1964 period as a whole, he neglects to see that the degree of suspicion varied over time and that until very close to the final months of his tenure, coalitions and agreements could have emerged permitting compromises and support for the democratic government (Cheibub:9).

38. See Argelina Maria Cheibub Figueiredo, Political Coalitions in Brasil, 1961-1964: Democratic Alternatives to the Political Crisis, Unpublished PhD Dissertation, University of Chicago, 1987. In particular, see chapters 5 and 6, pp. 153-207. Cheibub does not go into great detail about Goulart's relations with the military. See Stepan, The Military in Politics

39. Thomas Skidmore, "Politics and Economic Policy-Making in Authoritarian Brazil, 1937-71," in Authoritarian Brazil, Alfred Stepan, ed, New Haven: Yale University Press, 1973, pp. 4-5.

40. The economic policies of 1964-1967 are often characterized as orthodox stabilization policies. Nonetheless, various assessments underline the non-orthodox character of the measures.

Lara Resende states that the Economic Action and Stabilization Program, PAEG, included many non-orthodox elements. It was preoccupied with maintaining levels of growth and therefore was

somewhat tolerant of inflation which was to be fought in a gradual manner. Furthermore, the plan included important institutional reforms in taxes, the financial market, and foreign trade. Furthermore, it established salary levels rather than having them determined by the market. Restricting the minimum wage, which fell about 20 percent over the period, was an important component of the Program. See André Lara Resende, "Estabilização e Reforma: 1964-1967," in A Ordem do Progresso Cem anos de política econômica republicana 1889-1989, Rio de Janeiro: Editora Campus, 1990, pp. 213-232.

Thomas Skidmore, "Politics and Policy-Making in Authoritarian Brazil, 1937-1971," in Alfred Stepan, ed., Authoritarian Brazil, New Haven, CT: Yale University Press, 1973.

41. See (Skidmore:1988:56-57) for a succinct description.

42. The Industrial Development Commission (CDI), previously called the Council on Industrial Development, created in 1964 was to gather all the existing sectoral executive groups in the Ministry of Industry and Commerce (MIC). These groups, organized along sectoral lines, implanted or expanded these sectors.

Suzigan's assessment of the new CDI is that from 1964 to 1966, it did little. Only 237 projects were approved which represented fixed investments of 550 million dollars. [Any auto parts firms?] After 1966, the government introduced a system of incentives to be administered by the CDI, principally, import duty reductions on capital goods. From 1968 to 1973, given a surplus in the balance of payments, the CDI approved almost all projects. While during the first 3 years of existence it approved less than 250 projects, in 1973 (one year, it approved over 2,800 projects. The main repercussion was in the capital goods sector whose development was slowed. After 1974, the CDI was more selective. This is due to a change in the government's change in industrial policy and secondly, foreign exchange shortages.

See, Wilson Suzigan, "Política Industrial no Brazil," in Indústria: política, instituições, e desenvolvimento, ed. Wilson Suzigan, Rio de Janeiro: Ipea, 1978, pp.35-98.

43. There is virtually no available information on firm failures during this period. Syvrud explains:

The cost of borrowed capital was low in relation to equity capital; thus firms with access to this cheap credit expanded on the basis of borrowed capital. A good corporate treasurer always tried to meet his working capital requirements, which lost their value with inflation, out of borrowed funds. Equity was invested in real estate and other real assets which did not lose value with inflation. The ensuing high ratio of loan capital to net worth increased interest costs of these firms as interest rates turned from negative to high positive rates in the years after 1966, thus contributing to a record

number of bankruptcies (Syvrud:103).

See also Donald Syvrud, Foundations of Economic Growth, Stanford, CA: American Enterprise Institute - Hoover Institution Press, Stanford University Press, 1974, pp. 34, 43, 57, 92, 109.

44. Gattas cites various newspaper articles (Gattas:428).

45. Other assemblers also produced basic models with no options that were eligible for financing. Willys produced the Teimoso which apparently was more costly to produce than a model with standard options (Interview with Lichtenberg).

46. In June of 1965 taxes were reduced 75 percent and in August they were reduced 50 percent and then another 25 percent (Guimaraes and Gadelha: 4).

47. For figures on the impact of these incentives, see Guimaraes and Gadelha:34;Almeida:53.

48. Baer and Kerstenetszky make this point, without any supporting data for these years (Baer and Kerstenetszky:1972:142).

49. "Analise Sectorial," no author, n.d. (written between end of 1966 and 1971, probably in Banas).

50. Ibid.

51. Interestingly enough suppliers in Japan faced similar problems and also unsuccessfully brought their complaints to the state. See doctoral dissertation by Toshihiro Nishigushi.

52. Testimony by Décio Fernandes de Vasconcellos, owner of an auto parts firms and Sindipeças official, before the Parliamentary Commission Investigating the Price of Motor Vehicles. p. 581/13.

53. See Mindlin's response to Vasconellos' testimony in Minutes from Parliamentary Commission Investigating the Price of Motor Vehicles, October 20, 1967, 581/14.

54. Roberto Campos was disparagingly called Bobby Fields, a reference to his pro-foreign capital attitudes.

Despite his pro-foreign attitudes toward foreign capital, Campos can be included in the developmentalist group mentioned in the first chapter. He advocated state planning as a means of compensating for a weak private sector, concentrating and mustering resources, and finally speeding up development. See, Roberto Campos, "Planejamento do desenvolvimento economico dos paises subdesenvolvidos Os economistas e a arte ou ciencia da administracao publica," in Economia, Planejamento, e nacionalismo, Rio de Janeiro: Apec Editora, 1963, pp. 7-52.

55. Gattas cites Campos' declarations in O Estado de Sao Paulo, Nov. 6, 1966 (Gattas:423).

Ventura Dias cites a letter in which the president of Vemag explained the sale of Vemag, a national assembler, as a result of the governments efforts "to reduce the number of factories through mergers, as a way to decrease the costs of production of domestic cars (Ventura Dias:45). See Vivianne Ventura Dias, The Motor Vehicle Industry in Brazil: A Case of Sectoral Planning, Unpublished Master's Thesis, University of California at Berkeley, 1975.

Shapiro cites an interview with Roberto Campos in Visao. She states the "he saw concentration as 'an inevitable international tendency' which would reduce industrial costs and propagate competitive pricing" (Shapiro:223:n.72).

56. Roberto de Oliveira Campos, A técnica e o riso, Rio de Janeiro: Edicoes APEC, 2nd edition, 1967, p. 29.

57. VW bought out Auto Union GMB II (the licensor of Vemag) in Germany (Ventura Dias:44-45).

58. Trucks were produced by Mercedes Benz, Ford, GM, VW, Saab-Scania, and Chrysler. Cars were produced by American firms -- Ford, GM, Chrysler and a German firms -- VW.

59. Models are defined by the body and engines. For example, even if a platform carries two different bodies, I have counted them as one. Even if a model has two engines, I have counted them as one. VW, for example, produced Beetles with 1.2, 1.3, 1.5 and 1.6 liter engines. The information on models is taken from ANFAVEA statistics.

60. My definition of model proliferation differs significantly from that of Eduardo Guimaraes in his book A Acumulação da firma... Guimaraes attempts to show that in an oligopolistic industry firms reject price competition in favor of strategies based on project differentiation. To substantiate his case he uses data from a trade magazine that lists cars according to different models. The differences, however, can be as insignificant as the type of trim that is used. Based on his analysis, 512 models were introduced before 1967, as opposed to my count of 6 platforms, and 139 models were introduced between 1968 and 1978 (Guimarães and Gadelha:74). I calculate that a maximum of nine platforms were in production over the same period.

The definition of common platforms is very complex. They cannot be defined as having identical wheelbases because a wheelbase can be stretched without huge investments on the part of the assembler. One engineer suggested defining them as being made with common tooling, and having common hard points and locator guides to fasten the steering and other systems (Interview with an

engineer in the Light Truck Division of Ford Motor Company, Dearborn, MI).

61. Interview with John Lichtenberg, former Ford engineer.

62. There are some platforms that have been used for both multi-use passenger cars and light trucks. Whether these were included in the passenger vehicle count depended on how they were listed as such in the Anfavea statistics. I do not know the logic behind the listing. I have done a reasonable detailed analysis of car platforms and a much less rigorous definition of truck platforms. This reflects my limited technical expertise in the area.

63. Only eleven firms decided to begin production.

64. Fannuchi, the president of Sindipeças, used the term to describe the process of setting up world car production in Brazil. See Quatro Rodas, no date.

65. The remaining 50 percent subcontracted superficial and thermal treatments, quality testing, balancing, and other services (Delft:55).

66. OEM practices in the home countries typically squeezed the supplier. One former purchaser states that he was told to "save his salary" by negotiating lower prices on parts (Womack et. al.:Chapter 6, ff. 4). Many purchasers in Brazil made similar comments about savings targets in their purchasing activities as a measure of their performance.

Typically an OEM in the US had a single supplier for the most complex and technologically advanced components such as engine computers and three or four suppliers for commodity parts such as tires (Womack et. al:143).

67. Stevens, David. The Brazilian Motor Industry Change and Opportunity, Automotive Special Report, No. 8, Economist Intelligence Unit, 1987, p. 29.

68. Carlos von Doellinger and Leonardo Cavalcanti, Empresas Multinacionais na indústria brasileira, Rio de Janeiro: IPEA, 1975, p.132. The authors cite the Parliamentary Inquiry Commission that examined the de-nationalization of Brazilian industry over the 1965/66 period - Diário do Congresso Nacional, Supl. ao No 203 (D.F. 20/11/1968). Moniz Bandeira (1979:99 ff. 5) cites Rubem Medina, Desnacionalização: Crime contra o Brasil? RJ: Ed. Saga, 1970, p. 60.

For an overview of US MNC participation in the Brazilian and Mexican economies see Richard Newfarmer and Willard Mueller (1975).

69. There is a question as to whether Ford's purchase of Willys Overland reflected domestic conditions or problems that the parent company was experiencing in the US. One former Willys executive in Brazil believed that the merger was due to domestic problems. The parent company had taken a loan from an American insurance company and the loan was not rolled over. As a result the Kaiser company had to sell some of its assets. Although the Brazilian subsidiary was losing money, the executive stated that during many years it had been profitable and this reflected some managerial errors that could have been corrected. He states that the Argentine subsidiary of Kaiser, IKA (a joint venture between the Argentine government and Kaiser) was profitable. The evidence supporting this could go either way. In 1965, IKA was operating at 85 percent of installed capacity and held a market share of 30 percent. Over the next two years its utilization of plant capacity fell to 55 percent and its market share to 21.6 percent. After tax profits as a percentage of sale fell from 5.2 percent in 1965 to 1.1 percent in 1967 (after it was sold) (Lengyel:29 cites Evans et. al:1984:143; Jenkins:1977:159; and Nofal:1989:45-47). Similar to Brazil, the company's fortunes could reflect general uncertainty at the national level that could be muddled-through until better times.

Ventura Dias supports this hypothesis. She states that Ford acquired the stock of Kaiser in the US in October 1967 (Ventura Dias:48).

70. Richard Newfarmer and Williard F. Mueller, Multinational Corporations in Brazil and Mexico: Structural Sources of Economic and Noneconomic Power, Report to the Subcommittee on Multinational Corporations of the Committee on Foreign Relations, United States Senate, Washington, D.C. U.S. Government Printing Office, August 1975.

71. Ventura Dias, p. 64.

72. Ventura Dias stated VW was eventually denied the special benefits, probably not so much in deference to Ford, as to GEIMAC's attempts to promote the machine tools sector (Ventura Dias:55:ffn.6).

73. Skidmore states that Castello Branco felt that after his three year tenure in which had allegedly cleaned up the political and administrative systems. Subversive were purged and the political parties and administrative and financial systems reorganized. Castello Branco felt that Brazil could rejoin the ranks of the democratic countries (Skidmore:1988:65).

74. According to Skidmore, although Castello e Branco feared that nationalist policies and insufficient preoccupation with inflation would result, this did not occur (Skidmore:1988:63-73).

75. Skidmore:1988:pp. 69-70. Skidmore cites:

A speech by Delfim Neto in O Estado de São Paulo, March 12, 1967

Ministério do Planejamento e Coordenação Geral, Directrizes de governo: programa estrategico de desenvolvimento, 1967, pp. 145-62.

Mário Henrique Simonsen, Inflação: gradualism x tratamento de choque, chapter 2.

76. In May 1966, the government, under Roberto Campos, decided that 30% of financeira funds should be allocated to consumer credit (Guimaraes, 108).

77. These figures correspond with figures given by Mericle which state that between 50 and 60 percent of consumer credit was devoted to financing of motor vehicle purchases. Mericle quotes Carlos Alberto Wanderley, "Novas Prioridades de Industria Mudam Acao das Financeiras," Jornal do Brasil, September 8, 1974.

Table 3.24 demonstrates the increase in available credit (Guimaraes and Gadelha:109-10).

There appears to be a debate as to the source of credit for consumer durables. Guimaraes and Gadelha mention Well's research showing the credit for consumer durables emerged spontaneously in the early 1960s. They also state that the rapid increase in credit after 1967 resulted from high levels of liquidity in the financial system which in turn were the result of high levels of profits in firms. This would diminish the important of institutional reforms in the financial system by the military government (Guimaraes and Gadelha:107).

They cite, J.R. Wells, Growth and Fluctuation in the Brazilian Manufacturing Sector during the 1960's and Early 1970's, unpublished PhD dissertation, University of Cambridge, 1977.

78. Guimaraes notes that these periods were later decreased to diminish gasoline consumption. They were reduced to 24 months in 1974, increased to 36 months in 1975, and again reduced to 24 months in 1976 and reduced once again in 1978 to 18 months.

79. William R. Cline, "Brazil's Emerging International Economic Role," and Werner Baer, "The Brazilian Growth and Development Experience, 1964-1975," both in Brazil in the Seventies, ed. Riordan Roett, p. 64 and 48-9.

80. For a discussion of the world car strategy as a convergence between US assemblers' needs for cheap parts and developing countries needs for foreign exchange and new investment, see Piore

and Sabel, pp.197-200.

81. Government incentives to export manufactured products were successively introduced after the mid-sixties. Before BEFIEEX was legislated in 1972, fiscal incentives included exemption from income tax on profits derived from exports; the exemption of the Tax on Industrial Products (IPI) and the Tax on the Circulation of Merchandise (ICM) on exported products; fiscal credits from IPI and ICM; and drawback arrangements exempt from import taxes on inputs used in the production of exported goods.

82. The degree of subsidy in the BEFIEEX program is difficult to assess. A World Bank report calculated that in 1979 and 1980 the incentives to export (including BEFIEEX) were 15 percent and 9 percent respectively. The export incentives slightly more than compensated for the overvalued cruzeiro. See, M. Penalever, et. al., Brazil, industrial policies and manufactured exports, Washington, DC: World Bank, 1983, p. 62-63.

83. Baumann:15 and Crissiuma, pp. 82 and 83.

84. Eduardo Guimaraes, Acumulacao e crescimento da firma Um estudo de organizacao industrial, Rio de Janeiro: Zahar Editores, 1981, p. 152. Guimaraes uses data from the Council on Industrial Development.

85. Interview with BEFIEEX personnel.

86. M. Penalever, et. al., Brazil Industrial Policies and Manufactured Exports, Washington D.C.: World Bank, 1983, p. 121, fn. 84.

87. The "national similars" test required that firms who wanted to import equipment, parts, raw materials, or other products submit a petition to the interested syndicate. The syndicate polled its members to see if they were interested in producing the item and were able to do so in the required time period. Whether CACEX respected the decision of the syndicate depended upon the level of foreign exchange and contacts, in addition to assurances by the supplier that it was able produce the product.

88. This may reflect changes in bureaucratic power. It was about this time that the Finance Ministry became the primus entre pares and the MIC lost some of its power. The finance ministry was pushing exports, but what was the relation between the CDI and Finance [check in Brazil].

89. The list included door handles, window handles, seat and related components, window supports, hydraulic cylinders, stamped parts for tractors, injected plastic parts, radiators, and others. "O Sindipeças revela onde ocorre a desnacionalizacão," in Folha de

São Paulo, March 19, 1976.

90. "Distorcoes perturbadoras," in Visão, Vol. 44, No. 9, May 15, 1974.

91. "O Sindipeças reveal onde ocorre a desnacionalização," in Folha de São Paulo, March 19, 1976.

CHAPTER 4

The Revanche: (Partially) Recreating the Horizontal Arrangements of the Implantation Period

The development of the Brazilian motor vehicle industry has been portrayed as a series of advances and setbacks in the suppliers' struggle to create and consolidate their horizontal vision. The horizontal industry was predicated upon protected and organized domestic markets where assemblers subcontracted the bulk of production to suppliers under long-term and often single-source arrangements. The suppliers advanced during the pre-implantation and implantation periods (1950s-61), and managed to create incipient long-term and cooperative relations. They fought for these organized markets with a series of tactics, both inside and outside of the legislative arena: protection from imports (under national similars legislation); high local content laws; state oversight of assembler-supplier relations; and alliances with state officials and assemblers based on common ideas, nationalities, and ethnicities.

The suppliers were set back during the post-implantation phase and failed to consolidate the horizontal and cooperative relations as assemblers took advantage of the changing conditions and imposed more arms-length relations. By the 1970s, assemblers and suppliers had adopted strategies of vertical integration and relations among them were often conflictual.

This chapter describes how in the 1970s, despite the failures of the post-implantation period, some suppliers made important gains in creating a functional equivalent of the horizontal organizational practices -- they imposed long-term and solid relations on their assembler customers. The suppliers devised new tactics which reflected opportunities emerging from the changing political economy. They strove to reimpose long-term and often single-source contracts through producer cartels and a law inhibiting vertical integration by assemblers. Simultaneously, they sought to protect domestic markets from the perils of BEFIEX-related imports.

The suppliers' strategies and results were shaped by contingent events. The suppliers used price controls to organize domestic competition. They saw, in foreign exchange shortages and the pressures for redemocratization, an opportunity to reinstate the protection they had lost and to press their case for greater control over assembler imports and for measures against threats of vertical integration by assemblers on the domestic market. They resorted to well-worn tactics and also devised new ones. Sindipeças continued to espouse its nationalist rhetoric and lobbied, while individual firms continued to resort to corruption and government contacts to resolve problems. But suppliers were constantly alert to new opportunities, and the most notable new tactic was the organization of producers' cartels.

Not all firms were equally successful at controlling

their markets via cartels or producers groups. A hierarchy of suppliers emerged where those at the top had achieved dominion over their markets and imposed more long-term relations on their assembler customers. The rest of the hierarchy reflected different degrees of cooperation with and control by assembler customers. The hierarchy was decisive in understanding the functioning of the industry as well as future challenges, which will be discussed in the next chapter. Finally, although production volumes grew during this period, as in the past, firms often continued investing in general purpose machinery and hybrid mass- and flexible-practices persisted.

The international and domestic shocks of the late-1970s and 1980s served to further reinforce the hierarchy of suppliers. As inflation intensified, labor strife escalated, and raw material shortages and foreign exchange crises periodically emerged, suppliers and assembler firm continued to vertically integrate to buffer themselves from the often chaotic environment. Although thwarting the horizontal vision, vertical integration had some fortuitous results. It insulated firms from uncertainty and contributed to achieving surprisingly strong export performance by firms in the top of the hierarchy. The counterpart of the strong firms' insulation is the legacy of small firms who were shut off from the possibilities of steady growth.

Before embarking on the story of suppliers' revanche I

will briefly describe the institution of price controls. The remainder of the chapter describes the suppliers' struggle to recreate the horizontal vision of the implantation period. Each section treats one of the suppliers' successive battles to reassert control over their markets: the producer cartels; the struggle to seal off the domestic market from threatening BEFIEX imports; and the struggle to prohibit vertical integration by assemblers. The final section will describe the new hybrid of mass- and flexible-practices.

I.A. Price controls

Price controls have become such a pervasive aspect of producing and doing business in Brazil that there was a vocabulary referring to the actions of the Interministerial Price Council (CIP). Firms and products were "CIPados," which in English would translate to "CIPed," meaning that they were under the purview of CIP.

In 1965, price controls began as temporary and optional.¹ In exchange for holding the line on prices, firms were granted tax, credit, and foreign exchange incentives.² By 1967 the incentives and punitive deterrents, in addition to "unofficial consultations" with the price control board (CONEP), made price controls virtually obligatory.³

Elite economic and financial policy makers chose to fight inflation with price controls rather than restricting the money supply. They believed that price controls were a means

to avoid recession and maintain economic growth.⁴ Moreover, they thought that price controls would allow them to control the behavior of monopolistic and oligopolistic firms and inhibit ruinous competition, thereby creating a more perfect market. Although the price controls were intended to enhance the market mechanism, they ultimately reinforced the oligopolistic firms that they were to control (Frischtak:76-77;Pinto:1981).

When Delfim Neto became the new finance minister in 1967 and diagnosed inflation as cost-push rather demand-pull, he had to control prices to stop the inflationary spiral.⁵ The price control system turned out to be very burdensome and at times pernicious to firms' profits. Delays as long as a few months were not uncommon, which, given the inflationary context, were quite onerous. Furthermore the crude method of setting prices as a percentage of an economy-wide General Price Index (GPI) did not reflect the diversity of firms and their production processes. The syndicates stepped in to protect their members. In consultation with the various corporatist groups, "sectoral indices" documenting increases in costs of direct and indirect inputs specific to different types of production processes were established.⁶ From then on, petitions for price increases were determined as a function of these indices.

The information requirements hammered out in negotiations between CIP and the syndicates were quite detailed. Price-

controlled-firms needed to hand in current prices, the prices they would like to charge, as well as cost break-downs. They had to document changes in direct labor, material, and parts costs; direct services; production costs; indirect costs; administrative, financial and commercial expenditures. They also had to hand in sophisticated balance sheets that required a reasonable amount of accounting infrastructure and know-how, which may have been beyond the expertise of a small firm (Frischtak:83).⁷ Punishments for not obeying the price control board decrees or not handing in sufficient information led to delays, fines, forfeiture of government credit, and prohibition against charging higher prices (Frischtak:111-114).⁸

The 1968 reforms in the price control legislation brought other wide-reaching administrative changes. The Interministerial Price Council (CIP) was created and differed significantly from its predecessor, CONEP, in that the actual ministers of Finance, Industry and Commerce, Agriculture, and Planning and General Coordination, rather than second-level technicians, were members. Moreover, representatives from the private sector were given a consultative status rather than membership so that CIP might have more leeway in decision making.⁹ This exclusionary measure would probably not have been taken under a democratic regime.

Decisions on price increases for important and politically sensitive products and services (whose weight in

the GPI was high or who had a reputation as a major cause of inflation) were decided by the ministers themselves. These industries included basic inputs and products such as steel, electricity, cement, rubber, paper, fertilizers, pharmaceutical products, non-ferrous metals, fuel, bread; monopolistic or oligopolistic sectors such as automobiles, tires, beer; and large firms that exercised significant control over their market segments (Frishtak:80). These petitions accounted for only about 1 percent of CIP decisions. Other petitions were examined by the technical staff.

There was another important change within the 1968 price control reforms. The syndicates began compiling and processing the data from their members. By streamlining the information gathering and analysis process CIP could make more timely decisions. If the information was handed in by an individual firm, CIP was required to respond within 45 days.¹⁰ If the request for a price increase was processed by the syndicate, which would first compile the information from its members, the response from CIP was immediate.¹¹ The government and the syndicate cooperated to help each other fulfill their respective mandates. Simultaneously, the process of handing in composite cost information permitted small firms who did not have the capability of precisely calculating costs to ride on the coattails of the more bureaucratically endowed brethren (Interview with Sindipeças official).

While channeling data collection for price increases through the syndicates alleviated the bureaucratic bottleneck, in some syndicates it permitted some firms to form cartels and in essence create functional equivalents of the horizontal implantation period arrangements. The government was not naive and probably foresaw some opportunities for firms to use the system to organize their markets. At times it even lent a helping hand, as we shall see later in the motor vehicle industry. It is likely that since the firms and the state had a long relationship of mutual struggles and cooperation, however, there was an understanding along the lines of the "gentlemen's agreement," regarding rules of expected behavior in price controls. Finally, state officials might have believed that cartels actually facilitated controlling prices. If one firm was controlled, the others would have to follow suit.

Although price controls were obligatory after 1968, the legislation was confusing and constantly changing. At different times, price controls were more stringent or more liberal depending upon political pressures and inflation. In the mid-1970s, CIP exempted firms with sales under a certain value from price controls. In 1977 special treatment was granted to assemblers and auto parts firms by allowing them to practice price increases that would be retroactively approved by CIP. This was later spread to other sectors (Frischtak:87). Since CIP often rescinded the price

increases, by the end of 1979 prices in these sectors were again rigidly controlled. Between 1981 and 1983 prices were again liberated, and in 1983 they were held to 90 and then 80 percent of an interest rate on government debt (ORTN) (Pace:10). In 1984 prices were again strictly controlled.

Frequently the government permitted only a percentage of some costs to be passed on to consumers. No wage increases above the nationally decreed minimum wage were recognized by CIP, although firms often paid well above market rates to attract and keep workers. Finance charges were calculated by CIP at the official rate and not at the actual rate, which varied significantly.¹² Documenting price information required complex decisions regarding stocks and reliance on subcontractors:

Under the system in vogue, it normally would behoove companies to keep inventories down and work virtually on a replacement basis. But there is a rub: many raw materials in extremely short supply. To insure themselves against scarcity, many companies have been trying to lay in plentiful stock from suppliers. One firm that normally stocks for 12 months of production now has an inventory of 18. Either they work from small inventories and run the risk of production interruptions, or they stock well ahead with raw materials that will show up cheap which they apply to CIP for price hikes. At the moment, most companies prefer the second course.¹³

As shortages were aggravated, firms increasingly embarked on vertical integration to protect themselves from time-consuming and often acerbic negotiations with subcontractors as firms fought to push the losses associated with price controls to each other. After the late 1970s, the price controls were a

constant source of negotiation and friction among firms, the syndicate, and the government.

Although the reforms were worked out in conjunction with the syndicates, firms' attitudes regarding the price control system varied among firms and at given periods.¹⁴ Many firms complained that CIP decisions were arbitrary or unrealistic. Furthermore filling out the forms required a great deal of employee-hours. Other firms conceded that CIP decisions were reasonable, and others appreciated its market stabilizing potential.¹⁵ Firms often complained of high turnover among CIP analysts which also delayed the authorization process.¹⁶

Over time, fewer numbers of firms were required to submit information to CIP. During the 1970s, virtually every firm was subject to price controls. By the 1980s, CIP decided to oversee only leader firms or oligopolies and force onto them the responsibility of imposing order on their competitors, subcontractors, and customers. As a result, price controls were generally exercised in two manners: at the level of the individual firm or at the level of "sectoral groups." Individual firm control focused on large firms that were usually leaders in their market segments. By controlling the largest firm the other firms would follow suit (Frischtak:88). "Sectoral Groups" were composed of groups with similar production inputs but no firm clearly dominated the segment. As we shall see, the term sectoral group was used in various contexts. With regard to price control legislation it was a

clearly defined group of firms. The sectoral group/producer cartel created in the context of the syndicate was more loosely defined and may or may not have coincided with that used by CIP.

Price controls became so pervasive that they frequently led to bitter and costly collective action which was particularly pervasive during periods of tight oversight. Firms tried to force customers, clients, and competitors to plead their case for higher prices directly to the government. This was done tacitly as the firms denied each other price increases and labor higher wages, effectively putting everyone on the same side. For example, a supplier's work force may have demanded higher wages. The firm's directors may have even agreed with the demands and at times even coordinated the timing of the strike with the union leadership in the factory. The directors, however, intentionally did not meet the workers demands so as to cause a strike. The strike, which stopped production, in turn pressured the assemblers to increase prices and therefore avoid a more expensive work stoppages in their plants. From the 1970s on, price controls became a nexus around which firms, sectors, and syndicates, negotiated and coordinated collective action.

II. The Revanche: Using Price Controls to Reconquer Markets

Until the late 1960s Sindipeças geared its efforts to keeping out new entrants. After this period, Sindipeças

began using price controls as a catalyst around which it rallied syndicate members to create producer cartels as part of its efforts to reinstate horizontal arrangements. It was also successful in reinforcing supplier control over assemblers' BEFIEEX imports and vertical integration. The following section has various subsections: 1) the persistence of the horizontal vision; 2) Sindipeças' efforts and the national political economy, particularly, changes in the price control legislation; the prominence of its officials in the businessmen's campaign to redemocratize; and foreign exchange shortages stemming from national and international events. The final subsection discusses the functioning of the cartels/sectoral groups.

II.A. *Unrequited Promises*

Since its inception, Sindipeças had pursued a "horizontal" vision for the industry -- high levels of subcontracting by assemblers (rather than suppliers), long-term assembler-supplier relations, and therefore, organized and secure markets for suppliers. During the pre-implantation period it concentrated on establishing the legitimacy of the organization and its members, and diffusing its notion of a "horizontal" industry. During the implantation period and throughout the 1960s, Sindipeças strove to keep out newcomers in an effort to solidify relations between suppliers and assemblers. It helped its members navigate through the maze of the national similars legislation and tried to convince

officials from GEIA, and later the Commission on Industrial Development, to reject petitions by foreign firms by setting up visits to affected firm by the officials. Despite these efforts, it was often unsuccessful.¹⁷

After the 1964 coup, the syndicate saw many of its gains erode as new MNC suppliers came to Brazil, assemblers vertically integrated parts, and some national firms went out of business or were purchased by foreign firms, and BEFIEEX was instituted. By the early 1970s, the assemblers had successfully used the opportunities presented by the recession, political uncertainty, and the military government's large-scale/large-firm conceptions of economies of scale to push onto the suppliers many of the burdens that the assemblers had previously shouldered.

As a general rule, the suppliers looked to the state rather than themselves for help. As part of their appeal to the state, the suppliers continued their campaign of portraying assemblers' gains as the invasion of national capital by multinational corporations. These tactics echoed debates in national politics, but as discussed in the last chapter, the extent of denationalization in the auto parts firms did not match the fiery rhetoric. These nationalist tactics, furthermore, were unsuccessful at galvanizing state protection through the 1960s and early 1970s.

Before that time, the suppliers rarely cooperated among themselves, for example, by mounting a concerted effort to

establish minimum prices or allocate orders among themselves. A president of a supplier firms suggested that corruption rather than collective action was the suppliers' main means of solidifying their links with assembler customers. He attributed the high growth rates of the miracle years with growing profits due to expanding volume as discouraging suppliers from collective action.¹⁸ Finally, suppliers had worked well with state officials during the pre-implantation and implantation periods and probably hoped that the fruitful relationship would continue.

The understandings that the state would continue to protect suppliers by inhibiting new entrants and compelling assemblers to take on part of the risk of new investments never materialized. The failures of the consolidation period for the suppliers were aptly summed up:

... [T]he genesis and growth of the auto parts sector were in part fed on the expectation of political protection and regulation of the intersectoral relations (auto parts firms - assemblers) that would preserve and encourage national industry. *These expectations, propped up by the authorities and spelled out in governmental plans and programs, little by little appeared as broken promises, at least at the level assumed and desired by the small and medium Brazilian businessmen (emphasis mine).*"¹⁹

The suppliers' visions of a horizontal industry and the unrequited promises however, were not forgotten. The suppliers continued their nationalist tactics and broadened their arsenal as they sought to recreate their horizontal concepts. The 1964 coup, with its notions of economies of scale based on mergers and export promotion, doomed the

possibilities for recreating the conditions of the implantation period. In its unconventional anti-inflation measures -- price controls -- however, the regime unintentionally provided opportunities for supplier empowerment.

II.B. *Ubiquitous Price Controls and Sindipeças*

Sindipeças began to use price controls as an opportunity to organize suppliers into producers' cartels. Slowly firms created arrangements that, in the case of about 30 to 50 firms, effectively imposed market shares on assemblers. At a minimum, however, in the case of about 400 firms, they provided some defense for suppliers when the assemblers refused to pay prices that suppliers were authorized to charge by CIP; helped small suppliers combat the high prices of raw materials; and permitted suppliers more profitable replacement market sales, an important source of firms' profits. Both national and multinational subsidiaries used the same processes to organize their markets.

Price controls, administered by the federal price control board, were to maintain inflation within tolerable limits. The crude calculation of price increases as a percentage of the GPI did not work and the government refined its system with the help of business. The Federation of Industries of the State of Sao Paulo (FIESP) and the syndicates hired consulting teams of professors from the University of Sao Paulo (USP) to help elaborate the formulae and information

that CIP would use. In addition to being among the country's most respected professors, these consultants were Finance Minister Delfim Neto's former colleagues at USP. Sindipeças was particularly active in the process and lent the price control board typewriters and copy machines (Interview with Sindipeças officials). In 1969, to speed up the decisions of the Interministerial Price Commission (CIP), the syndicates began collecting price information from their members and then handing the information to CIP in a compiled form.

Understanding and following changes in price control practices was essential to a firm's survival and many small and medium enterprises (SMEs) relied on the syndicate for guidance. Some member firms lent Sindipeças their finance executives to help other firms. Irlemp, a national filter producers, and Metal Leve, a national piston producer, have lent their specialists for many years. At times these people spent over half of their working hours on Sindipeças-related activities.²⁰ One of these financial advisors explained: "If Sindipeças sent out a memo to all suppliers at 8:00 p.m. announcing a meeting to discuss changes in price control regulations, at 8:00 a.m. the following morning the auditorium would be overflowing. If Sindipeças sent out a memo at the same time announcing a meeting about access to BNDES financing, only two or three firms would show up."²¹

The consequences of inflation and price controls were insidious because firms did not always immediately feel their

impact, as in the case of the raw material prices cited above. Furthermore, firms could not always predict when the government would desperately lash out at creeping inflation by using false indices to restrict price increases.²² In 1973 as part of the government's plans to maintain inflation at 12 percent, prices increases were held to this level although inflation ran at about 20 percent (Frischtak:166:ff 12). The director of a multinational parts firm explained that unlike in the United States, surviving in Brazil required fleet-footed pricing:

In the U.S., executives are more concerned about lowering prices; increasing quality; and competing with the Japanese and Koreans. The Brazilian executive has to be more concerned about raising prices at the correct moment. This is because of the difficulty of working under inflation -- one never knows whether the government will change the OTN [price of government paper which served as a price index], the value of the dollar, or whether the government will freeze prices again.²³

In a similar vein, the director of a large national firm recounted: "In most countries firms celebrate when an export contract is signed. In Brazil we go home sweating, praying that we correctly took into account the effects of inflation."²⁴ While protecting a firm from the ravages of inflation was difficult for large firms with a team of financial specialists, it was excruciating for small firms who were not large enough to justify hiring a financial wizard and/or did not have personnel with sufficient education or training to set prices in an inflationary environment.

In the same manner that CIP engendered a new vocabulary,

it also required a certain etiquette. The president of a large multinational subsidiary explained: "I do not directly negotiate prices with the assemblers so as to avoid fights." If he, as president of the firm, fought with an assembler, then his firm may well have lost a customer. He made sure that if one of his vendors lost his temper in the often frustrating negotiations, the president was there to patch things up. Small firms did not have this luxury. Since the owner of the family firm was often the vendor as well as the president,²⁵ one mistake in the often virulent negotiations over payment periods and prices, in other words decisions about who bore the burden of inflation, often cost him a lot of business.

CIP decisions added a macabre and bitter twist to price negotiations. They engendered fights among the assemblers and suppliers as they struggled either to shift foregone profits and/or losses onto the other, or during the more lenient periods to swell profits in the expectation of lean periods ahead. Price controls were an irritant and catalyst as well as a rallying point for collective action. By law, no firm was allowed to charge prices that were not authorized by CIP. Frequently, however, although suppliers had authorization to increase prices, the assemblers refused to pay them. They would either play suppliers off of each other, and/or threaten to import or vertically integrate. Since the assemblers themselves were "CIPados," they either refused

increases to suppliers as a means to increase profits (diminish losses) and/or as a means of strengthening their bargaining position vis-a-vis the state by making sure that the suppliers would side with them when the latter complained about excessively restrictive price controls. In an alternative strategy, the assemblers sought to raise prices as much and as quickly as possible so as to prod consumers to pressure the government. Consumers would rebel against the speculation in new and used cars (they would be bought for investment purposes by those with available cash and sold for high profits during periods of shortages). Assemblers hoped that the combination of public pressure and the assemblers' threats to stop production and put workers on the street would force the government to lower its high taxes, thus permitting assemblers higher profits without resorting to charging higher prices.²⁶

Suppliers were infuriated that while the government authorized price increases which as discussed above, often did not cover the full extent of cost increases, the assemblers would not honor them. The suppliers complained that they were stuck between the raw material supplier and the assembler. Similarly, the assemblers countered that they were caught between the suppliers and the state.²⁷ In the more acerbic discussions, suppliers threatened the assemblers with interrupted deliveries. They often had inside information about the amount of stock in the assembler and threatened only

when levels were low (Interview with a supplier). Assemblers, in turn, intimidated suppliers by threatening to import or vertically integrate components produced by the suppliers. As the battles among individual firms raged, the suppliers, via Sindipeças, sought to heighten awareness of their plight within the state and among the public at large. Suppliers conflated assembler intransigence in pricing, threats to vertically integrate or import and cast them in the language of public debates on denationalization (see last Chapter).

Despite the widely acknowledged negative impact of price controls, the syndicates' and firms' views depended very much on their market positions as well as the particular time period. In response to firms' complaints, price controls were sometimes lifted and either price increases were approved retroactively (called "liberty with oversight") or firms were allowed to set their own prices. As inflation heated up, however, these periods of leniency were shorter and less frequent. In 1977, Sindipeças demanded the immediate abolition of price controls for all firms, the assemblers, and the auto parts firms. Nonetheless, with the loosening of price controls, Sindipeças executives understood that auto parts firms were likely to accelerate price increases to recuperate cost lags from the previous period. But, if at the same time, they fought among each other to increase their percentages of assembler contracts, the small and medium firms would be hurt the most. Moreover, an immediate liberalization

of pricing practices, "could lead the assemblers to vertically integrate their production."²⁸ Anfavea supported a position of gradual liberalization of prices. Individual assemblers, however, may have held different views, for example some assemblers, like the suppliers, supported immediate emancipation from CIP.²⁹

Despite the diversity in the size of the firms and the products they produced, Sindipeças officials understood that they could tactically use price controls to increase cooperation among their respective member firms in pursuit of the horizontal vision.

II.B. *Suppliers' Struggles and National Debates*

The suppliers' tactics and struggles were intertwined with changes in the political economy. In 1969, as discussed above, the syndicates, among them Sindipeças, stepped in to collect and compile their members' data on price increases. As Sindipeças collected the data it began encouraging firms to create sectoral groups and work together to share information on price increases as well as other strategic issues such as how the assemblers divided up contracts for parts among suppliers and what they paid. The groups also shared information to determine if assemblers were vertically integrating production.³⁰ The embryo of some of the sectoral groups were those created for the discussion of the Latin American Common Market, discussed in the last chapter.³¹

These groups were expanded and new ones were created. Over time, about 30 to 50 firms were able to organize and create functional equivalents of the assembler-supplier relations of the implantation period. This will be discussed in the following subsection.

The efforts to organize domestic competitors were given a big boost with the election of Vidigal Filho, the charismatic and high profile vice-president of Sindipeças from 1970-73 and president from 1973-79. During his term membership member grew from 320 members to 536 members.³²

Vidigal Filho stepped in to help the filter producers who after the first round of oil price increases had started ruinous price wars (Interview with Mammana Neto). He worked hard to encourage the formation of sectoral groups so that firms could protect themselves by developing common sales and discount policies, payment periods, and new products and other practices. He stated that uniting the auto parts suppliers was the only way to avoid the the squeeze from assemblers on the one hand, and the steel companies, state-owned oligopolies, on the other.³³ By encouraging the formation and strengthening of cartels, Vidigal Filho was simultaneously fortifying Sindipeças; pursuing his vision of an important national role for business associations; and making inroads against collaborationist business leaders who supported the military regime.³⁴

Vidigal's effectiveness and Sindipeças' victories

mirrored pressures the military's factoring hold on power. Internally, the right-wing segments of the armed forces had created death squads that were running amok and threatening discipline and internal unity in the army.³⁵ Externally, the military regime that had consistently been criticized by opposition politicians, students, and segments of the Church, now counted business elites among the disaffected. The lack of business sector input into pricing, planning, trade, raw material and other policies led to a backlash by the private sector.³⁶ Furthermore, the increasing presence of the state in the economy, often in direct competition with the private sector, fueled charges of "statization" of the economy.³⁷

The regime had to respond to growing internal and societal pressures. In 1974, President Geisel, an intellectual and spiritual heir to the more legalist Castelo Branco and the Sorbonne group tradition,³⁸ replaced the very repressive General Medici as president and a lurching distensao, or decompression of the political system, began.³⁹ Building on Stepan's work, Nysten suggested that Golbery, Geisel's chief assistant was trying to fortify civil society to offset the growing threat of the internal security apparatus and prepare for a return to democracy.⁴⁰ Upon resuming power, Geisel promised auto parts suppliers that he would press for legislation responding to their plight of denationalization and verticalization.⁴¹ Auto parts firms had to wait for Geisel's promises to materialize, but in 1979

a resolution prohibiting vertical integration by assemblers was passed. This will be discussed below.

Geisel's promises reflected not only the broader goals of redemocratization, but also the prominence of Sindipeças officials among opposition business leaders. Jose Mindlin, president of Metal Leve; Vidigal Filho, president of Cobrasma which produced axles and other goods; and Paulo Villares whose firm produced piston rings in addition to steel and capital goods were among the dozen or so prominent and emerging opposition business elites consistently cited in opinion polls.⁴² These business leaders were from large industrial groups. Although they were latecomers to the public cries for redemocratization, joining segments of the church, students, and intellectuals,⁴³ their role in maintaining economic growth lent urgency to their demands.

Yet a third element on the national scene supporting suppliers' demands for greater protection was the foreign exchange shortages of the mid-1970s. The miracle growth years (1967-1974) have been attributed to excess capacity from the 1964-67 recession. As excess capacity dried up, however, imports of capital goods and easy credit took over to sustain economic growth. With growth rates of over 10 percent, imports of raw materials and capital goods jumped from slightly over 1 billion dollars in 1967 to almost 9 billion in 1974.⁴⁴ Although international prices for Brazilian exports were high, the acceleration in imports outran the impressive

increase in the terms of trade. Import capacity over the period grew 16.5 percent annually while imports grew at an average of nearly 27 percent (Regis and Bonelli:19).⁴⁵

As the impact of the first oil shock reverberated through international markets, Brazil's import capacity dropped precipitously. The government resorted to further foreign indebtedness to sustain imports and credit levels necessary for growth. At the end of 1973 net external debt was 6 billion dollars. At the end of 1977 it had reached 32 billion dollars. By 1979 the debt had reached over 50 billion, after the increase in international interest rates and the second oil shock. Although domestic growth was being desperately pumped up by external loans, it was falling. Growth rates fell from almost 11 percent during the miracle years to 6.4 percent from 1974 to 1978 (Regis and Bonelli:14).⁴⁶

The military had always aspired to their vision of "grandeza" which informed the very expensive pharonic dams, highways, sophisticated raw materials plants. The debt-led growth strategy pursued in the post 1974 years also reflected the regime's increasing fragility, as demonstrated by important gains for opposition parties in the 1974 elections and increasingly strident complaints by business.⁴⁷ The regime was dependent upon economic growth to maintain itself in power.

The multitude of pressures shaped the Second Economic Development Plan (PND II) of 1974.⁴⁸ Increasing external

indebtedness would finance a new, massive import substitution effort. While import substitution in the consumer durable sector was in large part the engine of growth from the 1950s through the miracle years, the PND II would repeat the process, but shift the locus of growth to the capital and intermediate goods sectors.⁴⁹ Brazil would become more autarkic and technologically proficient. The model of growth was the *tri-pe'*, the alliance among foreign, national, and state capital. As the goals of the PND II were reached, the private sector, mostly large national firms, would progressively take over from the state the command of the *tri-pe*, and business complaints about denationalization and statization would be put to rest.⁵⁰

The path to private sector control required the state to initially increase its participation in the economy.⁵¹ While on the one hand state enterprises (when possible in conjunction with national or multinational capital) would produce needed raw materials (Petrobras, Carajas, Eletrobras, to name a few), they would simultaneously create a demand particularly for capital goods, but also raw materials, goods, and services from other private firms (Barros de Castro and Pires de Souza:38; Alves Pinto:19-20). While state investment kept the economy going and provided orders for national firms (large ones were favored over small and medium ones), it simultaneously generated a backlash as it crowded out private firms, centralized decision making, and sidelined the private

sector.⁵² Furthermore, the import substitution policies for raw materials and capital goods required more imports and fueled inflation. The balance of payments shortages were aggravated and as higher levels of inflation raged (30 percent in 1975 to 48 percent in 1976)⁵³ price controls became more stringent. These events provided suppliers new opportunities to organize domestic markets.

One additional issue, also intricately tied to the rapidly changing political climate, further aggravated relations between assemblers and suppliers. The wave of strikes which began in 1979, initiated a new period in Brazilian labor militancy and national politics that continued throughout the 1980s and early 1990s.⁵⁴ As firms felt that they could better control and negotiate with the labor force within their firm, these strikes may have been another factor fueling levels of vertical integration.

The changes in the national political economy -- inflation and price controls; cries against denationalization; foreign exchange shortages; and the prominence of Sindipeças officials in national politics -- revealed new opportunities. Sindipeças responded: It encouraged producers' cartels, and devised means to tighten oversight of assembler imports and vertical integration. Increasingly besieged, the state lent a sympathetic ear to the auto parts producers and in the process helped reinstate a horizontal vision.

II.C. *Sectoral Groups/Producers' Cartels*

The active participation of Sindipeças in price controls emboldened Sindipeças officials and firms to pursue their vision of a horizontal industry by establishing producers' cartels. It is important to note that producers' cartels, although an anomaly and illegal in the United States, were prevalent in many countries.⁵⁵ The producers' cartels, usually referred to as sectoral groups, did not have legal status in Sindipeças. They were created when firms producing similar parts, often prodded by Sindipeças officials, agreed to form such a group. Usually the sales agent or another manager of one of the member firms coordinated the group's activities and meetings. A record of their meeting dates, and sometimes a summary of accomplishments and goals, were published in the monthly Sindipeças newsletter. This was particularly common in the mid-1980s as Sindipeças undertook a new drive to expand the sectoral groups.

The strength of the sectoral groups as well as the willingness of Sindipeças executives to bring up their problems in meetings with government officials was often related to the number of firms affected and their cohesiveness.⁵⁶ One of these sectoral groups had over 100 members, which helped it to pressure the syndicate directors, who in turn pressured government officials. Both national and multinational subsidiaries worked side by side in these groups and they used the same processes to organize

their markets.

All sectoral groups aspired to organizing their competitors.⁵⁷ In the strongest case, firms set minimum prices, and common finance charges and payment periods. There was no formal enforcement mechanism such as fines. An offending firm, however, might be ostracized and excluded from future meetings.

Sectoral groups also addressed other concerns. Perhaps the most important issue discussed in the sectoral groups was how to avoid price wars. For example, at one point the precision springs firms had excess stock, and by encouraging firms to share price information the group members tried to keep themselves from sliding into a price war in the effort to unload the stock. Another problem that came up, mostly among the large firms, were BEFIEX contracts for suppliers. By the late-1970s, a few suppliers began using BEFIEX contracts. As such, they were entitled to import parts. Their competitors, however, may have blocked the imports as a negotiating tactic to extract concessions on other contracts or issues. These conflicts may have been mediated in the sectoral group. In another instance, a sectoral group tried to devise tactics for dealing with new firms, usually created by former employees, who tried to create a place for themselves by undercutting existing producers (Sindipeças Notícias, June 1985).

Firms also discussed means of cooperating to become more competitive and profitable. For example, firms agreed to

produce parts for each other to attain larger production runs and create full product lines for aftermarket sales (Sindipeças Notícias, 10/85). At other times, the groups addressed problems in intermediate goods. The filters group, the first sectoral group helped set up national producers of special paper used in filters (Sindipeças News:6/85). Other issues discussed in the sectoral groups included sharing information on the resolution of labor disputes (salary, working condition concessions) and market forecasts; devising strategies for obtaining official government financing; dealing with the price control board; acquiring raw material, and resolving tax and legal issues.

The organizing was not always easy. The following example, a well publicized case was not typical, but it serves as an illustration the dynamics of organizing, and the splits between the "insiders" and "outsiders" in Sindipeças. Miriam Lee took over her husband's spring factory upon his death. The firm, founded in 1936, was one of the first to produce auto parts and Eduardo Lee, Miriam's husband worked alongside Sindipeças activists in the early years of the industry. Either Ms. Lee refused to play by the rules of the game or did not understand them. In her book The Kings and I,⁵⁸ she explained how she was abandoned by Sindipeças as well as the government when Ford vertically integrated the production of springs in its factory in the Northeast of Brazil.

Lee recounted how, in 1976, the then vice-president of

Sindipeças, Carlos Fanucchi, called to tell her that the syndicate was establishing sectoral groups and that it was organizing the springs producers. Fanucchi stated that the formation of the group was important because "it will be easier to send price information to CIP and this is a government requirement." Lee stated that when she declined to participate he threatened her: "...at any rate you have to participate, otherwise they [her competitors] will unite against you and you will not survive the fight" (Lee:42).

The relationship between Sindipeças and the CIP tecnicos grew to be very cooperative. An executive of Sindipeças recounted that in the divisive process of trying to organize the springs producers, Ms. Lee would not cooperate. She did not trust her competitors and wanted to submit information to CIP as an individual firm. Since the syndicate was trying to organize the springs producers, it simply asked CIP for the information about the "renegade" firm's prices, which CIP, albeit improperly, passed on.⁵⁹

Through Sindipeças officials' efforts, firms slowly began two types of producers groups: the stronger ones imposed minimum prices and divided up market shares. Among the stronger groups, two types of arrangements emerged -- one was the market leader arrangement where the dominant firm set the price and the others agreed to follow rather than undercut. The second was an arrangement whereby firms agreed to respect rules set up by consensus. Firms that set up strong sectoral

groups included producers of pistons, bearings, wheels, shock absorbers and other suspension parts, brakes, piston rings, and electronic components. Commenting on the significance of the groups, the executive of a large auto parts firm commented, "In negotiating price increases with the assemblers, conversations with my competitors are more important than my conversations with the assembler."⁶⁰

As a general rule, when a new product was launched, suppliers competed among themselves to win a contract. At this point there was no cooperation among suppliers as they hid from each other all information about design, performance, and tests.⁶¹ Based on the project that they submitted to assemblers, the suppliers tried to win an exclusive supply arrangement during the first 1 to 4 years of the contract.⁶² Winning exclusivity on a contract gave the firm an edge on the after-market. After this initial period, the assembler wanted a second supplier. The second supplier usually ended up with about 20 percent of the contract in its first year producing the component. After this point the suppliers worked together to make sure that the assembler did not force them into price wars. Suppliers decided upon minimum prices and often divided production among themselves. They communicated these arrangements to assemblers in a bidding process that was virtually pro forma. The suppliers usually negotiated among themselves a 50/50 split and a minimum price, or if a new supplier was brought in they negotiated another arrangement.

Furthermore, if the price of a product was well below its cost due to years of incorrect CIP pricing, then the firms redistributed the contracts among themselves (while going through proforma bidding) in an effort to rename the product and charge a higher price.⁶³

Coordination among suppliers was not perfect. If one firm sought a more dominant market position or had excess capacity in a particular machine it may have sought a higher percentage of a contract. In this case, the supplier offered assemblers a lower price and consequently was awarded a larger part of the contract. The betrayed suppliers usually retaliated by lowering their prices on another product they had in common with the renegade supplier and taking a larger percentage of that contract. Usually the exchange stopped here, but once in a while it led to unmitigated price wars.⁶⁴ In this case the firms appealed either to Sindipeças or even to CIP for help in tempering competition.

Most suppliers, however, were not able to control their markets and in these cases a second type of producers' group emerged. Suppliers who had many competitors, low barriers to entry, and/or did not trust each other, were unable avoid frequent price wars. Often these suppliers were producers of small stamped parts, many types of forged parts, castings, fasteners, gaskets, and filters. Bearings producers, which produced a sophisticated product and coordinated 12 firms in the sectoral group, for example, did not trust each other.

They elected to not cooperate among themselves (Sindipeças News, July 1985). These sectoral groups could not or did not set minimum prices and other conditions. Nonetheless, they coordinated other important matters -- common purchasing agreements and efforts to pressure syndicate directors to demand governmental assistance on issues such as relaxing price controls and increasing access to credit. Additionally, as in the stronger sectoral groups, these firms exchanged information on prices of raw materials, settlements in labor disputes, and market forecasts.⁶⁵

The assemblers were fully aware of the market stabilizing tactics via rigged bids and information sharing and they also used similar tactics. They also shared among themselves information about the prices they paid to suppliers in an effort to lower prices of parts. When an assembler and a supplier were having problems, the assemblers often discussed the issue among themselves and if it affected various assemblers, they may have taken more drastic measures such as concerted action against the supplier. The assemblers periodically tried sustained and concerted efforts to work together to force suppliers to lower prices. However, because the suppliers fell back on the replacement market and after the late-1970s, in a more limited manner on export markets, the degree of success was not preordained. Furthermore, assemblers themselves had differences among themselves which also impeded collective action. If one assembler had to meet

an export contract; had a particular relation to the government;⁶⁶ or cash-flow problems and had to get the vehicles out, then agreements among assemblers were unlikely to stick.

As a general rule, the assemblers were unnerved by the suppliers' cartels although they themselves frequently collaborated and used the suppliers' cartels for their own ends.⁶⁷ Typically, before the mid-1970s, the assemblers threatened the suppliers with BEFIEX imports and vertical integration. In the celebrated case of the springs producers discussed above, Ms. Lee recounted that the director of Sindipeças threatened her if she did not join the sectoral group for springs producers. The next day she went to Ford to speak with the director of purchasing, Paulo Dias and tell him that Sindipeças was spearheading an effort to form cartels. She recounted that when she talked to Dias he did not pay much attention and gave her the impression that he knew about the sectoral group/cartel (Lee:43). Yet at a later date, Paulo Dias called the spring producers to his office. He stated that because they were forming a cartel Ford would be forced to vertically integrate production (Lee:47).

In fact, Ford was using the cartel as a pretext to score points with the government. Ford had decided to cancel the Willys Jeep (a leftover from the Willys acquisition) which it produced in a factory in the depressed region of Northeast. Rather than close the factory, Ford decided to begin producing

springs and uniforms there. By not closing the factory Ford wanted to ingratiate itself with the federal government as well as take advantage of incentives available to promote regional development.⁶⁸ Ford also believed that it could teach suppliers a lesson, although in various interviews, directors and managers in the assembler frequently commented that the investment had been a mistake.

Not all assemblers opposed the suppliers' cartels. The Brazilian president of a tractor assembler stated that the sectoral groups were beneficial to the motor vehicle industry. They kept firms alive and healthy; were a means of rapidly communicating among firms and pushing innovation through the system.

II.D. *Curtailing The International Threat*

Parallel to its efforts to organize domestic competition through producer cartels, Sindipeças persevered in its battle against the international threat to domestic markets. A key target of Sindipeças efforts in the mid-1970s was to diminish leverage that the assemblers gained over suppliers as a result of the BEFIEX-related imports. Suppliers' complaints resonated in the context of national debates. During the 1979 Sindipeças elections, Fannuchi campaigned: "We have to impede BEFIEX becoming an indirect form of verticalization."⁶⁹

When the BEFIEX legislation was being negotiated in the late 1960s the suppliers acquiesced and even supported it, yet

they never received the safeguards they expected. The resolution passed concurrently with BEFIEEX in 1972 directed assemblers to respect the horizontal principles on which the industry was founded. The resolution, however, carried no punitive sanctions. Perhaps the suppliers believed that the resolution would be enough to protect them from arbitrary imports. Most probably, they also understood that they would be protected by the "gentlemen's agreement" worked out between the CDI, Sindipeças, and Anfavea, whereby the assemblers would submit to Sindipeças a list of desired import which could be vetoed by suppliers.

Despite the resolution and the "gentlemen's agreement," CACEX which authorized BEFIEEX-related imports consistently ignored the suppliers vetoes.⁷⁰ The imports under BEFIEEX never reached more than 5 percent of total sales (see Table 3.3). The suppliers, however, were worried about setting a precedent. Furthermore, they were infuriated with and scared of assembler tactics which threatened suppliers with BEFIEEX imports if they did not lower prices or meet other demands.

Erratic economic growth compounded suppliers fears. The miracle year growth rates which had been about 20 percent per year for the industry from 1967 to 1974 and reached production levels of almost 900,000 vehicles, fell to only 5 percent in 1975 and fluctuated wildly over the following years. Only in 1978 did the industry began producing over one-million vehicles, merely 100,000 more than they had been producing

four years earlier.

The suppliers' worries were compounded with the wave of investment that came on line in 1975 in response to the growth of the miracle years and the BEFIEX incentives. Suppliers claimed that they had been coerced by the Council on Economic Development (a Government Bureau involved in industrial policy) to accompany assembler investments with parallel investments in parts production. As sales became erratic and expansion goals unmet, in an effort to keep machines running, the assemblers augmented their practices of vertically integrating and/or expanding into areas where suppliers could potentially produce. Although suppliers agreed that discussions between Sindipeças and Anfavea helped suppliers adjust to market fluctuations, they felt they still carried much of the risk and that they had been double-crossed by the government and the assemblers who had insisted on the investments.⁷¹ Their horizontal vision and livelihood were further jeopardized.

Given the economy's growing foreign exchange requirements, the suppliers were in a delicate position. On the one hand, the assemblers generated foreign exchange (See Appendices of this chapter). From 1972 to 1979, BEFIEX-related exports represented over 15 percent of total manufactured exports (Crissiuma:133). Over the same period, the motor vehicle industry represented approximately 34 percent of BEFIEX-related exports and the auto parts sector,

6 percent (Crissiuma:133).

Vehicles, however, in their thirst for imported petroleum simultaneously represented an unrelenting drain on foreign exchange. Petroleum and related products jumped from less than 12 percent of total imports in 1973 to over 30 after 1975, and as high as 55 percent in 1983 (Regis and Bonelli:18). The government attempted to slow vehicle sales by cutting financing periods for purchases and by closing gas stations on weekends to save on fuel. To cut imports of fossil fuels, in the late 1970s, the government launched an ambitious plan, Proalcool, to convert the Brazilian fleet of automobiles to ethanol-alcohol use, a fuel derived from sugar cane. The government and assemblers wavered in their commitment, but Proalcool finally steamed ahead and saved the motor vehicle industry from severe recession. The assemblers were reluctant to invest in the R&D needed to develop the engine, but finally agreed that it was better than rationing of gasoline and a severe fall in industry sales.⁷² Despite the second oil shock, the industry managed to grow 5 and 2 percent in 1979 and 1980, as it surpassed production of one-million units. It was not until 1981 when the government induced a recession to save the bleeding foreign exchange reserves that production fell a precipitous 30 percent. The losses were only partially recovered over the following years.

While the alcohol engine established the innovation and design capacity of firms in Brazil, it had few repercussions

in terms of future trends.⁷³ It may have helped solidify the position of large suppliers, but beyond collaboration around the project itself, it did not lead to a new era of more cooperative assembler/supplier relations.⁷⁴ Some suppliers mentioned its importance in demonstrating the capabilities as well as the ability of the sector to cooperate on innovative projects.

By about 1976 the wrenching foreign exchange shortages and pressures from industrialists forced the government to limit imports. Previously spurned, the suppliers' demands to limit BEFIEX-related imports based on national similars arguments were more frequently honored. CACEX, the import-export bank was increasingly receptive to suppliers' scrutiny and challenges to the assemblers' import petitions. Suppliers blocked imports for various reasons. One was to create new markets for growth. Another was to improve negotiating leverage with the assemblers on matters such as prices and payment periods (Interviews with Sindipeças Official;Stevens:5).⁷⁵

By the mid-1970s, some suppliers had created a functional equivalent of the horizontal industry which had been eroded over the 1960s. Producers cartels were well underway and the battle and the international threat was mitigated. Suppliers pursued the reinstatement of the horizontal industry reinforcing organized domestic markets. They sought legislation prohibiting assemblers from vertically integrating

production. They were successful, and gained greater leverage over their assembler customers in 1979 with the passage of Resolution 63.

II.E. *Resolucao 63 - General Geisel's Belated Promise and More Highly Regulated Assembler-supplier Relations*

While price controls provided the catalyst around which producers cartels were constructed, they were also a constant irritant to firms as they vied to push losses connected with price controls onto customers, subcontractors, and at times, competitors. The assemblers threatened suppliers with vertical integration and/or imports if they did not accept the lower prices.

In early 1976, Sindipeças announced that about 45 firms were being hurt by vertical integration by assemblers.⁷⁶ Vidigal Filho, the president of Sindipeças, stated that vertical integration by assemblers accounted for 70 percent of the idle capacity in the auto parts sector. He commented that as the assemblers embarked on expansion projects, particularly during the 1973/74 period they began producing more components in-house. The problem was compounded by uncertain economic growth. Vidigal stated: "The assemblers are accustomed to making invasions in the area of auto parts production: every time that vehicle sales fall, they begin producing components." He warned that the practice was dangerous because once sales resumed and there was no more

idle capacity, the assemblers would once again need the supplier. The supplier, however, may refuse to supply or may not be able to do so.⁷⁷

In a decision that Sindipeças trumpeted as equal in importance to the legislation that created the industry, Resolution 63 prohibited the assemblers from vertically integrating production of products that had previously been produced by suppliers.⁷⁸ Unlike the previous resolution asking the assemblers to "orient themselves in the direction of a horizontal industry," Resolution 63 carried a severe punitive clause which rescinded all tax and other incentives to assemblers that vertically integrated production already supplied by a parts firm in Brazil.

The resolution reflected foreign exchange shortages, growing business criticism of the exclusionary character of the regime, and astute tactical maneuvering on the part of Sindipeças. By eliminating assembler tactics that threatened suppliers with vertical integration, it gave suppliers an important tool to defend themselves. In a manner, the legislation further reinstated the condition under which some firms reinforced the horizontal arrangements.

III. *The Hierarchy of Suppliers**

As a hierarchy of suppliers solidified, some firms gained increasing control over their markets through the producers' cartels, limits to BEFIEX imports, and Resolution 63. A core group of suppliers, the majority multinational, was able to impose conditions on assemblers and avoid most domestic price wars. The remaining suppliers were relegated to varying degrees of more market-like relations and often an essentially dualist role, producing only in times of high demand. I will present a sketch of the peak, intermediate and lower echelons of the hierarchy. The relative position of firms reflects not only barriers to entry and the number of firms, but political factors such as the firm's relations in Sindipeças and sociological factors such as family dynamics. The firm's position in the hierarchy, in turn, shaped its export strategy, international competitiveness, and managerial and investment strategies. The hierarchy itself presents future challenges to the competitiveness of the industry, which will be addressed in the following chapter.

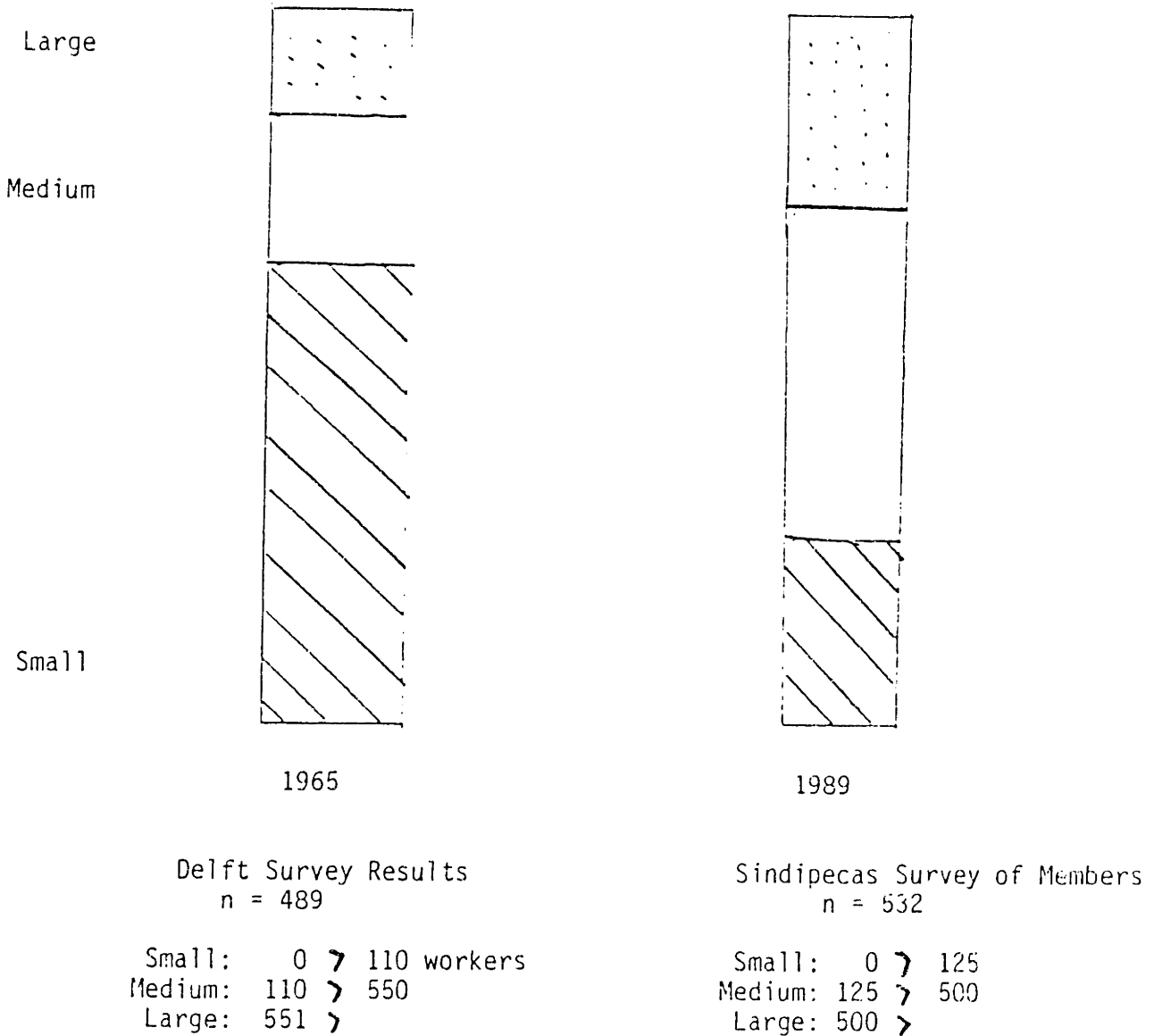
There are a total of approximately 1800-2000 auto parts suppliers in Brazil. In 1989, 532 firms were affiliated with Sindipeças.⁷⁹ These 532 firms represent approximately 95

* *In the industrial organization literature, vertical integration is often referred to as "hierarchy," as opposed to subcontracting, which is referred to as "market." These uses should not to be confused with the term hierarchy as it is used to describe the structure of the auto parts sector in Brazil.*

percent of total sales of approximately US\$ 14 billion
(Interview with Sindipeças official).⁸⁰

GRAPH 4.1

DISTRIBUTION OF SMALL, MEDIUM, AND LARGE AUTO PARTS SUPPLIERS, 1965 & 1989^{*}
 (Firms classified by number of workers)



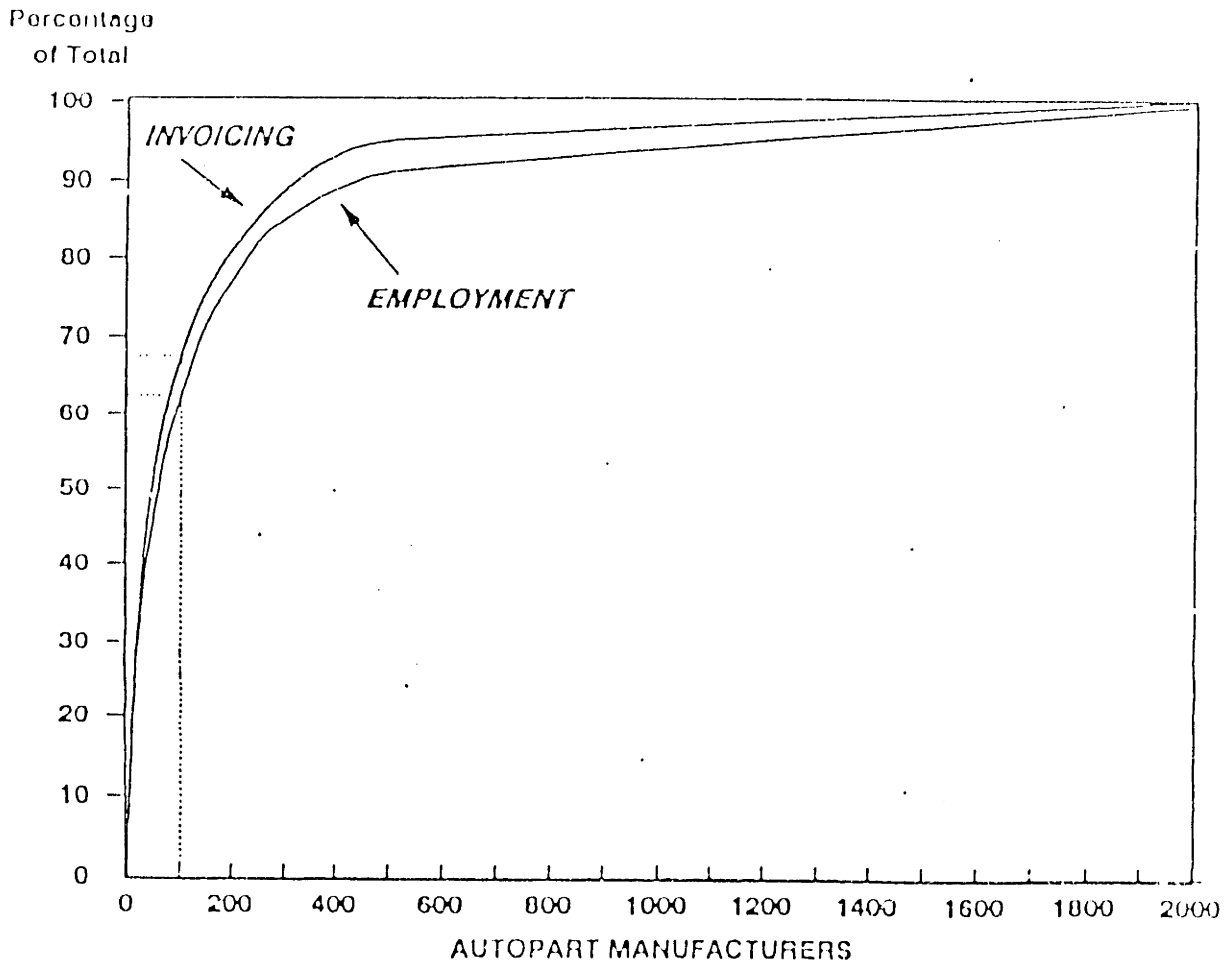
(*) Note not only that the categories do not coincide, but also that the sample of Sindipecas firms is biased toward more established firms.

The latter data is not strictly comparable to that of the 1965 Delft survey referred to in the last chapter because the categories are slightly different. Nevertheless, it is clear that firms in the sector have grown. In 1965 firms with 110 or less workers represented 64 percent of firms. In 1989, firms with 125 workers or less represented 27 percent of Sindipeças members. In 1965, firms with 110 to 550 workers represented 21 percent of firms. In 1989, firms with 126 to 500 employees represented 46 percent of firms. In 1965, large firms of 551 or more workers represented 3 percent of firms. In 1989, firms of 500 or more workers represented 27 percent of all firms.

Domestic sales and exports were highly concentrated as early as the 1970s. In 1990, approximately 100 firms accounted for almost 70 percent of total domestic sales.⁸¹ The largest 20 firms accounted for approximately 40 percent of sales, and one firm, Cofap, producing piston rings, shock absorbers, and various specialized castings, accounted for slightly over six percent of sales.⁸² Most of these firms were subsidiaries of MNCs or joint-ventures. Only three firms, Cofap, Metal Leve, and Nakata, were 100 percent nationally-owned.⁸³ Although Sindipeças periodically collected more specific data about concentration of sales, it refused to release it. Perhaps it was afraid of damaging its image as protector of small and predominantly national firms.

GRAPH 4.2

DISTRIBUTION OF SALES AND EMPLOYMENT
2,000 Auto Parts Companies



Source : SINDIPECAS

Table from: Booz, Allen, & Hamilton, Sectorial Strategy, Brazilian Auto Industry, November 1990, São Paulo, p. III-25.

Suppliers will be roughly categorized as either in the top (peak), intermediate, or lower echelons of their hierarchy. About 30-50 firms (including the twenty largest) or about five to ten percent of Sindipeças members, have managed to carve out monopoly or oligopoly arrangements and are in the peak of the hierarchy. The remaining approximately 400 (not all Sindipeças members sell to assemblers) firms have less or no control over their relations with assemblers and their sales in the replacement markets. But first, to understand the hierarchy, it is important to understand the markets in which these firms operate.

III.A. *Markets - Original Equipment, After-Market, Export*

III.A.1 *Original Equipment Market*

Auto parts firms supplied to three distinct, but not totally unrelated markets. They supplied original equipment (OE) to the assemblers which was either assembled on vehicles or sold by the assemblers to dealers who in turn sold them to consumers needing repairs on their vehicles. Although the assemblers want to completely control the replacement markets through their dealer networks, they could not because of the thriving after- or replacement markets in Brazil. Whether or not the assemblers had some control over the A-M depended on who owned the tooling. This issue will be discussed in the next section. Despite bitter disputes among suppliers and assemblers, however, the OE market was among the suppliers'

most stable.

III.A.2 *After-Market (A-M)*

The after-market (A-M) or replacement market was important to supplier firms' survival because when original equipment sales diminished, by definition, replacement market sales increased as the average age of cars increased. Furthermore, suppliers reported earning anywhere from 10 to 100 percent more per unit on the replacement markets. The extra costs they incurred included packaging, some distribution, and in some cases technical assistance to mechanics. Despite the higher per unit remuneration, the A-M was more price sensitive and as a result more difficult to secure.

The replacement market had three outlets. The first outlet consisted of large and established parts dealers who supplied to repair shops. The second were distribution networks set up by the suppliers themselves. They either supplied directly to repair shops or to the parts dealers. These two channels were usually based on traditional and long-standing relations. A frequent marketing strategy with suppliers of well founded cartels/sectoral groups was to exchange products with competitors to be able to offer a full line of products and sell kits, i.e. rather than selling only the pistons, the firm sold the pistons, pins, cylinders, bearings, and even the sleeves. Armed with the entire line, the supplier may have been in a position to require the

distributor to exclusively sell the supplier's products. Parts sold through the above channels carried a guarantee that the part was of the same quality as original equipment (parts used on the assembly line). Success on the original equipment market helped secure these two channels.

These markets were important for domestic firms who wanted to protect themselves from new MNC competitors. Metal Leve, for example, managed to withstand competition from German subsidiaries, K-S and Mahle, in part, because of its strong hold on the A-M. When the German piston producers set up operations in the late 1960s and early 1970s, respectively, they believed that their reputation would help them penetrate the A-M and they neglected both A-M contacts and the breadth of their product lines. It took them time to understand the importance of the long-term relationships with distributors and after awhile, the three piston producers began producing for each other so that all could offer some complete kits.

The third replacement market channel was a lower quality market that supplied to small parts dealers and repair shops. This channel was the most price sensitive of the three. These parts were usually copies of original equipment and often not as reliable. Some characterize this market as including parts rejected by the assemblers.⁸⁴

III.A.3. Exports

The third market for auto parts was the export market which was divided into two categories. One was long-term

contracts of original equipment which included any or some combination of the following: original equipment for assembly, long-term after-market with an assembler or a parts distributor abroad. Exporting became a means of empowerment. A supplier that exported original equipment to an assembler in the U.S. or in Europe reinforced its relationship with the subsidiary of the assembler in Brazil. A supplier that exported may also have gained more leverage over the assemblers in Brazil because it proved that it could be a capable partner in the assemblers' export plans. The supplier gained the prestige related to exporting and simultaneously, had more support within the government. As a result, their licenses and other bureaucratic procedures were processed more expeditiously. The OE export market was important to late-arriving MNC suppliers who did not understand the ins-and-outs of producing and selling in Brazil. The piston producers, K-S and Mahle, as well as the shock absorber producer, Monroe, all resorted to exports when their national competitors could not be pushed aside or tried to finish them off in price wars. These firms, although they intended to sell the bulk of their production in Brazil, ended up exporting a large percentage so they could survive competition from established suppliers.

Finding clients in the export market was an exhausting process, particularly for national suppliers who did not have parent companies abroad. A good relationship with an assembler in Brazil may have facilitated the quality export

strategy if the assembler opened doors in the parent company and/or offered letters of introduction for possible customers. Usually, however, the suppliers earned their export contracts by pounding the pavement and knocking on potential customers' doors.

On the long-term OE or A-M export markets, Brazilian firms competed on both quality and price. Exports were not always labor-intensive which would have reflected an exclusively price-driven strategy. For example, engines represented approximately 25 percent of exports. Brakes represented 4 percent of exports; clutches, piston rings, camshafts, and shocks about 1 one percent each. To be more competitive price-wise, firms often calculated their export prices solely as a function of variable costs, labor, raw materials, and tooling. They pushed the fixed costs -- managerial and capital depreciation onto domestic OE and A-M sales (Interview with various suppliers). They would have been unable to shift these costs without the sectoral groups and other agreements with competitors. Furthermore, many firms stated that they would not have been able to compete effectively without BEFIEX benefits.⁸⁵

The second export market were spot contracts where a distributor needed a one-time shipment of low-cost bumpers or other parts. Quality was not usually an issue in these contracts. Regular exporters complained that these short-term contracts were pernicious to the industry as a whole. Once

foreign customers had problems with one Brazilian firm, they were reluctant to deal with any of them. These strategies will be discussed in greater length in the section on exports.

The suppliers' dependence on the original equipment market (sales to the assemblers) has diminished over time. In 1977, almost 73 percent of Sindipeças members' sales went to assemblers. In 1989, this fell to about 55 percent. For the replacement market, the figures were 19 and 29 percent and for the export market, 3 and 13 percent. These figures, however, varied widely from firm to firm and segment to segment. A gasket producer typically had a high percentage of sales in the after-market. An axle producer had virtually no A-M and sold principally to the assemblers and possibly export markets.

TABLE 4.1

DISTRIBUTION OF AUTO PARTS SALES AMONG
ASSEMBLERS, AFTER-MARKET, AND EXPORTS, 1977-1991, (%)

<u>Year</u>	<u>Assemblers</u>	<u>After-Market</u>	<u>Exports</u>	<u>Other</u>
1977	72.8	18.5	3.1	5.6
1978	70.7	21.6	3.7	4.0
1979	71.2	19.5	4.0	5.3
1980	70.7	18.4	5.8	5.1
1981	65.0	21.6	6.2	7.2
1982	65.0	20.0	6.7	8.3
1983	62.8	22.7	9.2	5.3
1984	58.9	21.6	15.0	4.5
1985	60.3	22.5	12.7	4.5
1986	56.2	25.1	13.4	5.3
1987	51.3	27.2	16.3	5.2
1988	60.3	21.3	13.1	5.3
1989	59.7	24.8	10.2	5.3
1990	57.7	26.0	11.1	5.2
1991*	55.0	27.0	13.5	4.5

(*) = estimate

Source: Sindipeças

III.B. *The Peak: Suppliers with Dominion Over their Markets*

Approximately 30 to 50 suppliers have created a new and more durable version of the horizontal arrangements. By working with competitors, they have been able to impose long-term relations on their customers.

Firms in the peak usually had sales of well over US\$ 90 million annually, and many were subsidiaries of MNCs.⁸⁶ Needless to say, most of the executives in these firms understood the centrality and intricacies of negotiating the timing and content of price increases and payment periods. These and other business decisions such as launching new products, hiring, and new investments, however, were tightly intertwined with the institutions and networks in which the firm was embedded, not only in Sindipeças, but also family and ethnic groups. Sindipeças' efforts reinforced cooperation and communication among suppliers and protection from the international market: sectoral groups were created; BEFIEX-related imports were restricted; and Resolution 63 eliminated much of the leverage assemblers' had in vertically integrating production. Family and ethnic groups often tamed excessive competition, helped solidify cooperative arrangements, and in some cases, spurred salubrious competition among firms.

The national firms in the peak were by and large family firms, although they had links to MNC corporations either through joint ventures or licensing agreements. Some of

their stock was publicly traded and they may have been part of a large national conglomerate. Ties to conglomerates were less constraining to national firms than were the ties between foreign companies and subsidiaries in Brazil.

Peak firms invested heavily in engineering and design capacity and often had R&D facilities. Because they did much of the design work for their products, they insisted on owning the tooling, and therefore, controlled A-M sales (with the exception of those sold to the assemblers for distribution to their dealers). As a general rule they produced a wide variety of products did not sprun low-volume orders. In fact, they considered them a means to open new markets and develop new customers. Many firms stated that this gave them an edge over their MNC subsidiary competitors who tended to concentrate in higher volume production. Furthermore, in an unforeseen manner, the strategy served them well in export markets (Interviews with various suppliers).⁸⁷

The firms in the peak were the leaders in implementing quality and Japanese-like factory organization and, in general, were more advanced than their MNC counterparts. Finally, these firms were highly vertically integrated, which proved an important competitive edge on the domestic and export markets. The original horizontal conception of the industry focused on assembler-supplier relations as a means to foster the parts firms' growth. Therefore, it

condemned high levels of vertical integration in assemblers, because, by definition, what the assemblers produced in house was not subcontracted out to suppliers. The original horizontal vision, however, had little to say about relations among competing suppliers. High levels of vertical integration in suppliers, however, by stymieing the development of smaller firms, will prove barrier to the peak firms' ability to further expand design and manufacturing capabilities. This will be discussed in the following chapter.

Some of the firms in the peak of the hierarchy began as part of large industrial conglomerates whose connections to the government may have helped them gain access to preferential credit, import licenses, and in some cases, decisions to delay or prohibit the arrival of MNC competitors. Examples of this type of firm include Metal Leve (pistons), Cobrasma/Braseixos (axles), and Villares (piston rings). Nonetheless, good government connections did not automatically translate into growth and success. Villares eventually dropped out of auto parts production. Vidigal Filho's firm, Cobrasma, was mismanaged and just skirted formal charges of business fraud. In the late 1980s, the firm was salvaged by a long-time MNC partner, Rockwell who bought out the family owners.

A second group of large national firms began as importers or skilled workers. They did not have the

government contacts of suppliers connected to large national groups. They were astute businessmen who invested well and understood the importance of quality and price. They also worked hard to stabilize their domestic markets by gaining leadership in the syndicate and taking advantage of, and simultaneously reinforcing, their sectoral groups, mechanisms to protect firms from imports, and Resolução 63. Examples of this path include Cofap and Arteb, a glass and accessories producer.

All of these firms understood the importance of cooperating with the government. In an article on Metal Leve, after it ranked as the top supplier in 1973, Mindlin stated: "In Brazil, economic development is quite influenced by state initiatives and a firm that hopes to maintain a rate of accelerated growth cannot forget this fact."⁸⁸ The General Coordinating Director of the firm, added: "If we can conciliate a feasible and profitable investment that is within the government's global projects, we will give preference to that investment."⁸⁹

These firms were also an important element in Sindipeças' strategy of placing well-regarded business people in leadership positions. High profile executives from these large national firms were more likely to get audiences with important government officials.⁹⁰ This high profile tactic was necessary but inherently conflictive and led to friction between "insiders and outsiders," and

small and large firms.⁹¹ Having more access to advance information from government officials, a higher likelihood of rejections of new competitors from the Council of Industrial Development, and in some cases, access to loans as well as lower import duties generated ill-will within the sector. Elected syndicate officials had to delicately balance the interests of their firms and the sector at large, a difficult task that sometimes led to accusations of abuse of power.⁹²

Finally, a prominent position in Sindipeças inspired both fear and loathing among many of the assemblers in Brazil. Assemblers that were weaker or more reliant on suppliers to meet export contracts, such as Fiat, respected the hierarchy of power in Sindipeças and tread carefully when negotiating with important suppliers (Interview with Fiat Purchasing Executives and Managers). Alternatively, Mercedes Benz, the dominant firm in truck production, had a policy of not working with firms belonging to Sindipeças officials (Interviews with various assemblers and Sindipeças officials).

III.B.1. *MNC Subsidiaries*

Some MNC subsidiaries were consistently among the peak firms. For example, Robert Bosch was usually ranked among the top three supplier firms in Brazil. TRW, ZF, MWM, Rockwell, Clark, Bendix, Cummins, Eaton, were also among the top twenty firms. MNC subsidiaries as a general rule

learned to ride in the wake of their large national counterparts. They kept a low public profile and let the syndicate officials state their cases in language with nationalist overtones, although MNCs were often important behind the scenes negotiators. While Sindipeças stressed the national make-up of its members, as early as the 1970s, of the top 100 firms, 46 were foreign and represented approximately 61 percent of capital (Ventura Dias: 71).⁹³

Although the successful MNCs adapted to local conditions, they also took advantage of, or conversely, were constrained by ties to their parent companies. The parent company's philosophy regarding deviations from home country products and operating procedures, and the importance of the Brazilian subsidiary in the company's global operations were among the many facets affecting the subsidiaries' decisions and performance in Brazil.⁹⁴ For example, some subsidiaries reported that their parent firms would not approve new investment during periods of slow sales and recession even though this was the cheapest period for expanding for the next market upturn (Interviews with various MNC subsidiaries). The policies regarding export markets were also important. If export markets were controlled by the regional subsidiaries then export sales were often more a question of negotiation among subsidiaries rather than price considerations. Alternatively, in the case of Cummins, the parent company let subsidiaries freely compete

with each other in international markets.

The subsidiaries in Brazil could also bring parent companies into domestic squabbles. For example, if an assembler and an MNC supplier were having problems in Brazil, as a last resort, one or the other may have tried to get help from the parent firm. One brake firm was having quality problems with the products it sold to an assembler subsidiary. The brake firm also sold the same product to the assembler parent. The subsidiary contacted its parent which in turn contacted the parent of the brake supplier.⁹⁵ Everyone compared notes to try to solve the problems. National suppliers in Brazil also feared home country influence. The suppliers feared that the parent company would force an assembler to purchase from another MNC subsidiary rather than the national firm. National firms often tried to keep foreign suppliers from Brazil by purchasing licenses or other technical assistance agreements from them.

Other MNCs suppliers have gone to Brazil with the intention of taking advantage of low raw material and labor costs and manufacturing a narrow and high-volume product line. As these firms did not have an engineering staff and therefore were not able to modify parent company designs to adopt them to local conditions. It became increasingly cumbersome to coordinate the adaptations which were done in the parent company's laboratories, and the subsidiary ended

up hiring a small staff of engineers to address these problems. They also had to broaden their product line, often by exchanging products with competitors, to sell to the A-M. Furthermore, if the Brazilian subsidiary was not part of the parent firm's core business, poorly linked to the channels of power, having cash flow problems or a capital crunch, then the parent firm inhibited expansion and ignored profitable areas for growth and investment.⁹⁶

III.C. *The Intermediate and Lower Echelons*

The remaining 400 or so members of Sindipeças can be divided into two crudely defined groups: 1) the intermediate echelon, composed of firms that cast their lot and staked their futures on auto parts or other industrial production, characterized by important reinvestment of profits; and 2) the lower echelon composed of those firms that considered auto parts production one of many activities needed to diversify risk and maintain the family income. In general, firms in the intermediate echelon have sales of somewhere between US\$ 35 and 90 million. Firms in the lower echelon are usually below US\$ 35 million. The emergence of these echelons in many ways reflected the development of the industry as a whole.

Firms that began producing auto parts in the 1940s and 1950s typically came from one of the following backgrounds.

Sometimes they were tied to large industrial groups, as discussed above. Alternatively, they may have had import businesses, often in replacement parts for cars imported and assembled in Brazil.⁹⁷ In other cases, producers began as workers in an assembler. They were more entrepreneurial than their colleagues and decided to break out on their own, but not before coming to some agreement where the assembler guaranteed purchase of a minimum number of orders. Many firms were set up in this manner.⁹⁸ Finally skilled immigrants who had set up metalworking, furniture, and other businesses were sought out by the assemblers in the 1950s to help reach local content levels. These firms were recruited by assemblers to produce auto parts, as in the case of Nakata.

While most of the large national firms at the peak of the supplier hierarchy were family firms, the typical family firm was considered small or medium-sized. As the family and the industry grew, particularly during the 1960s and 1970s, a mismatch often emerged between the needs of the firm and the individual family members. Juggling this juncture was decisive in determining into which echelon a firm fell (Vieira and Venosa:1985). Frequently the succeeding generations were not interested in undertaking the management of the firm. In other cases, the founder had no sons, nephews, competent sons-in-law, or cousins. The firm had to be sold, at times to an MNC. The

denationalization of the sector became a cause celebre during the 1960s and 1970s. Other critical and interrelated issues included the institutionalization of competition, which although less stringent than that of firms in the peak, was important for growth; strategic choices, including the products they produced, managerial expertise; and the philosophy of the owner regarding exposure to risk.

III.C.1. *The Intermediate Echelon*

Firms in the intermediate echelon elected to pursue auto parts production as their principle activity and were willing to continue investing in more modern equipment and production processes. The firm probably survived a family-related or other transition. It probably reached a point where it had to invest and grow to keep up with the demand from assembler customers. It may not have had the necessary family-manpower or capital. For example, if there was no second generation or if those in the second generation did not get along or were not ready to take over the firm, then the owner either decided to sell the firm or to hire outside of the family. Firms that offered outsiders good conditions hopefully acquired valuable skills as well as a buffer from family disagreements. The professional or outside managers may have been able to mediate family disputes. Family firms in the intermediate echelon usually included long-time and

professional outsiders. Another means of acquiring expertise was during investment phases. If the firm had no capital it sought a new partner who may have taken a managerial role.

As will be seen in the discussion of the lower echelon, family firms were usually perceived by assemblers (and often state policy makers) as fragile and unreliable. Intra-family competition among firms and in ethnic or social communities, however, also led to salubrious competition and high quality production. Often, a firm's reputation, and profits were a source of the owner's prestige in his respective social group. In interviews, one large auto parts firm's particularly aggressive growth strategy was linked to the owner's desire to achieve status in the Jewish community. In other instances, the family firm did not grow enough to supply all the family members with sufficiently high status positions at the managerial and executive level. Family members broke off from the initial firm and started their own. The initial firm supplied capital and took a stake in the new company. This led to salubrious competition as the founders of spin-off firm wanted to prove to the original firm that they had been misjudged or wronged. Examples of this included the Sabo family, owners of three firms producing oil seals, tubes, and gaskets. Cousins of the Sabo family own Irlemp, the filter producer, and its spin-off Tampas Click which produced gas caps and

car locks. Since the success of these firms was linked to the owners' self-images, outside professional engineers and other administrators, were given room to grow and make decisions. These firms became increasingly proficient. They offered "black box" designs and paid for tooling, and were able to sell the product on the A-M, an important source of profits.

Generational characteristics of families also shaped investment and production strategies. The firms in the intermediate echelon began to implant quality procedures such as statistical process control (SPC), albeit at times under the prodding of the assemblers. Some firms, however, adopted the procedures with a vengeance. Their enthusiasm may have reflected the son's engineering degree and his father's reluctance to let him take charge of the firm's finances and sales. When the son was put in charge of the production department, he focused on innovations and improvements, including quality.⁹⁹

Like their counterparts in the peak, the firms in the intermediate echelon were probably highly vertically integrated. While the larger firms may have had more leeway in deciding to vertically integrate, the intermediate firm was probably forced to adopt this strategy because it did not have a lot of bargaining power in the market. When the market heated up, the intermediate firms were often shed by their subcontractors who either looked for more lucrative

markets or allocated their scarce capacity to their larger clients.

These firms have been able to organize some aspects of competition. Some may even have succeeded in creating a production cartel and managing production shares among themselves via rigged bids. Most likely, however, they systematically shared information about raw material prices and sources as well as prices on the A-M. They probably also exchanged products among themselves to offer full product lines on the A-M and probably worked together if threatened by an emerging firm.

MNC subsidiaries were frequently in the peak or middle echelons, but rarely in the lower echelons. MNC subsidiaries in the intermediate echelon may have been restrained by their parent companies who wanted to use the subsidiary to maintain a presence in Brazil, rather than grow. Alternatively, the firm may have had poor managers and made mistakes when it entered, such as offering too narrow a product line or paying insufficient attention to the A-M. Finally, a late-arriving subsidiary may not have been able to push aside its competitors. Examples of these firms include Monroe (shock absorbers), K-S (pistons); and Weber (carburetors) to name a few.

III.C.2. *The Lower Echelon*

Owners of firms in the lower echelon saw the firm as a means to support a lifestyle, but did not expect, or necessarily want, it to grow:

The underlying accumulation strategy in this context, is primarily of a family nature and not a business nature, in that one tries to form a patrimony that is safe from the instabilities that make a firm vulnerable: in this manner, it is not important that the firm is poor, as long as the family-owner has the means to convert the patrimony into real estate, stock market and other types of investments, including other entrepreneurial activities, as long as this allows the maintenance of a level of consumption and lifestyle compatible with the family members.... To extract from the firm the maximum that they can while they can, becomes a rational and coherent orientation when one takes into account the vulnerability, and little is done to overcome it, mostly because it is impossible in our structural condition (Vieira, Ferro, 144/145).

In other words, the owners of the firm invested the minimum required to keep it going or to maintain its market and at the same time improve the lifestyle of the family. As a result they limited the amount of business they did with an OEM:

I would say that during our history, we always had a small percentage of our sales to the assembler and much more in the replacement market. We were never adept at being a large supplier for the assemblers. Assembler sales never surpassed 20-25% of sales and never will, due to prices. It is an unstable market and always lets us down at critical moments (Vieira, Venosa:222).

Some firms stated that they did not want the responsibility of being an important supplier for an assembler. Others stated that they resented the assemblers' superior and dominating demeanor (Interviews with various suppliers in the lower echelon).

The problems of the family firm were compounded because it was often reluctant to hire "outsiders"-- professional managers or engineers. Typically, heirs occupied key decisions posts, and if none were available, owners brought in proteges (who were not always the most qualified), "men of confidence," and who held secondary and supporting roles. "Outsiders" may have been hired because they got along with the owner rather than because they were competent:

The need for support and articulation with the most important director in the firm in addition to recognizing internal relations of power is fundamental to an engineer's permanence in a small firm. This is often times more important than his own technical competence (Vieira and Venosa:246, 208).

While the anti-outsider attitude reflected the owner's need to control his firm, it also reflected the dilemma small firms frequently have in hiring and keeping qualified personnel, particularly engineers. On the one hand, the family's desire to continue controlling the firm provided limited room for advancement for outsiders. Small firms, however, skirted a vicious circle. They could not afford to pay high salaries across the board and their qualified engineers and workers were "stolen" by larger firms that paid higher salaries (Vieira and Venosa:245-247). This was particularly true during periods of labor shortages. One tube firm was doing quite well, particularly in terms of exports. The owner of the firm, however, stated that although he had too much work, he could not hire anyone

else, "It would not work out." His only hope were his two single daughters whose future husbands might be recruited into the firm.

While family competition has led to professionalism and growth in some firms, as discussed above, more frequently small family firms gave rise to the impression of lack of professionalism and ephemerality. The former director of purchasing at one assembler explained that in the past the firm did not use long-term contracts because "if something happened to the owner of the firm there were no sons around to carry on production." Furthermore, the assemblers and large parts firms mentioned this characteristic as a motive behind their decisions to vertically integrate production.

Firms in the lower echelons were generally lower-cost, lower quality producers and did not have the expertise of the firms in the peak (or to a lesser extent those in intermediate echelons). These firms did little design and innovation for their large customers. Usually they used the blueprints and instructions given to them by the customer and often did not even make their own copy. The assembler paid for the tooling and could take it and transfer it to another firm on short notice. As a result, the auto parts firm could not sell the OE product on the A-M, although it may have produced unauthorized copies to sell on the low-cost A-M. Additionally, firms in the lower echelons had little leeway in negotiating prices. One firm reported that

after bidding, an assembler may have come back to the supplier and stated that a competitor was charging less for a part. The supplier either agreed to lower its price or decided against taking the contract. Suppliers rarely negotiated with each other or called a competitor to inquire if he really was charging a lower price (Interview with Grampos Aco).

Firms whose quality declined because of bad decisions, the nature of competition, or family reasons and could no longer supply quality acceptable to the assemblers, either retreated to exclusively producing for the parallel or low-cost A-M or to other less demanding markets such as parts for kitchen appliances or toys. One exception was Urba. This firm decided that the pressure and competition in the OE market was not worth the effort (Interview with owner of Urba). The firm dedicated itself to producing high quality copies of water pumps and selling on the A-M and long-term export markets. In 1988, Urba was purchased by Echlin, an distributor for the American A-M.

Competition in the lower and intermediate echelons was not always as cut-throat as may appear. Firms embarked on some niche market strategies to protect themselves. For example, one firm, Grampos Aco, produced small stamped parts. To gain a leg on its competitors it vertically integrated into various surface treatments for metal parts. Now some of its competitors use its heat and chemical

treatments on their stamped parts before delivering them to the assemblers. Nakata, before it joined the ranks of the large firms was well entrenched in the intermediate echelon. It began producing gas shocks, a niche-market product that neither Cofap nor Monroe produced. Irlemp adopted very flexible production process and moved into low-volume industrial filter production which its MNC subsidiary counterparts Mann and Fram declined to enter. A tube producer, Incodeisel invested in sophisticated machinery to design complicated tubes. This firm, however, is essentially a one-man operation and therefore vulnerable.

Alternatively, a firm in the intermediate and particularly in the lower echelons may have had assembler business because the owner or a vendor had personal contacts in the assembler. This was simultaneously a strength and a weakness. While it gave a small firm an edge on its competitors it made it extremely dependent on the particular individual. When a vendor with contacts left a small auto parts firms, sales in the firm fell drastically.¹⁰⁰

At times, the assembler itself mediated competition to keep firms alive. Zannetini Barossi produced small stamped and mechanical parts such as window lifting mechanisms. It charged a higher price than a larger competitor, Eluma. Fiat, the customer, looked at Zanettini's cost break-down and agreed to pay the higher price.

A common nationality between an assembler and a

supplier could help to solidify a relationship. Fiat preferred working with firms of Italian owners and VW preferred working with suppliers of German origins. Some meetings were even conducted in Italian or German.

The place of firms in the hierarchy corresponded with their size, with the large firms in the peak, the medium in the intermediate, and the small in the lower echelons. The degree to which firms were able to tame competition shaped their strategic decisions regarding market segments and possibilities for growth. How firms addressed crises in succession; and where they fell along the "ins" and "outs" category and clout with Sindipeças officials were also important factors in the firms' growth.¹⁰¹ Had these firms benefitted from more systematically organized competition, support from Sindipeças, more backing in government economic development plans, we would expect to see a less highly vertically integrated sector, and more modern equipment and design capacity in the smaller firms. The hierarchy, as will be described in the next chapter may well constrain the future development of the industry.

III.D. *The Hierarchy in a Comparative Perspective and the Issue of Vertical Integration*

The pronounced hierarchy of suppliers is typical of other auto parts markets. In the United Kingdom, 100 firms account for 80 percent of total sales (Lamming:14).¹⁰² Europe wide, the largest 25 companies, less than .02 percent

of all major European auto parts firms, represents 40 to 45 percent of all sales (Lamming:15-16). Some of these firms are represented among the top 20 Brazilian firms, for example Bosch, ZF, TRW, Bendix, Eaton, Dana. In the US market, the top thirty suppliers account for approximately one-third of total sales (Womack, et. al:164-65).

Nonetheless, although suppliers are hierarchically organized world-wide, the same suppliers in the top echelons internationally are not necessarily the top suppliers in Brazil. Furthermore, neither economies of scale nor static comparative advantage exclusively explain why and when assemblers vertically integrate. Piston firms provide one example. The assemblers in the United States typically produce their own pistons. In Europe, Mahle, a piston manufacturer who at one time had a license with the Brazilian firm Metal Leve, bought Mammana Neto's firm CIMA in 1968. Yet in 1989, Mahle was not among the top 20 firms; Metal Leve, whose president was a long-time activist in Sindipeças and many of whose shareholders were members of a large industrial group, Klabin, has been either the first or second ranked firm for many years.

Other examples that demonstrate that parent company practices are not decisive in shaping events in Brazil include axles and shock absorbers. These parts are usually produced in-house in the United States.¹⁰³ In Brazil, both are produced by important suppliers. Shock absorbers

are produced by Cofap, which usually vied with Metal Leve for the top ranked position, and axles by Albarus and Rockwell Braseixos. Valeo is the second largest company in the European Automotive parts industry, yet its subsidiary in Brazil, Cibie, is not among the top twenty firms. Cibie's main competitor is Arteb, a national firm whose president is now serving his third term as president of Sindipeças, was the 15th largest supplier in Brazil in 1989, outranking Cibie.¹⁰⁴

The issue of economies of scale also cannot explain the relations between assemblers and suppliers. According to this theory, the larger the scale and the higher the number of producers,¹⁰⁵ the more likely that the product should be subcontracted. Yet VW, which produced the largest number of autos, and by any definition, had achieved economies of scale, was the most highly vertically integrated firm.¹⁰⁶

While the reputations and relationships between assemblers and suppliers in their home countries did have some spill-over in Brazil and while the hierarchy of suppliers in the United States, Europe, and Brazil was likely to be similar, parent company practices and prestige were never exactly replicated in Brazil. One important difference was the issue of vertical integration. The large suppliers in the United States and Europe were less highly vertically integrated than their counterparts in Brazil.¹⁰⁷ The higher levels of vertical integration in

Brazil reflected the failed struggles of small firms. The causes are multiple, including a large-firm bias in policy making (see chapter 3). The suppliers' original horizontal vision, however, also provided insufficient protection for small firms as it focused on assembler/supplier relations and ignored relations among competing suppliers.

IV. *A New Hybrid: Below-Scale Production, Vertical Integration, and Producers' Cartels*

The Brazilian motor vehicle industry continued to diverge from the mass production model, often in subtle, but important ways. Production volumes grew, but the industry continued to be characterized by a wide variety of platforms and models. By the early and mid-1980s, production volumes on Ford's Escort, GM's Chevette, Fiat's 147, and VW's BX line (on which the Fox is built) often surpassed 100,000. VW's Beetle, in its heyday, 1972-1980, reached over 300,000 units. At the same time, however, the number of platforms continued to grow and suppliers continued to produce for many assemblers. In the mid-1980s there were a dozen passenger car platforms and numerous truck platforms. It was not only the combination of the uncertain environment and multiplicity of platforms that induced suppliers to invest in general purpose machinery. Inflation and price controls generated strong market fluctuations and unforeseen, last-minute changes in orders. Even though suppliers stocked parts to meet contingency orders and

lengthen production runs, they wanted to retain an important core of flexibility to meet orders for many products with a minimum of investment.

Levels of vertical integration continued to be high, as is often the case in mass production. Vertical integration became a self-fulfilling prophecy as the smaller firms were increasingly abandoned by state policy makers and larger firms. The larger and medium-sized firms were also forced to vertically integrate because assemblers escalated their exports and began looking more favorably on suppliers that were vertically integrated. The assemblers believed, probably correctly, that highly vertically integrated firms could better control quality, delivery, and cost, which was increasingly important to sustaining exports. Finally, even when firms did not want to vertically integrate, they were often forced to do so. During market upturns and periods of raw material shortages, their smaller suppliers could not or did not want to supply, and/or suppliers did not have sufficient weight with subcontractors of castings, plastics, or other small parts who were desperately trying to fulfill orders for their large clients.

As practices of vertical integration combined with market stabilizing arrangements (sectoral groups/cartels) became more prevalent, a hierarchy of suppliers solidified. The firms in the peak used the cartels to construct limited stability in the constantly fluctuating markets and often

hostile assembler-supplier relations, essentially protecting themselves from vertical integration by assemblers, even before *Resolucao 63* was passed. As these firms were pulled by the allure of exports and goaded by the fear that assemblers were bringing new foreign suppliers, they took advantage of their circumscribed stability to invest in increased quality and productivity, as well as design capabilities. Their high quality production combined with connections in *Sindipeças* and the government effectively protected them from vertical integration. They represented a core of cooperative and stable relations within the context of more conflictive, mass-production assembler-supplier relations.

Industries organized according to the logic of mass production often have a group of principle suppliers whose relations with customers are not governed by the market, as is the case with these peak suppliers. The composition of the core group, however, is not the result of a predetermined and structural logic of mass production, but rather the strategies by firms to forge long-term relations with often hostile customers in a chaotic environment. Success in creating stability, however circumscribed, is a continual struggle where firms constantly look to any realm of their lives -- the syndicate, their social networks, government contacts -- for opportunities to devise new stratagems.

By the 1970s, the horizontal vision persisted, but was transformed. Originally a view of widespread and cooperative assembler/supplier relations, it became a restricted one. Given the important market fluctuations, it is surprising that the vision persisted. As the firms and state officials worked side-by-side in the corporatist group, these men came to believe that the suppliers needed and were entitled to long-term and cooperative assembler/supplier relations. The vision was transformed, however, as only a restricted group of suppliers managed to forge these relations -- those that cooperated with their competitors, had capital available to ride out market downturns, and produced a variety of products.

Hybrid industrial organization practices in the Brazilian motor vehicle industry decisively shaped its response to the calamities of the 1980s. The combination of the debt crisis, a precipitous downturn in the domestic market, and raging inflation forced firms to look abroad. Their exporting strategy was based on low-volume production. High levels of vertical integration and quality-related investments permitted firms to shift gears from the domestic to foreign markets in a short period of time. This story will be told in the next chapter.

APPENDIX I

BRAZILIAN MOTOR VEHICLE PRODUCTION AND EXPORTS

<u>Year</u>	<u>Total Vehicle Production (units)</u>	<u>Vehicle Exports (units)</u>	<u>Vehicle Exports as % of Production (%)</u>	<u>Passenger Car Production (units)</u>	<u>Passenger Car Exports (units)</u>	<u>Passenger Car Exports as % of Production (%)</u>
1957	30,542			1,166		
1958	60,983			3,831		
1959	96,114			14,495		
1960	113,041			42,619		
1961	145,584	380	0.3	60,205		
1962	191,194	170	0.1	83,876		
1963	174,191	-	0.0	94,764		
1964	183,707	57	0.0	104,710		
1965	185,187	129	0.1	113,772		
1966	224,609	210	0.1	128,821		
1967	225,487	35	0.0	139,260		
1968	279,715	9	0.0	165,045		
1969	353,700	25	0.0	244,379		
1970	416,089	409	0.1	306,915	52	0.0
1971	516,964	1,652	0.3	399,863	656	0.2
1972	622,171	13,528	2.2	471,055	6,611	1.4
1973	750,376	24,506	3.3	564,002	13,891	2.5
1974	905,920	64,678	7.1	691,310	47,591	6.9
1975	930,235	73,101	7.9	712,526	52,629	7.4
1976	986,611	80,407	8.1	765,291	62,079	8.1
1977	921,193	70,026	7.6	732,360	56,636	7.7
1978	1,064,014	96,172	9.0	871,170	77,388	8.9
1979	1,127,966	105,648	9.4	912,018	76,486	8.4
1980	1,165,174	157,085	13.5	933,152	115,482	12.4
1981	780,883	212,686	27.2	585,834	157,228	26.8
1982	859,304	173,351	20.2	672,589	120,305	17.9
1983	896,462	168,674	18.8	748,371	132,804	17.7
1984	864,653	196,515	22.7	679,386	151,962	22.4
1985	966,708	207,640	21.5	759,141	160,626	21.2
1986	1,056,332	183,279	17.4	815,152	138,241	17.0
1987	920,071	345,555	37.5	683,380	279,530	40.9
1988	1,056,332	320,476	30.3	782,441	225,360	28.9
1989	1,013,252	253,720	25.0	731,992	164,385	22.5
1990	914,671	187,314	20.5	663,084	120,377	18.2

Source: ANFAVEA

From: Helen Shapiro, Automobiles: Trade and Investment Flows in Brazil and Mexico, Revised version of a paper presented at the World Trade and Global Competition Conference, Harvard Business School, December 1-3, 1991.

APPENDIX II
BRAZILIAN VEHICLE EXPORTS, 1970-1990
(US\$ thousands)

<u>Year</u>	<u>Vehicles</u>	<u>Engines</u>	<u>Components</u>	<u>Total</u>
1970	2,790	534	5,598	8,922
1972	24,935	144	29,067	54,146
1974	118,712	17,386	67,671	203,769
1976	233,579	67,442	84,721	385,742
1978	373,641	132,078	104,689	610,408
1980	729,948	210,620	160,500	1,101,168
1981	1,066,045	188,459	311,911	1,566,415
1982	715,853	188,853	250,128	1,154,834
1983	594,036	293,862	299,160	1,187,058
1984	669,247	350,272	413,931	1,433,450
1985	746,410	407,176	450,153	1,603,739
1986	667,461	280,514	539,585	1,487,560
1987	1,522,382	259,027	671,707	2,453,116
1988	1,645,636	261,714	710,336	2,617,686
1989	1,489,257	304,252	776,500	2,570,009
1990	975,127	220,710	701,647	1,897,484

Source: ANFAVEA

Exhibit 7
BRAZIL: TRADE BALANCE IN AUTOMOTIVE INDUSTRY
(US\$ thousands)

<u>Year</u>	<u>Imports</u>	<u>Exports</u>	<u>Trade Balance</u>
1940-1950	420,547	-	(420,547)
1951	256,846	-	(256,846)
1955	232,403	-	(222,403)
1960	83,505	39	(83,466)
1965	8,256	3,192	(5,064)
1970	69,128	8,922	(60,206)
1972	97,642	54,146	(43,496)
1974	347,947	203,769	(144,178)
1976	235,088	385,742	150,654
1978	292,889	610,408	317,519
1980	524,185	1,101,168	576,983
1981	468,702	1,566,415	1,087,713
1982	318,386	1,154,834	836,448
1983	367,729	1,187,058	819,329
1984	394,618	1,433,450	1,038,832
1985	435,522	1,603,739	1,168,217
1986	665,240	1,487,560	821,320
1987	825,327	2,453,116	1,627,789
1988	665,506	2,617,686	1,952,080
1989	573,110	2,570,009	1,996,899
1990	733,095	1,897,484	1,164,389

Source: ANFAVEA

From: Helen Shapiro, Automobiles: Trade and Investment Flows in Brazil and Mexico, Revised version of a paper presented at the World Trade and Global Competition Conference, Harvard Business School, December 1-3, 1991.

ENDNOTES

1. Much of the information on price controls is based on: Claudio Roberto Frischtak, "Regulação estatal de preços industriais no Brasil: a experiência do Conselho Interministerial de Preços," Unpublished Master's Thesis, Universidade Estadual de Campinas, Department of Economics and Economic Planning, 1980. Eli Diniz and Renato Raul Boschi, "Burocracia, clientelismo, e oligopolio: o Conselho Interministerial de Preços," in As Origens da crise Estado Autoritário e Planejamento no Brasil, Eds. Olavo Brasil de Lima Jr, and Sergio Henrique Abranches, Sao Paulo: Vertice, Editora dos Tribunais, 1987, pp. 57-101. Ricardo Augusto Amorim Branle Pinto, Oligopólios, Políticas de estabilização e controle de preços, Unpublished Master's thesis, EPGE/FGV, Rio de Janeiro, April 1981. Gil Pace, Unpublished memo to Dr. Anibal Teixeira, Head Minister of Seplan/PR, Re: Market Economy, Dec 9, 1987.

Prices of basic goods in Brazil have largely been controlled since the 1950s.

2. The high levels of inflation, however, about 25 percent per year in 1965 and 10 percent in 1966, discouraged firms from restraint in raising prices. In 1966 the incentives and rules regarding voluntary price were significantly modified. Firms that kept price increases to 70 percent of the inflation index (General Price Index) would receive a 20 percent on income taxes. Firms that increased prices only 10 percent above the level of inflation would pay a 2 percent fine on sales (Pinto:26-27).

3. A business magazine for foreign firms in Brazil stated: "While there is no obligation for firms to sign, those that do and live up to their promises qualify for important benefits. In addition, frequent visits by officials with executives of leading companies have made it clear that refusal to comply will result in a great deal of trouble" (The New Brazil prospect for stability and profits, New York: Business International, 1965, p. 19).

In a later article, the publication reported that 100 firms initially signed up for the price control measures. After government pressure, the list grew to 1000 firms. "Brazil's Unorthodox Tactics for Fighting Inflation Keep Manufacturers in Cost-Price Squeeze," in Business Latin America, February 16, 1967, p. 49.

4. Barros de Castro and Pires de Souza cited an interview with Mario Henrique Simonsen, the then Finance Minister published in Visao, April 19, 1976. See Antonio Barros de Castro and Francisco Pires de Souza, A Economia Brasileira em Marcha Forçada, Rio de Janeiro: Paz e Terra, 1985, p. 35.

5. Frischtak cited Delfim Neto, whose views were later elaborated into an economic development program in "Analise do Comportamento Recente da Economia Brasileira: Diagnostico, mimeo, Departamento de Economia, FEA/USP, 1967 (cited in Frischtak:73).
6. In 1969 3242 firms asked for permission to increase prices. In 1976 this number increased to 5973. As a general rule, each price control técnico had to analyze about 6 price increase petitions per month (Diniz and Boschi:76).
7. Small firms were not the only ones overburdened by the demands of documenting the price control legislation. Business Latin America described on firm's complicated method for calculating prices in an inflationary environment: "[t]he basic principle that may be overlooked is that the payment received must equal the replacement cost of the item sold plus overhead and normal profit on the day of receipt rather than on the day of sale." The principles are difficult as they entail "1) adjusting for the increased tax liability that arises from the profits generated solely by the inventory value increases; and 2) determining as closely as possible the selling prices that will recapture the real value of the product sold" (The New Brazil prospect for stability and profits, New York: Business International, 1965, p. 17).
8. He concluded that price controls reinforced oligopolistic markets by legitimating and reinforcing sectoral leadership, institutionalizing price signals, diminishing uncertainty in oligopolistic practices, and limiting price variations, profits, and returns. "These policies guarantee short term stability of the relative positions of firms that are established in the market, as well as capital returns that allow sufficient investments by the more established groups such that they maintain their dominance" (Frischtak:174-75). Furthermore, the procedures often discriminated against firms that were making investments (Pace:8-9).
9. Apparently some members of CIP/CONEP felt that business representatives had too much input in decisions. Renato Raul Boschi and Eli Diniz Cerqueira, et. al. "Burocracia, clientelismo e oligopolio: O Conselho Interministerial de Preços," in op.cit, p. 61.
10. Firms may have preferred to deal with CIP on an individual basis because they did not trust their syndicate officials and/or their competitors or they might have had an inside track in CIP. Inside tracks were not likely to last long as the turnover in CIP was quite high.
11. Diniz and Boschi cite Notícias Sindipeças (Sindipeças monthly bulletin), No 27, July 1976 (Diniz and Boschi:1979:107).

12. "Brazilian Price Controls Revisited: Companies Find Getting Increases Tough," in Business Latin America, August 20, 1970, p. 270. The article cited one firm that stated that its borrowing costs were 36-38 percent per year while CIP allowed rates of 21.6 percent to be passed on in price increases.

Diniz and Boschi:70

13. "Firms Operating in Brazil Appear Caught in Cost-Price Bind," in Business Latin America, Dec 19, 1973, p.408.

14. For foreign subsidiaries views of price controls see: "Brazilian Price Controls Revisited: Companies Find Getting Increases Tough," in Business Latin America, August 20, 1970, p. 270.

15. In some cases, the CIP would be called in by firms to eliminate price wars. Such was the case for metal bottle caps in 1972, color televisions and stereos in 1975, and car batteries in 1975. In most of these cases, minimum prices were negotiated with the help of the CIP (Frischtak:104-105).

16. CIP officials left because they were not well paid and because the negotiations and fights with firms was debilitating (Diniz and Boschi:84-85). When the analysts left they CIP they often accepted higher paying jobs in the private sector or created consulting/lobby firms who sold their services to the private sector (Diniz and Boschi:78,90-916).

17. The syndicate also kept firms abreast of changes in tax, labor law, export, and other legislation which rapidly were changing after the 1964 coup.

18. Although it is difficult to document the extent of corruption, in interviews, executives from both assemblers and suppliers referred to it. One executive of a purchasing department in an American assembler stated that when there were economy-wide shortages and/or high inflation, yet of his purchasers had no problems with a supplier, the executive suspected corruption. Various suppliers mentioned that in order to secure a contract they had to deposit money in someone's private account.

19. Paulo C. Vieira and Jose Roberto Ferro, "A questao da sobrevivencia das PME de autopecas," in Peguenta Empresa... O Comportamento Empresarial na Acumulacao e na Luta pela Sobrevivencia, Sao Paulo: Brasilense, 1985, p. 150.

20. One financial specialist stated that during peak period, for example, immediately after the legislation had been changed or negotiations regarding changes, he spent over 50 percent of his time on Sindipeças-related activities. On average, he probably spent around 20 percent of his time on these activities.

21. Interview with Guilardi, financial director of Irlemp and long-time Sindipeças activist.

22. Inflation indices were usually doctored by the government to demonstrate that inflation-fighting programs were successful and to justify policies such as pre-announced devaluations of the currency implemented by Delfim Neto.

23. This quote was taken from an interview Annie Posthuma did with a large supplier in March, 1988.

24. This quote was taken from an interview Annie Posthuma did with a large supplier in February 1988.

25. In his thesis on the organization of a firm in the machine-tool firms, Fleury made the following observation about family firms that produce machine tools:

...the delegation of responsibilities for work organization depends on the number of family members involved in the administration of the firm. If there is more than one person, they create a division of labor among them: one becomes responsible for external contacts and the other for internal organization, including planning and control of the work force.

In the case where there is only one family member running the business, this one generally undertakes external contacts and delegates the issues of internal organization to a person in which he has total confidence: the supervisor [mestre] of the factory.

Afonso Carlos Correa Fleury, Organizacao do Trabalho Industrial: Um confronto entre Teoria e Realidade, Doctoral Thesis for Department of Engineering, University of Sao Paulo, Unpublished, May 1978.

Vieira and Venosa find similar patterns of division of labor in small autoparts firms. See Viera and Venosa, 1985.

26. Taxes on motor vehicle purchases in Brazil were typically well over 30 percent of the price of the vehicle. In the United States they were less than 10 percent (Various Anfavea newsletters).

27. Wholesalers in Brazil did not sell quantities that a smaller firm would want to purchase. As a result, small firms had to buy from middlemen and paid a premium of 30 to 40 percent over the original manufacturer's price. Small suppliers often asked their assembler customers to buy the raw materials for them. While in a pinch, assemblers may have called a raw material supplier to ensure that a small components firm received raw material or may have helped an auto parts firm finance raw material purchases, the

assemblers never tried establishing a long-term arrangement whereby they would systematically help their smaller suppliers.

28. "Os perigos da crise," in Gazeta Mercantil, March 22, 1977.
29. In a public and very vitriolic battle, Vidigal Filho, the head of Sindipeças accused the president of VW of not wanting to end price controls because it would demonstrate just how incompetent a manager he was. Vidigal stated that VW had overly indebted itself and price controls were a convenient means of justifying this to the home office. "Eulalio: Simonsen foi enganado na 6a," in Gazeta Mercantil, March 20, 1977.
30. Interview with Alberto Fernandes of Metal Leve.
31. Interview with Rossi of Acil.
32. Diario de Comercio Industrial, Dec. 14, 1979. Membership has since fallen over 25 percent due to disputes among firms.
33. Luiz Roberto Serrano, "Vidigal evita guerra," in Gazeta Mercantil, June 24, 1977.
34. In 1979, the Federation of Industries of the State of Sao Paulo (FIESP), the representative of the largest industries in the country held election. In an upset victory Vidigal Filho defeated the incumbent Teobaldo de Nigris, the conservative president who was seen as a collaborator of the military regime.
35. Alfred Stepan, "Paths Tward Redemocratization: Theoretical and Comparative Considerations," in Guillermo O'Donnell, Philippe C. Schmitter, and Laurence Whitehead, eds. in Transitions from Authoritarian Rule: Comparative Perspectives, Baltimore, MD: Johns Hopkins University Press, 1986, pp. 64-84.
36. For a good summary and bibliography on the attitudes of disaffected business elites see, Eli Diniz and Olavo Brasil de Lima Junior, "Modernizacao Autoritaria: O Empresariado e a Intervencao do Estado na Economia," Instituto Universitario de Pesquisas do Rio de Janeiro, no. 47, May 1986. Velasco e Cruz:...June 1986). For more in-depth study of particular areas of conflict between the business elites and the state see, Olavo Brasil de Lima, Jr and Sergio Henrique Abranches, As Origens da Crise Estado Autoritario e Planejamento no Brasil, Rio de Janeiro: Vertice/IUPERJ, 1987.
37. There is some debate as to the extent and increase of state participation in the economy. For a detailed discussion demonstrating massive increases in different types of state intervention see, Fernando Rezende, "O crescimento (descontrolado) da intervencao govermental na economia brasileira," in Brasil de Lima Jr. and Abranches, *op cit*, pp. 214-252. For a more moderate view, see Thomas Trebatt, Brazil's State-Owned Enterprises.

Cambridge: 1983, p. 130, (cited in Fishlow:1989:95). Barros de Castro and Pires de Souza, op cit, 1985 present a more economic interpretation of state participation.

38. See Skidmore:1988:46-65.

39. For a discussion of the different factions and Geisel's and Golbery's balancing act between the hard-line and Castelistas factions of the military, see Skidmore:1988:160-209.

40. Regarding the elite-led transition, see Alfred Stepan, "Paths Toward Redemocratization: Theoretical and Comparative considerations," in Guillermo O'Donnell, Philippe Schmitter, and Laurence Whitehead eds, Transitions from Authoritarian Rule: Comparative Perspectives (Baltimore and London: Johns Hopkins University Press, 1986, pp. 64-84. Regarding attempts to reinforce civil society, particularly small firms, see William Nylen, "Small Business Owners Fight Back: Non-elite Capitalists' Activism in "Democratizing" Brazil (1978-1990), Unpublished Ph.D. thesis, Department of Political Science, Columbia University, 1992. See also, Leonel Itaussu Almeida Mello, "Golbery Revisitado: Da Abertura Controlada a Democracia Tutelada," in Dilemas da Consolidacao da Democracia, Jose Alvaro Moises and J.A. Guilhon Albuquerque, eds. Sao Paulo: Paz e Terra, 1989, p. 214.

41. In a interview with Vidigal Filho one journalist described Sindipeças-government relations:

The truth is that the auto parts sector does not have any reason to complain about its access to government. Vidigal was received four times by President Geisel and his revindication that verticalization of auto parts by the OEMs be avoided were met."

Vidigal sugere fortalecimento das entidades empresariais," in Gazeta Mercantil, December 21, 1976.

See also, "Sindipeças: expectativa na promessa de Geisel," in DCI, Feb 21, 1979. Before Geisel announced Resolution 63, Vidigal Filho believed that it might be a tax-break to encourage subcontracting, the heart of the horizontal vision.

42. The others prominent business leaders frequently cited in opinion polls included: Laerte Setubal, president of the Duratex Group; Jorge Gerdau, president of the Gerdau Group; Mario Garnero, president of FIESP and Volkswagen; Claudio Bardella, former president of the Brazilian Association for the Development of Basic Industry (ABDIB); Severo Fagundes Gomes, former minister of Industry and Commerce and president of the Parahyba Group; and Antonio Ermirio de Moraes, president of the Votorantin Group. Cited in Eli Diniz and Olavo Brasil de Lima Junior, "Modernizacao Autoritaria: O Empresariado e a Intervencao do Estado na

Economia," Instituto Universitario de Pesquisas do Rio de Janeiro, no. 47, May 1986. p. 94. ff. 102.

43. Although all groups espoused a return to democracy, they held very disparate views and demonstrated different levels of commitment. For an enlightening synopsis of different groups' views on the relationship between democracy, social reform, and economic growth. See Peter McDonough, Power and Ideology in Brazil, Princeton: Princeton University Press, 1981, pp. 143-153. Unions specifically adopted a redemocratization platform in the late 1970s. See Maria Herminia Tavares de Almeida, "Novo sindicalismo and Politics in Brazil," in State and Society in Brazil Continuity and Change, ed. John D. Wirth, et. al, Westview Press, 1987, pp. 147-178.

44. Regis Bonelli and Pedro S. Malan, "Industrialization, Economic Growth, and Balance of Payments: Brazil, 1979-1984," in State and Society in Brazil Continuity and Change, ed. John D. Wirth, et. al, Westview Press, 1987, pp. 13-48.

45. Imports jumped from almost 6 percent of GDP in 1967 to almost 14 percent of GDP in 1974. William Cline, "Brazil's Emerging International Economic Role," in Brazil in the Seventies, Ed. Riordan Roett, Washington, DC: American Enterprise Institute for Public Policy, 1976, pp. 63-87.

46. Growth levels in the motor vehicle industry fell from an average of slightly over 20 percent to 8 percent. Nonetheless, 1974 and 1978 were high growth years registering 20 and 16 percent, respectively, while the other years registered very low or negative growth rates.

47. See Skidmore:1988:171-173 for a description of the elections. Also see Bolivar Lamounier, "Authoritarian Brazil Revisited: The Impact of Elections on the Abertura," in Democratizing Brazil Problems of Transition and Consolidation, ed. Alfred Stepan, New York: Oxford University Press, 1989, pp. 43-79.

48. The process leading to the PND II is clearly much more complex, but not well explained in the literature.

49. Priority areas under the Plan included: 1) Capital Goods (mechanical and electric machinery, tractors, shipbuilding, railroad material); 2) Steel and Metallurgy (steel ingot; flat-laminates and heavy grades, other laminates and special steel, aluminum, copper, zinc); 2) Chemical Products (sulphuric acid, caustic soda, chlorine, fertilizer, thermoplastic resins, artificial and synthetic fibers, synthetic elastomers, detergents, ethanol, ammonia); 4) non-metallic intermediate goods (cement, cellulose, paper); 5) Mining (iron, iron exports, research). Intermediate Carlos Lessa, Estratégia de Desenvolvimento: Sonho e Fracasso, Brasília: Fundação Dentro de Formação do Servidor

Público (FUNCEP), 1988, p. 18-20.

50. For an illuminating discussion of the *tri-pe* see Peter Evans, Dependent Development The Alliance of Multinational, State, and Local Capital in Brazil, Princeton: Princeton University Press, 1979. For discussions of the PND II as a defense against denationalization, see: Velloso, J.P. dos Reis, Balanço Preliminar do II PND, Brasilia, Speech in the Conselho de Desenvolvimento Econômico, CDE, on Dec 20, 1978, mimeo, p. 3. Cited in Marcio Percival Alves Pinto, "Governo Geisel: a crise de uma politica economica O II Plano Nacional de Desenvolvimento, os pacotes economicos e o pacto social," Unpublished Masters Thesis, Department of Economics, University of Campinas, 1985, p. 13, ff. 6.;20-21. Lessa discusses the shift from the state as the fulcrum of the *tri-pe* to the private sector as the fulcrum and correcting the pro-foreign bias in past economic policy (Lessa:18, 30-31). For a discussion of the large-firm bias in the plan, see Marcio Percival Alves Pinto, p. 18,20; Lessa:200.

51. Many argue that the expansive monetary policy, inflation external and internal indebtedness necessary to sustain the strategy, a response to political pressures, were irresponsible and harmful. These policies were responsible for many of Brazil's current economic misfortunes. See Albert Fishlow, "A Tale of Two Presidents: The Political Economy of Crisis Management," in Democratizing Brazil Problems of Transition and Consolidation, Alfred Stepan, ed. New York: Oxford University Press, 1989, pp. 83-119. For a contrasting and laudatory view of the import substitution policies of the post-1974 period, see Barros de Castro e Souza de Pires:1985.

52. Lima and Abranches, op cit.

53. Barros de Castro and Pires de Souza:33; Fishlow:1989:96.

54. See John Humphrey, Capitalist Control and Workers' Struggle in the Brazilian Auto Industry, Princeton: Princeton University Press, 1982. For a view of the strikes from the assemblers' perspective, see Barbara C. Samuels II, Managing Risk in Developing Countries National Demands and Multinational Response, Princeton: Princeton University Press, 1990. For a brief history of the union and politics, see Tavares de Almeida:op cit. Also see Margaret E. Keck, "The New Unionism in the Brazilian Transition," in Democratizing Brazil Problems of Transition and Consolidation, Alfred Stepan, ed., New York: Oxford University Press, 1989, pp. 252-296.

55. Although producers' cartels are illegal in Brazil, the legislation is widely ignored.

For a good overview of producer cartels see, Michael Best, The New Competition Institutions of Industrial Restructuring,

Cambridge, MA: Harvard University Press, 1990.

For a discussion on producer cartels and organizations in industry and services in some European countries, see Streeck, Wolfgang and Philippe C. Schmitter, eds. Private Interest Government Beyond Market and State. Beverly Hills, CA: Sage Publications, 1985.

Wyn Grant and Wolfgang Streeck, "Large firms and the representation of business interests in the UK and West German construction industry," in Organized Interests and the State: Studies in Meso-Corporatism, London: SAGE, 1985. See other articles in this volume.

See also, Yamakazi, Hiroaki and Matao Miyamoto, Trade Associations in Business History, The 14th International Conference on Business History, Tokyo: University of Tokyo Press, 1988.

Gary Herrigel, Industrialization Organization and the Politics of Industry: Centralized and Decentralized Production in Germany, Unpublished PhD dissertation, Department of Political Science, MIT, February, 1990.

56. Interview with Guilardi, Sindipeças financial expert, Director of Irlemp, 7/23/89.

57. In the exception to the rule, the bearings producers, composed of 12 firms, refused to share price information. In describing their sectoral group, the coordinator stated: "In these firms, only issues of common interest are brought up, like legislation, import protection, etc. Market problems are not a part of the agenda, because all firms are fiercely competitive, which serves to maintain the market healthy" (Sindipeças Notícias, 7/85). These attitudes and practices, however, are very much the exception to the rule. See Samuels:1990:95-96 for a discussion of how the relations between competitors in the home country may influence their behavior in Brazil.

58. Myriam Lee, Os Reis e Eu, SP:Artecom Produções Gráficas e Publicidade Ltda, n.d. I believe she financed publication of the book.

59. Interview with Sindipeças official.

60. Interview with the president of a supplier.

61. Information among competing suppliers and assemblers was also passed along as a result of contacts with common customers and subcontractors. For example, if a supplier was having problems, an engineer from an assembler¹ may have lent a hand. Suppliers reported that the engineer might describe how a competitor solved the problem and suggest that the supplier try a similar procedure.

The assemblers and suppliers may also share information about projects that are in the pipeline although they never visit each other's factories. During less competitive periods engineers

mentioned that they frequently and informally shared information with friends in other companies. This phenomenon was studied in U.S. companies. See Eric Von Hippel...

62. The longer contracts of four to five years, have become more common since the mid-1980s and reflect changes in international practice.

63. Interview with Alberto Fernandes, financial expert in Sindipeças, Metal Leve.

64. Interview with various suppliers.

65. The issue of raw material prices was central to SME survival. Because small and medium sized firms in Brazil bought raw materials in small quantities, they could not purchase them from the original manufacturer, but rather were forced to purchase from a distributor who charged 30 to 40 percent more. Although this translated to higher prices, the assemblers and larger suppliers did little to help their smaller suppliers. In 19-- Sindipeças and its small and medium-sized firm created a new firm to purchase sheet steel and sell it to the SMEs. When SMEs have not been able to create a central purchasing firm, they at least try to share information among themselves about different distributors' prices or help set up alternative sources of raw material, for example powdered metal producers for sinterized parts or paper producers for filters.

66. For a discussion of VW's close relation to the government and its influence in addressing labor strikes in the late 1970s, see Samuels:1990:pp.91-95.

67. During the bulk of the period of price controls, assemblers handed in pricing information separately. Assemblers complained that at times CIP would play one assembler off another. Although it would grant price increases to most firms, if the government were angry with one firm it would limit the extent of its price increases. This effectively limited price increases for the entire sector (Interview with Anfavea official).

68. Suppliers were afraid that other assemblers would vertically integrate by moving production to the Northeast. See "Segunda batalha Depois da greve, a Ford enfrenta fornecedores," in Veja, May 14, 1980, p. 92.

69. S. Stefani, "Fanucchi de Oliveira e o candidato de Luiz Eulalio ao Sindipeças," in Gazeta Mercantil, Aug. 22, 1979.

70. Interview with Sindipeças official.

71. Fannuchi statements Oct. 11, 1976. Vidigal Filho stated that the assemblers were ignoring gentlemen's agreements whereby they would offer suppliers who invested long-term contracts. See "O

Sindipeças revele onde ocorre a desnacionalização," in Folha de São Paulo, March 3, 1976. At a later date, Vidigal Filho explained that dialogue between the assemblers and auto parts firms helped mitigate the impact of the market fluctuations of the mid-1970s. See "Os perigos da crise," in Gazeta Mercantil, Mar 22, 1977.

72. See Maria Helena Castro Santos, "Alcohol as Fuel in Brazil: An Alternative Energy Policy and Politics," Unpublished Ph.D. Dissertation, Department of Political Science, Massachusetts Institute of Technology, 1985. See also, Michael Barzelay, The Politicized Market Economy Alcohol in Brazil's Energy Strategy, Berkeley: University of California Press, 1986.

73. The principle challenges in developing the alcohol engine were adjusting the compression ratio of the engine, which is higher with alcohol. Additionally, new alloys and treatments had to be found to protect metal parts from corrosion. While the engine and related parts were more expensive because of the additional protection and production steps involved in their manufacture, these parts were subsidized by government, and therefore, were sold at prices slightly below those for gas. By the 1980s, alcohol cars surpassed production of gasoline cars.

74. Interviews with suppliers and assemblers.

75. Nonetheless, BEFIEX petitions continued to be a negotiated process. For example, if an assembler submitted a petition for a variety of imports and only one supplier was opposed to a particular import, the Syndicate president would negotiate with the supplier to see if it would change its mind and permit imports (Interview with Sindipeças official; 6/89).

76. "O Sindipeças revela onde ocorre a desnacionalização," Folha de Sao Paulo, March 19, 1976. Another study reported at least 50 cases of take-overs of Brazilian firms by foreign firms from 1970 to 1978. Sebastiao C. Velasco E. Cruz, "PMES e Relacoes Interindustriais: Um Estudo Sobre a Indústria Automobilística e o Setor de Autopeças," Unpublished mimeo, CEBRAE/IUPERJ, Dec 1981, p. 31.

77. "Sindipeças: na expectativa da promessa de Geisel, in Diario de Comércio Industrial, February 21, 1979.

78. Sindipeças Notícias, Feb 1979 (cited in Velasco Cruz: op cit., 25). Assemblers could produce in-house a component never produced in Brazil. They could not, however, vertically integrate what had already been produced by suppliers in Brazil.

79. As described in Chapter 2, all auto parts firms obligatorily contributed a certain percent of total sales to Sindipeças. This sum was collected by the Ministry of Labor and passed on to Sindipeças. To be a member of Sindipeças and have voting

privileges, firms had to pay an additional sum, calculated as percent of total sales. The approximately 25 percent membership is probably a good or average rate compared to other syndicates. Many firms declined to become voting members of Sindipeças because they did not want to spend the money. Alternatively, in a smaller number of cases, firms may have produced other products in addition to autoparts, and belonged to another syndicate.

80. Other accounts put the total at US\$ 9 billion. See Booz, Allen, and Hamilton, "Executive Summary, Sectoral Strategy -- Brazilian Auto Industry," Report Commission by Sindipeças, Fenabrave, Sindifap, and a consortium of over 100 assembly and auto parts companies in Brazil, 1990?

81. Concentration has characterized the sector since the mid-1970s. At that time, Sindipeças had about 365 members out of a total of over 1000 firms that produced auto parts. At the time, about 5 percent of the firms were large firms and responsible for over 40 percent of total sales. See Distorcoes pertubardores, op cit.

82. I calculated the 40 percent this figure by taking estimated sales for 1989 from Sindipeças (latest figures that I have) and dividing them by the sales of the top 20 firms as reported by Melhores and Maiores, 1990. If we use the Booz Allen and Hamilton estimates of total sales of US \$ 9.4 billion and divide it by sales of the top 20 firms in dollars, the figure is 45 percent. The last figure may not use dollar equivalents converted by the same exchange rate.

83. The 20 largest firms in order of 1989 sales are: Cofap, Metal Leve, Robert Bosch, TRW do Brazil, ZF, MWM, Rockwell Braseixos, Clark, Bendix do Brasil, FNV, Varga, Borlem, Cummins Brasil, Arteb, Albarus, Tandon, Marcopolo, Fras-Le, Nakata, Eaton (Melhores e Maiores, August 1990).

84. Interview with various Sindipeças officials.

85. Furthermore, since all incentives and subsidies were published in the official log of the Congress, when an incentive was granted to a company, its customer called and demanded that the firm lower its price by the amount of the incentive (Interview with a trading company manager, July 1989).

86. Cofap, the largest firm had sales of over US\$ 600 million in 1989. "Diversificar e Fortelecer, in Exame Melhores e Maiores, August 1990, p. 115.

87. Metal Leve and Irlemp mentioned that the wide-product line cum low-volume strategy was important competitive strategy. This strategy was more prevalent, but not limited to national firms. Schraeder Valves also did low-volume production. It set up a

separate shop for these products. The president stated that the low-volume production was important for developing new customers and learning.

88. "A estratégia de crescimento da mais rentável," in Exame, September, 1973 or 74, p. 22.

89. Ibid, p. 22.

90. If the executive officers of a large firm have a good reputation or good relations with the government, so much the better for the firm. One president of a large supplier firm has a particularly good reputation as an advanced businessman was trying to explain to me how government connections work. He stated that at an official function, a high government official commented to the his wife: "Your husband is the only businessman that has never asked me for anything." Such an opinion means that this businessman will be listened to when the government needs information or when the auto parts firms ask him to represent them. It is important to maintain a clean reputation in business practices. The president of this firm emphatically declared that while he could not guarantee that people in his firm did not fix prices, but he did not.

91. High profile businessmen are central to the corporatist group tactics. For example, the Brazilian Association of Authorized Dealers was created in 1984. One of its first tasks was to send a questionnaire to the 3,600 dealers throughout the country. The questionnaire asked them who they knew and what kind of relationship they had with the President, Vice-President, Ministers, senators, federal representatives, governors, state representatives, mayors, and alder persons at the different levels of government. This was to be the basis of the Association's new national lobby effort. S. Stefani, "Organizar um "lobby" politico nacional, o objetivo da Abrave," in Gazeta Mercantil, Sept 21, 1984.

92. In one of the many episodes regarding the sticky question of price controls, Vidigal Filho, the high profile president of Sindipeças accused Garnero, the president of Anfavea, of "Acting on his own and having a secret meeting with Mario Simonsen and his employer, the president of VW...In this meeting, without taking into account the opinion of the other assemblers and suppliers, VW decided to impose its rules, with the authority of the president of Anfavea." in "Eulalio: Simonsen foi enganado na 6a" in Gazeta Mercantil, Mar 29, 1977.

There is an inherent conflict between the syndicate or association official and his firm loyalties. Chiaparini, who became president of Anfavea when Mario Garnero, a high profile VW official resigned. Commenting on his new positions, Chiaparini stated: "I just hope that I do not leave this situation with a medal from Anfavea and without my job at Ford," in S. Stefani, "As

opiniões de Chiaparini," in Gazeta Mercantil, Jul 7, 1981.

93. Another study of the amount of foreign capital in the parts sector gives similar figures. Of a total of 467 supplier firms, 106 are classified as large and 361 as small and medium. Of the 106 large firms, 41 are foreign and 14 have some percentage of foreign ownership. Of the 361 national firms, 27 are foreign and 2 have some percentage of foreign ownership (Velasco Cruz, op cit. p. 38). As will be seen later, the 106 large firms are responsible for the bulk of the sector's sales. Therefore, while foreign capital is not predominant in terms of the number of firms, it is dominant in terms of the sectors sales.

94. For a discussion of the influence of these variables regarding labor policy in Brazil and cooperation with parts suppliers in Mexico see, Barbara C. Samuels II, Managing Risk in Developing Countries National Demands and Multinational Response, Princeton: Princeton University Press, 1990.

95. A more recent example occurred when Ford of Brazil forced its advertising firm Young & Rubicon to drop the Lada do Brasil account under threat of losing Ford's world-wide account. See Harvard Business School Case, "Lada do Brasil," March 1992.

96. For a discussion of bounded rationality as applied to MNC subsidiaries in developing countries, see Peter Evans, The Alliance, 1979.

97. Cofap, the largest auto parts producers in Brazil and Latin America began as an importer of auto parts. Stevaux is another example. Both firms are active in Sindipeças.

98. An example of such a firms is Acil which produced seat supports, carpeting, interior finishes.

99. Interview with executive of Indaru, an insulation firm.

100. Jose Roberto Ferro, "Subordinacao e dependencia: Mudanca tecnologica e mercado em pequenas e medias empresas do ramo de autopecas," Unpublished, Master's dissertation, School of Administration of the Getulio Vargas Foundation, Sao Paulo, 1984, p. 183.

101. The differences among firms is reflected in a survey carried out on small and medium-sized firms' attitudes toward Sindipeças. The Delft survey, published in 1967, reported that small and medium suppliers were, in general, not satisfied with their syndicates. The survey revealed that 71 percent of small and medium firms polled stated that the syndicate did not help them. The syndicate was criticized for lack of leadership and poor lobbying. About 10 percent of the firms polled stated that the syndicates showed too much interest in the fortunes of large firms to the detriment of

smaller ones (Delft:263).

The syndicate, however, was not expendable for all of these firms. Of the firms polled, 22 percent (one third of the medium-sized firms and one quarter of the small firms) stated that employer associations helped the sector. These firms claimed that the syndicates had been good intermediaries between the supplier firm and the client, and had given good information about markets, technical, tax, and legal issues. Furthermore, they felt that the syndicate had done a good job lobbying (Delft:263).

Small and medium-sized firms wanted the state to offer better financing conditions, particularly access to working and investment capital; a policy of minimum prices for products to avoid price wars in combination with a guaranteed maximum price for raw materials (although simultaneously they wanted anti-trust laws); protection from foreign firms as well as large national firms; tax reductions; and better transportation (Delft:264). Sindipeças began providing many of these services in the coming years.

The divisions between large firms, on the one hand, and small and medium firms on the other persisted. Vidigal left Sindipeças after two terms as president and ran for the Federation of Industries of the State of Sao Paulo. His vice-president ran for the presidency and had Vidigal's support. Vidigal's support for Fanucchi responded to the syndicate's unwritten voting tradition -- the president presided for two terms and then the vice-president was elected.

The opposition candidate, Humberto Francisco Pereira Dias, owner of a small firm, had little chance of winning given that the popular Vidigal Filho, who was highly popular supported Fannuchi. His platform, however, was indicative of the problems that small and medium-sized firms confronted. His platform included: 1) elimination verticalization in the auto parts sector; 2) creation of export consortia to take advantage of excess capacity; 3) support for metal working firms that are working in their sectoral groups; 4) nationalization of a larger number of auto parts components; 5) better follow up BEFIEEX proposals in the CDI; 6) negotiations with the government regarding financing for the acquisition of raw material at a "fair price" -- in addition to securing for members "tranquility in productivity, through social justice in the labor sector"; and 7) formation of a team of employees and directors to help members solve problems that come up in the sectoral groups.

102. The UK has 300 major suppliers and 1,500 minor suppliers (Lamming:13). Richard Lamming, "The Causes and Effects of Structural Change in The European Automotive Components Industry," in International Motor Vehicle Program Working Paper, May 1989.

103. Kirk Monteverde and David J. Teece, "Supplier switching costs and vertical integration in the automobile industry," in Bell Journal of Economics, Spring 1982, Vol. 13, No. 1, pp. 206-213.

104. Cibie controlled the lion's share of the OE market in head and taillights. It held approximately 70 percent and Arteb approximately, 30 percent. Yet Arteb is a larger firm because it sells other products, among them steering wheels locks in which it has a monopoly, and mirrors. Arteb probably controls a large percentage of A-M sales.

105. See Williamson:1975 and 1985.

106. Williamson predicted that vertical integration would occur when bounded rationality and uncertainty combined with small numbers and opportunism. There is no question that bounded rationality, uncertainty, and opportunism were prevalent in Brazil. Nonetheless, when the assemblers did vertically integrate, they typically produced simpler parts where the largest number of suppliers are available.

107. The information came from interviews of supplier executives who worked in subsidiaries in Brazil. They compared the Brazilian subsidiary's "make vs. buy" decisions with those of the parent company. I will give data about Brazilian suppliers' levels of vertical integration in another chapter, but there is no published comparative data available.

CHAPTER 5

Recipe for Exports and Competitiveness: Background and Strategic Ingredients

As state officials and development theoreticians predicted, the motor vehicle industry became an important source of growth, foreign exchange, and technological learning for the Brazilian economy. Vehicles, CKDs¹, and auto parts oscillate around 10 percent of total Brazilian exports. When the domestic recession of the early 1980s hit, the product of the debt crisis and unsuccessful national economic development plans, the motor vehicle industry was among the most successful at finding new markets. In 1990, approximately 187,300 vehicles were exported totalling, US\$ 975 millions. During the 1980s, these exports were even higher, averaging 222,000 units. Throughout most of the 1980s, assemblers had a net positive impact on the balance of trade, generating over US\$ 1 billion of foreign exchange annually (See Chapter 4 Appendices).

An unanticipated, but fortuitous outcome of the domestic recession was the performance of the auto parts sector, whose exports reached US\$ 2.1 billion in 1989.² These numbers carry a strong caveat. Assemblers and their affiliates, with exports of engines, radios, and other components were responsible for a very large percentage of these exports. At least US\$ 500 million, however, was from independent auto

parts companies (both national and MNC), and about US\$ 400 million were exported by eight firms. The remaining US\$ 100 million was exported by about 120 auto parts firms, but these exports, again, were highly skewed. About 25 firms who had constructed some market organizing mechanisms were responsible for the bulk of these exports. Exports by the remaining firms were generally sporadic shipments of low-cost, low technology products.

This chapter focuses on the impact of producers' cartels and market stabilizing agreements, as well as the legacies of general purpose machinery and high levels of vertical integration. I call these background decisions/conditions, and they have been discussed at length in the preceding chapters. The background decisions, additionally, have another effect. They provide firms with more leeway in making strategic decisions in factory reorganization, pricing, investment, and location. I overdraw the distinction between background and strategic decisions to facilitate the analysis. In reality, however, the two categories are tightly intertwined and the background decisions promote certain strategic decisions, and these decisions, in turn, reinforce or modify background decisions.

The firms that tamed their markets with some form of producers cartel are the preeminent exporters. Their export performance was also shaped by the legacy of general purpose machinery and traditions of small volumes which permitted them

to target niche markets on both the original equipment and replacement export markets. Firms in Brazil were willing to produce quantities that did not interest higher-volume producers and used this as a selling point.

Like most firms in Brazil, those in the peak (and middle echelon) of the hierarchy were highly vertically integrated reflecting the history of rocky relations among clients and suppliers. High levels of vertical integration permitted firms to mitigate the impact of rampant inflation, price controls, and increasingly bitter relations among clients and subcontractors. To ensure delivery and quality in the hostile environment, in addition to their core operations, firms produced many sub-components such as small plastic and rubber parts or springs and did other operations, such as machining, that in another context could easily have been subcontracted.

Lastly, lest the road to exports appear to be paved with thrift and judiciousness, I briefly mention its mercantilist component. Institutionalizing competition also permitted firms to raise prices on the domestic market while lowering those on exports. Furthermore, firms did bureaucratic acrobatics such as creating fictitious points of sales and other devices to maximize subsidies. Without the various subsidies, they would not have been able to export, although the subsidies frequently merely compensated for an overvalued exchange rate.³

This chapter examines the recipe for successful exporting

in the Brazilian supplier sector by making a somewhat contrived analytical distinction between background decisions and strategic decisions. The first section of the chapter analyzes the impact of background decisions discussed in earlier chapters. It demonstrates that the bulk of exports is highly correlated with firms in the peak of the hierarchy, a proxy for the degree of cartelization, or taming of the domestic market. Then it analyzes other background decisions, general purpose machinery and traditions of small volumes and vertical integration. The second section discusses strategic decisions by firms including decentralization of the factory floor within the context of high levels of vertical integration, pricing, quality, product development, and location of various services. The decisions analyzed here are not exhaustive.

The third section places Brazil in international perspective. Surprisingly, as a result of the peak firms' performance, the auto parts sector was considered more competitive than the assembly sector. The final section examines blockages presented by the restricted nature of the horizontal vision and the very factors that earlier led to the surprisingly strong export performance.

I. *Background Decisions: Taming the Domestic Market, a History of General Purpose Machinery, and High Levels of Vertical Integration*

I.A. *The Correlation between Exports and Taming the Domestic Market*

Exports of auto parts jumped from 3 percent of total sales in 1977 (earliest date for which figures are available) to around 15 percent of total sales in the late 1980s and between 10 and 13 percent in the 1990s (See Table 4.3). Exports of auto parts, however, were highly concentrated in a small number of firms. Firms that occupied the peak of the hierarchy and had channelled the fruits of organized domestic competition into better equipment, training, and production were the dominant exporters.

There are at least two impulses behind the surge in exports of auto parts. As early as the 1960s, some firms targeted exports as part of a larger strategic vision. These firms saw them as a means to reinforce their domestic position, protect themselves from the threat of multinational newcomers, and ingratiate themselves with the government. They hoped that by exporting to the parent-company assemblers, they would gain some leverage over the subsidiaries in Brazil. Others believed that the government, responding to chronic foreign exchange shortages, would increasingly force firms to export and reward those that did. Suppliers began exporting in the mid-1970s.

The other impulse driving exports was the domestic recession of the early 1980s when the demand for vehicles bottomed out. Economic growth fell 3.5 percent in 1981 and production in the motor vehicle industry plunged by 30 percent, from over 1.1 million units to under 800 thousand units. The industry did not recuperate 1979 levels of production until 1986, and then only briefly. In these circumstances, auto parts firms were forced to find new markets or fail.

Exports of auto parts are difficult to analyze because assemblers and their affiliates are responsible for a large number of them. In 1989 total exports of auto parts were approximately US\$ 2.1 billion. Assemblers' exports of engines and other components were responsible for approximately half of these exports. Approximately 30 percent of the remaining US\$ 1 billion, or US\$ 600 thousand are exports of diesel engines and radios by affiliates of Ford, Ford Holland and Ford Industria e Comercio. The bulk of the remaining 40 percent, or approximately US\$ 390 million, was exported by eight firms in the peak of the hierarchy.

TABLE 5.1

EXPORTS OF BRAZILIAN AUTO PARTS, 1989
 (Percentage of Total Exports of Auto Parts)

	(US\$ mill)	(%)
Assemblers Engines Components	1,081.0	51
Assembler Affiliates Ford Holland Ford	555.6	26
Top 8 Independent Exporters	386.7	18
Remaining Exports	96.7	5

TOTAL	2120.00	100

Source: Adapted from information in Booz, Allen, and Hamilton, 1990.

TABLE 5.2
EXPORTS BY TOP EIGHT NON-ASSEMBLER-AFFILIATED EXPORTERS, 1989

<u>Firm</u>	<u>Origin of Capital</u>	<u>Amount Exported</u> (US\$ millions)	<u>Parts Exported</u>
Cofap	Brazilian	77.1	Shock absorbers Piston rings Castings
Allied Bendix	American	57.6	Brake systems
Cummins	American	55.6	Diesel engines & related parts
Metal Leve	Brazilian	49.3	Pistons/bearings
Rockwell/ Braseixos	American	48.9	Wheels/axles
Robert Bosch	German	45.0*	Injection equip. Alternators Other
Alburus	American	31.3	A x l e s Transmissions
Clark	American	22.9	Transmissions
TOTAL		387.6	

(*) Auto parts only.

Source: Adapted from information in Booz, Allen, and Hamilton, 1990.

The remaining US\$ 100 million was exported by approximately 120 auto parts firms. These exports, again, were highly skewed, and approximately 30 firms were responsible for the majority.

Of the eight principle non-assembler-affiliated exporters, only Cofap and Metal Leve were national firms. The

remaining six firms were subsidiaries of MNCs. Rockwell-Braseixos had been a national firm until recently when Rockwell acquired 100 percent ownership. Despite the overwhelming presence of multinational firms, the accomplishments of the sector as a whole should not be taken lightly. There is no question that channels to the parent company as well as various incentives offered by the Brazilian government facilitated exports when they occurred. Nonetheless, these exports were usually original equipment (they were used on the assembly line) and therefore, had to meet rigorous quality standards. Without meeting these standards, the foreign subsidiaries would not have been able to export, despite the intra-company channels and incentives.

The issue of intra-company trade, furthermore, is a sticky one. A subsidiary in Brazil cannot automatically count on its parent company to import the subsidiary's products. Although the parent company seeks a source of inexpensive parts to lower its cost on the domestic market, it likes to generate competition among its low cost subsidiaries in Mexico, Korea, Taiwan, and Malaysia. These subsidiaries, in turn, try to outbid each other. The bidding wars discourage long-term agreements such as the 10-year BEFIEX commitment. Alternatively, although the parent firm may be willing to import, during inflation-ridden periods, subsidiaries in Brazil lose money as rising domestic inflation erodes the profits from pre-fixed and non-indexed export prices. During

these periods, the subsidiaries attempt to discourage or cancel the export contracts. The statistics on BEFIEX contracts bear out many of the difficulties of coordinating parent and subsidiary firms. Between 1972 and 1985, a total number of 316 BEFIEX contracts were signed. Almost 70 percent of them were signed by private national firms (principally in the shoe and textile industries), and only 30 percent by subsidiaries or joint-ventures. Motor vehicle BEFIEX contracts were in the latter category.⁴

The remaining US\$ 100 million of exports shipped by approximately 120 auto parts firms were highly skewed. About 30 firms exported regularly, although in much smaller quantities than the eight leaders.⁵ The remaining firms exported sporadically. The 30 consistent but lower volume exporters include:

TABLE 5.3

SECOND GROUP OF CONSISTENT EXPORTERS

<u>Firm</u>	<u>Product</u>	<u>Origin of Capital</u>
Varga	brake parts	JV
Jurid (division of Bendix)		Foreign
Borg-Warner	cluthes	Foreign
Nakata	suspension parts	Brazilian
Monroe	shock absorbers	Foreign
Stevaux	gaskets and seals	Brazilian
Sabo	gaskets and seals	Brazilian
Urba	pumps	Brazilian
Wapsa	other electric parts	Foreign
Arteb	mirrors, headlights and other accessories for cars	Brazilian
Metagal	" "	Brazilian
Cibie	" "	Brazilian
Dyna	windshield wipers	Brazilian
Clark	transmissions	Foreign
ZF	" "	Foreign
Motorgear	" "parts	Foreign
TRW	steering assemblies	Foreign
ZF	" "	Foreign
DHB	" "	Foreign
K-S	pistons	Foreign
Cima/Mahle	"	Foreign
Weber	carburetors	Foreign
Fram	filters	Foreign
Borlem	wheels	Brazilian
Mangels	"	Foreign
Sifco	forged parts camshafts	Brazilian
Echlin	misc. small parts	Foreign
Kostal	"	Foreign
Colmeia	radiators	Foreign
De Maio Gallo	exhaust systems	Brazilian

Source: Interviews with Sindipeças officials.

Note: Sifco and Colmeia were purchased by MNCs within the last few years.

Firms like Stevaux, which exported low technology parts such as gaskets, or Sabo which produced high-end oil seals, have used a combination of strategic decisions, high quality and innovation to forge market leader positions. Simultaneously, they were Sindipeças activists and forged leadership in their sectoral groups and fought to tame domestic markets (background decisions). More will be said about this later.

Perhaps, only Urba, which sold exclusively to the cut-throat domestic replacement market and had many competitors, managed to sustain long-term export contracts. Urba's secret to success, high quality production for the replacement market, is not typical in Brazil. Urba decided that producing for assemblers was not worth the effort and retreated to the aftermarket. Nonetheless, it maintained high quality production, despite its almost artisan-like production processes. Around 1987, one assembler contacted Urba to discuss resuming production. As the assembler's technicians visited the firm, they noticed that when workers put together the bearing for the water pump, they did it in "Toyota" fashion. Rather than produce a number of parts, a worker produced one part and immediately measured it. These organizational practices explain Urba's consistently high quality production, despite the makeshift facilities. In 1989, Urba was purchased by a large American firm Echlin, which produces various parts for the replacement market.

I.B A History of General Purpose Machinery

The auto parts firms were conscious of their traditions of general purpose machinery and small scale as an export strategy. Jose Galvao Filho, a Sindipeças activist, explained:

the Brazilian auto parts industry is structured to offer high quality, operating on a smaller scale; thus it works at its own rate, with quantities that normally to [sic] no interest the greatest world manufacturers of this area, whose automatized production lines would make the cost of small series too high and not very competitive."⁶

As early as the late 1960s, some auto parts firms had set their sights on exporting. The Auto Parts Industry Export Association, organized by Mammana Neto and other enterprising parts producers, was created in the early 1960s, approximately 10 years before the BEFIEEX program was legislated. As early as the 1960s, the producers were working to enhance the advantages of small batch production. They banded together to be able to offer foreign buyers "package deals" of various types of auto parts, usually for the replacement market.⁷

A study of the impact of the BEFIEEX legislation on the auto parts industry came to similar conclusions regarding the importance of low-volume production and competitiveness:

the strategy of auto parts producers, in particular the national ones, has been characterized by taking advantage of niches in specific national markets. In this case, sales to foreign markets are highly unstable, therefore, mitigating against long-term agreements for given levels of exports, as required by BEFIEEX.⁸

There is other anecdotal evidence supporting the low-volume export strategy. Cummins, which produces an engine

mounted on VW's truck exported to the United States was thrilled when production to VW increased from 110 or 120, to 150 or 180 units a month.⁹ Freios Varga, which produces brakes, signed an export agreement with Chrysler where it will produce brakes for models substituting the LeBaron and Reliant models, both low production.¹⁰

I.B.1. The Impact of Industrial Policy on Low Volume Exports

The niche market strategies were also reinforced by the export promotion legislation, BEFIEX. The legislation discriminated against smaller firms and reinforced the position of larger firms in its import tax abatements and policies regarding destination of imports (Baumann:28). BEFIEX was clearly tailored to the assemblers, and not the suppliers. It was only in 1979, six years after the BEFIEX legislation was passed, that Robert Bosch, a huge multinational subsidiary, became the first supplier to sign an export agreement. By 1987, only eight auto parts firms had a BEFIEX contract and these firms were the largest in the sector.¹¹

The large supplier firms that had BEFIEX contracts typically exported low-volumes, in some cases based on engineering skills. Metal Leve, for example, devised an articulated piston for Caterpillar trucks and heavy machinery (typically produced at low volumes) that cut down on friction and was more fuel efficient. Firms without BEFIEX contracts

were destined to constantly search for new markets and new products, however, small and ephemeral they may have been.

The minimum export requirements gave large firms an advantage over their smaller counterparts. Initially, firms had to export a minimum of US\$ 40 million per year, although this was later reduced (Penalever, et. al.:121). One reason for the differences is that the state officials were reluctant to invest a lot of resources (foregone taxes, analysis and oversight of the project) for what they considered a low return in terms of exports. The import duty reductions negotiated on smaller contracts were not as beneficial as those for large ones. While the assemblers negotiated 100 percent abatements on duties in addition to many other incentives such as lower domestic taxes and tax rebates, smaller firms could negotiate only 50 to 75 percent abatements and lower benefits in other areas.

The law also discriminated against non-BEFIEX firms in yet another manner. Imports acquired under BEFIEX, whether parts or machinery, could be used for production on the domestic market. Non-BEFIEX export incentives available to smaller firms included abatements on income and value-added taxes, drawback arrangements, financing for exports, foreign exchange benefits, loans, and financing available to trading companies.¹² Imports within the non-BEFIEX regimes could not be used for production on the domestic market. For example, when the price of domestic steel exceeded the

international price, firms were permitted a green-yellow drawback. They were allowed to import cheaper steel, but it could only be used for export production.

Although the assemblers were virtually forced to sign BEFIEX contracts, the suppliers initially considered themselves auxiliary players with the understanding that the assemblers would soon help launch them on international markets. Suppliers hoped that as a result of the parts' firms successful indirect exports, that is supplying parts mounted on engines and vehicles, the assemblers would open doors for suppliers on the international markets. In some cases they did. As part of the global component philosophy,¹³ Isuzu began producing a transmission that was to be exported to various GM facilities. SABO, a Brazilian firm had decided to buy the oil seal technology from GM and to this day it delivers and produces the seal for Isuzu. In most cases, however, parts firms felt that they had been hoodwinked into supporting BEFIEX and then back-stabbed when the assemblers threatened them with BEFIEX imports if they did not lower prices or concede on other issues.

I.C. Vertical Integration

Despite the diversity of products and markets, most auto parts firms have one characteristic in common: Since the mid-1960s, fluctuating market demand, the lack of state support for small firms, and political and economic uncertainty has led to antagonistic relations between assemblers and suppliers

and between large suppliers and their smaller counterparts. Because firms could not find satisfactory agreements for sharing the costs of market downturns and price controls, the larger firms (assemblers or suppliers) pushed them onto their subcontractors. The assemblers delayed payments to suppliers, changed orders on short notice, and tried to play suppliers against one another to lower prices. Smaller firms were weakened or angered and in turn became less willing to remain loyal during market upturns, preferring instead to supply for the highest bidder. Larger firms were forced to continue high levels of vertical integration.

Statistics on vertical integration are hard to come by and unreliable. Because the issue has been so politicized, (suppliers have used it to demand that the government to pressure assemblers into granting more lucrative contracts), and firms are not required to reveal these statistics, they are reluctant to do so. In passenger cars VW and General Motors were more highly integrated than Ford or Fiat. Since the Autolatina merger, the firm has been trying to do more outsourcing to lower investment costs.¹⁴

There is even less information on the levels of vertical integration in the parts sector. The following data documents levels in 1987 and 1988. According to interviews, the bulk of vertical integration occurred during the 1960s and 1970s: After that there was not much left to bring in-house. Suppliers that continued vertically integrating began

producing the remaining small plastic, rubber, or other parts that they had previously bought, which represented a small percentage of production costs.

The following data came from a sample including large national and multinational firms as well as medium and small-sized firms. Although the sample is diverse, it is not random.¹⁵ The following figures are unweighted,¹⁶ and otherwise would show higher levels of vertical integration.

TABLE 5.4

Levels of Vertical Integration* in Suppliers

<u>Product Produced</u>	<u>Level of Vertical Integration (%)</u>
Electrical Parts (2 firms)	50 - 55
Axles	55
Suspension parts	45
Suspension and steering parts	65
Shock absorbers (2 firms)	75 - 80
Headlights	90
Brakes	85 to 90
Auto parts in general (i.e. window lifting mechanisms)	90
Seat components	100
Seatbelts	100
Bearings	100
Cables	55 to 60

* Vertical Integration is defined as the value-added in-house minus cost of raw materials.

Source: Author's interviews of 18 supplier firms.

About 65 percent of the cost of suspension parts (value added excluding raw materials) is produced in-house. Curiously, the majority of firms in this sector have developed a policy of spinning off suppliers from internal departments, but maintaining majority control. This point will be discussed later. The only brake producer in the sample produces approximately 85 to 90 percent of the value added in-house (again, excluding raw materials). People who know the industry assert that the figures for the other producers are similar. The remaining firms in the sample produce less expensive components -- headlights, stamped parts in general, seat components, seatbelts, seals and cables. The percentage of value added in-house ranges between 80 to 100 percent. It was not possible to obtain specific comparisons with firms in the United States or Europe. Nonetheless, plant managers in Brazil and in the United States stated that MNC subsidiary operations in Brazil were more highly integrated than in the parent country.

The high levels of vertical integration are reflected in the diversity of operations done in most plants. All suspension parts firms produced stamped parts and did most of their machining, surface treatments, tooling, and some production and testing of machinery in-house. The two most highly integrated firms also produced rubber parts and plastic parts. One produced its own powdered metal pistons (part of the shock absorber) as well as its own springs. The brakes

firms produced castings, stamped, rubber, and plastic parts in-house. They also did machined their parts. Interestingly enough, electrical parts firms were not as highly vertically integrated as the others in the sample. This probably reflected the philosophy of the parent firm, Bosch, which owned the two firms and directed them to buy from suppliers as much as possible. Firms frequently make machinery in-house. They fear industrial espionage by other suppliers and therefore produce it in-house.¹⁷

Most firms, however, explained that they vertically integrated because they were forced to. When the market heated up, their suppliers refused to or could not meet their needs. In an opportunistic vein, the supplier may have demanded a very high price. All firms typically jacked up prices to either recover past losses due to price controls or to cushion themselves against anticipated losses. Alternatively, the subcontractor may have been forced to take care of its largest customers, who also were experiencing a surge in demand, and it did not have the capacity to meet everyone's needs. A third reason was independence. Acil, a medium-sized and upcoming firm that produced the frames and reclining mechanism for seats with sales of US\$ 80 million of sales, reported that it had no trouble with its only parts supplier (it had vertically integrated all other operations). However, it wanted to be as independent as possible and therefore decided to produce in-house its only subcontracted

part.

Fortunately, the high levels of vertical integration served the sector well throughout the 1980s as, on the one hand, the government pushed for more exports and increasingly squeezed firms' profits by controlling prices, and on the other firms were struggling to push the costs of rampant inflation onto each other. For firms that exported, high levels of vertical integration have proved essential to ensuring that the client abroad receive high quality products on time. Although vertical integration has allowed firms to export, it has simultaneously created problems in coordinating production and administration within assembler and supplier firms and has proved costly.

I.C.1 Costs of Vertical Integration

During the mid-1980s, it was not uncommon for firms to operate at a loss yet show a profit, the result of financial investments in government paper. Uncertainty, inflation, and a generalized lack of confidence in the country's solvency forced the government to set a very high interest rate on its treasury notes and other papers. These financial investments became central to a firm's survival and an important incentive to finding ways to liberate capital.

High levels of vertical integration also posed logistical and other problems. It was difficult to coordinate so many operations under one roof. Firms in Brazil usually resorted

to holding intermediate buffer stocks between the successive stages of production to avoid having to closely synchronize the operations. Intermediate stocks, in addition to tying up capital, led to high levels of rejected parts because mistakes were not detected until the stored parts were ready to use, often months later.

In addition to the cost and coordination problem, there was another factor increasing the costs of vertical integration. The uncertainty and inflation of the 1980s, in conjunction with problems in the home country markets convinced Ford and VW to embark on a bold experiment. In 1986, after years of discussion, they decided to merge, creating Autolatina, a colossus that would dominate over half of the Brazilian market. The new firm would achieve economies of scale and command low prices from suppliers. Simultaneously, both companies' operations would be rationalized, diminishing the need for new investments. For example, VW's Verona and Ford's Apollo, launched in the early 1990s, were the same car, a derivative of a second-generation Escort. Both sported the engine used in VW's BX platform. (VW's entry level vehicle, the Fox, which is exported to the U.S. is made on this platform).

The merger heralded a new era in supplier responsibilities. In November 1987 Autolatina sent a memo to all suppliers stating that they would have exclusive responsibility for quality control and eventually design of

parts. Since developing parts and/or purchasing technology is expensive, subcontracting would be a means of internally generating the resources. This will be discussed in greater detail in the conclusions.

II. Strategic Decisions: Decentralizing the Factory Floor Within the Context of Vertical Integration, Pricing, Innovation, and Location

Until now the discussion has focused on the impact of background decisions on export competitiveness. This section focuses on strategic investment and other decisions made by individual firms as they choose to export to different international markets. Again, the separation between background and strategic decisions that I make here is somewhat artificial because the two go hand-in-hand.

II.A. Decentralizing the Factory Floor within the Context of Vertical Integration

As both assemblers and suppliers were forced to export within the context of severe market fluctuations and inflation, they looked abroad for solutions to cut costs and increase quality. Many have chosen to adopt parts of the Toyota-system management system that is sweeping the motor vehicle industry internationally.¹⁸ New hybrid organizational practices arose as on the one hand firms integrated parts of the Toyota system into their current production practices. Others, such as K-S pistons, tried to make rigid lines more flexible as they strove for economies of scale.¹⁹ They decentralized their factories and turned

departments into independent production units, a proxy for subcontracting. They coordinated the newly-autonomous units by implementing a just-in-time system on the factory floor. Usually this was accompanied by, or preceded by, the implantation of statistical process control, and at times, a Brazilian version of Quality Control Circles. The peak supplier firms were among the country's leaders in implanting these techniques. They often set up factory visits and gave lectures in various professional groups to teach other firms. Firms struggled to decentralize operations on the factory floor but continued to maintain levels of vertical integration.

Suppliers' efforts to develop new production practices also reflected the assemblers decentralizing trends. The assemblers have adopted JIT and are attempting to shift more of the responsibility for quality control, JIT delivery, and eventually parts design onto the supplier, an effective cost cutting measure. As in the United States when the system was first implanted, it essentially eliminated inventories for the assembler by pushing them onto the supplier.²⁰ This required suppliers to more finely coordinate their production to avoid rising costs associated with higher levels of inventories.

To fend off the pressures of vertical integration within the context of inflation, exports, and assembler pressures, the largest supplier firms began programs to decentralize production on the factory floor. The newly decentralized

departments were often turned into profit centers which had their own cost accounting systems and were responsible for making their own profits. They treated each other as clients and suppliers as a means of improving quality and service and enhancing coordination. As in the case of the suspension firms listed above, some firms spun-off departments into 100 percent-owned subsidiaries that supplied the parent firm.²¹ Metal Leve, an industry leader, hoped to decentralize so that each area would be a mini-factory meeting the needs of each client.²² Cofap spun off its departments into separate firms to facilitate technology purchases. Even smaller firms like Acil that struggle to maintain levels of vertical integration, worked to decentralize operations on the factory floor. The firm invested in numerically-controlled machine tools and organized its machining operations on a just-in-time basis (Interviews and plant visits). Unlike the Toyota system, where subcontracting is prevalent, firms in Brazil created a functional equivalent by decentralizing their internal departments.²³

Suppliers, however, are also taking initiative in JIT systems. Rather than attempting to create JIT links with their clients, which are difficult as a result of frequently changing political and economic policies and the tortured history of firm relations in the sector, the suppliers are creating JIT systems on their factory floors. Consistent with past practices, auto parts firms in Brazil cushion themselves

against shortages and problems from their suppliers by maintaining stocks of raw materials and parts. In areas where they can control the production process, notably, the factory floor, however, they are implementing just-in-time systems.²⁴ The pressures to cut costs and increase quality have led some subsidiaries to surpass their parent companies in implementing these programs.

Internal JIT has many variations in Brazil. It has been adopted by many large firms and some medium-sized firms, particularly those that export. The JIT systems are shaped by the idiosyncratic characteristics and histories of firms. As described in section I.A., some firms like Urba, had by trial and error devised partial JIT systems. Another example, Nakata, early in its development had a joint venture with a Japanese shock absorber producer, Tokiko. Itiro Hirano, the president of the firm explained that Tokiko insisted on reproducing its just-in-time system in Brazil, even despite Nakata's objections that it was not feasible because suppliers were not reliable. The experiment did not work because of the generally hostile relations between customers and suppliers. Nakata eventually bought out Tokiko's share of the joint venture but maintained a licensing agreement.

The influence of Tokiko, however, was unmistakable. Nakata's factory sported a modified JIT system, and there was no buffer stock at the machines, although there was a limited amount at various points in the factory. Even though there is

some work in progress, the machining was done in small batches.²⁵ Finally, Nakata created its own suppliers of stamped and forged parts and developed strong ties with other outside suppliers by not vertically integrating production during market downturns. Hirano stated that it was important to generate competition both within and outside of the firm. Metal Leve has developed similar processes. By 1989 there were less than 15 pistons in the chute waiting to be transferred to the next machining operation. Nonetheless, although not quite a tight JIT system, it is a far cry from the metal bins full of pistons that were in place only a few years ago.

The use of statistical process control, a sophisticated sampling technique to quickly detect defects, is growing. In 1989, on average over one-third of suppliers were well advanced in implanting it and another 25 percent were at an incipient stage (Interview with various assemblers). The pressures of producing in economic and political uncertainty have pushed firms to adopt SPC. The factory reorganizations push firms create internal just-in-time system and they need to guarantee quality. Farsighted suppliers that prepared themselves to export during the 1970s adopted statistical process control (SPC), even before they were required to do so by their customers. Additionally, SPC is being rapidly spread through the industry as the MNC assemblers force suppliers, even the small ones, to adopt it.²⁶ All the assembler firms

have instituted requirements that by 1988 supplier firms adopt statistical process control and frequent deliveries. Finally, the subsidiaries of MNCs are also influenced by the parent companies programs to increase quality and diminish prices through productivity.

Some firms have been supplementing their factory reorganizations and quality drives with Quality Control Circles, although on a much smaller scale than in Japan and under different circumstances. VW in Brazil developed a program of quality circles before its parent company did, and Ford's Quality of Life Program is more advanced in Brazil than in some of its other plants.²⁷ There are other differences. In Japan, QCC meeting are frequently held after work. In over one-third of those cases, workers who participate are given some sort of meal or a small honorarium. In Brazil, workers who participate in QCC meeting after working-hours are also offered sandwiches, meals, or nominal payments. Nonetheless, what would be symbolic recompense in Japan, is an important bonus in Brazil, even if it is only a sandwich or other type of snack. Another important difference is in the participants. Participation in QCCs in Japan is widespread, and allegedly voluntary. Participants in Brazil are chosen by their supervisors.²⁸

Finally, firms were covering their bases and developing programs to improve relations with subcontractors to permit more outsourcing. A poignant example is the director of

purchasing of a foreign supplier who took a Dale Carnegie course so that he could better convey to his suppliers the excitement, opportunities, and responsibility in the new era of relations. He explained that his firm and its suppliers were no longer "enemigos," but rather "amigos." Other firms were embarking on similar programs. Foreign subsidiaries often applied or adapted their parent company procedures in Brazil, requiring their suppliers to use SPC, take more responsibility for quality control, and deliver more frequently. In exchange, the customers offered their suppliers longer-term contracts, although the suppliers claimed that the customers have not made good on their promises. National firms developed similar arrangements whether they devised their own programs or adopted those of their assembler customers.

Even small firms were making efforts, although they often bordered on the absurd. Small firms often had large and powerful raw material or components suppliers, for example to supply specialty steel or castings. The larger supplier probably derided the smaller supplier, with its less professional staff, older facilities, and pitifully small percentage of the larger firm's business, as it attempted to require proof of SPC and impose other conditions on its more powerful supplier.

Firms are hitting against the limits of vertical integration and are reorganizing their factories as though

they were a group of independent firms, unleashing pressures to improve quality and implant techniques such as JIT and SPC. In the process of adopting new models they create new variants and hybrid practices. They look to the Japanese motor vehicle industry based on lower scale production, but still yearn for economies of scale. They seek to fashion more cooperative relations with their suppliers, but continue to maintain levels of vertical integration.

II.B. Other Strategic Decisions: Bargain Basement, Quality, Innovation, Location of Services

Posthuma's study, "Changing Production Practices and Competitive Strategies,"²⁹ focuses on the strategic decisions of a group of firms, which includes most of the top exporters listed in Tables 5.1 and 5.2. She focuses on the multiplicity of strategies, and stresses the various paths to exports. She discussed four possible strategies: bargain basement (price cutting), quality, innovation, and moving to the clients backyard.

The study presented two fascinating findings. The first is that all firms tried to cut prices, but many combined this strategy with very sophisticated investments. The second related finding is the relative unimportance of low labor costs in most of these firms' export strategies. Regarding cost-cutting, Posthuma concluded:

Among firms in the research sample, this attitude of price-cutting never operated in isolation, but always in conjunction with one or more of the other three competitive elements to be discussed, which diversified

the fronts on which they could compete (Posthuma:240).

Firms showed wide variations in other areas, particularly their capabilities and commitments to quality and product innovation and design. Only a few could supply their customers with black-box designs. Some were so intent on serving their clients that they set up facilities abroad, most commonly warehouses and sales representatives, and but in some cases laboratories and production facilities. Metal Leve obtained government financing to set up a research laboratory in Ann Arbor, Michigan so that it could be close to its clients and take advantage of local know-how. It also opened production facilities in South Carolina, in a non-unionized region. However, it reportedly had a difficult time training and keeping workers

The following table of strategic decisions sums up the results of Posthuma's research. The firms are not identified by name, but most are in the peak of the supplier hierarchy.

TABLE 5.5

Evaluation of Firms in Research Sample According to Types of Four Competitive Strategies Utilised

Firm Code	Bargain ¹ Basement	Quality, ² Price & Delivery	Providing ³ Technical Solutions	Moving to ⁴ Client's Backward
L1	Y	S	C	-
L2	Y	S	A	-
L3	Y	C	C	M/T
L4	Y	S	C	-
L5	Y	S	A	-
L6	Y	S	A	-
L7	Y	S	C	M/T/D
L8	Y	C	A	-
L9	Y	S	C	M/T/P/A/D
L10	Y	C	A	A
L11	Y	S	A	-
S1	Y	S	A	-
S2	Y	S	C	-
S3	Y	S	C	-
S4	Y	S	A	-
S5	Y	S	A	-
S6	Y	S	A	-
S7	Y	C	A	-
S8	Y	S	C	-
S9	Y	S	A	-
S10	Y	S	A	-

1 Y = Yes
N = No

2 C = Cosmetic change
S = Structural change

3 A = Ability to conduct simple technological adaptations
C = More significant in-house technological capability

4 M = Marketing and sales office
T = Technical assistance office
P = Production operations overseas
A = Local assembly of parts imported from Brazil
D = Technological development activities

Table from: Posthuma: p. 245.

A second surprising finding is found in Table 5.7, also from Posthuma's study. Competitiveness of these firms was based on investments and quality in almost all the firms. Low labor ranked among the lowest factors (Posthuma:250-251).

TABLE 5.6
Factor of Competitiveness as Rated by Firms in the Research Sample (by frequency with which each point was cited by firms)

Competitive Factor	Number of Firms
Investments in training of workers and technical personnel	17
Emphasis on quality control programmes	16
Increased investments in R&D	10
Reorganising the production process	10
Specialising the product line	9
Increasing the product line	7
Increasing percentage of external market served	7
Increasing clients served in internal market	7
Low cost of labour	6
Significant investments in microelectronics equipment	3

n.b. - 18 firms responding

Table from: Posthuma: p. 247.

III. Brazil in Comparative International Perspective

Brazil produced of 914,000 vehicles in 1990 and occupied eleventh place of vehicles manufacturers, well below eighth place which it held in the late 1980s. It produced less cars than South Korea (1,322,000) and slightly more than Mexico (821,000) which had previously been dwarfed by Brazil.³⁰

In a comparative study of Brazil's manufacturing industries done by the a division of Brazil's Planning Ministry and The Long-Term Credit Bank of Japan, Ltd., part of which is reproduced in Table 5.8, the auto parts sector rated higher than the assembly sector because of the performance of the peak firms. The study recognized a variety of problems plaguing the sectors ranging from inadequate design capabilities and outdated equipment. As seen in Table 5.8, the Brazilian assembly sector (but also the parts sector) confronts serious challenges from its Asian competitors. In a bittersweet testament to the peak firms' competitiveness, 61 Brazilian suppliers came to the United States at the invitation of GM who was trying to pare down its own internal suppliers by exposing them to greater competition.

TABLE 5.7

Competitiveness of Brazilian Manufacturing Industries

Industry	Competitiveness	Comments
Automobile	△	<ul style="list-style-type: none"> . Performance of products is not improving for this oligopoly . Little progress in the introduction of robots for production steps . Little domestic demand for the introduction of electronic systems and new materials . Information industry restrictions have affected competition
Auto Parts	(for some, ◎) ○	<ul style="list-style-type: none"> . COFAP, Metal Leve, and major foreign-owned firms are at the international level . Domestic private concerns are short of design and precision processing capabilities and lag in modernization of production equipment. . The industry has no capabilities to produce electronic parts, owing to the absence of demand
LEGEND		◎ ... Excellent △ ... Adequate ○ ... Good × ... Unsatisfactory

Table from: Instituto de Planejamento Economico e Social (IPEA) and The Long-Term Credit Bank of Japan, Ltd., "Current Brazilian Economic and Business Opportunities," Unpublished study June 1988, p. 171.

TABLE 5.8

Comparison of International Competitiveness by Sector
(Automobiles)

◎ ... Excellent △ ... Adequate
 ○ ... Good × ... Unsatisfactory

Item	Country	Brazil	South Korea	Taiwan
Passenger car design capabilities		×	○	○
Engine development capabilities		△	△	×
Introduction of electronic parts		×	○	○
Prices of automobiles for export		○	◎	○
Fuel efficiency		△	○	○
Thickness and quality of steel sheets for automobiles		×	◎	○
Introduction of robots for the welding of bodies		△	◎	○
Introduction of robots for painting		△	◎	◎
Wages		◎	△	△

Table from: Instituto de Planejamento Economico e Social (IPEA) and The Long-Term Credit Bank of Japan, Ltd., "Current Brazilian Economic and Business Opportunities," Unpublished study June 1988, p. 177.

IV. The Challenges and Obstacles of Success

The foregoing analysis revealed that suppliers in the peak of the hierarchy were by far the most successful exporters and that from their protected positions they created a synergy where background conditions (market stabilizing measures, general purpose machinery, high levels of vertical integration). These, in turn, encouraged bolder strategic decisions (factory reorganization and investments) which in turn reinforced their need for horizontalness (background decisions). The peak firms were responsible for almost all of the US\$ 500 million of exports from non-assembler affiliates. They were also the most innovative and advanced in factory reorganization and decentralization, quality control, and product development. Finally, although they offered low prices to international clients, this factor is only one of many aspects of their competitiveness. *In other words, those suppliers who have constructed some version of the horizontal vision of the implantation period were the most successful firms, not only among suppliers, but throughout Brazil.*

The successful recipe combining background and strategic decisions is buffeted by internal and external pressures. External pressures include assembler cost-cutting, foreign exchange shortages, and the crumbling of arrangements underpinning producer cartels/sectoral groups -- price controls have been eliminated and domestic markets opened to imports. In 1990, over 15,000 vehicles, mostly Russian Ladas,

have entered Brazil despite tariffs that double and triple the price of the vehicle.³¹ Internal pressures are associated with the costs of vertical integration, including tying up capital which restricts more profitable investments in financial markets and additionally, investments in improving quality or product development.

By mid-1980s, the assembler responses to high inflation, recession, and uncertainty were based on cost cutting including some combination of either rationalizing production or retrenching operations. The assemblers were forcing their suppliers to share the burdens of market downturns and export costs by requiring them to deliver more frequently and undertake more of the responsibility associated with quality control.³² As in the United States, assemblers essentially pushed onto suppliers new costs, although the suppliers claim that they have received little recompense in the form of longer-term contracts. They complain of the relentless downward pressure on prices, despite the rocketing inflation. Those who have been granted longer-term contracts of four to five years only grudgingly acknowledge the benefits.

In the 1990s inflation relentlessly mounted and liberalization was accelerated. To compete with imports, suppliers will have to develop, or at least buy and adapt new technologies. While imports of new cars may provide suppliers with new A-M markets, their prime responsibility will be to support assemblers in Brazil who will have to update their

products. One characteristic of these technologies is that they are expensive. More fuel efficient engines, safer cars, and other innovations requires large amounts of research, development, and investment whose risks should be spread over many firms. While smaller and medium-sized firms are unlikely to do the major R&D, product development, or purchases of technology, they can certainly help larger firms minimize investment by undertaking part of the production and designing some of the less complicated parts of these new components.

The decentralizing strategies of the large suppliers firms is a sign that these times have arrived. As the assemblers continue to devolve responsibility to their suppliers, the pressures on them will only grow. As research and development costs and technology purchases skyrocket, and the assemblers demand more of it from their suppliers, it is desirable to spread risks over various firms rather than centralize them in a few highly integrated ones.

Ideally, the larger firms would do the bulk of product innovation and assembly of final parts, while medium-sized and smaller firms would undertake investment related to the development and production of smaller parts or subcomponents. This is a new version of the horizontal blueprint that extends the notion of subcontracting beyond the assembler/supplier relation to that among suppliers.

ENDNOTES

1. CKDs are completely-knocked-down vehicles that are exported in kits and assembled in other countries.

2. These numbers are net figures and imports have not been taken into account.

3. The role of subsidies in exporting will not be analyzed here. See Levy et. al., Brazil: Industrial Policies and Manufactured Exports, 1983.

4. Renato Baumann, "Befiex: Efeitos Internos de um Incentivo a Exportação," Working Papers (Notas para Discussão, Institute of Planning (IPLAN), Edifício BNDES, Setor Bancário Sul, 70076, Brasília - DF, pp. 14 and 17.

5. Anne Caroline Posthuma, "Changing Production Practices and Competitive Strategies in the Brazilian Auto Components Industry," Unpublished PhD thesis, Institute of Development Studies, University of Sussex, November 10, 1992, p. 16, ffn 8.

6. "The Advantages of the Smaller Production Scale," in Sindipeças News, September 1981, p. 14.

7. See "The Advantage of the Smaller Production Scale," in Sindipeças News, September 1981, p. 14.

The Autoparts Industry Export Association membership list included: Banco & Savino S.A., Industrial Orlando Steveaux Ltda, RCN Industrias Metalurgicas SA, Urba S.A. Industria e Comercio; Whlerson S.A. Industria e Comercio, Simetal, De Maio Gallo, Bussing do Brasil, Maquinas Varga, Industrias C. Fabrini, Supertest, CIMA, Laraconti, Original Autopecas, Resolit. See Anne Caroline Posthuma, Changing Production Practices and Competitive Strategies in the Brazilian Auto Components Industry, Unpublished Ph.D. Dissertation, University of Sussex, Institute of Development Studies, p. 41.

8. Werneck, et. al, p. 62. He cited Eduardo Augusto de Almeida Guimarães and Maria Fernanda Gadelha.

9. Ariverson Feltrin, "Cresce 50 % Volume de Encomenda de Caminhões VW para os EUA," in Gazeta Mercantil, Feb 14, 1989.

10. "Made in Brazil Exportações já passam de 1,3 bilhao de dólares," in Veja, Oct 29, 1986, p. 115.

11. Baumann cites Balanço Anual 1987 published by Gazeta Mercantil, p. 26.

12. The latter measure was particularly aimed at smaller firms who would not have export departments. For a complete list of these incentives see, Sebastiao C. Velasco e Cruz, et. al., "PMEs e relacoes interindustriais: Um estudo sobre a industria automobilistica e o setor de autopecas," Unpublished report of Convenio CEBRAE/IUPERJ, December 1981, pp. 50-54.

13. World car v. Global component.

14. One report states that on average the assemblers in Brazil produce about percent 55 of their components and 35 percent of the value added (Stevens:29) which according to my interviews is a very low estimate. Most assemblers in Brazil are more highly vertically integrated than their parent firms, as are many of the suppliers. This compares to levels of vertical integration of international assemblers. Porsche and Saab produce about 25 of the value added in-house; 50 percent at Ford, about 70 percent at General Motors; about 27 percent at Toyota (Womack et. al:58-59). In another analysis, levels of vertical integration for GM are calculated to be 55 percent; Ford, about 43 percent; Chrysler about 38 percent; Nissan about 36 percent; Honda about 25 percent; and Toyota about 25 percent (Flynn:49). The methodologies for calculating levels of vertical integration are not explained by the researchers and are probably quite different.

15. I visited firms where I had letters of introduction either from colleagues and acquaintances in Brazil or from the parent company in the United States.

16. They report a firm's level of vertical integration but are not multiplied by the firm's market share. If this were the case, levels would probably be somewhat higher.

17. Bosch (electrical), Sabo (gaskets), and Steveaux (gaskets) all mentioned this as one factor influencing their decision to make some of their machinery in-house.

18. Brazilian firms had very different reactions than their American and Japanese counterparts to the Japanese motor vehicle industry success story. American and European firms faced Japanese competition directly whether through imports or transplants. They reacted by blaming high labor costs and counterbalancing this with massive, expensive, and often inefficient investments in automated technology. As Japanese market share has grown, American and European assemblers learned that technology writ large was not a panacea for uncompetitive production practices. They began the painful process of reorganizing their factories and rewriting contracts with suppliers and workers in an effort to improve quality, diminish design and production costs, and shorten the design cycle.

Because of the protected domestic markets, the prohibition against new assemblers Brazilian firms faced less competition from

Japanese firms. In addition, wages in Brazil are low. As a result, firms in Brazil avoided the expensive error of investing in high technology factories.

19. They used families and set up the lines so that so pistons could be diverted. This is very different than the cells approach that Metal Leve took.

20. Susan Helper, "How Much Has Really Changed Between US Automakers and Their Suppliers?" in Sloan Management Review, Vol 15, Summer 1991, p. 24.

21. Assemblers were typically wary of suppliers that had spun off firms. They believed that it was a ploy to justify charging the assemblers higher prices because firms would be required to show profits at each step (Interview with financial executive in assembler).

22. I thank Anne Posthuma for sharing her interview material with me.

23. For similar findings regarding factory reorganization, the introduction of SPC and quality circles, see Posthuma, Table 4.1, p. 134.

24. For a similar analysis, see Posthuma, op cit, p. 185. Posthuma notes that Japanese firms began in the same manner and others researcher have seen JIT combined with large inventories in Brazil. She cites Koichi Shimokawa, "Product and Labor Strategies in Japan," in The Automobile Industry and its Workers Between Fordism and Flexibility, ed. by Steven Tolliday and Jonathan Zeitlin, NY: St. Martin's Press, 1987. For the Brazilian case, she cites Roberto Rocha Lima, "Difusao da Automacao e de Novas Formas de Organizacao e Gestao da Producao no Setor Automobilistico," Unpublished Master's thesis, Polytechnic school, University of Sao Paulo, 1989.

25. The worker put a part in one machine and started the machine. While the operation took place, the workers turned to another juxtaposed machine and took out the part that had just been machined to measure it. Then he put in a new part and returned it to the original machine to repeat the process.

26. By June 1989 one-third of one assemblers' suppliers had an SPC and other quality procedures beyond the implantation stage throughout their factories. Another 33 percent had begun implementing SPC procedures. The remaining third of suppliers was slowing being replaced by higher quality suppliers (Internal OEM documents).

27. See Elizabeth Bartolaia Silva, Refazendo a fábrica fordista Contrastes da indústria automobilística no Brasil e na Grã-Bretanha, Sao Paulo: Hucitec, 1990.

28. See Helena Hirata, "Receitas Japonesas Realidade Brasileira," in *Novos Estudos*, No 2, July, 1983, see in particular, p. 63. She attributes the Brazilian divergences to the very different socioeconomic contexts. For two short case studies of successful quality circles, see Mario Salerno, "Produção, trabalho: CCQ and Kanban a new Japanese immigration," in Processo e relações de trabalho no Brasil, Sao Paulo: Editora Atlas, 1987, pp. 179-202. He claims that the introduction of QCs does not alter the organization of the factory or work (p. 200).

29. Unpublished PhD dissertation, Institute of Development Studies, University of Sussex, Nov, 1991.

30. Data from World Motor Vehicle Data, 1991.

31. Jay Austin and Helen Shapiro, "Lada do Brasil," Harvard Business School Case Study, 9-392-122, 1992, p. 22.

32. Although the assemblers' responses were informed by their parent company philosophies and certainly tight parent control over expenditures, the responses, as in the past, have been surprisingly autonomous although, collectively, they have the similar result of shifting more responsibility onto suppliers. The most dramatic response has been that of Ford and VW who in 1986 merged their respective companies in Brazil and Argentina to create Autolatina. The merger, in many ways, continues VW's history of autonomy from the parent firm in terms of its products -- its BX line was produced only in Brazil (and exported to the US). Although Ford has produced "world cars," as in every part of the world, the cars important differences such as engines, suspensions, and material that relate to regional tastes and the availability of materials. Even Fiat, whose products looked most like their European counterparts has a very different story underneath the skin. In Brazil, the Uno strategy was to cover the middle to up-scale markets. The Brazilian versions, therefore, sport larger engines than their Italian counterparts (1.3 and 1.6 as opposed to 1.1 or 1.3). Furthermore, while Fiat in Italy is a virtual monopoly, in Brazil it was the smallest of the passenger car assemblers. As a result it had to devise different policies than those of its parent company to dealing with suppliers. These policies include more cooperative relations (for example long-term contracts) with suppliers that have been able to stabilize markets (Interview in Fiat).

CHAPTER 6

The Horizontal Vision: Chimera or Blueprint for Development?

The winners in this account of the Brazilian motor vehicle industry are those who have recreated a version of the horizontal blueprint -- long-term relations with assemblers -- advocated by suppliers in the early 1950s. Their struggles to solidify the horizontal relations were tortuous and unpredictable. The battle over the organizational practices in the industry began as state officials, industrialists, and assemblers sparred over competing definitions of mass production. The assemblers contended that there were insufficient economies of scale to justify the dedicated machinery and long-production runs, and that suppliers were ill prepared to face the challenges. State officials may have agreed, but believed that the industry was so fundamental to Brazilian development that it was worthwhile (and necessary) to adjust the model so that the shortcomings could be redressed. Suppliers aspired to cooperative and long-term relations with their customers as a means of ensuring their growth, and called this mass production with horizontal principles.

Whether the result of short-term expediency or long-term visions, the state officials and auto parts producers fought to build the industry around tight cooperative relations

between assemblers and suppliers, contrary to practices in the American and large European assemblers. These men hammered out legislation and wielded state oversight to compel the assemblers to support the fledgling suppliers. The alliance between the suppliers and the state also reflected factors such as contingent foreign exchange shortages; stratagems such as artfully using opponents' terminology to reinforce the pro-industry coalition; wielding the dirigiste network and the syndicate to rein in dissidents and present a united front; and solving problems with "gentlemen's agreements," frameworks within which firms and individuals worked out (flexible) agreements to surmount obstacles.

The protectionism and high local content blocked imports yet required that vehicles be made in Brazil. Assemblers were forced to encourage suppliers with long-term contracts and so began the history of hybrid practices. Other aspects of setting up the industry such as approving many assemblers for a small market reinforced the hybrid nature of production practices as firms invested in general purpose machinery to produce small runs.

The horizontal arrangements, however, proved short-lived and did not survive the implantation period. It became increasingly clear after the coup that the military government held a vision of mass production similar to that of the assemblers. Although the term fell into disuse, the suppliers continued to aspire to the horizontal vision and were incensed

by the state's perfidy as it supported BEFIEX export promotion, pierced protectionism, and proffered assemblers new leverage over suppliers. Perhaps one reason behind the suppliers ineffective responses to the onslaught was the horizontal arrangements themselves. The long-term and single-source relations with assemblers undermined collective action among suppliers. Yet they continued to maneuver, seeking new foundations on which to build their vision.

In the 1970s, the prominence of Sindipeças leaders as spokesmen opposing the military regime revitalized the syndicate and the horizontal vision. Coinciding with foreign exchange shortages and crumbling civilian support, the military leaders gave auto parts suppliers a respite. Their demands to limit BEFIEX-related imports by the assemblers were heeded, and sanctions against encroachment by them on the domestic market were codified into law.

The military government needed the industrialists' support in another struggle, containing growing inflation. The widespread and stringent price controls, a bizarre aberration of the authoritarian regime, provided suppliers the opportunity to recreate the horizontal arrangements to which they felt they were entitled. As the clumsy and crude efforts to control the economy failed, the regime retrenched and brought the private sector back in. New patterns of state/supplier cooperation emerged as the syndicates worked to devise clearer formulae for calculating price increases and

compiled data from their members. Simultaneously, syndicates, the firms, and the state understood the inconvenience and ravages of price wars, and worked together to prevent them.

A revitalized Sindipeças turned the government's need for cost breakdown information into a means of organizing price cartels where suppliers agreed on minimum payment periods and prices to prevent assemblers from instigating price wars. Firms that were able to create cartels constructed new horizontal arrangements predicated upon cooperation from suppliers, renewed protection from imports, and Resolução 63 which mitigated threats from assemblers. By dividing up production shares and establishing minimum prices, they essentially imposed long-term relations on their assembler customers. These firms used the horizontal arrangements to generate profits and smooth out market fluctuations which, in turn, permitted them investments in more productive machinery, worker training, and more qualified managers.

The horizontal arrangements/cartels were a necessary, but not sufficient explanation for export performance. Supporting roles were played by the failed model of mass production -- too many assemblers producing too many platforms/basic models -- which led to low volume production using general purpose machinery. Suppliers used these strategies internationally and successfully conquered export niches. The firms in the peak of the hierarchy came closest to embodying the suppliers' initial horizontal

conceptualization and became industrial leaders in Brazil.

Ironically, another element in the supplier's successful exports was the limited extent of the horizontal vision which was restricted to the peak suppliers. The domestic recession of the early 1980s and subsequent market fluctuations forced firms to export. Those that were highly vertically integrated were partially protected from relying on subcontractors who were ravaged by inflation and market downturns. The peak firms had better control over prices, delivery, and quality, and were poised to meet the export challenge.

Vertical integration was costly and firms had to undertake ambitious factory reorganizations to alleviate the rigidity and coordination problems. Peak, and some middle echelon firms, decentralized production on the factory floor, in effect creating various small firms under one roof, a functional equivalent of subcontracting. In addition, they coordinated relations among the various departments by implanting "just-in-time" (JIT), a production and delivery system based on low levels of work-in-progress. Although firms coordinated operations "just-in-time" within the confines of the factory, they continued to maintain high levels of inventory from raw material and second-tier suppliers as a buffer. The restricted nature of the horizontal vision relegated problem solving to the domain of internal decisions by individual peak firms or in some cases, the peak firms' sectoral groups, thus further segregating the

smaller suppliers.

Only about fifteen percent of all Sindipeças members, approximately 50 firms in the peak and some in the middle echelon of the hierarchy, reconstructed a version of the horizontal vision. The limited nature of the arrangements, however, have proven costly not only for individual firms but for the sector, the economy, and the society.

Most of the remaining 450 or so members of Sindipeças were unable to create strong cartels, however, they exchanged information on contract terms -- prices that they charged assemblers, financing periods, and prices of raw materials and other costs of producing. There are many reasons that they were unable to form strong cartels, and some are interrelated. They include the often high number of firms that produced a particular product, which in itself, reflects firms earlier successes at establishing their markets. Vertical integration by their larger brethren deprived smaller firms of markets. Finally, their business acumen, personalities, and willingness to cooperate, which in turn reflects the social, family, and other networks in which the firms' owners were embedded may also have been factors.

The current challenges facing Brazil are severe. Inflation is unrestrained, obstructs attempts to recreate rules among firms, and strains increasingly tenuous agreements. Within this context, imports are being liberalized and therefore, assemblers are pushing onto

suppliers more responsibility for production, design, inventory, and delivery which in turn taxes the already highly integrated firms.¹ Despite concerted efforts to improve relations between assemblers and suppliers, and suppliers and their subcontractors, their conflictive histories inhibit higher levels of subcontracting.

Can the horizontal vision be extended to include the very firms that so valiantly struggled for it in the early 1950s? There are at least two possible outcomes. Rampant inflation and erratic policy making which have strained or broken previous initiatives, continue to confound new ones. Arrangements must be supple enough to withstand the bitter altercations among firms over who pays the costs of ravaging inflation and market downturns. But this flexibility regarding the division of losses is most needed at a time when it is difficult to construct, a veritable prisoners' dilemma. If agreements do not transpire, the economy will continue to be encephalitic, dominated by a few large isolated and introspective firms who have no option but to maintain their vertical- integration-cum-internal-decentralization mode. Outside, a sea of small, fledgling firms will continue on the margin of survival, restricting the competitiveness of the sector to a small number of firms.

Can the alternative, more cooperative relations between clients and subcontractors emerge? The findings of this study of the Brazilian motor vehicle industry will be put in

comparative perspective to search for clues.

I. State/Business Cooperation and Industrial Development

The literature review in Chapter 2 laid out the traditional accounts of Brazilian industrialization which are underpinned by a large-scale imperative. Whether the state spearheaded the process or state/societal cooperation induced it, industrialization was assumed to require massive capital accumulation and investment, and culminate in mass production. Typically, in the state-led versions, the process was cumulative. In a series of historical turning points, the state acquired increasing capacity to oversee accumulation, investment, and technology acquisition.

The discussion predicated on state/society cooperation usually focused on large private entities, whether foreign or national, because it was assumed that they were the only ones capable of accumulating capital. Recent accounts have revealed the heretofore unrecognized role of small-scale actors, but their efforts are seen as an alternative route to large-scale industrialization.²

The analysis ended with a revisionist position decoupling statist development and state/society cooperation from any structural logic of industrialization. French demonstrated that the national corporatist system did not *a priori* lead to state and/or business control of labor which would have facilitated large-scale accumulation.³ While the corporatist

system was used by the state and business to repress labor, it was also used by labor to forge an series of alliances at the local, state, and federal levels. These alliances at times led to improved working conditions and assistance in promoting unionization. In the same manner, the 1964 coup cannot be seen *a priori* as a means to create conditions permitting foreign investment and a "deepening" of industrialization, the advance from consumer durable to capital goods production. Cheibub demonstrated that President Goulart missed repeated opportunities to strike alliances with former opponents from the center- and center-right. In the process he missed chances to promote social reform which alienated many segments of society and were one important impetus behind the military coup.

From the industrial organization perspective, the conclusions were similar. Studies of industrial organization from industrialized countries demonstrated a bewildering variety of approaches. Apparently contradictory practices persisted not only among firms in a sector, but within individual firms themselves. The practices were a strategy by firms to diminish risk and promote learning and monitoring.⁴ When these perspectives were applied to Brazil, it became clear that industrial organization practices were not examples of failed mass production, but rather innovative attempts to surmount obstacles such as uncertainty, small markets, and severe fluctuations.

This study of the motor vehicle industry revealed the central role of overlooked (small) actors, the auto parts firms and their alliance with state officials. It also revealed that industrial organization practices in the motor vehicle industry were not mass production and that auto parts firms and state officials intentionally deviated from the model to encourage the former's growth. Consequently, industrialization was not led by a state or state/society relations complying with the dictates of the large-scale imperative.

The experience of the Brazilian motor vehicle industry suggested that tight cooperation between state and societal actors is a prelude to successful industrialization, but that the cooperation does not follow a predetermined structural logic. A corollary postulate is that cooperation should lead to organized markets that restrain widespread competition based on price cutting and grant firms tools with they can construct long-term relations between customers and suppliers.

A review of recent literature on industrialization in Brazil recognizes the importance of societal/state cooperation in industrialization. Schneider points to the accommodation (or lack thereof) with the private sector as one element in the success or failure of state-owned industrial enterprises, a critical case because they are exclusively owned by state and allegedly should be free from private sector interference. Schneider's study of Brazil's state-owned industries

suggested that an important factor in a particular project's success was the nature of agreements with the private sector.⁵ He contended that because regional elites and consumers were not incorporated into its administrative structure, Siderbras, a state-owned holding company, could not withstand their demands for investments or unrealistically low prices and therefore, never became an efficient organizational innovation for coordinating national steel production (Schneider:118). In a like manner, Acominas, an integrated steel mill, never negotiated a division of markets with its private competitors and ended up producing in hotly disputed segments (Schneider:123,131,142).

Richard Doner's findings, in his comparative study of four ASEAN countries and their attempts to create motor vehicle industries, are also consistent with the more general conclusions emphasizing state/business cooperation.⁶ Thailand was more successful than the Phillipines, Malaysia, and Indonesia at reaping benefits from TNC assemblers and foreign technologies, achieving high local content, and developing the most dynamic national auto parts park. It also had the highest capacity utilization and was among the top exporters. Doner attributed this superior performance to a more concertationist relation between the private sector and the state.

He suggested that the more concertationist arrangement stemmed from the combination of highly organized business;

strong corporatist identity and stable preferences among the state groups responsible for policy; and institutionalized and regular negotiation between the business groups and the state officials (as opposed to business placing more importance in lobbying with politicians with no specific responsibilities for the motor vehicle industry). This is consistent with the Brazilian experience where state/business cooperation has taken place within the corporatist system, and understandings among the different groups and state officials, have been constantly refined and renegotiated via gentlemen's agreements.

The finding of these studies are liberating because they change the terms of social scientists' debate. The issue of divining the degree of relative autonomy of the state becomes immaterial and efforts focus on ascertaining the nature of concertation between state and societal actors and its impact on shaping the sector's markets. Richard J. Samuels, in his study of the energy sector in Japan began to focus on the mechanics of cooperation, which he called "reciprocal consent." He eloquently explained:

...the evidence from the energy industries makes any inference of state leadership problematic. Market [private sector] objectives are more commonly achieved through the state than state objectives are achieved through the market. The pervasive Japanese state has nearly always been congenial to private interests, in large measure because private firms have learned how to surrender jurisdiction while retaining control of markets. By privately ordering markets to conform to a perpetually negotiated, state-sanctioned economic order, private investors have found one solution--some would say the optimal solution--to the vagaries of capitalist

development. Risk is frequently socialized, costs often transferred. This solution entails the intimate involvement of state agencies, and as a result the politics of reciprocal consent is often confused with state leadership....

What exactly is the nature of the "socialization of costs" and successful cooperation?

I.A. Changing Political Economy and Cooperation

A theme running this study of Brazilian industrialization (and through Doner's analysis as well), is the indeterminate role of national events in obstructing and/or encouraging cooperation. Doner pointed to the role of recessions, foreign exchange shortages, political uncertainty, and ethnic struggles, to name a few. Ethnic conflict is not as decisive in Brazil, but changing conjunctures such as foreign exchange shortages, changing conceptions of industrialization, changing governments, pose opportunities and dangers for private sector/state cooperation. Successful agreements need clear procedural rules where firms agree how to divide among themselves the tensions of inflation, price controls, and changing policies.

I.B. State/Business Cooperation and Industrial Organization Practices

This study of Brazilian industrial practices probes the implications of state/business relations on the factory floor.

In this aspect it complements Doner's work which focuses on broad issues such as local content; product diversification and rationalization; exports; and degree of national ownership. All of these were at one time open for negotiation in Brazil and definitively shaped the development of the industry. In Brazil, as in the ASEAN countries, true rationalization never occurred. In the 1950s, state officials waited for the tardy American assemblers to submit projects and while it waited it accepted any project that met its standards. The post-coup government encouraged a wave of mergers in the late 1960s, yet Brazil lost a second opportunity to rationalize the industry. The number of assemblers fell, but no ceiling was placed on the number of platforms they could produce. The combination of small markets and multiple producers taught firms to produce low volumes using general purpose machinery which unwittingly, led to successful export strategies. Doner does not look beyond accepted notions of economy of scale/industry rationalization even though the Japanese assemblers, around which the ASEAN industries were built, pioneered methods applying mass production techniques to low-volume production.

I.C. State/Business Cooperation and Market Stabilizing Arrangements

Another critical facet of state/business relations is the construction of market stabilizing arrangements among firms. In Brazil, this involved two sets of agreements. One was

between the state and the auto parts firms and involved creating boundaries around markets. In the 1950s this included defining eligible participants and assigning them market segments as well as protection from imports and high local content levels. In the late 1970s, the protection lost as a result of the export promotion legislation was reinstated, and on the domestic market Resolução 63 prohibited vertical integration by assemblers and competitors.

The second set of agreements had more tangential state involvement. In exchange for cooperation on reining in inflation, the state gave the auto parts firms the tools with which they could construct sectoral groups/cartels and reduce predatory pricing.

I.C.1. Government-sponsorship and Interfirm Agreements

Cartels are illegal in Brazil and as a result the corporatist syndicates cannot impose fines on their members for violating restrictive pricing or other inter-firm agreements.⁷ Nonetheless, the agreements exist and are often implicitly supported by the state, for example when it stepped in to mitigate price wars among firms. The cartels were, in a manner, a compromise with the military government which realized that it needed the cooperation of industry to meet its developmental goals, control inflation, and sustain a growth coalition to keep it in power. As a result, the government collected information to establish prices controls,

and in the process tacitly permitted firms, with their syndicates' prodding, to form cartels.

Brazilian cartels, in part because of the nature of their relation to the state, strove to avoid cut-throat pricing competition but did no institutionalized cooperative R&D or other product development. Had the state sponsored research labs or elicited other types of cooperation from industrialists, the form of the sectoral groups might have been very different and the breadth of the horizontal vision might not have been restricted to a reduced number of firms.

While the state/corporatist/firm negotiations created the broad outlines of the issues to be included among the interfirm agreements, the nature of the agreements were worked out among the firms themselves. In Brazil a successful cartel almost always required a committed firm member who coordinated the competitors and could elicit cooperation or at least a willingness to try to come to agreements. Often a Sindipeças official made the first overtures and then stepped in during difficult moments, as in the case of the springs producers. The outcome was not foreordained and negotiations often broke down as smaller firms with less overhead used the meetings to get access to pricing decisions and undercut their larger competitors. The results were often painful for all producers, including the assemblers. As they increased their orders to the lower priced firm, it in turn, needed investment capital to increase capacity. But since the agreement among

firms had broken down, the larger firms were lowering their prices to undercut the renegade firm's new investments. The assemblers often ended up with angry and decapitalized suppliers.

A second difficulty in constructing the cartels were devising punitive measures to keep firms from breaking the agreements. In Brazil it was understood that if one firm violated the minimum price and payment periods then it was subject to being undercut on another contract. As a general rule the forages stopped here. This discussion of the sticks and carrots of inter-firm relations is incomplete and the areas in which it develops and the rules that sustain and expand it needs further study.

The Role of Language (Some of it imported)

The role of the language and ideas has received much attention in recent studies of Brazilian development. Sikkink contended that Brazilian developmentalism worked because its CEPALian* ideas found institutional strongholds among policy makers and state officials and that the ideas converged with industrialists' interests.⁸ Yet as this study of the motor vehicle industry has shown, industrial organization practices had little resemblance to CEPALian

* CEPAL or ECLA, the Economic Commission for Latin America, was the organ of the United Nations concerned with industrial development headed by Raul Prebisch. CEPAL officials and Brazilian policy makers often worked together.

visions of mass production. Adler credited a group of "ideological antidependency guerrillas" with creating the ideas leading to a domestic computer industry and launching Brazil on the road to technological autonomy.⁹ Yet he cannot explain how the Brazilian informatics legislation neglected microelectronics production which became much more important than computer hardware in technological development.¹⁰ In other words, the anti-dependency guerrillas, by focusing on computers rather than microelectronics, increased Brazilian dependence on foreign technology.

The ambiguity of the language of foreign models of industrial organization are pervasive. In the early years of the Brazilian motor vehicle industry, the hybrid practices were masked by a veneer of mass production. Currently, firms in Brazil look to the Japanese, rather than the Americans as they seek to survive and export in the context of high levels of uncertainty and inflation. Once again, the language is the buzzwords of internationally recognized competitiveness, but the practices are reformulated. Consistent with the Japanese model, firms in Brazil decentralized production and coordinated the operations with a combination of just-in-time and various quality programs. Nonetheless, while in Japan the decentralization spread to a network of subcontractors, in Brazil factory reorganization was confined to individual firms. The possibilities for extending it via subcontracting, a hallmark of the Japanese system, was blocked by the legacy

relations with smaller suppliers who, shed during market downturns, were unable or unwilling to supply during upturns. The language of foreign models is not a blueprint for action but a tool that groups can use to articulate their agenda as they seek support from their peers, state officials, and the public.

At the same time, the common terminology also masks the tenuousness of these alliances. The language of mass production joined a coalition of state officials with disparate views on the role of the state in propagating a modern economy. With the military coup, however, a definition of mass production more consistent with the assemblers' prevailed. The argument that inspired protectionism and other measures in support of suppliers, now accelerated the their demise as assemblers were granted permission to import (and leverage over suppliers) in exchange for exports. Clearly, language facilitates adapting to changing circumstances, but the new arrangements must be both stabilized yet constantly revitalized. Institutions, networks, and traditions such as Brazil's corporatist groups or gentlemen's agreements presented one example of a framework for constantly fine tuning agreements on confronting change.

This brief comparative overview of industrialization experiences cannot answer the question of whether the assemblers and auto parts firms in Brazil can devise rules

sharing the costs of inflation and uncertainty so as to strengthen the smaller suppliers and create a truly horizontal industry. The discussion merely highlights the foundations of past agreements, and while admitting that the current uncertainty poses danger to incipient arrangements, recognizes that it also holds opportunity for new ones.

ENDNOTES

1. Some analysts of Brazilian industrialization believe that cartels negative and reinforced monopolistic practices whereby firms restricted output and raised prices. One rationale for ending price controls by the recently impeached President Collor was to abolish cartels.
2. See the discussion of Font's work in section IV of Chapter 1.
3. John French, The Brazilian Workers' ABC Class Conflict and Alliances in Modern São Paulo, Chapel Hill, NC: University of North Carolina Press, 1992.
4. Charles Sabel, "Moebius-Strip Organizations and Open Labor Markets: Some Consequences of Reintegration of Conception and Execution in a Volatile Economy," in Social Theory for a Changing Society, ed. by Pierre Bourdieu and James S. Coleman, Boulder, CO: Westview Press, 1991, pp. 23-61.
5. Ben Ross Schneider, Politics Within the State Elite Bureaucrats and Industrial Policy in Authoritarian Brazil, Pittsburgh: University of Pittsburgh Press, 1991. Although Schneider notes that political coalitions are important and his examples attribute failure in part to a lack of agreements with the private sector, he ultimately chose a strong state/no cooperation vision of industrialization: "Insulation is a highly political and contingent outcome, and successful presidents have wielded it carefully and selectively" (Schneider:229).
6. Richard F. Doner, Driving a Bargain Automobile Industrialization and Japanese Firms in Southeast Asia, Berkeley: University of California Press, 1991.
7. For a brief mention of some of the literature on cartels/corporatist arrangements see footnote 56 in Chapter 4 of this dissertation. For an equally brief review of the literature on Brazilian corporatism and its neglect of critical facet see footnote 4, Chapter 2.
8. Sikkink compared the Argentine and Brazilian developmentalist periods, respectively, under President Frondizi and Kubitschek. She contends that the developmentalist ideology never found an institutional home within Argentine policy making circles. Her story, however, points to Frondizi's obstinance and stupidity in dealing with Argentine society and industrialists and does not need any recourse to ideas and institutions to explain the failure of Argentine developmentalism during the period (Sikkink:1991).

9. See also, Emmanuel Adler, The Power of Ideology The Quest for Technological Autonomy in Argentina and Brazil, Berkeley: University of California Press, 1987.

10. See Caren Addis and Antonio Botelho, "Bold Initiatives and Unintended Consequences: Social Networks and the Development of the Brazilian Motor Vehicle and Informatics Industries," Paper delivered at the Latin American Studies Association Meeting, April 4-6, 1991. Adler pointed to an alliance between the ideological guerrillas and Navy officials, but in fact the latter had lost interest in developing domestic sources of technology for its frigates.