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Competition analysis of automobiles and light commercial segment between 1990 and 2014

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Abstract

This paper reviews the concept of market structure in oligopoly and concentration indicators CR(4) and HH, and verifies the changes in the concentration and competition of the automotive and light commercial market between 1990 and 2014. In 1990, the CR(4) that represents the participation of the four largest firms that was 98.8% becomes 95.1% at the end of 1996, and the HH index that varies between 1/n and 1, being 1 monopoly situation dominated by a company and without competition and 1/n varying the competition as more companies enter the sector, it goes from 0.2951 in 90 to 0.2756 in 96, pointing out the sector as concentrated and competitive, characteristic of oligopoly. These indicators continue to change in the following years and in 2014 the CR(4) is 64.9% and the HH index measures 0.1700, showing that the sector is less concentrated and more competitive. The review addresses the market characteristics in the oligopoly whether or not it´s concentrated and competitive in Brazil from 1990 to 2014 divided into two periods, the first from 90 to 96 and the second from 97 to 2014. The characteristic of the car and light commercial market in the first period indicates for a sector with the characteristic of a very concentrated and competitive oligopoly. For the second period analyzed, a much less concentrated and more competitive sector.

Keywords

oligopoly; market concentration; barriers to entry; competition index, economics, market data analysis, automotive industry.

1. Introduction

The automotive sector over time undergoes a market transformation, which has attracted investments in the order of US$ 64 billion by various brands, in order to build new plants for

the production of vehicles; modernization of machinery and equipment; expansion of production capacity. This sector has produced in its entire existence in Brazil more than 71.2 million vehicles. It employs more than 1.5 million people (direct and indirect) according to data from ANFAVEA (2015).

According to the oligopoly concepts of Pindyck and Rubinfeld (2010), Rossetti (2009), Kon (1999) and Nicol (1989), the structuring of sectors in a few suppliers can confer market power and generate prices beyond those considered optimal. As a consequence, consumers may bear higher product prices and/or lower supply from such a process. In this sense, it´s relevant to study the characteristics inherent to the automotive sector of Brazil by the eventual market power and discuss consequences for the consumer market.

The general objective of this work is to analyze the automotive market, specifically the segment of automobiles and light commercial vehicles, in Brazil, between the period 1990 to 2014. To meet this objective, CR(4) concentration indicators and the Herfindahl-Hirschman index (HH) are applied as an analysis instrument. It´s intended to analyze the data of the sector as market-share, production, licensed volume, volume emplacado and export and import data to substantiate the analysis.

The database originates from the National Association of Motor Vehicle Manufacturers (ANFAVEA); National Federation of Motor Vehicle Distribution (FENABRAVE); Ministry of Development, Industry and Foreign Trade (MDIC), Central Bank of Brazil (BACEN) and the Brazilian Institute of Geography and Statistics (IBGE).

The main justification of the research is aimed at understanding if there is eventual market power concentrated in a few companies and what would be consequences for the consumer. Finally, to evaluate the measures taken by the government and to what extent they affected the structuring of the sector in Brazil. This work is composed of three sections, the first consisting of a theoretical approach to the concepts of oligopoly market structure and concentration indicators. The second section contains a brief historical context of the formation of the automobile industry in Brazil and makes an analysis of the period between 1990 and 1996. The third makes an analysis of the market in the period from 1997 to 2014. Finally, the conclusion, a synthesis of the analysis of the main results obtained during the research.

2. Market Structure: Oligopoly

2.1. Oligopoly Theory

The oligopoly presents as a characteristic a small number of competing companies and that at the same time concentrate a significant part of the supply or its totality, that is, there is potential for all or some of the companies to obtain substantial volumes of profits in the long term. In addition, the potential for barriers to entry makes it impossible or difficult for entrants to enter the sector (Pindyck & Rubinfeld, 2010). For Kon (1999) the oligopoly presents as its main characteristic the small number of companies within an industry. Rossetti (2009) reports that it´s very common to find markets that have oligopolistic structures:

The number of sectors and subsectors of the economy in most countries in which typical oligopoly situations prevail tends to be greater than those in which other market structures occur. Markets that are not dominated by a small number of large companies, which concentrate significant portions of total sales, are rare (Rossetti, 2009). Although it´s not trivial to identify from what level of concentration the market is considered oligopolistic, it´s considered the scenario in which the number of producers is not considered very large as a factor of characterization of the oligopoly (Nicol, 1989). Another characteristic presented by

Nicol (1989) for this market structure is the production of similar or differentiated goods as in the case of automobiles.

The formation of an oligopoly also involves other factors, and not only the number of companies operating in the same sector, the way they compete is also a striking feature. In this sense, the existence of few players makes competition, within this market structure, dependent on the reactions that companies will adopt due to the action of the other, on the ability that each firm has to anticipate the movements of its competitors, in addition, by the degree of rivalry among themselves (Kon, 1999).

Pindyck and Rubinfeld (2010) also report the existence of a dependence on actions and reactions between firms, they can adopt cooperative movements, when firms plan strategies together and have some type of agreement, or adopt competitive movements, a situation in which companies can not close agreements and negotiation is impossible.
According to Kon (1999) companies establish rules and norms to form the price above the total cost; these agreements exist to enable firms to guarantee a profit margin or a desired return on the capital invested higher on each unit produced. There are situations, however, in which the leading company imposes the price level to be followed by having a total cost similar or lower than that of its rivals.

Rossetti (2009) points out other characteristics of oligopoly, one that consists of the lack of differentiated products (identical or very close similarities) and high rates of technical concentration, when the dominant players hold most of the supply and the market and the other in which there is the existence of differentiated products. In the situation where products are homogeneous, Pindyck and Rubinfeld (2010) observe that companies compete in the market for the quantity produced, decisions about production levels take into account the quantity of their rival and vice versa.

From the analysis of Nicol (1989) it´s possible to understand why companies direct their strategies to differentiate their products and maintain large amounts with advertising. Nicol (1989) reports that consumers create positive perceptions about brands, whether real or fictitious, and this favors the effect of advertising, whose focus is to build customer loyalty.
The existence of oligopolistic markets with homogeneous or heterogeneous products differs somewhat from the way firms tend to compete, and therefore, it´s necessary to analyze more deeply the effects that this market structure causes in price decisions for the firm and for the consumer.

2.1.1 Oligopoly Problems

In oligopoly, according to Nicol (1989), the lean number of producers will cause marketing actions, product launches, pricing practices, among others, to cause reaction effects on competitors. Ferguson (1999) also presents a similar line of reasoning in arguing that rival companies can tacitly establish agreements for competition via advertising.

Rivals may devote their lives to trying to guess each other's plans; they can tacitly agree to compete through propaganda rather than price changes, or through the market potential generated by monopoly, build agreements for cooperation rather than effectively compete (Ferguson, 1999). Companies, as presented by Nicol (1989) and Ferguson (1999), may prefer to act together or make the decision that is best for them. That said, these possible decisions and forms of competition can affect other firms and families.

Agents, due to the lack of antitrust laws, can adopt a cooperative behavior, choose the levels of production that best meet the needs of their companies and obtain a good profit margin

according to Pindyck and Rubinfeld (2010). This situation is characterized as a cartel, the agreements benefit an organized group of companies that practice higher prices and control production levels, this means that competition becomes less fierce and producers guarantee good profit margins reports Ferguson (1999). For Nicol (1989) the situation in which companies can control the market, the consumer is at a disadvantage, since it leaves him with no alternative and forces him to pay exorbitant prices.

For Pindyck and Rubinfeld (2010) in a contrary situation, if antitrust laws prevent companies or if firms establish aggressive strategies there is a risk of starting a price war, intensifying the dispute for a greater market-share, and harming the profitability of the business. If you consider the contrary situation of companies acting together, it´s understood that the consumer will take advantage, since the firms will no longer control the pricing practice of the market and soon the customer will have more options.

2.2. Barriers to Entry

The demand curve of companies is affected by the number of players operating in the same sector, if the other factors remain constant. As new firms enter a particular sector competition tends to increase, so incumbents may face new challenges to maintain price levels and subsequently make adjustments, and retain their clients (Pindyck & Rubinfeld, 2010). In this way, the possible entry of new companies into a market classified as an oligopoly has the potential to affect the level of profit and also prices (Kon, 1999).

Thus, barriers to entry are associated with preventing the entry of new entrants to compete in this market. If the barriers prevent and/or discourage the entry of new competitors, it´s to be assumed that they contribute to maintaining the reduced number of companies within a given sector and possibly to the formation of oligopoly. To further understand this effect it´s necessary to verify the possible types of barriers to entry and their characteristics (Pindyck and Rubinfeld, 2010).

Porter (2004) exposes the types of barriers, among them: Entry via cost advantage, when protected by patent; product differentiation; economies of scale when unit costs decrease as production increases; the need for capital when large sums are required for new firms to enter the market; government policy through the creation of laws that regulate the activity, this can be for improvements in working conditions or concern for the environment and; costs of changes when the change of supplier occurs, the incoming company will need to convince the buyer to use its product or service and it´s necessary to carry out new training of the workers.

2.2.1. Barrier to Cost Advantage

Companies already installed have easy access to inputs and, consequently, save on transportation and logistics expenses; own the production technology or hold patents that protect against plagiarism and; have strong distribution channels either by location or by agreements with partners. This cost advantage allows dominant firms to adopt prices at the point where it reaches the long-term average cost of potential competitors reports (Ghemawat, 2012).

Porter (2004) explains that the cost advantage can be unmatched, official subsidies obtained through government agreements can last for years and the learning or experience curve makes it an important barrier to entry if firms can retain this knowledge for themselves. The learning curve makes unit costs fall over time, the gains are due to productive efficiency, employees can

improve their techniques and methods, make better use of the resources of machines and equipment.

2.2.2. Product Differentiation Barrier

For Ghemawat (2012) the company that has a differentiated product is often recognized for its brand, quality and durability, consumers make two comparative analyses: 1) between the products of different brands and 2) which meets their needs. For Kon (1999) this analysis made by buyers combined with the differentiation of the product associated with the promotion of sales with advertising, forces the incoming companies to have a high expenditure on marketing and practice lower prices than the dominant firms.

That said, for small firms, this form of competition does not bring benefits, since the market-shares are not enough to generate revenues capable of covering the costs essential to the survival of the company. Because differentiation is able to establish a barrier to entry, this causes entrants to have significant entry costs to enter the market. Consequently, this action generates initial losses that persist for a considerable period. Soon, faced with the potential risk of entry failing, then investments in the formation of a brand become potentially riskier (Porter, 2004).

2.2.3. Barrier via Economies of Scale

For Gremaud (2012) economies of scale are generated by cost reductions achieved in the long run as additional units are produced. These reductions may occur by less use of raw materials to produce the same quantity or by savings generated by manufacturing larger quantities using the same fixed factors. Economies of scale become a barrier to entry by forcing the newly arrived company to mass-produce and, or submit to small production and be at a cost disadvantage (Porter, 2004).

2.2.4. Barrier Due to Investment

Incoming firms to build a factory may need a large volume of resources and this coupled with the unfavorable conditions of the financial system becomes a barrier to entry. This effect is only reduced for large groups or for already consolidated companies that are diversifying their businesses. The fact is that these are already consolidated, have greater access to the capital market, so it would not be a problem for credit institutions to raise the necessary resources (Fagundes & Pondé, 1998). Porter (2004) makes a caveat for groups or companies that have easy access to credit, for it to have means available to financial resources does not exclude the risk at entry, which favors the firms already installed.

2.2.5. Barriers Arising from Government Policy

The spheres of government have influence in the formation of barriers, either directly or indirectly. Government policies can become a barrier to entry for several reasons: the government can be a major buyer or supplier of a particular industry reports Porter (2004), as well as it can create laws that regulate the activity, either in defense of the environment or that protect the consumer. Pondé, Fagundes and Possas (1998) point out that this form of government action generates costs both for established companies that have to adapt to the

standards, and for entrants that have needed to acquire or develop new technologies. Therefore, this policy contributes to the formation of oligopoly, since companies already installed have greater chances of remaining in this market. But there is also the government's action that hinders the formation of the oligopolistic market structure, since anticompetitive laws aim to reduce market concentration, inhibit unfair pricing practices, prevent the abuse of economic power and cooperation between firms.

From the explanation of the concepts of barriers to entry it´s possible to perceive that they affect the conditions of entry and influence the decisions of potential firms. Maintaining this logic, the barriers strengthen the maintenance of the number of companies that already operate in a given sector and help to maintain or form the market concentration, so it can be concluded that the barriers contribute to the formation of the oligopoly.

2.3. Concentration Index

The existence of a few companies is part of the characteristic of oligopolistic market structure. These companies concentrate much of the production in addition to controlling the sector of operation. Rocha (2010) points out that concentration composes the elements that form the market structures and that due to its importance it has become the object of study. For Kon (1999) concentration is not only a factor that constitutes the market structure, but is also relevant to competition.

Concentration index provide valuable information to understand market dynamics and understand the performance of industries at different times. The measurement is given by the market-share of each firm, which can represent the revenue, the volume of sales, the productive capacity in specific locations or not (Rocha, 2010; Kon, 1999). The concentration index are: the Herfindahl-Hirschaman index (HH) and the concentration ratio of the four largest companies (CR4) that are the most used (Schmidt & Lima, 2002). The concentration ratio (CR) is the oldest formula and represents the firm within the industry in which it operates, is not affected by changes in the number of companies and usually calculates those of the three or four largest. The higher the value calculated, the greater the market concentration (Rocha, 2010).

$$CR(k) = \sum_{i=1}^{k} p_i \tag{1}$$

It´s considered:
k = number of firms
Pi = market-share of the *i-th* firm
∑ = sum representation

According to Kupfer and Hasenclever (2002) the HH index is constituted by the weighted sum of the squares of the individual participation of the firms on the whole, for this calculation it´s considered all the companies contained in the analyzed market and raised to the square to give greater weight to the companies that have greater participation.

$$HH(k) = \sum_{i=1}^{k} p_i{}^2 \tag{2}$$

It´s considered:

k = number of firms
Pi2 = market-share squared by *i-th* firm

This index varies between 1/n and 1. In the case of HH = 1, upper limit, the company has a monopoly on the market, if it´s HH = 1/n = P1 = P2 =…= Pn. The higher this value, the greater the concentration and the lower the competition between the agents (Kupfer and Hasenclever, 2002).
Concentration indicators are of fundamental importance for the analysis of the competitiveness of the industry (Rocha, 2010; Schmidt & Lima, 2002). However, as Kupfer and Hasenclever (2002) explain, they do not in themselves explain the division of the market according to the entry of a new company.

For Kupfer and Hasenclever (2002) a greater concentration directly impacts on the reduction of competition between companies, and that the market power resulting from a greater participation depends on individual performances, so the concentration indicators must also take into account the distribution of the market. A market can be very concentrated and unequal, but not the other way around. The fact that a new competitor can enter the sector does not mean that it will affect the current power of the dominant ones, it will depend on the accommodation that the installed firms will give to this new player. If entry is facilitated, the difference in concentration levels tends to be smaller, otherwise the discrepancy between the participation of the dominant ones in relation to the new firm will only increase.

Another issue raised by Kupfer and Hasenclever (2002) is that the CR(k) concentration index has some shortcomings: 1) horizontal mergers are ignored if the sum of the stake arising from this new alliance falls below the *k-th* position observed and 2) by not considering the participation of this new company in the *k-th* position the analysis of the concentration is compromised. Due to this hypothesis, the economic defense agencies of some countries adhere to the replacement of the CR(k) by the HH index for the analysis of fusion processes.

3. The Evolution of the Automotive and Light Commercial Industry between 1990 and 1996

3.1. The Economic Scenario and the Consolidation of Industry in Brazil

The automobile industry was consolidated in Brazil in the fifties after the implementation of the Plan of Goals of the Juscelino Kubitschek Government. This plan aimed to advance industrial development, especially the production of durable consumer goods such as those of the automobile industry, since the country was a major producer of non-durable consumer goods report Lacerda et al. (2010). Brazil at this time according to Rabelo (2003) was going through a process of exhaustion of growth abroad due to the post-World War II period, the main powers of the world France, England, Germany, Italy, Japan, USA and Russia, were rebuilding their economies, which compromised the Brazilian external demand.

Caputo and Melo (2009) point out that in 1953 there was the worsening of Brazilian external accounts, the negative result of the trade balance reaches the mark of 4% of GDP. As a result of this situation and the need to meet future domestic demand after the diagnosis of ECLAC (Economic Commission for Latin America), the Government of Juscelino Kubitschek opted for the internal development of sectors such as transport, basic industry, food, education and energy. This decision according to Lacerda et al. (2010) would require large public and private investments, the Government would be in charge of heavy industries and infrastructure such as

oil refining, steel, energy and transport, while private sector investments would be taken care of by strategic groups the so-called executive groups. The main groups that stood out were the executive group of the automobile industry (GEIA), the naval industry (GEICON), the iron ore group (GEMF).

At this time, as Caputo and Melo (2009) point out, the growth of Brazilian industry was led by foreign direct investment from the sectors producing capital goods and durable consumption, represented by the automobile industry. The inflow of foreign capital for the time was 497.7 million US dollars, about 73% of this value was from the automobile industry. Lacerda et al. (2010) report that the American Ford, General Motors, and the German Volkswagen and Mercedes-Benz, were the ones that invested the most. The focus was to produce passenger and light commercial vehicles, trucks, tractors and buses. These multinational companies (MNEs) were already showing signs of their importance for economic activity for the following years, first due to the large foreign investment and second due to the participation in demand in other sectors.

Multinational companies have come to largely dominate Brazilian industrial production, especially the most dynamic sectors of the manufacturing industry (Lacerda et al., 2010, p. 102). The automobile industry as pointed out by Santos and Baruty (1997) had such a rapid advance that at the end of the 70s it already reached the production volume of approximately one million units per year, this level of production would be the same as in the 90s.

Table 1 - Production of automobiles and light commercial vehicles assembled and dismantled (1970-1989).

Year	VW	GM	Ford	Fiat	Toyota	Others	Total
1970	233,011	59,673	45,768		593	34,598	373,643
1971	295,725	73,251	60,642		509	43,576	473,703
1972	343,533	91,288	108,328		588	19,647	563,384
1973	379,370	122,062	135,245		645	37,490	674,812
1974	458,954	162,207	160,768		639	35,677	818,245
1975	502,580	159,461	155,880		895	22,605	841,421
1976	529,636	167,914	156,312	8,350	1,498	26,951	890,661
1977	472,192	130,688	110,301	65,052	2,695	25,069	805,997
1978	518,603	183,299	138,623	97,302	3,669	21,909	963,405
1979	525,703	196,010	148,439	129,321	4,105	18,505	1,022,083
1980	514,237	217,208	140,565	160,217	4,310	12,155	1,048,692
1981	295,303	147,511	110,245	130,381	4,070	3,630	691,140
1982	324,142	176,733	133,734	163,449	2,706	2,022	802,786
1983	341,354	205,372	157,657	146,213	2,500	1,673	854,769
1984	302,697	194,283	169,127	138,207	3,290	1,212	808,816
1985	345,982	217,203	175,255	150,981	2,585	1,548	893,554
1986	372,691	244,184	169,963	167,389	3,493	2,850	960,570
1987	309,179	188,045	115,011	213,647	3,696	2,649	832,227
1988	361,993	238,080	157,868	213,649	5,007	1,922	978,519
1989	315,589	234,195	160,736	217,829	5,020	2,631	936,000

Table 1 shows that in the early 70s the volume produced was approximately 400 thousand/year, which is equivalent to saying that the installed capacity of these NMEs had grown about 2.5 times. This growth has great contribution of Fiat that disbursed 88% of the investments made at the time to be able to enter this market, the share of this in the total production of the sector

at the end of the decade was 12.65%.

The companies of the automobile sector installed in Brazil until the 1990s, reports Negri (1999), were absolutely protected. This segment, since its implementation, has been favored by economic plans to stimulate and develop the national industry, and by commercial policies to protect local content, this by virtue of the first in continuity with the import substitution process that lasted until the end of the 80's (Giambiagi & Moreira, 1999). The 80s, report Lacerda et al. (2010), were very difficult for the Brazilian economy, it was a time of retraction and hyperinflation that eroded the purchasing power raising the cost of living of the population. The records of the IGP-DI of the Getúlio Vargas Foundation (2015) for the years 1987, 1988 and 1989 is 415.87%, 1037.53% and 1782.85%, respectively.

The economic scenario until 1990 proved to be demotivating to the entry of new competitors in the automobile industry. On the supply side, as reported by Lacerda et al. (2010), Brazil did not have skilled labor, import tariffs were high, firms, except for the intermediate goods industry, operated with idle capacity. In addition, the four main automakers VW, Ford, GM and Fiat, concentrated about 99% of the production and licensing volume, Toyota with its Bandeirante model, had 0.7% of market-share. Therefore, a potential competitor was faced with a pent-up domestic demand, companies already installed with idle capacity and tariff barriers due to the rates charged on foreign products.

3.2. Analysis of the Automotive Market from the years 90 to 96 in Brazil

From 1990, it occurs to the Brazilian commercial opening and goes until 1994 (Giambiagi & Moreira, 1999). This opening has two objectives: To restructure the local industry, given that the machines and equipment were scrapped; and improving productivity, a plan to modernize industries. Lacerda et al. (1999) report that there were many oligopolized sectors, which in a way, made it difficult to combat inflation. This market-opening policy would enable the government to increase competitiveness and improve benefits to consumers. For the automobile companies that wanted to enter the Brazilian market, it was the opportunity to realize investments in the country.

Giambiagi and Moreira (1999) report that at this time the world context was one of integration between the economies of the countries, through bilateral or multilateral agreements. This movement of integralization is due to the technological advances of the previous decade such as automation, microelectronics, informatics and telecommunications according to Lacerda et al. (1999). In this sense, Santos and Baruty (1997) point to the advances that the automobile industry was already experiencing in the most advanced economies, the so-called lean production. This production model according to Womack, Jones and Ross (1992) consists of the combination of artisanal production with mass production, aims to produce automobiles with the excellence of large-scale artisanal production. This technique results in resource savings and value gains.

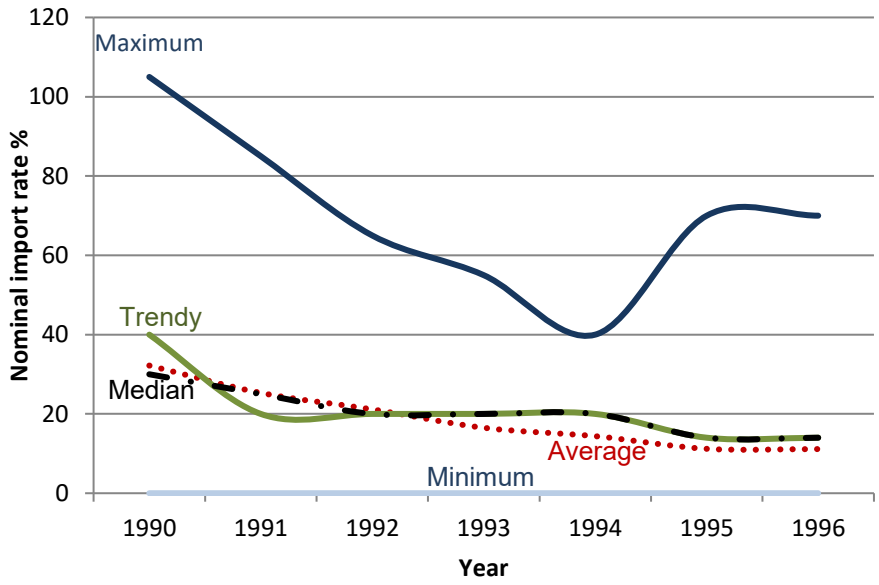
The commercial opening, as reported by Negri (1999), was characterized by the end of the rates on vehicles and parts. In Graph 1 it´s possible to see that between 90 and 94 the average import rate is reduced from 40% to 20%. The IPI of popular cars, for example, had been reduced to 0.1%. The requirement for domestic components fell from 85% to 60%. According to Negri (1999) in the period from 95 to 96 there is an increase in import rates, to contain the advance of imports that causes an imbalance in the trade balance and the flight of direct investment to other South American countries that benefited from the MERCOSUR agreement.

In 1991, the entry of other brands in Brazil begins via importation, benefiting from the policy

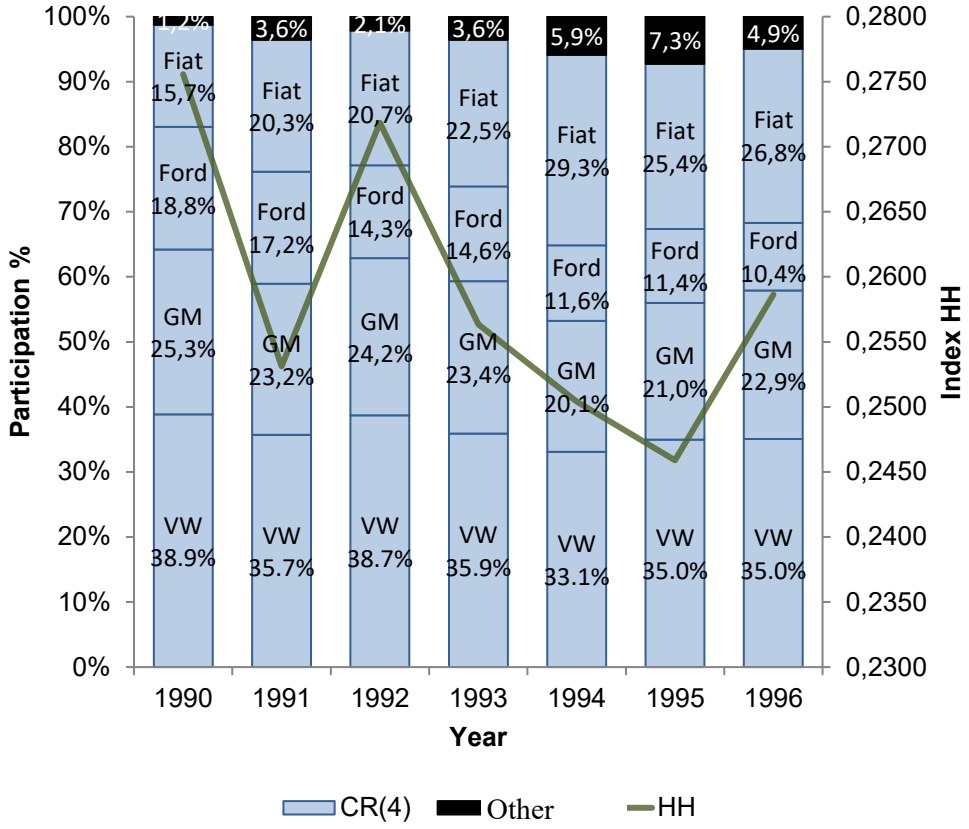
of commercial opening. The French brand Peugeot-Citroen registers 58 units of licensed vehicles. In 92 the Japanese Honda registers 741 units, in 93 two more brands have their vehicles computed in the licensing volume, Renault, of France, registers 1559 units and Nissan, of Japan, with 764 units. From '90 to '96, about 11 percent of licensed automobiles and light commercial vehicles were imported, based on yearbook data ANFAVEA (2015).

Graph 2 shows the impact that commercial opening had on the distribution of the market from 1990 to 1996. The CR(4), which refers to the participation of the four largest VW, GM, Ford and Fiat, reduces as it increases to the participation of the other brands. The green line refers to the HH index, which decreases as more companies enter the fray. What can be seen from the analysis of graph 2, is the increase in competition, in search of greater market-share among the agents and the growth of other firms until 1995 that mainly brings together Honda, Renault, Peugeot-Citroen and Nissan. In 1996 there is a drop in the share of these brands due to the increase in import rates by 95, this increase caused a drop of 39% in the licensed volume of imported vehicles the following year. Production data for automobiles and light commercial vehicles in 96 of the industries already installed point to a growth of 13% compared to 95, and 105% from 90 to 96.

Graph 1 - Evolution of Brazil's import rates (1990-1996).



Graph 2 - Participation of companies in the licensing of cars and light commercial vehicles (1990-1996).



Santos and Pinhão (1999) point out that the multinational companies that settled in Brazil in the 90's did not come only due to government incentives. There was also an interest of the firms in expanding their holdings in emerging markets due to the increase in global competitiveness, and a movement of decentralization of production, transferring to auto parts the production of some components that are not part of the main activity of the company. In this period according to Negri (1999) the companies already installed also took the opportunity to renew themselves and prepare for a more competitive scenario.

Despite having contributed to expand the supply of automobiles, the policy of commercial openness according to Lacerda et al. (2010) brought consequences to external accounts. From 1993, according to data from the Central Bank, Brazil begins to face deficits in current transactions. In 1995, for example, the deficit in the Balance of Payments stood at US$ 18.4 billion negative and that of the Trade Balance at US$ 3.8 billion. The automotive sector was one of the responsible for the poor result of the Trade Balance as shown in table 2.

Table 2 - Trade Balance of the Automobile Industry (1990-1996).

Year	**Export** Millions US$	**Import** Millions US$	**Trade balance** Millions US$
1990	1,611	422	1,190
1991	1,625	634	991
1992	2,818	890	1,928

1993	2,848	1,807	1,040
1994	3,038	3,166	-128
1995	2,740	5,579	-2,839
1996	3,061	4,025	-965

This negative scenario of external accounts according to Lacerda et al. (2010) and Negri (1999) caused the Government to take some measures to adjust the conduct of economic policies for the automobile sector, in order to contain and equalize external accounts, among the measures is the installation of quotas through MP No. 1,024 and the increase of rates to about 70%. This measure caused friction with the MERCOSUR countries, especially Argentina, which alleged non-compliance by Brazil with the signed free trade agreements. This discussion ended up in the WTO that was not in favor of the measure adopted by Brazil, in this way, to solve the discussion, MP No. 1,235 and Decree No. 1,761 were created, which again reduces import rates.

4. Analysis of the Automotive and Light Commercial Industry from 1997 to 2014

4.1. The Brazilian Automotive Regime and the Advancement of Production - 1997-2006

On March 14th, 1997, Law No. 9,449 was enacted, in accordance with MP No. 1,235 and Decree No. 1,761, which according to Negri (1999) constituted the basis of the Brazilian automotive regime. This regime provided for the reduction of import tariffs of 50% for vehicles, 90% for capital goods that make up the permanent assets of automakers, and regressive rates for parts used on assembly lines. The measure would be effective until December, 1999. In addition to this, the Government enacted Law No. 9,440 also in March 97, which would give additional incentives to companies that set up in the Midwest, North and Northeast regions.

Santos and Baruty (1997) report that these measures had the objective of attracting investments to the industry, improving the competitiveness of exports, and also encouraging the installation of firms in less favored locations. The Government would contribute with infrastructure services, including land donation, provide loan lines through BNDES such as Finame (financing of machinery and equipment) and exemption from ISS and IPTU taxes. All this incentive according to Pinheiro and Motta (2001) would be reverted to the benefit of exports in the future.

The result of these measures is a greater geographical distribution of the sector. Table 3 shows the dispersion of the production chains of passenger cars and light commercial vehicles. According to Santos and Pinhão (1997) Honda and Toyota opted for the State of São Paulo, where there was already a specialized workforce due to the development of auto parts companies and a greater share in car sales among the states, about 40%. Toyota already knew the local market by virtue of its factory that produced the Bandeirante model. Both adopted a more conservative strategy, producing a single model, with production estimated at 30,000 vehicles a year.

Peugeot-Citroen has set up its plant in Brazil in the State of Janeiro, due to its operations in South America. The unit would produce two models to compete in the compact and medium

market. Renault had already chosen to set up its plant in the state of Paraná, to facilitate its logistics process with the MERCOSUR countries, where it also had other factories and obtain economies of scale, the planned capacity was 120,000 units per year. Renault also closed an agreement to supply engines up to a thousand displacements to Peugeot-Citroen in the country. Audi/VW had also settled in Paraná, the factory planned the production of the Golf and Audi A3 models, with an estimated capacity of 160,000 vehicles per year. Most suppliers were located in São Paulo, which would facilitate the logistics process (Santos & Pinhão, 1997).

Table 3 - Distribution of Industrial Poles - Base 97.

Companies	State	Products	Net Revenue 1997 (millions R$)
Fiat	MG	Passenger vehicles; light commercial	6,265
Ford	SP	Passenger vehicles; light commercial	3,934
GM	SP	Passenger vehicles; light commercial	6,650
Toyota	SP	Light commercial	314
VW	SP	Passenger vehicles; light commercial	7,086
New Plants	**State**	**Products**	**Investment (millions US$)**
Chrysler	PR	Light commercial	315
Ford	BA	Passenger vehicles	1,300
GM	RS	Passenger vehicles	700
Honda	SP	Passenger vehicles	150
Mercedes-Benz	MG	Passenger vehicles	820
Peugeot-Citroen	RJ	Passenger vehicles	600
Renault	PR	Passenger vehicles	1,000
Toyota	SP	Passenger vehicles	150
VW/Audi	PR	Passenger vehicles	700

In the year 97 according to data from ANFAVEA (2015) the national production of vehicles reaches a record of 1.98 million units, double in relation to the beginning of the commercial opening, driven by the increase in the productive capacity of the four largest companies in the sector. There is also, in the same year, an increase of 36% in the licensed volume of imported vehicles, this growth is explained by the maintenance of the reduction of import rates and the

exchange rate 1 to 1. In 98 the production had a drop of 24% in the line of passenger vehicles and light commercial vehicles, and 21% in the licensed volume, the reason is the concern of the economic political scenario. According to Lacerda et al. (2010) this period was turbulent, the external scenario was of instability due to the Asian crisis and Russia, the Brazilian internal scenario was of worsening of macroeconomic index: low GDP growth, high public deficit and increase in the unemployment rate.

Also in 98, the licensed volume of imported cars grew by 14%, reaching the record volume for the decade of 90 of 340 thousand imported vehicles reducing the participation of the national according to data from ANFAVEA (2015). Two factors contributed to this growth: devalued dollar (parity between real and dollar close to 1 to 1 according to BACEN data); and benefit granted via the automotive regime (reduction of import rates).
In the year 99, there is an inversion in the series of growth in the licensing of imported vehicles, down 49% compared to the previous year, the share on the total licensed compared to national vehicles also fell, went from 23% in 98 to 14% in 99 according to data from the ANFAVEA (2015).

The devaluation of the Real reduced car imports before the end of the incentive provided for the automotive regime. According to BACEN data, the value of the dollar in January 98 was in the range of R$ 1.20, a year later it was worth about R$ 1.50, at the end of 99 close to R$ 1.80. This effect of the currency had been caused by virtue of the new floating exchange rate regime adopted by the Government due to the exchange rate crisis of 98 generated by the movement of speculative capital, as Souza and Hoff point out: The dynamics of the car market from 97 onwards can be seen in table 4, the licensing data refers to the wholesale volume. With the end of the incentive proposed by the automotive regime in December 1999, combined with the benefits given to automakers for local production of vehicles, total production begins to grow. In the year 98 Honda produced 15.7 thousand vehicles, in 2006 this number reaches 78.9 thousand. Toyota went from 5,000 vehicles in '98 to 57,900 in 2006. Renault goes from 24,800 units produced in 99 to 65,600 in 2006. Peugeot-Citroen only started production at its plant in Brazil in 2001, with a volume of 18,100 vehicles, and in 2006 it reached 95,700 vehicles. Nissan, which from 2002 in alliance with Renault produced 3,700 units and arrives in 2006 with 8,600 vehicles produced, data from the ANFAVEA (2015).

Table 4 - Comparative data between production and licensing of automobiles and light commercial vehicles (1997-2006).

	Production			Licensing		
Year	Top 4	New brands	Total	National	Import	Total
1997	1,979,775	4,628	1,984,403	1,573,847	299,818	1,873,665
1998	1,475,918	25,142	1,501,060	1,122,590	343,833	1,466,423
1999	1,209,754	76,749	1,286,503	1,020,635	174,974	1,195,609
2000	1,471,322	125,558	1,596,880	1,237,296	166,348	1,403,644
2001	1,569,595	146,400	1,715,995	1,335,666	175,139	1,510,805
2002	1,542,056	158,090	1,700,146	1,290,266	106,125	1,396,391

2003	1,514,419	207,422	1,721,841	1,278,311	68,431	1,346,742
2004	1,901,471	279,660	2,181,131	1,420,383	59,273	1,479,656
2005	2,059,890	317,279	2,377,169	1,534,669	85,170	1,619,839
2006	2,143,538	327,678	2,471,216	1,693,135	139,149	1,832,284

The measures for the automotive sector adopted from the second half of the 90s according to Carvalho (2005), Pinheiro and Motta (2001) were essential for the entry of new automobile manufacturing units in Brazil, as well as opened up the modernization of the manufacturing units already installed, mainly for the production of popular cars. The introduction of the new Brazilian automotive regime together with the expectation of growth of this market in the country and the need for the Government to stimulate the export agenda of these products, to improve the trade balance and transform it into a source of external resources, became the facilitating factors of entry in this period.

The automakers invested about US$ 14.2 billion in Brazil between 95 and 2002, to install their factories and to develop models that would suit the local market, and the four largest were responsible for US$ 11.1 of the volume invested, as pointed out by Carvalho (2005) and Santos and Pinhão (1997). Fiat, for example, has invested about US$ 3 billion in its Betim plant in new model development projects; expansion of production capacity and the production of a new engine technology (Fire). Volkswagen has invested approximately US$ 2.8 billion to: Develop a new engine plant; develop a new plant for the production of new models in Paraná and another US$ 3 billion to remodel and restructure the São Bernardo do Campo (SP) plant, also for the production of new models.

Also according to Carvalho (2005), General Motors invested about US$ 2.8 billion, from 95 to 99, in units already installed in Brazil and for the construction of a new plant in Rio Grande do Sul. In 2000, it announced an investment plan in the order of US$ 1.5 billion that would be spent until 2003 to modernize factories in São Paulo and to launch new products. Ford in the same period as GM invested US$ 2.5 billion in new plant and new product launches. Toyota disbursed US$ 150 million for the construction of its factory in Indaiatuba, in the interior of São Paulo, for the production of the Corolla medium sedan, the factory at its beginning had a capacity of 15,000 units/year, then Toyota expanded this capacity to 45,000 units/year with an investment of US$ 300 million.

Renault, according to Santos and Pinhão (1997), invested about US$ 1.12 billion in the installation of a factory for the production of the Clio II, Mégane and Scénic models, with a capacity of 120,000 vehicles/year and an engine factory. With the production of these models it´s possible to see that the strategy was to conquer space in the sales of small and medium cars. Renault had other factors facilitating its installation in Brazil in addition to the measures adopted by the Government. Much of its network of suppliers accompanied it in the installation process, located mainly in nearby regions or on the factory grounds itself and provide exclusive components to the brand's products.

The PSA Peugeot-Citroen Group invested about US$ 600 million for the installation of its factory in the State of Rio de Janeiro point out Santos and Pinhão (1997), the goal was to produce the Peugeot 206 and Citroen Xsara models to compete in the compact and medium category. The group aimed to export to Argentina about 20% of the total produced, due to trade

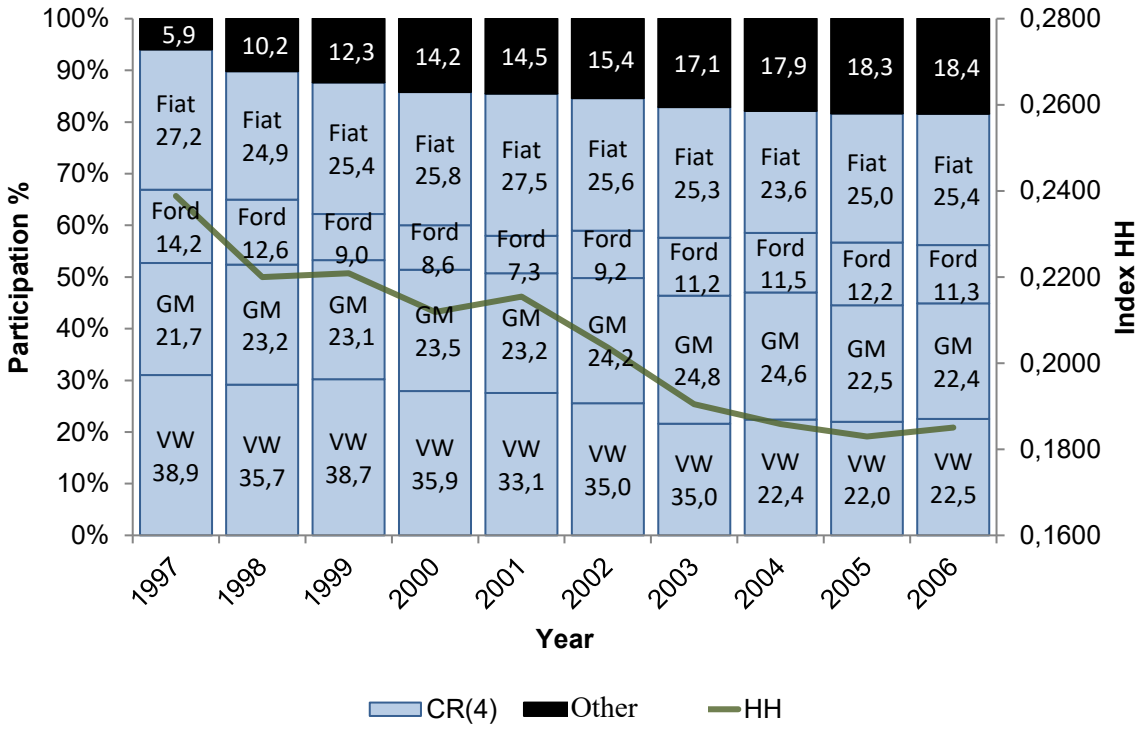
facilities between South American countries via the Treaty of Asunción. In addition, the PSA Group had two main suppliers belonging to the group itself and with the interaction of its manufacturing unit in Argentina.

Nissan began its production in 2002 in the alliance made with Renault at the factory of São José dos Pinhais in Paraná with the Frontier model, in this way it took advantage of much of the structure formed by Renault (Automotive Guide, 2014).

Mitsubishi Motors installed its factory in Brazil in '98, in the city of Catalão interior of Goiás, its first production outside the L200 model. The predominant characteristic of this brand in Brazil is the production of 4x4 Off/Road models, due to the events it promotes and sponsors such as the *Rally dos Sertões*, Lancer Cup, Mitsubishi Cup, among others. The facilitating aspect for the installation of its factory in the country, in addition to the incentives of the automotive regime, is the acceptance of its products by the consumer public, this brand was already known in the Brazilian market and its products respected. In 92 imported the models Pajero Full, Lancer, Space Wagon, Eclipse, 3000GT, Colt and the L200 itself, with the strategy more aimed at audiences with greater consumption potential.

Honda inaugurated its factory in 97, in the city of Sumaré (SP) after the good acceptance of its Honda Civic model before imported, and in 2003 brings to Brazil the Honda Fit model.
The dynamics of the car market suffer even greater variations after the policies proposed by the automotive regime as shown in Graph 3. The share of the other brands jumps from 5.9% to 18.4% in 2006, the sum of the share of the four largest brands falls from 94.1% in 97 to 81.6% in 2006, slightly decreases the concentration in relation to 97, but the market still remains unequal when the individual participation of the other players is verified. In the other category, four brands stand out, Peugeot-Citroen goes from 0.5% to 5.2%, Toyota from 0.8% to 3.8%, Honda from 0.2% to 3.7% and Renault from 0.5% to 2.8%, for the period of 97 and 2006, respectively, which proves the disparity of market-share in relation to the four largest.

Graph 3 - Participation of companies in the licensing of automobiles and light commercial vehicles and the competition index (1997-2006).



The leadership leaves the hands of VW and passes to Fiat. Among the four largest, Ford was the one that suffered the most variations in its share, between 99 and 2002 the index was below double digits. The green line of the HH index indicates increased competition among agents and the competition for greater market-shares after the insertion of new companies in Brazil.

The explanation of the variations in market-share can be seen in table 4. Ford in 2002 had only one model in the top ten, its second model the Ford Ka appeared in 17th position, the absence of a better presence of its product mix in the ranking of the twenty best-selling products, made it impossible to have a better share in the national share. In 2006 there is already a recovery, the Fiesta Hatch and Sedan models appear in the top ten. Volkswagen in 2002 led very comfortably in relation to the second with the Gol model, keeping only this in the top ten, the difference in quantity for the second place was approximately 76,500 vehicles. VW had five products in the top twenty, but in 2006 it had only two models in the top twenty, the Gol remained in the lead, but lost ground and the wide gap between the second place decreases to 26,400 vehicles, demonstrating the fierce competition for the compact market.

GM in 2002 had three models in the top ten, taking 2nd, 3rd and 9th place. In 2006 GM managed to place six of its product mix in the top twenty. Fiat in 2002 had three models also in the top ten and four in the top twenty. In 2006 it manages to place five products among the twenty and improves the sales volume of the Palio, Uno and Siena models, showing the strength of its products that contributed to maintaining its leadership in the national participation. Peugeot-Citroen in 2002 had only the Peugeot 206 model in the top ten. In 2006 in addition to the Peugeot 206, which fell five positions, manages to put the Citroen C3 in the ranking and keep two products in the top twenty.

Renault in 2006 no longer has a product in the top twenty, as it created the Sedan version of the Clio and sales were split with the Hatch model. Honda in 2002 had only the Civic among the top twenty, but in 2006, in addition to gaining greater sales volume with the Civic, it also brought the Honda Fit in 2003 which was well accepted and became Honda's best-positioned product. Toyota improved the Corolla's positioning in 2006, rising from 18th to 11th, as Corolla sales increased by 106 percent, from 17,084 to 35,336 units.

Table 5 - Comparison of the ranking of car registrations - 2002-2006.

Year 2002			Year 2006		
Position	Models	Volume	Position	Models	Volume
1st	VW/Gol	208,300	1st	VW/Gol	189,132
2nd	GM/Corsa	131,749	2nd	Fiat/Palio	162,728
3rd	Fiat/Palio	130,814	3rd	GM/Celta	126,228
4th	GM/Celta	105,440	4th	Fiat/Uno	115,158
5th	Fiat/Uno	96,825	5th	VW/Cross Fox	107,631
6th	Ford/Fiesta	66,926	6th	GM/Corsa Sedan	105,283
7th	Renault/Clio	39,743	7th	Fiat/Siena	56,358
8th	Peugeot/206	39,166	8th	Ford/Fiesta Hatch	56,298
9th	GM/Astra	36,735	9th	Ford/Fiesta Sedan	40,376
10th	Fiat/Siena	31,604	10th	GM/Corsa Hatch	37,518
11th	Fiat/PalioWeekend	30,406	11th	Toyota Corolla	35,336
12th	VW/Golf	27,169	12th	Honda/Fit	35,028
13th	VW/Polo	23,038	13th	Peugeot/206	33,388

14th	VW/Parati	22,393	14th	GM/Vectra	31,357
15th	Honda/Civic	20,503	15th	Honda Civic	29,131
16th	VW/Santana	19,458	16th	Fiat/Idea	26,706
17th	Ford/Ka	18,413	17th	GM/Astra Hatch	23,605
18th	Toyota/Corolla	17,084	18th	Citroen/C3	22,162
19th	Ford/Focus	15,612	19th	Fiat/PalioWeekend	22,054
20th	Audi/A3	9,385	20th	GM/Meriva	21,375

In the car market from the analysis of FENABRAVE license plate data it´s possible to perceive the more constant presence of the brands Fiat, GM, VW, Ford, Renault, Peugeot-Citroen, Toyota and Honda. The products of these brands compete mainly in the categories: Compact; Small hatch; Compact, Small and Medium Sedans, whose share is approximately 81.8% of the volume of car sales in 2006.

In categories such as Sport Utility Vehicles (SUV) & Large Pick-ups and Large Sedan it´s possible to verify the presence of other brands, as shown in Table 5. In this table there is a different positioning of the brands. The automakers Ford and GM, for example, still have an advantage over other brands due to the greater production capacity of their factories and better regional distribution of their dealership networks according to data from ANFAVEA (2015), this favored a greater presence in this ranking. Toyota and Mitsubishi have a more effective presence among the top ten products in the Large SUV & Pick-up category. Hyundai, which belongs to the same South Korean economic group that owns Kia, begins to appear with its Tucson model with the proposal of a more aggressive design and lower price, according to *Quatro Rodas* magazine (2008).

In the category of Large Sedans in addition to the giants VW, GM and Ford there is also the greater presence of Peugeot-Citroen, although in the relation of FENABRAVE (2006) the Citroen C4 model is is on the list of Large Sedan, it´s considered by the magazine Four Wheels (2007) as a Medium Sedan. Three other brands stand out: Honda, BMW and Mercedes-Benz. The first with the Accord model in the 2nd position and the other two with three models each.

Table 6 - Ranking of license plate of the category of SUV vehicles & Large Pick-ups and Large Sedan - 2006.

SUV & Large Pick-Ups			Large Sedan		
Position	Model	Volume	Position	Model	Volume
1st	Ford/Ecosport	43,599	1st	Ford/Fusion	7,041
2nd	GM/S-10	18,899	2nd	Honda/Accord	2,287
3rd	Toyota/Hilux	17,388	3rd	VW/Passat	1,152
4th	Mitsubishi/L200	11,504	4th	Citroen/C4	811
5th	Mitsubishi/Pajero	10,826	5th	VW/Jetta	748
6th	Ford/Ranger	9,858	6th	Citroen/C5	566
7th	Toyota/Hilux SW4	6,179	7th	GM/Omega	563
8th	Nissan/Frontier	3,841	8th	Peugeot/407	540
9th	Hyundai/Tucson	3,564	9th	Audi/A4	489
10th	Ford/F250	2,227	10th	M.Benz/C180	429
11th	GM/Blazer	1,686	11th	BMW/320	426
12th	Hyundai/HR	1,066	12th	KIA/Cerato	424

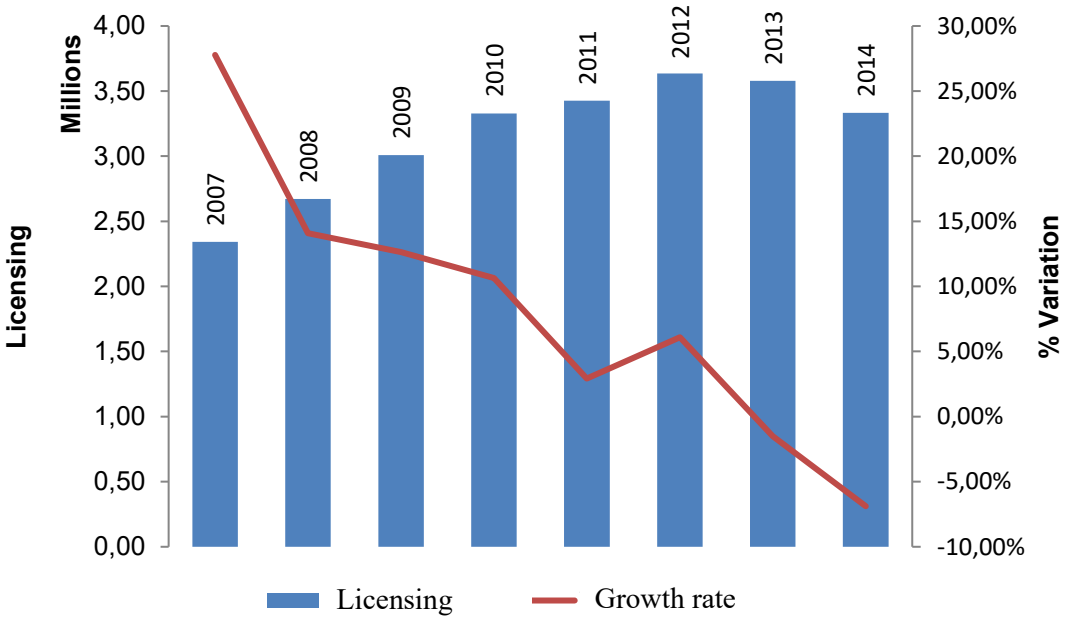
13th	Jeep/Cherokee	928	13th	Chrysler/300	358
14th	Toyota/Land Cruise	855	14th	BMW/325	288
15th	Land Rover/F.Lander	852	15th	M.Benz/C200	240
16th	Mitsubishi/Airtrek	791	16th	Toyota/Camry	217
17th	Toyota/Rav4	786	17th	M.Benz/CLS	193
18th	Dodge/Ram	746	18th	KIA/Magentis	148
19th	Land Rover/Discovery	721	19th	BMW/330	147
20th	Kia/Sorento	643	20th	Ford/Mondeo	131

The presence of a greater number of companies in the Brazilian market according to Casotti and Goldenstein (2008) is due to the growth of sales and the improvement in income levels due to the migration flow of the population to the C class. This increased the expectation of the future growth of the market for the coming years. Automakers believe the market could reach 3 million units a year and a steady growth rate of 6 percent. The economic scenario presented in Brazil at the end of 2006 confirms this trend, according to IBGE data the GDP had grown on average between 2004 and 2006 about 4% per year, the unemployment rate since 2002 had been on a decreasing scale.

4.2. The Resumption of Investments and the Advancement of Asian Companies - 2007-2014

In the period from 2007 to 2014, the licensed volume of cars and light commercial vehicles in Brazil grew on average 8% per year and exceeds 3 million vehicles, as shown in Graph 4. This rise is due to government incentives to reduce IPI at various times in the economy and the increase in direct credit to face the global crisis of 2008 according to IPEA (2009), Franzoi (2012) and BNDES (2011). According to information from ANFAVEA (2015), until 2012, the investment in this sector was US$ 22.6 billion, a resource that had been used for the implementation of new factories.

Graph 4 - Evolution of the car and light commercial vehicle market (2007-2014).



Hyundai, through the CAOA Group, invested about R$ 1.8 billion in the construction of its plant in Anápolis, Goiás, with a production capacity of 130,000 vehicles/year. In the first two years only the HR utility was produced. In 2009 it began to produce the Tucson model and in 2013 began the manufacture of the ix35 model according to data from the Automotive Guide (2014) and the CAOA group. By partnering with the CAOA Group, Hyundai was able to count on the experience of this group to market its products. Kia Motors do Brasil has been present in the country since 1992 acting through the importation of vehicles. The automaker considers the milestone of success in Brazil its product Sportage. The confidence in your brand comes from the van Besta, a reference in vans (Kia Motors Brasil, 2015).

The growth of these brands in Brazil begins to gain prominence between 2007 and 2008. Hyundai in 2007 had achieved a market-share of 0.8% and the following year it had grown to 1.64%. Kia appeared in the December 2008 report with a 2.56% share in the light commercial category. Hyundai's featured products were the Tucson, Azera and Santa Fe models, while Kia's models the highlights are: Sportage, Sorento and Cerato (FENABRAVE, 2008; FENABRAVE, 2009). In the 2008 ranking according to data from FENABRAVE (2009) in the category of Large Sedans, Azera led with 28.6% of the volume registered against 9.5% of the second.

The Kia Cerato and Magentis appear in the 4th and 7th position with 7.93% and 5.44% share respectively. In the category of SUV's in the ranking of the top twenty Hyundai models appear in 2nd, 9th and 11th place, with the products Tucson, Santa Fe and Vera Cruz. Kia appears in the 6th and 13th position with the Sportage and Sorento models.

In 2008, the balance of trade of automobiles in Brazil, according to data from ANFAVEA (2015), is negative at US$ 2.36 billion, after a positive six-year period. The origin of imports are Argentina, Mexico and South Korea. With the arrival of the Hyundai and Kia brands, the market dispute had become more fierce according to Graph 5, and their models came with more modern design and lower prices. The brands installed in Brazil were forced to reduce costs. Honda, for example, began importing the CR-V model from Mexico, after the agreement signed between the two countries, as stated in the report of Quatro Rodas magazine (2008). The intensification of the dispute increased the market-share of other brands, which went from 19.1% in 2007 to 35.1% in 2014.

Within the other category, Honda that was 5th place in the ranking in 2007 with 3.7% share became the 8th place in 2014, but went on to hold 4.78% share with the introduction of City in the category of Compact Sedans, this product was the 3rd best selling of Honda and the 2nd in the category in which it competes. Renault in 2007 had 3.1% share and was the 7th place, in 2014 it became the 5th force with 8.5% share.

Among its models stand out the Sandero in the 5th position of the ranking of cars and the Duster in the 3rd position in the ranking of light commercial vehicles. Hyundai in 2014 won the position of 6th place in the ranking with 7.2% share, expanded the dispute in virtually all categories especially in the line of Compact Hatch, Small and Medium Sedan and Large Sedans, introduced the models HB20, HB20s, Elantra, Sonata, Veloster, i30, in addition to having its line of SUV's. The Hatch model of the HB20 in December, 2014, was the 4th most registered in the ranking of cars and the Small Sedan was the 13th (FENABRAVE, 2007 and 2014).

Toyota in 2007 was the 8th force in Brazil with a share of 3.0%, in 2014 it gained a position, becoming the 7th force with a share of 5.9%. Introduced in Brazil the Etios model in the dispute in the category of Small Hatch and Small Sedan. Nissan took the 9th position in the market with

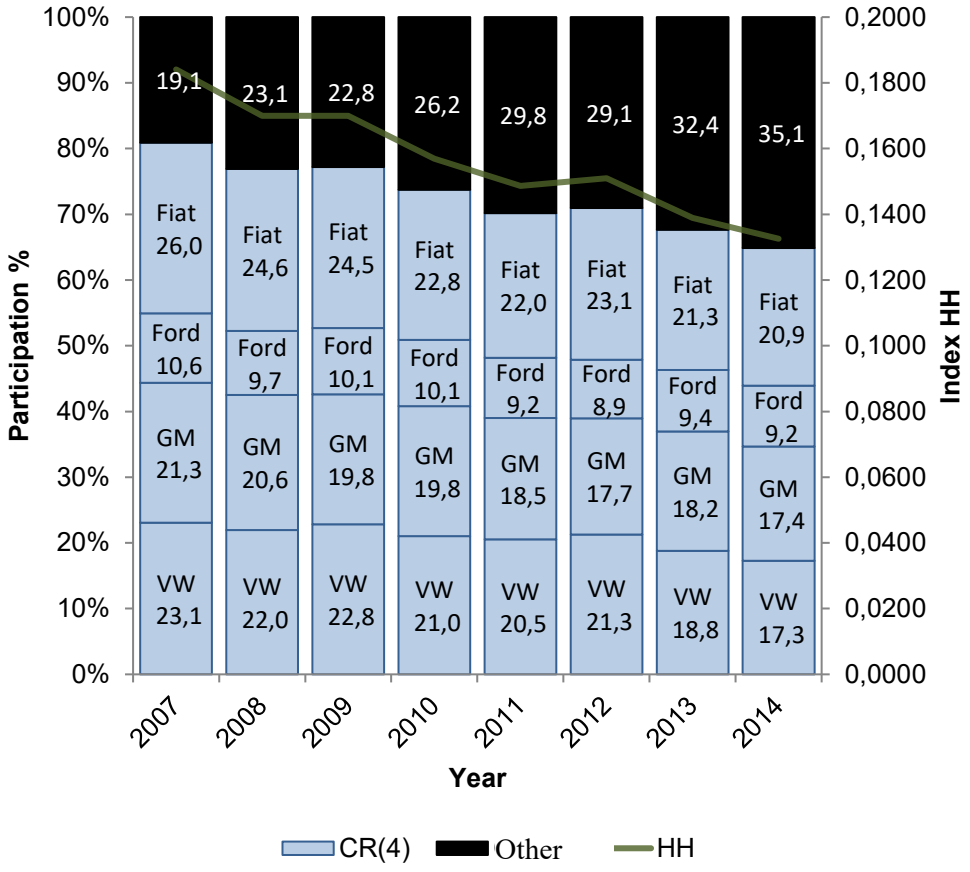
the share of 2.17%. Nissan as well as other automakers expanded the dispute in the category of compact Hatch and Small and Medium Sedan, launched the products March, Versa, and Sentra, in addition to counting on the Frontier model in the dispute of the Large Pick-ups (FENABRAVE, 2007 and 2014).

The four major automakers Fiat, VW, GM and Ford, saw their combined share reduced from 80.9 percent in 2007 to 64.9 percent in 2014. The reason was the loss of space in the categories of compact and small vehicles in which they dominated. In relation to the most current scenario of the automobile market, due to the increase in imports, and with the objective of stimulating once again the export agenda and trying to stimulate the national development of new technologies, the Government launched the Inovar-Auto program with Law No. 12,715 and regulates with Decree No. 7819.

Due to these incentives and with the future estimate of growth of the Brazilian market according to ANFAVEA (2015), some automakers announced plans to build new factories in Brazil as stated in the Automotive Guide (2014). Honda in 2013 announced the construction of a new plant in the interior of São Paulo, Mitsubishi announced the investment plan to restructure its factory in Brazil to produce new models. Nissan invested about R$ 2.6 billion in the construction of a factory inaugurated in 2014.

From the CR and HH instrument it was possible to identify that the market of automobiles and light commercial vehicles is less concentrated compared to the initial period of study. This sector can be considered as being oligopolized since the four largest companies have a relevant stake. There is also an inequality of market-share ratios.

Graph 5 - Participation of companies in the licensing of cars and light commercial vehicles and the competition index (2007-2014).



5. Conclusion

In this work the analysis of the segment of automobiles and light commercial vehicles between the period 1990 to 2014 has the verification of the factors that alter the degree of concentration and competition of the market of automobiles and light commercial vehicles in Brazil. The use of the CR(4) and HH instruments to measure participation and provide a basis for the analysis. The auto industry in Brazil is dependent on the actions of the Government to make investment decisions and advance the economy. The dynamics of competition in this market occur mainly when there is an intervention such as: Increase or reduction of vehicle import rates; tax benefits for the installation of new plants; reduction of tax rates for imports of machinery and equipment and auto parts.

Government decisions at various times sometimes favored companies not installed in the country equal to those that occurred at the beginning of the commercial opening in 90, sometimes favored the firms already installed as in the second half of the 90s. In addition, these sideways changes in the Government's attitudes act both as facilitators to the entry of new companies into the country or as barriers to entry.

In 1990 the commercial opening through reduction of import rates, allowed the entry of new products of brands not active in the Brazilian market, between the first and second half of the 1990s there is a change in government policy in order to stimulate national production. With this some automakers: Honda, Toyota, Renault and Peugeot-Citroen, took the opportunity to announce investments in the construction of new vehicle production plants. The measures brought changes in the competition in the range of 90 to 96, the CR(4) index goes from 98.8% to 95.1% and the HH index varied from 0.2951 to 0.2756 respectively, showing the strong competition and a concentrated market for this period.

A similar situation occurred in 2008, when the government announced the reduction of IPI to combat the crisis. South Korean automakers Hyundai and Kia entered the country via import and their products were well accepted by the consumer. In 2012, the Government adopts an inverse policy to contain imports and stimulate national production. Launches the Inovar-Auto program that establishes a series of incentives for companies that are already installed in the country or that already sell products, to invest in technological development in the country. In this way the automotive sector once again benefits from the reduction of taxes and other companies announce plans to install factories in Brazil, as was the case of Hyundai, Nissan and Mitsubishi. The sector's figures in 2014 point to a CR(4) of 64.9% and the HH index of 0.1700, with a greater presence of products from other brands in the bestseller list.

Therefore, it´s verified that the market of automobiles and light commercial vehicles presents the structure of a concentrated and competitive oligopoly and greater offer of differentiated products. It´s worth mentioning that the greatest growth in participation in recent years has been in brands that do not belong to the CR index(4).

Conflict of Interest Declaration

The author has no conflicts of interest to declare.

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