CHAPTER 4

ASSESSING BRAZILIAN GOVERNMENT EFFICIENCY IN NURTURING THE PRIVATE SECTOR: A CROSS-SECTORAL ANALYSIS ON INDUSTRIAL POLICY

Waldemiro Francisco Sorte Junior

INTRODUCTION

This chapter examines the efficiency of the Brazilian government in stimulating the growth of the private sector by means of a cross-sectoral analysis on industrial policy. The discussions will focus upon governmental policies implemented in two important sectors of the Brazilian economy: the automobile and pharmaceutical industries. The reasons for the resilience capacity shown by the Brazilian economy in face of the 2008 world crisis will also be examined, to evaluate whether such policies represent a new paradigm in developmental studies or are still in line with the main assumptions of the Developmental State Model.

Governance can be defined as "the manner in which power is exercised in the management of a country's economic and social resources for development" (ADB, 1999: 3) and it involves the creation of political and institutional conditions for promoting economic growth. Thus, the capacity of a government to collaborate with the business sector and to coordinate research institutions, umbrella organizations, universities, and other players in order to promote entrepreneurship, R&D initiatives and private investment in key industrial sectors is an important element of governance. This collaboration between public and private sectors towards the maximization of mutual goals is central in explaining the rapid industrial growth experienced by East Asian countries under the Developmental State Model. In the past few years, a number of developing countries such as India, Brazil and China have had a growing presence and importance in the world

economy. By analyzing the main initiatives adopted by these emerging economies during the 2008 world crisis, recent literature has identified the main reasons for their high resilience capacity, pointing towards the emergence of a new paradigm in developmental studies. However, although at first glance these initiatives seem to oppose fundamental assumptions of the Developmental State Model, measures adopted by the Brazilian government during the crisis tend to still be in line with the main features of this model.

Recently, an increasing number of authors in the field of developmental studies have also emphasized the capacity of emerging countries in designing successful policies to achieve high levels of GDP growth. Instead of relying on theories and models created in developed nations and transplanted to their realities, emerging countries are said to be designing their own strategies to address local problems, to meet the needs of entrepreneurs and communities, and to promote structural transformation (Ocampo, 2004; Naudé, 2009). As a result, the South-South Collaboration approach is becoming prominent in the agenda of several developing countries, as an alternative to the traditional pattern of technical and financial assistance provided by northern developed economies (Alden and Vieira, 2005; Robine, 2008). Studies regarding this issue are of paramount importance to identify successful initiatives to cope with external crisis as well as innovative measures to promote sustainable economic growth in emerging countries. This chapter intends to further contribute to this literature by analyzing some of the countermeasures adopted by the Brazilian government which were responsible for the country's resilience during the 2008 world crisis.

Brazil accounts for over 30% of the total population of Latin American and the Caribbean region and approximately 40% of its GDP.[1] The country is a leading member of the G20 and has been increasingly recognized as a regional power (Lima and Hirst, 2006). Although Brazil was once regarded as an Intermediate State, in which corruption and rent-seeking coexisted with partially developed government and political institutions (Evans, 1995), initiatives adopted during President Lula's Administration promoted significant social changes and stimulated economic growth. The

1 According to the 2010 census, the population of Brazil was 190,732,694 inhabitants (IBGE, 2010) while the total population of the Latin American and the Caribbean is estimated in approximately 580 million people (Schneider et al. 2010). In 2009, The GDP of Latin America and the Caribbean was estimated in US$ 3,949.2 billion, from which Brazil had a significant share, accounting for US$ 1,577.3 (Banco Central do Brasil, 2011; UNESCAP and ECLAC, 2011: 27).

country has, thus, consolidated its importance as a member of the BRICS[2]. Nonetheless, there are still a number of problems that should be addressed as regards to industrial policy in order for the country to move to a path of steadier economic growth. A certain level of good governance seems to be in place, but it is still necessary to tackle structural flaws, in particular related to the low level of state embeddedness in the private sector, to the limited insulation of the public bureaucracy against political pressure and to the still insufficient level of efficiency and competence of public officials.

This chapter will be divided into four sections. Section one will briefly discuss the main reasons for the resilience capacity of emerging economies in face of the 2008 world crisis and will describe what is being called the new paradigm in developmental studies. Section two will present the main features of the Developmental State Model, based on the analysis of East Asian countries, in particular Japan, Taiwan and South Korea. Section three will review the historical evolution and the current industrial policy adopted by the Brazilian government for the pharmaceutical and automobile industries. Finally, on section four, a comparison between the Developmental State Model and the new paradigm in developmental studies will be made in order to identify their major differences and similarities.

1. THE 2008 WORLD CRISIS AND THE NEW PARADIGM IN DEVELOPMENTAL STUDIES

Recent literature acknowledged the resilience capacity of a number of emerging economies, especially Brazil, India, South Africa and China, due to their ability to minimize the negative effects of the 2008 world crisis and rapidly resume their economic growth. Scholars attempted to explain why these countries were largely insulated from external shocks, while others struggled for a longer time to neutralize the adverse consequences of the crisis. Among these scholars, Briguglio *et al*. (2008) proposed a framework which identifies the main factors responsible for economic vulnerability and resilience. They defined vulnerability as inherent features over which coun-

2 The BRICS is an acronym for Brazil, Russia, India, China and South Africa, which are emerging economies whose economic and political significance have considerably increased in the past few years. Their reserve accumulation accounts for over 40% of the world's total foreign-exchange reserves and, except for South Africa, all the BRICS economies have GDPs of over US$ 1 trillion. South Africa joined the BRICS in April 2011 (The Economist, 2010b).

tries have limited or no control and whose existence is not a result of ineffective policies. Vulnerabilities are permanent and they determine to what extent a given country is exposed to external shocks. Three main sources of economic vulnerability were identified: economic openness; export concentration; and dependence on strategic imports.

Economic openness is related to the size of the domestic market and the state's ability to achieve the productivity level and product range to cope with the domestic demand. The degree of economic openness determines the country's exposure to external crisis and is measured by the share of international trade on GDP. Export concentration is connected to the lack of diversification of products offered to the external market. Finally, dependence on strategic imports is reflected on the share of energy, food and industrial supplies on GDP and it shows to what extent a country is affected by the fluctuation of the cost and availability of such products on the external market. Dependence on strategic import is, thus, related to "country size, resource endowments and possibilities for import substitution" (Briguglio *et al*., 2008: 5).

Although vulnerabilities are not a result of misguided policies, governments may adopt actions to reduce their inherent exposure to shocks. Resilience refers to measures undertaken by states to mitigate the adverse effects of vulnerabilities. It shows whether or not policies are well-designed to allow a country to recover from external distresses in a short period of time. In this manner, resilience is defined as "the policy-induced ability of an economy to recover from or adjust to the negative impacts of adverse exogenous shocks and to benefit from positive shocks" (Briguglio *et al*., 2008: 5). The authors pointed out four major factors contributing to economic resilience: macroeconomic stability; microeconomic market efficiency; good governance and social development.

Macroeconomic stability refers to the state of equilibrium between aggregate demand and aggregate supply, reflected in sound fiscal policies, low inflation, low unemployment rate and a balanced external debt. Microeconomic market efficiency is related to the ability of internal market mechanisms to adjust to external distresses and promptly return to a state of equilibrium, minimizing negative effects. This factor can be measured by the extent to which labour, credit and business regulations are effective, free market institutions are in place and whether the market operates competitively and efficiently. The authors adopt a more restrictive definition of good governance, describing it as the presence of an institutional framework capable of guaranteeing the rule of law and the enforcement of property

rights, which are "essential for an economic system to function properly". It can be measured by factors such as impartiality and independency of the judicial system, integrity of the political system, and insulation of the state from military interference. Social Development is reflected in the level of education, access to health, skill formation and income of the society. It shows whether social dialogue within society is effective, avoiding civil unrest (Briguglio *et al*., 2008: 7-10).

Ocampo (2004: 19) adopts a different perspective and focuses on the interface between production structures and macroeconomic variables to explain the process of economic growth in developing countries. According to him, the dynamics of production structures are observed in the interaction of innovations and linkages. Innovations are "new activities or new ways of doing previous activities," which can be learned and diffused throughout the economic system. They are considered, therefore, the basic engines of growth due to their capacity to enhance productivity and the overall system output. Linkages among firms may take place within and across industrial sectors and "are associated with the development of networks of suppliers of goods and specialized services, marketing channels, and organizations and institutions that disseminate information and provide coordination among agents." He argues that an industrial policy capable of generating economic growth should be focused on promoting "dynamic transformation of production structures with appropriate macroeconomic conditions and stability."

The emerging economies seem to have the necessary resources to boost their production structures. Over the past 25 years, China, India and, to a lesser degree, Brazil have recorded significant rates of GDP growth per year —an average of 9%, 6% and 2% respectively.[3] Their large and predominately young population with low income levels and demanding low wages represents a great advantage in terms of domestic market and availability of workforce. Moreover, technological capabilities are being developed in these countries, with the potential to increase productivity (Nayyar, 2008: 8).

Additionally, in the case of Brazil, successful measures were undertaken from the mid-1990s to control inflation and fluctuations in the exchange rate, which created an environment of macroeconomic stability.

3 If only the 8 years of President Lula's Administration are considered, however, the average Brazilian GDP growth raises to approximately 4% a year. From 2002 to 2010 Brazil reported the following percentages of GDP growth: 2.7, 1.1, 5.7, 3.2, 4.0, 6.1, 5.2, -0.6, 7.5 (Banco Central do Brasil 2011). Although the 2008 world crisis did hit the Brazilian economy resulting in a clear slowdown in 2009, GDP growth plunged in 2010.

During the world crisis in the late 2008 and early 2009, countercyclical fiscal policies were effectively used to increase the aggregate demand, resulting in a rise of domestic consumption (Barbosa, 2010).

The particular case of the Brazilian automobile industry illustrates the efficiency of such policies. As discussed in section three, this industrial sector was strongly hit by the crisis from October 2008. According to Anfavea (2010b) and data collected from the Ministry of Development, Industry, and Foreign Trade, sales dropped 13.6% in comparison to the previous month and 8.5% in comparison to the same month on the previous year. Sales further decreased by 35.8% from October to November 2008. As a result, by the end of 2008, automakers recorded stocks of 211,625 finished vehicles (64,168 units in automakers' factories and 147,457 in dealers' facilities). The reduction on sales had a negative impact on productivity and the production of automobiles in December 2008 (97,048 units) was the lowest since January 2000. To address this problem, the central government and the São Paulo state government channeled financial resources through state-owned institutions to stimulate financing and leasing operations. The central government also increased the availability of financing mechanisms for the acquisition of capital goods and reduced the value-added tax called IPI (Tax on Industrialized Products) for automobiles. These measures greatly stimulated domestic consumption and the automobile sector, along with home appliances, played a pivotal role in sustaining consumer demand in 2009 (IEDI, 2010).

China and India also adopted countercyclical measures in response to the world crisis. Although such initiatives tend to be successful to stimulate domestic demand only in the short-term, it is unquestionable that these emerging countries have shown great resilience in the face of external shocks without relying on aid from developed economies. Accordingly, some authors argue that this resilience capacity points towards the emergence of a new paradigm in development studies, in which developing countries will have more autonomy to design their own countermeasures to address both internal and external problems and will be less dependent on the aid of advanced economies or traditional assistance from Bretton Woods Institutions (Naudé, 2009: 4). The South-South Collaboration framework also emerged in this context, in which emerging economies in the south seek to have more independence in setting their own political and economic agenda and increasing power to influence international politics.

The next section will describe the main features of the Developmental State Model, so that a more comprehensive comparison with the new paradigm in developmental studies can be conducted in section four.

2. THE DEVELOPMENTAL STATE MODEL

The Developmental State is said to be the key factor in the economic prosperity of East Asian countries, especially Japan, Taiwan and South Korea (Amsden, 1989; Wade, 1990). It is characterized by strong government intervention in the economy and close links between private and public sectors. The State is able to dictate the allocation of capital in the economy by controlling the banking system and monitoring the inflow of foreign capital. Although multinational corporations (MNCs) are welcomed in the country, the state imposes export requirements and restricts their access to the domestic market, to "insure that the companies adopt an internationally competitive technology, rather than one which is viable only on the protected domestic market" (Wade, 1990: 364). Also, the Developmental State has a close relationship with the private sector, inducing and fomenting entrepreneurs to start businesses in industrial sectors that are believed to be of national interest.

More specifically, under the Developmental State Model, the government is able to "generate and implement national economic plans; manipulate private access to scarce resources; coordinate the efforts of individuals businesses; target specific industrial projects; resist political pressures from popular forces such as consumers and organized labor; insulate their domestic economies from extensive foreign capital penetration; and (…) carry through a sustained project of ever-improving productivity, technological sophistication, and increased world market shares" (Pempel, 1999: 139).

The Developmental State can thus be considered more tolerable than communist regimes, and more goal-oriented than the market-rational systems (Johnson, 1983: 51). At the same time that the public bureaucracy is insulated from private pressures, it is able to create close connections with large firms in pivotal industrial sectors, to advance national interests through a process of collaboration towards the achievement of mutual goals.

During its early periods of growth, Japan and South Korea relied on large-sized private firms to promote sectoral policies (the *zaibatsu* in Japan and *chaebol* in Korea), while Taiwan relied more heavily on small and

medium enterprises (SMEs) —especially regarding export-oriented initiatives— and large government enterprises (Amsden, 1989: 9). Nonetheless, in all these countries, the state bureaucracy played an important role in directing firms into industrial sectors considered indispensable for economic growth. In Taiwan, in addition to a powerful and well-prepared state bureaucracy, public research institutes were created to maintain the dynamism of the government, preventing inertia by bringing up-to-date expertise into the public sector (Wade, 1990: 216). In the case of South Korea, the government is said to have played the main entrepreneurship function, since "every major shift in industrial diversification in the decades of the 1960s and 1970s was instigated by the state" (Amsden, 1989: 80).

2.1 Meritocratic State Bureaucracy

The public bureaucracy under the Development State Model is characterized by the ability to hire the most capable professionals. It is said that "once a competitively selected economic bureaucracy acquires a reputation for attracting the best and brightest (…) it continues to attract such people (even though at much lower salaries than the private sector) because selection is the stamp of outstanding talent" (Wade, 1990: 371).

The literature acknowledged the importance of key governmental agencies in Japan, South Korea and Taiwan for stimulating private entrepreneurs in entering strategic industrial sectors, which resulted in high levels of economic growth. In the case of Japan, the Ministry of International Trade and Industry (MITI) was successful not only in selecting pivotal industries to promote economic growth, but also in persuading the private sector to invest in the development of such industries. The South Korean counterpart of the Japanese MITI was the Economic Planning Board (EPB), with the responsibility of allocating resources, directing the flow of credit, and formulating all of the country's economic plans during the 1960s and 1970s (Weiss, 1998: 51). In the case of Taiwan, the pilot agency capable of recruiting high-quality talents was the Council for Economic Planning and Development (CEPD), responsible for assessing the macroeconomic situation of the country, formulating macroeconomic development plans, and evaluating large-scale public enterprise projects. The Taiwan government also strongly relied on consultants from the U.S. and from universities, research institutes and consulting firms (Wade, 1990: 197-201, 211-217).

In East Asia, the state bureaucracy has traditionally a prestigious image within the society. In the case of Japan, Johnson (1983: 68) affirms

that "Japanese public places greater trust in the honesty of site officials than in the honesty of politicians or business leaders" and Haley (1994: 153) states that "a sense of mission is widely recognized as one of the chief attributes of the Japanese bureaucracy". As a result of the highly competitive selection process for entering the government and the commitment of public officials to the governmental goals rather than individual's private interests, the public administration in East Asian countries is closer to the Weberian ideal model:

> "The internal organization of Developmental States comes much closer to approximating a Weberian bureaucracy. Highly selective meritocratic recruitment and long-term career rewards create commitment and a sense of corporate coherence" (Evans, 1995: 12).

Informal networks further increase the coherence and corporate identity of the public bureaucracy. In Japan, the majority of public officials come from the University of Tokyo, favoring the creation of personal ties linked to formal competence, the so-called *gakubatsu* system (Wade, 1990: 339; Evans, 1995: 49). Additionally, the practice of *amakudari*, in which a former bureaucrat is relocated to "a lucrative job in a public corporation or private industry" after retirement, is said to create an important communication channel between the private sector and the state bureaucracy (Johnson, 1983: 70-71). These institutionalized channels are essential for the "continual negotiation and renegotiation of goals and policies" between the state and the private sector (Evans, 1995: 12). By developing a state meritocracy permeated with strong informal networks, the Developmental State was able to maximize the efficiency of the bureaucratic model, improving the sense of commitment to governmental goals and enhancing the relationship between public and private sectors. In this manner, public bureaucrats could more easily advance national interests.

2.2 Embedded Autonomy

In this context, Evans (1995: 59) highlights the importance of what he describes as "embedded autonomy." For an efficient state, autonomy is essential. Nonetheless, it is not the autonomy of corrupt or predatory states, which results in the maximization of personal interests rather than the common good. Autonomy should be followed by a great degree of embeddedness in society, which requires the creation of "a concrete set of

connections that link the state intimately and aggressively to particular social groups with whom the state shares a joint project of transformation."

Embeddedness in society may bring synergetic outcomes when division of labor is "sustained by shared orientations and concrete integrations among the actors involved" (Evans, 1996: 1123). Accordingly, successful industrial transformation requires both well-designed policies and a process of monitoring and negotiation, so that public and private sectors can implement the necessary changes to better achieve their shared goals. In other words, the role of the state is not completed when firms are successfully stimulated to set up businesses in key industrial sectors. Even after such firms are established in the market, a constant process of information exchange and negotiation is necessary to ensure that the interests of the private sector are in line with the objectives of the government. Such an information exchange process may additionally provide means for the government to correct eventual deficiencies in public policies due to information asymmetries or unanticipated changes in market forces.

The next section will present the historical evolution and current trends in industrial policy for the automobile and pharmaceutical industries in Brazil. The Developmental State Model will be revisited in the fourth section of this chapter, to analyze to what extent it still influences policy making in the country.

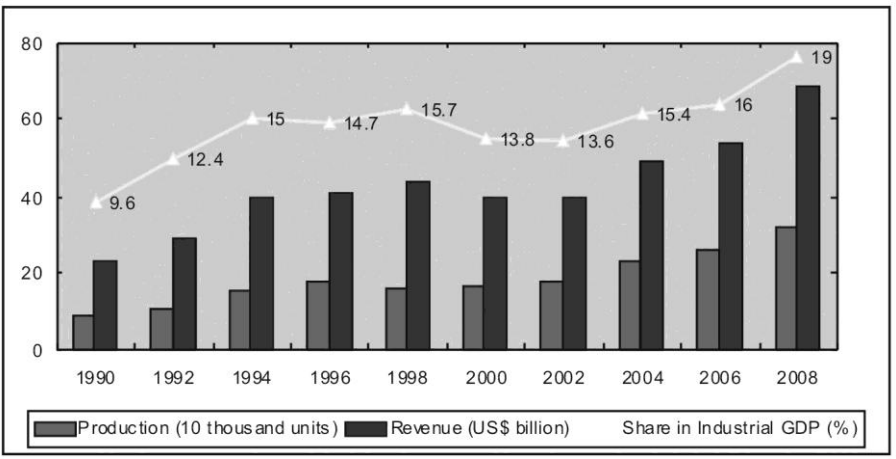
3. THE BRAZILIAN AUTOMOBILE AND PHARMACEUTICAL INDUSTRIES: A CROSS-SECTORAL COMPARISON ON INDUSTRIAL POLICY

The automobile and pharmaceutical industries were chosen for study for a number of reasons. Firstly, they both are key sectors in the Brazilian economy and they have both played a strategic role in the history of Brazilian industrialization.

The automobile industry provides a rich ground for the analysis of the effectiveness of Brazilian industrial policies. As discussed in the following subsection, the government has played an active role in stimulating the growth of this sector in Brazil since the 1950s. From its very early stages of development, the automobile industry was expected to promote industrial transformation in the country and it is still one of the most important sectors in the Brazilian economy. In 2009, Brazil was sixth in worldwide vehicle

production, with 2,185,923 units, and this sector was responsible for 19.8% of the country's industrial GDP.

Figure 4.1. Brazilian Automobile Industry: Revenue, Productivity and Share of Industrial GDP (1990-2008)



Source: Anfavea 2010a.

The pharmaceutical industry is also a relevant sector in the Brazilian economy. In 2008, Brazil was the ninth biggest pharmaceutical market in the world and registered sales of over US$ 17 billion (Palmeira Filho and Capanema, 2010: 310). Moreover, this sector was one of the few industries in Brazil that recorded positive growth in the accumulated rate from January to December 2009 (7.2%), when other sectors such as Computer and Telecom Equipment (–28.3%), reported substantial decline in their production activity due to the world economic crisis (IEDI, 2010).

The automobile industry is considered to be one of the core sectors to promote industrial transformation due to the high level of spillover effects within and across industrial boundaries. Managerial practices such as just-in-time deliveries and Total Quality Management became well-known in this industry before being vastly adopted in several other sectors. Moreover, many pivotal industries, such as steel and information and communications technology (ICT), have to improve their quality standards to supply up-to-date material for automakers. The navigator system, which provides online information on vehicle position and alternative routes through GPS technology, is an example of how the automobile industry can stimulate technological improvements across industrial sectors.

Similarly, the pharmaceutical sector deserves closer attention because it is intrinsically connected to industries that are expected to be of central importance in the near future, such as biotechnology, nanotechnology and biomass. In fact, the increasing interconnection between the pharmaceutical and biotechnology industries is evident by the number of cooperation agreements signed throughout the world in the past few years. The quantity of cooperation agreements increased from 69 in 1993 to 373 in 2000 and to 517 in 2005. Technological spillover effects can already be observed in the growing number of biotechnology-based drugs and in the fact that most of these drugs are being sold by large pharmaceutical firms (Liebeskind *et al*., 1996: 429; Reis *et al*., 2009: 387).

Furthermore, both in the automobile and pharmaceutical industries, there are a large number of SMEs that may benefit from backward linkages by being integrated in the supply chain of large firms. In the automobile industry, SMEs supplying components for vehicles are under constant pressure to enhance their productivity and efficiency to cope with automakers' demands. On the other hand, they get up-to-date information about technology and market trends and a secure outlet for their products.

There is a tendency towards increasing outsourcing and vertical disintegration in the world pharmaceutical industry nowadays (Schilling and Steensma, 2001: 1152; Reis *et al*., 2009: 376), which will certainly pose challenges in terms of quality and productivity improvements for SMEs, but also represents a great opportunity for such firms to grow and consolidate their position in their supply chain network. It is also worth mentioning the existence of a large number of Brazilian SMEs focusing on innovative health biotechnology (Rezaine *et al*., 2008: 629). The interaction between these SMEs and large pharmaceutical firms is relevant, since smaller firms will greatly expand if the demand for their products were to increase.

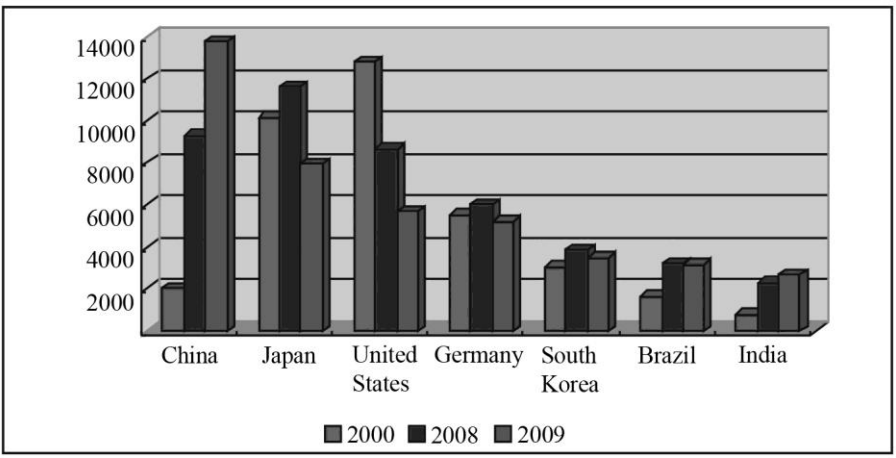
The automobile industry generates many direct and indirect jobs. In 2009, the Brazilian auto parts industry had 205,000 employees and the number of people employed in the automobile industry was 109,043. Also, indirect jobs created in other industries as well as in the services sector are intrinsically connected and dependent to the automobile industry. The number of direct and indirect jobs generated by the sector in 2005 from manufacturing to resale was estimated in 1.5 million (Anfavea, 2010a: 16, 46; Sindipeças, 2010: 9).

The automobile industry also plays a vital role in promoting regional development. For instance, Teixeira and Vasconcelos (1999: 22) highlighted that suppliers as well as other firms came to Camaçari municipality in the

Bahia state following Ford's decision to build a new plant in that region. Senhoras and Dias (2007: 6-7) also affirm that, as a result of the partnership between Fiat and the Minas Gerais state, this local government could attract 20% of the total foreign direct investment in the country from 1971 to 1977. Due to this capacity of generating regional growth, in the past few years many Brazilian local governments are providing a number of incentives to persuade automakers to build factories in their regions. For instance, the Paraná state granted tax exemptions to Renault for 8 years, which represents approximately US$ 1.13 billion, and donated the land in which the plant was built (Botelho, 2002: 60).

The following figure shows the growth of the automobile industry in emerging countries between 2000 and 2009. The figure also reveals that vehicle production was greatly hit by the world crisis in 2009 in the United States and Japan, but was not so much affected in emerging economies. In Brazil, countercyclical fiscal policies such as tax reductions were pivotal for stimulating domestic demand and to reduce the adverse effects of the crisis in the automobile industry.

Figure 4.2. Worldwide Vehicle Production (thousand units)

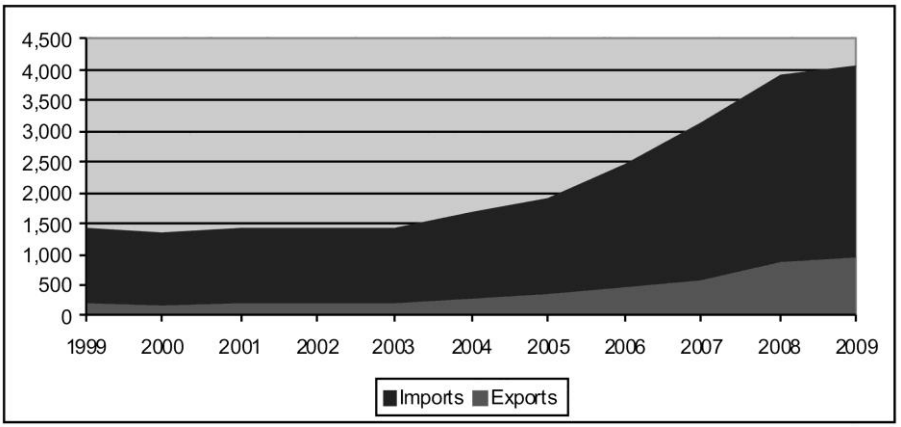


Source: Anfavea 2010a.

The need for developing countries to strengthen their domestic pharmaceutical industry to address the major health needs of their populations is yet another important reason for studying this particular industrial sector. The pharmaceutical industry is strategic for security reasons as it is intrinsically connected to health policies and to the population's well-being (Pra-

dhan, 2006). The governmental inability to stimulate local productivity may lead to significant trade deficit (Figure 4.3) and to insufficient drug supply, resulting in vulnerability to epidemic outbursts.

Figure 4.3. Imports and Exports of Drugs in Brazil, 1999 to 2009 (US$ million)



Source: Abiquif 2010.

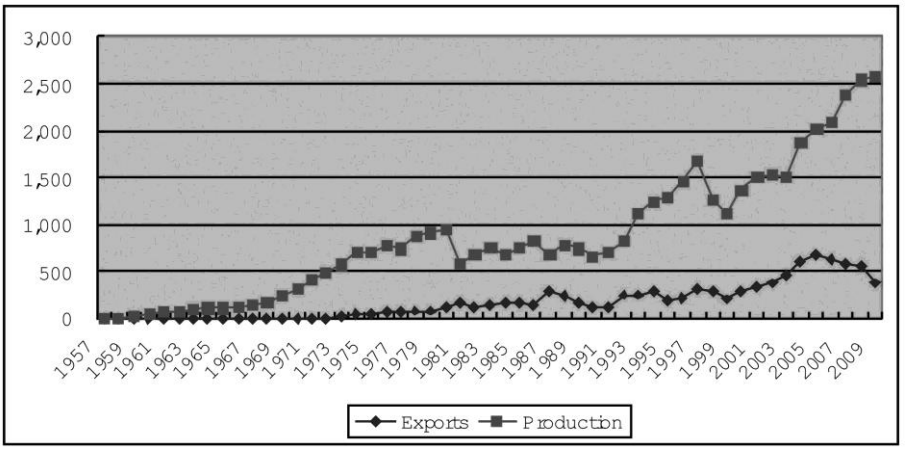
Additionally, the existence of the so-called neglected diseases demands a greater role of the pharmaceutical industry in developing countries. R&D investment of private firms for these types of diseases is insufficient, mainly due to the high costs of new drug development and the low profit potential, as neglected diseases usually afflict the poorest segments of the population (Hubbard and Love, 2005: 148; Chaudhuri, 2005: 8). According to MSF (2001: 11), "of the 1,393 total new drugs approved between 1975 and 1999, only 1% (13 drugs) were specifically indicated for a tropical disease." In this context, studies on the pharmaceutical industry are relevant to back up governmental policies aimed at stimulating innovation in strategic areas and facilitating the access of essential medicines for the poor.

3.1 The Brazilian Automobile Industry: MNC-Driven Industrial Development

The Brazilian government has played an active role in stimulating the development of the automobile industry in the country. By prohibiting car imports in 1956 and conceding import tax exemptions to automakers interested in producing vehicles locally, the government successfully introduced the automobile industry in the country (Evans, 1995). There was a convicti-

on that this sector could lead to industrial transformation and, therefore, the government focused on attracting as many foreign companies as possible. No initiatives were taken, however, to protect and nurture domestic firms and, by 1968, the automobile industry was completely dominated by MNCs and was vertically integrated until the mid-1970s. Export-oriented policies in the 1970s were unsuccessful due to an overvalued exchange rate and to the uncertainty of the Brazilian economy, and automakers continued to focus on the domestic market (Shapiro, 1994). The industry stagnated in the 1980s and, at that time, Brazilian plants lagged "far behind the world pace in terms of productivity and product quality" (Womack *et al*., 1991: 276).

Figure 4.4. Automobiles Production and Exports in Brazil (thousand units)



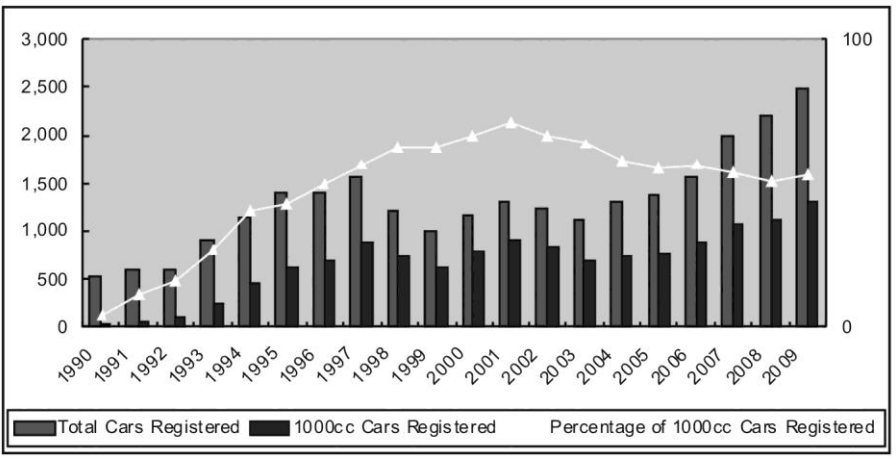
Source: Anfavea 2010a.

The restructuring of the Brazilian automobile industry started in the early 1990s. The government reduced import tariffs on vehicles, auto parts and equipments in 1991 and initiated a process of discussion with union leaders and representatives of automakers and auto parts suppliers with the purpose of gathering data to direct future policies for this sector, under the so-called Chamber of the Automobile Industry. Such discussions resulted in agreements regarding the need to decrease the price of domestic vehicles (especially those with 1000cc engines), increase the existing financial mechanisms to facilitate automobile purchasing, create export promotion policies, and increase investment to modernize Brazilian factories (Anfavea, 1994; Anfavea, 1995; Anderson, 1999; Finep, 2006). Additionally, from 1994, a new currency was adopted in Brazil and the economy was stabilized.

From 1991, the year in which the aforementioned process of discussion started, to 1996, one year after the third and final meeting was held and the final agreement was settled, the production of vehicles in Brazil expanded by 87.9% (Figure 4).

As a result of the policy of reducing the price of 1000cc cars and expanding existing mechanisms to facilitate financing vehicle purchase, a greater share of the population could afford to buy a new car. The Brazilian government offered significant tax rebates, especially for the value-added tax IPI (Tax on Industrialized Products), as a way to stimulate the production of 1000cc cars. The policy was successful and greatly increased the domestic sales of cars produced in Brazil (Fiuza, 2002: 3-4). Several automakers were interested in manufacturing these vehicles due to the aforementioned governmental subsidies. Fiat's Uno, Volkswagen's second generation of the Beetle, and GM's Corsa are some examples of 1000cc cars whose sales were significant in Brazil. The following figure shows that the share of 1000cc cars in the number of new vehicles registered in Brazil greatly increased from the 1990s, peaking into 71% in 2001.

Figure 4.5. Registration of New Cars with 1000cc Engines (thousand units)



Source: Anfavea 2010a.

The 1990s were characterized, therefore, by the revitalization of the Brazilian automobile industry. State intervention, especially by promoting the Chamber of the Automobile Industry and trade liberalization, was relevant in encouraging automakers to undertake initiatives focused on enhancing productivity and quality up to world's standards. In fact, Brazilian

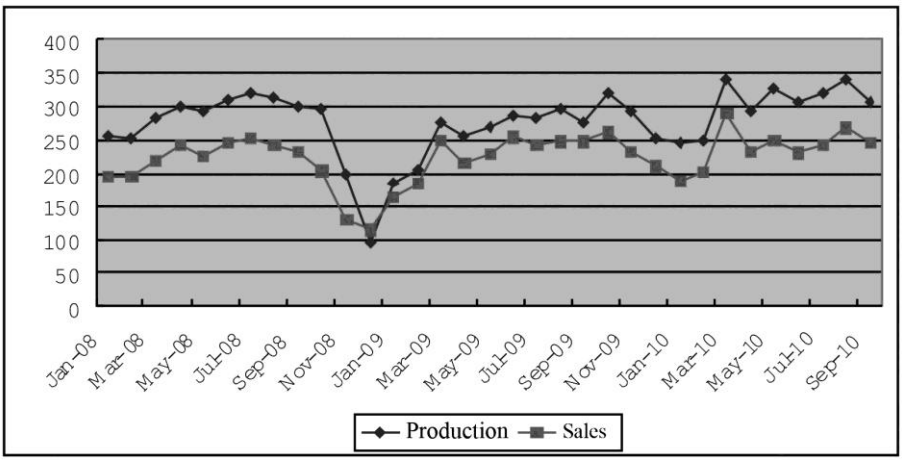
government's import taxation up to the 1990s have allowed small inefficient auto parts manufacturers to sell low quality products at high prices. In the lack of international competition, automakers in Brazil had little incentive to improve productivity and quality, since they were delivering products to the overprotected and incipient Brazilian domestic market. From the 1990s, however, such firms faced international competition and had no option but to improve quality and reduce prices in order to survive.

The stabilization of the economy and appreciation of the Brazilian currency from 1994 represented another challenge for domestic auto parts producers. After the opening of the Brazilian market, transnational first-tier suppliers entered the country and opted to vertically integrate their operations, due to the low quality and efficiency of domestic firms. By purchasing or taking control of key domestic auto parts producers, a few first-tier suppliers dominated the Brazilian auto parts market (Ó hUallacháin and Wasserman, 1999). The share of foreign capital in the Brazilian auto parts sector increased from 48.1% in 1994 to 75.4% in 2009 (Sindipeças, 2010).

It is also worth noting that several new transnational automakers decided to set up factories in Brazil from the mid-1990s. These MNCs made significant investments in new plants in a number of different states and São Paulo's share in vehicle production decreased from 74.8% in 1990 to 45.4% in 2009 (Anfavea, 2010a: 70). One of the main reasons for this geographic relocation of automakers' facilities is the incentives provided by Brazilian states and municipalities, especially tax exemption and donation of land, to attract investment into their localities. Automakers were also attracted by other factors such as the reduction of labour costs, adequate infrastructure, and less influence of labor unions (Botelho, 2002).

More recently, countercyclical measures adopted by the Brazilian government were pivotal in reducing the adverse effects of the 2008 world crisis in the automobile industry. In the period between 2004 and 2007, the production and domestic sales of automobiles in Brazil have increased on an average of 30%. However, the Brazilian automobile industry was largely hit by the world crisis and both sales and production of vehicles greatly decreased in the last trimester of 2008 (see figure 4.6). To address this problem, the Brazilian government adopted several countercyclical measures, such as tax rebates and credit expansion for domestic consumers. In particular, the reduction of the IPI value-added tax from January 2009 to March 2010 was highly successful in stimulating domestic demand and in encouraging automakers to resume domestic car production (Alvarenga *et al*., 2010; Barbosa, 2010).

Figure 4.6. Production and Domestic Sales of Automobiles in Brazil: January 2008 to September 2010 (thousand units)



Souce: Anfavea 2010b.

Currently, most of the transnational automakers have set up factories in Brazil. It is interesting to note, however, that although there are over 15 transnational automakers operating in Brazil, only four of them (Volkswagen, Fiat, General Motors and Ford) are responsible for over 80% of vehicle production in the country. The share of each remaining automaker in total vehicle production is an average of 1.5%, and most of them assemble less than 70,000 automobiles a year (Anfavea, 2010a).

Under Lula's Administration's latest industrial policy framework launched in 2008, the so-called PDP (Productive Development Policy), the automobile industry is considered relevant for its potential for exports and spillover effects, and governmental initiatives are focused on increasing its competitiveness. The automobile industry, therefore, is considered a well established sector in Brazil that needs to be further nurtured to expand its participation in exports and induce industrial transformation.

The PDP explicitly acknowledged the need for the government to establish permanent and direct channels of communications with the private sector (Brazil, 2008). Nonetheless, it is interesting to note that the negotiation between the Ministry of Development, Industry and Foreign Trade and the automobile industry is conducted through Anfavea, the Brazilian Automotive Industry Association. Although representatives of each automaker are usually present in the meetings, it is questionable whether the interests of every firm are equally met. As already mentioned, there are a number of

automakers with low levels of production in the Brazilian automobile industry. Both central and local governments should make efforts to stimulate these automakers manufacturing on a smaller scale to expand their production in order to reap benefits from economies of scale. The Brazilian domestic market and the Mercosur regional market represent great opportunities for these firms as the number of inhabitants per vehicle is significantly lower than in developed countries. While Brazil and Argentina had 6.9 and 4.7 inhabitants per vehicle in 2008, developed nations such as the U.S. and Japan had 1.2 and 1.7 respectively (Anfavea, 2010a: 172).

3.2 The Brazilian Pharmaceutical Industry: In Search of Self-Sustenance in R&D and Drug Production

The sales of pharmaceutical products at apothecary's shops started in the 19th century in Brazil. These apothecary's shops initially sold imported medicines and locally produced herbal and chemical ingredients, but later on established their own industrial laboratories. It was also in the 19th century that the first public laboratories —such as Butantã and the Oswaldo Cruz Institute, both founded in 1899— were created to address major public health and sanitary concerns and to produce snake antivenom and vaccines. At that time, public health policies, particularly from the São Paulo state government, were relevant for stimulating productivity and R&D activities in the pharmaceutical and chemical industries. The first transnational pharmaceutical laboratories from Europe and the United States started manufacturing drugs in Brazil in the early decades of the 20th century (Cytrynowicz, 2007: 43-48; 59-66).

The First World War greatly contributed to the growth of the pharmaceutical industry in Brazil. Difficulties in importing products and the shortage of medicines in the world market provided momentum for the development of pharmaceutical firms in the country. During the Second World War, the engagement of both domestic and MNCs in import substitution policies adopted by President Getúlio Vargas resulted in a significant growth of the pharmaceutical industry. Productivity rose from 7.6 in 1911 to 18.5 in 1920 and then to 133.6 million products in 1938. Import substitution policies also included API (active pharmaceutical ingredients) production and a number of pharmaceutical firms, mainly foreign ones, started vertically integrating their manufacturing processes (Cytrynowicz, 2007: 34-35; 81-85).

However, the discovery of antibiotics and the development of Industrial scale drug production in the post-war period resulted in the rapid obsolescence of the products and technology used by Brazilian firms. This technology gap between domestic and MNCs intensified in the 1950s and 1960s as foreign companies developed their industrial capabilities in all stages of drug manufacturing and initiated global scale drug commercialization. Technological constraints and the lack of new product manufacturing capacity of Brazilian companies resulted in an increasing number of joint ventures and mergers and acquisitions between domestic firms and MNCs from the mid-1940s. Industrial promotion policies during President Juscelino Kubitschek's Administration in the 1950s, including import restrictions on manufactured products and tax rebates on imports of capital goods, benefited MNCs at the expense of domestic companies. As a result, drug imports significantly decreased, although the share of foreign control on the Brazilian pharmaceutical industry rose from 13.5% in 1930 to 45% in 1950 and 70% in 1960 (Bermudez, 1992: 21; Cytrynowicz, 2007: 88-126).

During the Military Regime in the 1960s and 1970s, two opposing political views dominated the debates on industrial policy for the pharmaceutical industry. One of them argued that Brazil should become a self-sustained producer of drugs, as the pharmaceutical industry was considered strategic for national security reasons. The private sector would have, according to this approach, a secondary role to the government in drug production. The second view, on the other hand, was more centered on public health needs and advocated the necessity to procure drugs at the lowest available prices to meet the population's demands, regardless whether the producer was a private or state-owned firm. Several public laboratories for drug production were created by local governments in this period, such as Furp (Foundation for Popular Medicine) in 1968 and Lafepe (Pharmaceutical Laboratory of Pernambuco) in 1967. However, although in 1975 there were a total of 460 laboratories in Brazil and 385 (84%) were Brazilian, only 75 (16%) foreign-owned firms were responsible for 88% of the pharmaceutical industry revenue (Bermudez, 1992: 25-26; Bastos, 2006: 278; Cytrynowicz, 2007: 141-152).

From the mid-1970s, the domestic firms seemed to have abandoned their ambitions to develop new products and were focused on producing the so-called similar drugs, which are copies of brand-name medicines. In fact, Article 8 of the Decree 7903, enacted in August 27, 1945 ruled that patent protection could not be granted to medicines, except for process patent. Later on, in 1969, the Decree 1005 abolished process patent protection for pharma-

ceutical products. These regulations remained in effect until Law 9279 was passed in May 14, 1996, which provided patent protection for pharmaceutical products, following the Brazilian government decision to adhere to the TRIPS (Trade Related Aspects of Intellectual Property Rights) agreement. Therefore, for a long period in Brazil there were no legal constraints for the production of similar drugs. The production of similar drugs stimulated the growth of domestic firms and benefited the Brazilian population, since the prices of these drugs were considerably lower than those of brand-name drugs. In fact, the development of technical skills and capacity for the production of similar drugs is said to be the first step towards new drug discovery. The ability to generate incremental innovation is, thus, considered an important stage in the learning process for developing a new molecular entity and releasing a new drug in the market (Cytrynowicz, 2007: 141-150, 173).

President Fernando Collor's Administration, in the early 1990s, was characterized by a strong process of liberalization and opening of the Brazilian market to free trade. This policy was said to have caused the bankruptcy of several domestic API producers, as these firms could not survive international competition. Even foreign firms which had vertically integrated manufacturing processes in Brazil decided to shut down their factories and import their own products, as a result of import tariffs reduction (Büchler, 2005: 127). Currently, 80% to 90% of APIs used for drug production in Brazil are imported, especially from India and China (Cytrynowicz, 2007: 173).

From the mid-1990s there were active debates on generic drugs, which are copies of off-patent medicines, but are considered interchangeable with the correspondent brand-name drugs after bioequivalence and bioavailability testing. Such tests ensure that the generic drugs have the same chemical composition, quality and stability of brand-name drugs and guarantee that they will have the same effects on the human body. The Brazilian government decided to support the development of a generics market as a way to improve the population access to essential drugs and to enhance the policy of free medication distribution (Lobo, 2009: 345). After the Law 9787 was enacted in February 10, 1999, regulating generic drugs production in Brazil, these drugs were imported until domestic firms developed their technical capacity to produce them. Generic drugs soon became an attractive market niche for several domestic firms and, in 2009, these drugs represented approximately 19% of the total sales of medicines in units in Brazil (Pró-Genéricos, 2010).

From the early 2000s, the Brazilian government decided to stimulate the development of the domestic pharmaceutical industry. In 2003, this industry was considered a strategic sector under the PITCE (Industrial, Technological and Foreign Trade Policy) and, on the following year, BNDES (National Bank for Economic and Social Development) launched Profarma (Support Programme for the Development of the Pharmaceutical Productive Chain). BNDES was created in 1952 with the role of financing infrastructure and industrial development and it has historically played an important role in supporting industrial growth in Brazil. The Profarma programme was originally divided into three subprogrammes with the following objectives: (i) to provide financial support for the expansion and modernization of Brazilian pharmaceutical firms; (ii) to stimulate the engagement of Brazilian firms in R&D activities; and (iii) to encourage mergers and acquisitions among Brazilian firms in order to create larger and internationally competitive domestic enterprises (Brazil, 2003; Capanema, 2006: 205). Changes were implemented in Profarma from 2007 and two additional subprogrammes were created with the following objectives: (iv) to promote exports, and (v) to provide support for public laboratories.

Data from August 2007 show that most of the financial resources of Profarma were used either for supporting the expansion and modernization of factories (US$ 328.5 million), or to encourage mergers and acquisitions (US$ 199.9 million). The amount spent for stimulating R&D activities was less significant: a total of US$ 64.9 million (Capanema *et al*., 2008: 7). This may be explained by the fact that the number of Brazilian pharmaceutical firms capable of engaging in R&D activities is still limited.

A more recent industrial policy, PDP, also considered the pharmaceutical industry as strategic. This policy prioritized the need to invest in R&D to overcome obstacles in innovation. It also acknowledged the importance of coordinating efforts among the private sector, research institutes and the academia as a way to increase competitiveness in the pharmaceutical industry.

By recognizing the necessity to coordinate public health policies with industrial growth needs, the government developed the concept of Industrial Health Complex. Such a concept is comprehensive and encompasses not only the industrial sectors involved in manufacturing health related products, such as biotechnology, pharmaceuticals, and medical devices, but also public and private hospitals, clinics, philanthropic organizations and other akin institutions. The main idea is to align health policies with industrial development in order to: (i) improve the population living standards; (ii) stimulate

innovation; and (iii) generate economic growth. This integrative approach is expected to improve the delivery of health care while, at the same time, encourage private investment in production and R&D, increasing the competitiveness of Brazilian firms and generating employment and higher income (Gadelha, 2006).

The framework of the Industrial Health Complex is based on the Brazilian Constitutional provision of health as a common good. According to this provision, the government has the duty to provide free and universal access to the health care system. The utmost priority of the initiatives implemented by the Ministry of Health, therefore, is the assurance of universal access to drugs and adequate treatment in order to address the health care needs of the population. Many improvements have been made in the domestic pharmaceutical industry due to this universal access driven approach of the Brazilian government.

The Brazilian HIV/AIDS programme can be pointed out as a good example of the positive externalities of such an approach for the domestic pharmaceutical industry. In order to ensure free and universal access to drugs and treatment for HIV/AIDS, the Brazilian government has centralized ARVs (antiretroviral drugs) procurement. This centralized procurement provided a great bargaining power to the central government in negotiations for drug price reductions and to issue the compulsory license[4] for *Efavirenz* on May 4, 2007 (Rodrigues and Soler, 2009: 555). The government has also used public laboratories for the mass production of ARVs. The production volume of these public facilities is representative and they were responsible for producing 43.1% of the ARVs purchased by the Ministry of Health in 2005 (Rossi, 2008: 138).

Public laboratories are central in the current policy adopted by the Ministry of Health. The rationale is that centralized public procurement provides a stable and secure outlet for drugs produced by public laboratories. These public facilities will benefit from economies of scale and may reduce

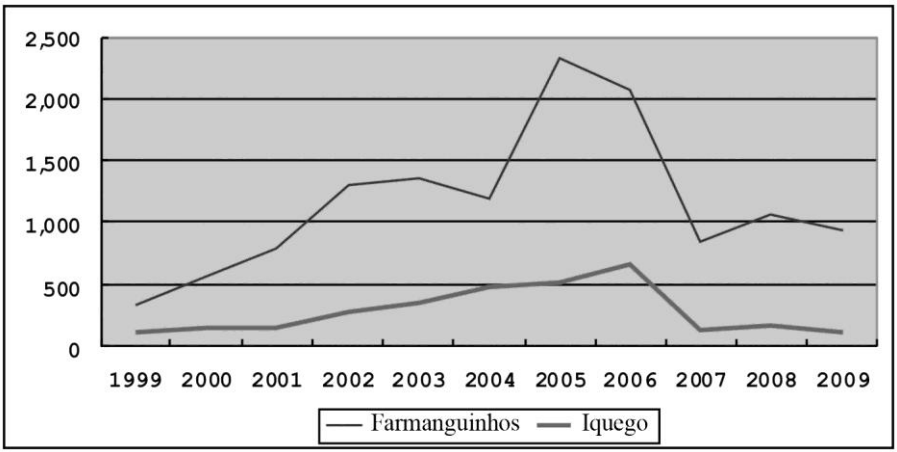
4 Compulsory licensing is one of the flexibilities offered by the Article 31 of the TRIPS (Trade Related Aspects of Intellectual Property Rights) Agreement. According to this provision, a member country may allow a third party to pursue local production of a patented drug "without the patent holder's consent if justified in the public interest" (Cohen et al. 2005). The patent holder, however, is entitled to receive royalty payments. This flexibility is based on the principle that the "TRIPS Agreement does not and should not prevent Members from taking measures to protect public health," which is recognized in the WTO Declaration on the TRIPS Agreement and Public Health, adopted on November 14, 2001 (WTO, 2001; Kerry and Lee, 2007).

government expenditure on medicines. Centralized procurement also increases the Ministry of Health purchasing power, as the government concentrates the demand for drugs that would be otherwise pulverized in the Secretariat for Health of states and municipalities. By using both centralized procurement and public drug production, the Ministry of Health has greater bargaining power in negotiations for price reduction with transnational pharmaceutical firms.

Additionally, public laboratories may be used to nurture innovation in the private sector through public-private partnership and may engage in R&D activities focused on neglected diseases. Since 2008, the Ministry of Health is stimulating public-private partnerships based on technology transfer. In these partnerships, private firms will be responsible for producing medicines and APIs for essential and strategic drugs and will then transfer the expertise to public laboratories. These are contracts with advance purchase commitment up to 5 years to encourage large private pharmaceutical firms to engage in collaboration with public laboratories. Such partnerships are also expected to reduce the country's dependence on API imports as public and private firms are expected to vertically integrate their manufacturing process in Brazil.

However, in June 2009 the media reported over 60% of idle production capacity in public laboratories (Agência Câmara, 2009). Such a low productivity shows a lack of alignment between the Ministry of Health priorities and the activities of these public facilities. The production of Farmanguinhos and Iquego are displayed in the following figure. Farmanguinhos (Institute for Technology in Pharmaceuticals) is the biggest public laboratory in Brazil and is directly linked to the Ministry of Health while Iquego (Chemical Industry of the State of Goiás) is a large public laboratory controlled by the government of Goiás. There are over 17 public laboratories in Brazil engaged in drug production, but these two examples illustrate the problem of idle production capacity observed from the mid-2000s in most of these public facilities in Brazil.

Figure 4.7. Production of Farmanguinhos and Iquego (million units)



Source: Chagnon 2007 and data collected by the author during fieldwork.

The sharp decrease in production observed from 2006 was mainly caused by the decentralization of major public health programmes from the Ministry of Health to the Secretariat for Health of states and municipalities. As the Ministry of Health was the main buyer of drugs from Iquego and Farmanguinhos, this sudden change in these programmes has had a negative impact on the public laboratories' productivity. Iquego, for instance, was a large producer of drugs for diabetes and high-blood pressure for the central government. Centralized public procurement by the Ministry of Health has assured a stable outlet for its products. After the decentralization, however, the Secretariat for Health of each state and municipality has the discretion to decide whether to procure from public laboratories or private firms.

It is true that the Secretariat for Health at the state or municipality levels may have a deeper knowledge of the health needs of the local population. Moreover, in states in which the pharmaceutical private sector is well-established, the local governments will be able to search for lower prices and procure drugs according to the demand. On the other hand, however, decentralization pulverizes drug procurement, decreasing the bargaining power of the Ministry of Health in negotiations for price reduction. In addition, public laboratories were not designed to compete with the private sector. They are not profit-oriented institutions and are supposed to facilitate the access of the population to essential medication. Their R&D activities are centered on filling the gap of the private sector on niches such as neglected diseases and other fields which are relevant for major public

health programmes. These facilities are not meant to struggle for market share with private firm or to promote irrational drug use.

The production decrease of public laboratories is inconsistent with the increasing demand for essential drugs in the health public system. This is evidence of the mismatch between the Ministry of Health's strategy and the activities of these public facilities. The use of centralized procurement, public production of medicines and public-private partnerships to nurture the growth of the pharmaceutical industry and, at the same time, improve health care services delivery may turn out to be an effective strategy. Nonetheless, the lack of coordination between the Ministry of Health and public laboratories may jeopardize the successfulness of such policies. Coordination is of utmost importance to avoid overlapping activities between public and private pharmaceutical laboratories and to ensure that public laboratories' production and R&D initiatives are in line with the needs of the Brazilian population.

It is also worth mentioning that even the HIV/AIDS programme, which is portrayed in the literature as a highly successful initiative of the Brazilian government (see, for instance, Cassier and Correa, 2007; Flynn, 2008), faces challenges that might endanger the sustainable delivery of free and up-to-dated ARVs in the long run. Although the public laboratories are responsible for a considerable production share of ARVs purchased by the Ministry of Health, ARVs produced by foreign firms are more significant when it comes to the impact on the Ministry's budget. In 2005, for instance, although the public laboratories produced 43.1% of the ARVs available in the country, these drugs corresponded to only 19.6% of the total costs. Conversely, while foreign firms produced 39.5% of these drugs, they accounted for 72.8% of the Ministry of Health's expenditure (Rossi, 2008). Public laboratories produced mainly first-generation ARVs, which are not under patent protection and are low value-added if compared to second-generation ones. This explains the high prices paid for drugs manufactured by foreign firms.

One should also note that if Brazilian public laboratories or domestic private firms do not have the technical capacity to produce second-line ARVs, the bargaining power of the Ministry of Health in price negotiation will be reduced and the threat of compulsory licensing will be less effective. This demonstrates the relevance of developing a strong and technologically advanced domestic pharmaceutical industry in Brazil.

4. THE DEVELOPMENTAL STATE MODEL IN LIGHT OF THE NEW PARADIGM IN DEVELOPMENTAL STUDIES

The Developmental State has used high tariff barriers and other types of protectionist policies to restrain the demand for imports and to promote the growth of domestic industries. These protective measures, however, were used as part of a long-term policy focused on stimulating local firms to gain expertise and achieve economies of scale. On top of that, they were combined with export promotion policies. As a result, domestic producers received invaluable technical assistance from foreign buyers, traders and suppliers, which greatly increased their quality levels (Wade, 1990: 359-363). Export-oriented policies were, therefore, fundamental for improving the manufacturing capacity and product quality in East Asia.

In the particular case of the automobile industry, one of the main reasons for the low quality and productivity of Brazilian factories in the 1980s was the disproportional reliance on the domestic market. In knowledge-intensive and capital-intensive industries, late industrializing countries are extremely dependent on the investment of MNCs for technology transfer. This is true even for late industrializing countries that successfully developed strong domestic automakers. In the early years of the South Korean automobile industry, for instance, Hyundai had close ties with Mitsubishi and 50% of Daewoo was owned by General Motors (Evans, 1995: 93). Also in Japan, Toyota reverse engineered Chevrolet's engines and initially adopted Taylorism and the Ford system, while Nissan directly imported "packages of products and process technologies from small American companies" (Fujimoto, 1999: 38).

However, it is important to note that although the Developmental State relied on MNCs for developing knowledge-intensive industrial sectors, it persuaded such companies to adopt export-oriented strategies. As a result, MNCs had to use up-to-date technology and constantly raise productivity and quality to meet global standards (Wade, 1990: 363-364). Therefore, East Asian countries were successful in using MNCs' technology and technical capacity to promote the dynamic transformation of their own domestic firms. It is widely recognized in the literature that the first vehicles produced by Toyota and Nissan had very poor quality, but they both managed to become world class automakers (Fujimoto, 1999: 35; Chang, 2007: 1-2). Technology transfer from MNCs, reverse engineering and export-led policies resulted in the delivery of a highly competitive product to the international market in a relatively short period of time.

Brazilian government was successful in attracting transnational automakers in the 1950s, but export-oriented policies were adopted only in the 1970s and were mostly ineffective (Shapiro, 1994: 225). As transnational automakers heavily relied on the domestic market, there were no incentives for utilizing up-to-date technology and by the time of the opening of Brazilian market to international competition in the 1990s, both vehicles and components produced in the country were not price and quality competitive in the international market. The lack of initiatives by the Brazilian government to stimulate exports, therefore, has had a negative impact on productivity, quality standards and competitiveness of the Brazilian automobile industry.

Successful countermeasures adopted by emerging economies to absorb the adverse effects of the 2008 economic crisis, however, tended to be intrinsically connected to the existence of a large and expanding domestic market. As discussed in section one, a major reason identified in the literature for Brazilian resilience during the recent world crisis was the size of its internal market. The government adopted several measures, such as tax reduction and increase in public expenditure, to stimulate aggregate demand, which resulted in a rise of domestic consumption. It is true that exports play a pivotal role in emerging economies. The Indian pharmaceutical industry is well-known for its export-led strategies and the external market is also an important destination for a great part of Chinese products (KPMG, 2006; The Economist, 2010a). Nonetheless, in the face of the contraction of the international economy in 2008, the large size of these emerging countries' domestic markets was a central reason for their resilience.

Moreover, the three main sources of economic vulnerability identified by Briguglio *et al*. (2008) and discussed on section one emphasize the perils of depending on the external market for strategic imports and as the major destination of domestic products. In other words, their framework seems to identify the availability of natural resources and the size of the domestic market as key to a greater resilience capacity in face of external shocks. This is in partial contrast to the Developmental State Model, which tends to stress the importance of export-led industrial policies and to take as a given the unavailability of natural resources, especially because East Asian countries are small in size and lack raw materials.

As export-oriented policies were pivotal under the Developmental State Model, much attention has been drawn to the analysis of the export destination of East Asian countries. In fact, export promotion policies in East Asia highly benefited from U.S. assistance. The U.S. opened its market to

Taiwan, South Korea and Japan and offered top-quality aid because it wanted to show the superiority of market-oriented economic institutions, by differentiating these three East Asian countries from the surrounding communist states. Moreover, the U.S. supported the economic growth of these countries due to security concerns, since their geographical location were more strategic for the West's defense perimeter than other countries such as "the Philippines, Indonesia, or Brazil" (Wade, 1990: 346). This assistance included financial aid, transfer of technical expertise and an unconditional welcoming market for the three countries' exports. The literature considers the lack of support of hegemonic powers as one of the major drawbacks for countries trying to replicate the success of East Asian economies after the 1990s (Pempel, 1999: 155, 173-174). Authors describing the new paradigm in developmental studies, however, take as a given the limited availability of external aid from developed nations or the inability of Bretton Woods Institutions to provide good quality assistance in periods of world crisis. They tend to focus on national policies adopted by emerging economies that resulted in greater resilience to external shocks.

The main features of the Developmental State Model, however, are still present in the new paradigm in developmental studies. In the case of Brazil, the influence of the Developmental State Model can be observed in many recent initiatives undertaken by the central government. Barbosa (2010: 2-4) identified "the restructuring of the government's career and payroll expenditures" as one of the measures adopted by President Lula's Administration which was successful in reducing the adverse effects of the 2008 world crisis. According to him, from 2007 the government started a restructuring process of civil servants' career in order to "increase the number of public employees in key government activities, increase government wages to a level consistent with attracting good professionals to public service and reduce the outsourcing of typical government activities to private firms." Such initiatives are in line with one of the central characteristics of the Developmental State Model, which is strengthening a meritocratic public bureaucracy that will lead industrial transformation.

Public bureaucracy's insulation from the influence of the private sector is also considered a relevant feature of the Developmental State Model. The concept of embedded autonomy refers to a situation of close partnership between public and private sectors, in which the government plays the leading role. The Developmental State Model, thus, confers great power to the public bureaucracy, sometimes to the detriment of demands from civil society or from the business sector. Wade (1990: 375) asserts that

"state effectiveness depends on the coherence of state policies, which is difficult to maintain when important parts of the state are beholden to sectoral, ethnic, or regional interests."

On the other hand, several authors have argued that the disproportional power of politicians and local elites thwart the implementation of sound government policies in Latin American countries. Schneider (1999: 291) identified political capitalism, characterized by the appointment of a large share of civil servants on the basis of patronage or clientelism, as the main hindrance to the success of the Developmental State Model in Brazil and Mexico. For him, this "appointive bureaucracy" resulted in a low public esteem of civil servants in these two countries and in several problems such as "overcentralization, fragmentation, low professional ethics, high turnover, corruption, low salaries, and poor training." He considered the appointive bureaucracy as one of the most fundamental difference between the type of state bureaucracies in East Asia countries from the one observed in Mexico and Brazil. In this manner, the initiative adopted by President Lula's Administration may be seen as an attempt to change the Brazilian public bureaucracy into a system closer to the East Asian Developmental State.

Brazilian state also tends to rely on key state-owned financial institutions for directing the private sector according to governmental objectives, which can be pointed out as another similarity to the Developmental State Model. In Brazil, public banks account for 35% of the credit operations in the country (IEDI, 2009b). During the recent world crisis, state-owned banks such as Banco do Brasil, Caixa Econômica Federal and BNDES were responsible for injecting money in the economy despite the adverse response of private banks and the shortage of capital in the international market (IEDI 2009a). BNDES also plays a critical role in financing projects and nurturing firms in industrial sectors considered to be pivotal for economic growth. One example is the aforementioned Profarma programme launched by BNDES to nurture the growth of the pharmaceutical industry, which was considered a strategic sector in recent Brazilian industrial policies.

Nonetheless, state intervention in Brazil was not as efficient in promoting industrial transformation and economic growth as in East Asian countries. As discussed in section three, Brazilian state was successful, to some extent, in nurturing the growth of both automobile and pharmaceutical industries. However, Brazil was not able to create a strong domestic firm in the automobile industry, and did not reach the same level of development in this sector as other newly industrialized countries such as South Korea. The government also adopted measures to foster the development of the phar-

maceutical industry, but was not able to prevent product and technology obsolescence of Brazilian firms in the post-war period. As a result, the Brazilian pharmaceutical industry did not evolve into a vertically integrated manufacturing sector with international levels of investment in R&D. Due to this partial success of Brazilian industrial policies, Evans (1995) considered Brazil as an Intermediate State, i.e., a middle term between the Predatory State, in which high levels of corruption and rent-seeking hinders industrial development, and the Developmental State.

Furthermore, the Brazilian government played an important role in the 1950s in encouraging transnational automakers to start manufacturing vehicles in the country, through vehicle imports restrictions, tax rebates and other subsidies. Since then, the automobile industry has grown to be one of the key industrial sectors in the Brazilian economy and was responsible for 19% of the Brazilian industrial GDP in 2009 (Figure 1). However, the creation of a Brazilian domestic automaker was not among the priorities in the industrial policies for the automobile industry. The Brazilian government wanted to develop the automobile industry due to its capacity to promote industrial transformation and was not so much concerned in protecting domestic firms against foreign domination. As a result, domestic firms that started assembling vehicles in Brazil, such as FNM (National Motor Factory), did not receive any special treatment from the government and were soon absorbed by transnational automakers (Shapiro, 1994). Conversely, South Korea was successful in nurturing its *chaebols* in the automobile industry to create successful domestic automakers (Evans, 1995).

In fact, the policies adopted by the Brazilian government at that time to promote industrialization benefited MNCs to the detriment of domestic companies also in the pharmaceutical industry. A number of regulations enacted by SUMOC (Currency and Credit Superintendence), one of the Brazilian monetary authorities before the creation of the Central Bank, greatly favored MNCs. Such regulations, in particular the Instructions 70, 80, 87 and 113, reduced the import tax for capital goods, raw materials and APIs, and represented an important incentive for foreign firms, since most of them already produced APIs in their own countries. The Brazilian domestic firms, on the other hand, could not take advantage of such instructions and did not receive any type of subsidies to strengthen their manufacturing and technical capacities.

State intervention in the automobile industry in Brazil was also less successful in creating conditions for higher levels of economies of scales. Since public officials placed high priority in the prompt development of the

automobile industry in the 1950s, they welcomed all foreign automakers interested in assembling vehicles in Brazil. This strategy reduced the government capacity to create domestic leaders as it hindered the achievement of economies of scale. Even nowadays, although most of the transnational automakers manufacture vehicles in Brazil, many of them have low production levels and are not reaping benefits from economies of scale. Wade (1990: 311) attributes the success of the South Korean automobile industry to the "government's ability to restrict entry of new producers, and thereby protect economies of scale."

The pharmaceutical industry has a longer history than the automobile industry in Brazil, and a number of domestic firms that emerged in the 19th century reached a great level of prosperity during the First and Second World Wars. The local government of São Paulo and the central government (at that time sited at Rio de Janeiro) were relevant in generating demand for chemical and pharmaceutical products. The São Paulo state government was said to have become the main buyer of chemical products and one of the largest vaccines and antibody producers during the First World War. In addition, the first public laboratories created in the 19th century were pivotal in conducting research on tropical diseases and on training researchers, technicians and specialists who would later on set up private pharmaceutical firms (Cytrynowicz, 2007).

The Brazilian government, however, was not successful in nurturing the private sector and in stimulating research on public facilities in order to keep pace with the technological improvements in the pharmaceutical Industry, especially the development of industrial modes of production and the manufacturing of antibiotics. In addition, although both the United States and Europe developed their basic chemical industry in the early 1940s, Brazil was a late entrant in this sector and the supply of APIs in the country continued to be greatly dependent on imports. As a result, in the post-war period, a number of formerly highly competitive Brazilian domestic firms started to lose ground to MNCs. The lack of technical capacity to produce APIs was an obstacle to the vertical integration of their manufacturing process. Moreover, their inability to produce the newest drugs available in the market, especially antibiotics, in industrial scale, left them with no option but to form alliances with MNCs.

The Brazilian government has recognized the pharmaceutical industry as strategic in two recent industrial policies, PITCE and PDP, but the gap in terms of R&D investment and innovation capacity between Brazil and the biggest pharmaceutical firms in the world is still enormous. For instance, in

2009, Laboratório Cristália, one of the leading firms in the Brazilian pharmaceutical industry, invested 6% of its revenue in R&D, which corresponds to approximately US$ 17 million. In the same year, main pharmaceutical firms in Europe and the United States, such as Roche, Pfizer, Novartis, Sanofi-Aventis and GlaxoSmithKline, all recorded investments of over US$ 5 billion in R&D. In fact, the total amount spent by BNDES from 2004 to 2007 under the Profarma programme to encourage domestic pharmaceutical firms to undertake R&D activities was only US$ 64.9 million. By 2010, this amount has greatly increased to US$ 258.1 million, but such financial resources still seem to be insufficient to generate new drug development, especially if one considers that this total amount was divided among 25 different R&D projects. In India, which is an emerging economy with a strong pharmaceutical industrial sector, largest firms such as Sun Pharmaceutical Industries, Cipla and Matrix Laboratories invested over US$ 40 million in R&D in 2009, and the top investor in R&D, Dr. Reddy's, spent over US$ 80 million (JRC, 2010).

Hence, although the pharmaceutical industry was considered strategic since the early 2000s, it is questionable whether the initiatives undertaken by the government will be sufficient to nurture the growth of this sector, especially regarding the amount of expenditure in R&D which is necessary to foster new drug development.

Nevertheless, rather than moving away from the framework of the Developmental State Model, the Brazilian government seems to be operating changes in its structure to address deficiencies in past industrial policies and create conditions for the development of a type of partnership between public and private sectors closer to the one observed in East Asia.

The latest industrial policy under Lula's Administration, PDP, emphasizes the need to strengthen the channels of communication between the government and the private sector. The PDP acknowledged the necessity of increasing the Brazilian government's level of embeddedness in order to better address the needs of the private sector and to rapidly adapt to changes in the market. Hence, this industrial policy still encompasses one of the main assumptions of the Developmental State Model, which is strengthening public-private coordination for the achievement of mutually defined objectives and for promoting sustainable growth in strategic industrial sectors.

This relationship between public and private sectors in Brazil, although partially successful in nurturing the growth of some industries, still needs to be improved to create more dynamic and competitive industrial

structures in the country. In 2009, Brazil showed a significant trade deficit for high technology intensity industries, which is evidence of the lack of competitiveness of the country's exports in terms of technology content (IEDI 2009a). Palma (2010) also emphasizes that the manufacturing sector of Latin American countries in general, and Brazil in particular, have historically maintained a low level of value-adding capacity if compared to its East Asian counterparts. In this manner, Brazil is a leading exporter of iron ore, but a minor exporter of steel. As the Brazilian manufacturing sector has limited capacity to move higher in the value-chain, its ability to generate positive externalities and spillovers is reduced. There are instruments of industrial policy, such as tax rebates and higher exports subsidies for value-added products, which could be utilized to stimulate this move upwards in the value-chain.

Finally, it is interesting to note that, although the government did not prioritize the creation of a Brazilian company throughout the history of the automobile industry, it is currently trying to foster the emergence of a strong and vertically integrated domestic firm in the pharmaceutical sector. There is evidence that the government is undertaking several measures to achieve such a goal. BNDES Profarma programme has a line of credit specifically for strengthening domestic firms through mergers and acquisitions. Additionally, there is a clear resistance from both central and local government against the acquisition of domestic firms by foreign companies (Scaramuzzo, 2010). This tends to show that the level of interface between public and private sectors are intensifying, especially in industrial sectors considered strategic.

CONCLUSION

The analysis of the resilience capacity of emerging economies to withstand the adverse effects of the 2008 world crisis reveals that their sources of strength were different from the factors responsible for the economic growth of East Asian countries in the past. A number of initiatives undertaken by these emerging economies to reduce the negative impacts of the world crisis were focused on increasing the aggregate demand. In this manner, a strong and thriving domestic market was pivotal for their resilience capacity in face of the contraction of the external market. Countries such as China, Brazil, India and South Africa, which could rapidly recover from the crisis, all had large domestic market and implemented successful

measures to increase internal consumption. This is in partial contrast with the export-oriented policies promoted by Japan, Taiwan and South Korea during their early periods of economic development and recent literature argues that this seems to indicate the emergence of a new paradigm in the field of developmental studies.

Nonetheless, rather than being long-term policies, these initiatives were short-term countermeasures to deal with external shocks. Although their domestic markets have played an important role in sustaining economic growth despite the world crisis, these emerging economies will have to adopt successful export-led growth strategies to generate dynamic industrial transformation and to further develop technological capacities. Therefore, emerging economies still need to draw from the lessons of East Asian countries' past experiences and this new paradigm does not exclude the main assumptions of the Developmental State Model.

In fact, initiatives implemented by the Brazilian government to promote industrial development in the long-run are still in line with measures formerly adopted by East Asian countries. President Lula's Administration seems to have made great efforts towards the creation of a meritocratic state bureaucracy. By significantly increasing the salary and restructuring the careers of civil servants in order to attract good and talented professionals, the government was clearly focusing on the improvement of the public bureaucracy. One should note that this was not an ordinary process of restructuring the public administration to improve the efficiency of the governmental expenditure. Rather, it was an expansion of public expenditure on civil servants, to increase their wages and ensure that typical government activities will not be outsourced. Thus, instead of moving forward with neoliberal oriented policies or minimal state approaches, the Brazilian government prioritized efforts towards the creation of an efficient public administration which will be able to direct economic growth and dynamic industrial transformation in the country.

Moreover, a recent industrial policy adopted by the central government in 2008, PDP, is based on one of the main assumptions of the Developmental State Model, which is the need to increase the level of state embeddedness in the private sector. An intense debate between public and private sector was conducted through meetings and forums to define the outline of this industrial policy and this dialogue is expected to continue. In addition, the PDP defined strategic sectors for promoting industrial growth and transformation in the Brazilian economy, which were biotechnology, nanotechnology, pharmaceuticals, defense, nuclear energy, and ICT. This

idea is similar to the strategy of the public bureaucracy in East Asian countries under the Developmental State Model.

Brazil, however, still has a lot to learn from the East Asian experience in order to create the political and institutional conditions to promote sustainnable economic growth. The Developmental State Model shows that, for achieving high levels of economic growth, at least four issues are of paramount importance: (i) a relatively stable policy framework which prioritizes economic growth; (ii) a competent public bureaucracy with capable professsionnals; (iii) a well-organized private sector; and (iv) institutionalized coordination mechanisms between the public bureaucracy and the private sector aiming at the achievement of mutually defined goals.

Some of the aforementioned initiatives implemented during President Lula's Administration were focused on improving the efficiency of the public bureaucracy and to enhance the level of state embeddedness in the private sector. There are, however, a number of structural constraints that need to be addressed in order to improve the state capacity to coordinate the private sector towards economic development and to establish conditions to consolidate good governance. One of the main problems still seems to be political capitalism, which turns the Brazilian public officials into hostages of clientelism and patronage. As a result, the power held by the Brazilian public bureaucracy and its capacity to implement and sustain programmes for economic growth and transformation become considerably lower than those of its East Asian counterparts. By winning two consecutive elections and maintaining high levels of public approval, Lula has guaranteed, to some extent, political stability. Nonetheless, the continuity of public programmes, the appointment of high public officials and a number of key strategic decisions are still strongly influenced by political pressure.

In addition, although the interaction between the government and the business sector has increased, the discussions presented in this chapter regarding the pharmaceutical and automobile industry reveals that a higher level of embeddedness have to be promoted in order to achieve steadier economic growth. Although the pharmaceutical industry has been identified as a strategic sector in recent industrial policies, it is clear that the level of coordination between the Ministry of Health and the public laboratories is unsatisfactory. Also, even though programmes were designed to foster the growth of Brazilian private domestic pharmaceutical firms, their pace of development is still slow if compared to their counterparts in other emerging economies.

Similarly, in the automobile industry, the Brazilian government has insufficient channels of communication with the private sector, which results in ineffective policies to address the needs of automakers with low production volume. Hence, due to the lack of embeddedness, business growth opportunities are not being properly exploited and the Brazilian automobile industry is losing an important chance to consolidate its leadership in the regional market.

It is true that institutional reforms are slowly being implemented to promote good governance in Brazil. Nonetheless, a long time will be necessary for more substantial structural changes to take place and the government will still have to struggle with the side-effects of an "appointive bureaucracy" greatly influenced by political pressure and an incipient pattern of interaction between public and private sectors.

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