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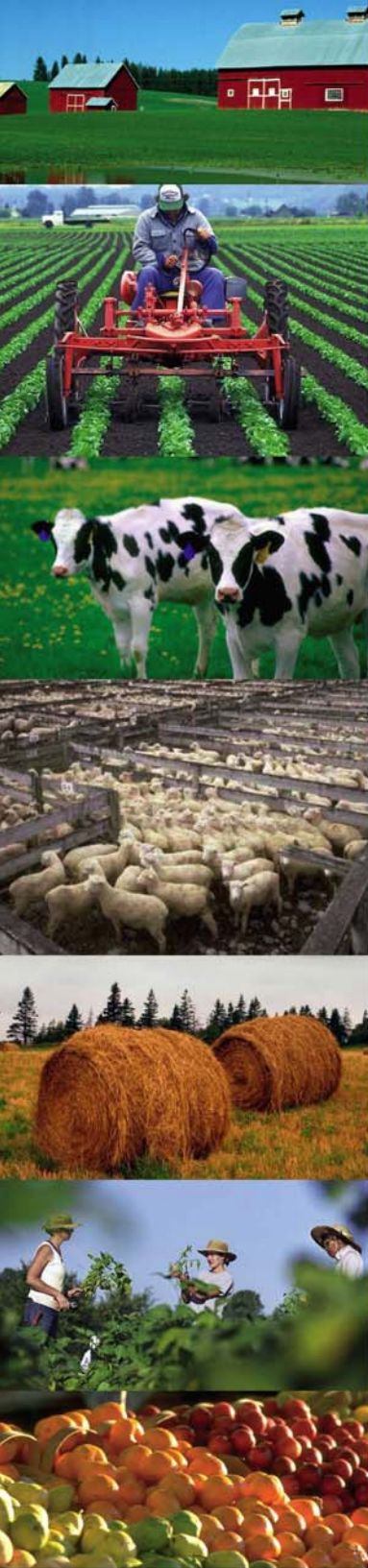
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FSRG Publication



Structural Changes in Food Retailing:

Six Country Case Studies

edited by

Kyle W. Stiegert

and

Dong Hwan Kim



**Food System
Research Group**



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Any mistakes are those of the authors. Comments are encouraged.

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Chapter 3: The Case of Brazil

Danilo R.D. Aguiar

1. INTRODUCTION

The evolution of food retailing in Brazil has followed the same pattern found worldwide, whereas typical retail stores have been moving from small-scale grocery stores to supermarkets and from supermarkets to hypermarkets. Moreover, the share of foreign direct investment (FDI) has increased substantially in the retail sector especially since the middle of the 1990s.

Until the decade of 1970, most retailing was done by family-managed, small-scale, specialized food stores. Beginning in the 1970s, the trend toward supermarkets intensified in large cities, while small-scale stores prevailed in small towns. During the 1980s, supermarkets increased their importance in food retailing in both large cities and small towns, but most of the investment was still carried out by Brazilian national companies and local entrepreneurs, in the case of small towns.

The first large international retail chain to invest in Brazil was the French company Carrefour. Carrefour's presence represented a landmark in Brazilian retail industry. Since starting activities in Brazil in 1975, Carrefour has opened new stores and acquired stores from local-based supermarket chains. Beyond changing the relationship between retailers and consumers, the new pattern of competition introduced by Carrefour has changed the relationship between retailers and also between retailers and suppliers.

With this new retail pattern, consumers have access to new and improved quality products as well as lower prices. Declining prices are possible due to scale economies obtained by large supermarket chains and their increased bargaining power against suppliers.

After Carrefour, other foreign retailers have started investing in Brazil. The flow of FDI in the retail sector increased substantially after 1994 when the Brazilian government developed an economic plan (Real Plan) combining inflation control and opening the domestic economy. As a consequence, foreign retail chains such as American Wal-Mart (starting in 1995), Portuguese Sonae (also starting in 1995) and Netherlander Royal Ahold (starting in 1997), among others, entered the Brazilian market (Aguiar and Silva, 2002). In addition, the largest national retail chain, Companhia Brasileira de Distribuição (CBD), merged with French group Casino Guichard Perrachon & Cie. in 1999, in order to keep up with its transnational competitors.

In short, the sharp changes that have occurred in the retail organization have affected the strategies and the performance of the Brazilian food system since the beginning of the 1990s. Market concentration and internationalization have brought about changes not only in the market configuration but also in the way the Brazilian food marketing system operates. Rivalry among retailers has apparently brought benefits to consumers, but market power (especially monopsony power) continues to be a major concern.

In this chapter, we identify the major changes that have occurred in Brazilian retail sector since the 1990s and present general evidences of the impacts of such changes on both consumers and food suppliers, focusing on the period after 2002 for which there is no analysis in Brazil.

2. THE STRUCTURE OF FOOD RETAILING IN BRAZIL

2.1 Food Retail Definition and Data

Our analysis focuses on the supermarket sector. Every year the Brazilian Association of Supermarkets (Abras) publishes, in the April issues of *Superhiper Magazine*, the Ranking Abras, determined by research company ACNielsen, with a large range of information about the top 500 supermarket chains and the self-service sector.¹ This ranking is the major data basis used in this study to analyze the structure of Brazilian retail.

Brazilian federal law #7208, settled in November 1968, defines a supermarket as “a retailing business establishment managed by a single person or a group which, adopting a self-service system, displays and sells in the same place, continuously, food products and other utilities of household life.”. In the same law, self-service is defined as “the system of sales in which the consumer chooses and acquires the products by himself, paying when leaving the store” (see Cyrillo, 1987).

Officially, the supermarket sector and the self-service sector are considered different from each other based on the number of checkouts. The criterion adopted in the *Ranking Abras* defines a self-service store as a store with at least one checkout, while supermarkets should have at least two checkouts. Therefore, supermarkets are considered part of the self-service sector. Retail stores can also be classified based on size. *Abras* considers stores smaller than 5,000 m² as supermarkets, while stores larger than 5,000 m² are considered hypermarkets.

Most of the information published in the *Ranking Abras* is national information. Since supermarket competition occurs typically at a local basis, using national data may conceal the real level of market power present in local markets. In spite of that, most indexes calculated in this study have national scope.

In terms of food retailing, the information reported in the *Ranking Abras* shows that around 70% of the total gross revenue of the top 500 supermarket firms come from retailing food products. The remaining is obtained selling electronics, cleaning products, hygiene personal products, etc. Therefore, the organization of the supermarket sector affects mostly the marketing of food products.

2.2 Market Concentration

Table 1 reports the concentration rates (CR) calculated for the 3, 5, 10, 20, 30 and 300 largest supermarket chains (CR3, CR5, CR10, CR20, CR30 and CR300, respectively) in relation to the whole self-service sector. The various rates indicate that the largest firms’

¹ Until 2003 the results of Ranking Abras was also available at Abras homepage (ABRASNET). Since then, the information is available only on the magazine.

shares increased substantially between 1994 and 1999. In addition, it is noticeable that the CR5 increased more intensely than the remaining concentration rates: from 1994 to 1999, the increments in market concentration were 68% for CR3, 70% for CR5, 55% for CR10, 43% for CR20, 36% for CR30 and only 7% for CR300. After the intense concentration in the late 1990s, there has been a slight reduction in retail concentration since the year 2000. This process of deconcentration occurs in the participating 5, 10, 20, 30 and 300 largest firms, while shares of the three largest continued increasing until 2005.

The most substantial increasing in concentration occurred in a two-year period from 1997 to 1999, when the share of the five largest supermarket chains increased from 27% to 39%. Such amazing concentration was only possible because of the intense process of mergers and acquisitions (M&A) that occurred in Brazilian retail that time. Thus, M&A became a major strategy adopted in the Brazilian retail sector and the most important element to explain structural changes.

Table 1. Concentration rates (CR5, CR10, CR20 and CR30) in the Brazilian retail sector, 1994-2006 (in %)

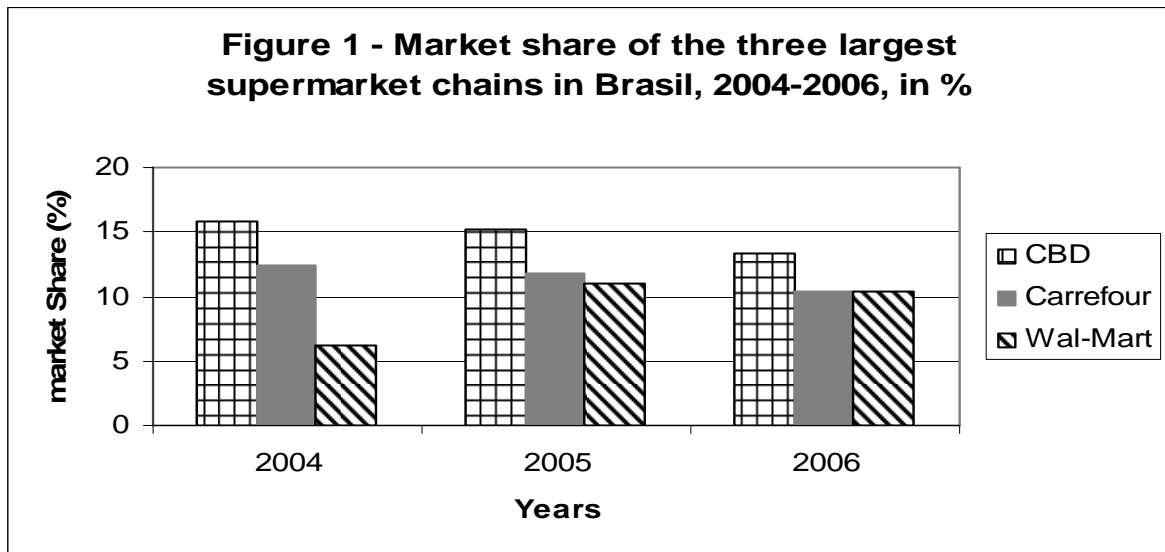
Year	CR3	CR5	CR10	CR20	CR30	CR300
1994	18.4	23.0	28.8	35.4	39.3	60.9
1995	22.9	28.0	34.8	42.6	47.1	74.0
1996	21.3	26.1	32.6	40.4	45.1	67.9
1997	22.2	27.4	33.8	41.6	46.6	68.9
1998	26.8	33.0	39.8	46.0	49.9	68.6
1999	30.9	39.2	44.8	49.9	52.6	65.4
2000	32.7	40.8	46.9	52.0	54.7	66.9
2001	31.0	39.1	45.6	51.1	53.7	65.5
2002	31.4	38.8	45.0	50.9	53.6	65.6
2003	31.6	38.1	44.8	51.3	57.9	66.8
2004	34.5	40.2	45.5	51.1	53.7	65.7
2005	38.0	40.5	45.4	50.6	53.1	64.1
2006	34.1	36.5	41.4	46.4	48.8	58.7

Source: calculated using data from *Ranking Abras* (ABRASNET and SUPERHIPER).

After a stable period in the beginning of this century, M&A regained importance in 2004, when Wal-Mart, 6th ranked supermarket company in 2003, merged with Bom Preço, which was 4th ranked that year. As a consequence, Wal-Mart assumed the 3rd position in 2004 ranking and was even able to surpass Carrefour in 2006 (Figure 1).² Also in 2004, CBD merged with Sendas, which was 5th ranked in 2003, strengthening its leadership.

² The gross revenues of Carrefour and Wal-Mart were very close in 2006: Wal-Mart sales differed by only 1,996 in Brazilian currency (less than US \$1,000).

Since the beginning of this century, an important change occurred in Brazilian retail that has not been identified by concentration rate indexes: though the CR5 has steadily maintained around 40%, the market has moved from a two-big-player to a three-big-player structure³. Till 2003, CBD and Carrefour were the only two companies fighting for the first position. Since then there has been a competition among CBD, Wal-Mart and Carrefour. In 2006, for instance, the gross revenue of the 4th ranked (G. Barbosa Comercial LTDA.) was only 11.5% of the gross revenue of the 3rd ranked (Carrefour), indicating a huge difference between the largest three and the remaining firms.

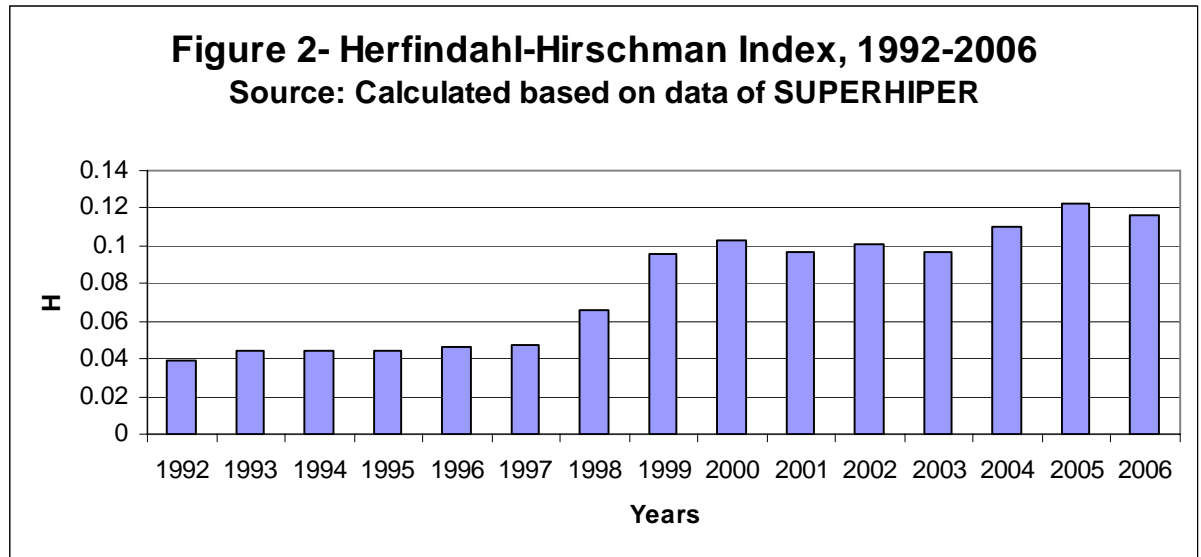


Data presented in Table 1 and in Figure 1 indicate the three largest firms reduced market share in 2006. The CR3, which had increased from 34% to 38% between 2004 and 2005, reduced to 34% in 2006. Though the three firms have increased their gross revenue, the gross revenue of the self-service sector as a whole has increased even more. Also, the estimates of the other concentration rates were four to five percent lower in 2006 in relation to 2005. Such change represents the most dramatic reduction in concentration verified since 1994.

The reduction in market concentration from 2005 to 2006 might be concealing a long-run trend of concentration. When we look at the evolution of the Herfindhal-Hirschman Index calculated for the 300 largest firms from 1994 to 2006 (Figure 2), we see that the

³ It is interesting that the process of market concentration has been a global process and that most of the industries have moved toward a structure with three leaders and a fringe of smaller firms. Such trend was identified by Sheth and Sisodia (2002), who named this phenomenon as “the rule of three.” In the case of the Brazilian retail industry, such rule seems to apply.

retail concentration has increased steadily through time.⁴ In 1994, 23 equal-sized firms would generate an equivalent H index; this number would drop to less than 9 firms, in 2006.



Despite this long-run trend, does this represent the beginning of a new trend or just a casual result? To answer this question we analyzed 2007 changes, not yet reported in the most recent *Ranking Abras*. In April 2007, Carrefour acquired a large retail company (Atacadão) and assumed the first position. Considering the gross revenues of 2006 and adding up the revenue of Atacadão to Carrefour's gross revenue, the new ranking would be as reported in Table 2. So, after the acquisition of Atacadão by Carrefour, the CR3 returned to the same level of 2005 (38%), cutting short the process of reduction in concentration.

Table 2. Simulation of the ranking of the top 3 supermarket chains after Carrefour acquired Atacadão in 2007

Firm	Gross Revenue (US\$ millions)	Market Share (%)
Carrefour	9,143.3	14.3
CBD	8,450.5	13.3
Wal-Mart	6,627.7	10.4
Total	24,221.5	38.0

Source: data in Brazilian currency provided by SUPERHIPER (2007). Average exchange rate provided by FGV (2008).

⁵The Herfindahl-Hirschman Index (H) was calculated as: $H = \sum_{i=1}^{300} s_i^2$ where s_i is the market share of each firm.

Since the beginning of the current century, with the exception of years 2003 and 2006, the CR5 has been consistently maintained around 40%. Comparing with other countries and regions, table 3 shows that the level of concentration in Brazil is still smaller than in Europe, but the increase in concentration is substantially larger in Brazil, considering the period 1996-1999.⁵ Besides, since Brazil is a lot larger than most European countries, it is natural for the concentration ratio be smaller. When we compare Brazil with the European Union (EU), we see that the concentration level in Brazil has become close to the level found in EU.

In the case of the United States, Hendrickson et al. (2001) report that the retail CR5 increased from 24% to 42% between 1997 and 2000. So the US went through a process similar to Brazil's.

Table 3. Concentration rates of the retail market in Brazil and in selected European countries, 1996-1999

Countries	CR5 (%)		Change from 1996 to 1999 (%)
	1996	1999	
Brazil	26	39	50,0
Portugal	55,7	63,2	13,5
Austria	58,6	60,2	2,7
Belgian and e Luxemburg	61,6	60,9	-1,1
Ireland	64,2	58,3	-9,2
United Kingdom	56,2	63,0	12,1
EU (average)	43,7	48,9	11,9

Source: Concha-Amin and Aguiar (2006) for Brazil; Dobson et al. (2003, p.113) for the remaining countries and for EU.

2.3 Turnover

A very important dimension of competition can be captured by means of turnover indexes.⁶ If the turnover is high, meaning that the firms change places intensely in the ranking, the rivalry present in the market can preclude firms from exerting market power. Therefore, despite the concentration level, firms have difficulty exerting market power if they are in an unstable environment characterized by intense turnover.

Joscow (1960) developed a very interesting procedure to analyze turnover by means of ranking the firms into different groups. This method was also used by Concha-Amin and Aguiar (2006) to analyze supermarkets' turnover in Brazil from 1992 to 2001. Following this approach, we divided the 300 largest supermarket chains into 12 groups and analyze how the configuration of each group changed from 2001 to 2006. The 12 groups are:

⁵ The fourth column of table 2 shows that there has been even a decreasing in concentration in some countries, like Belgium and Luxemburg, and Ireland.

⁶ See Hymer and Pashigian (1962) for a classical analysis of turnover.

Group A, the five largest firms; Group B, firms ranked from 6th to 10th; Group C, firms from 11th to 15th; Group D, firms from 16th to 20th; Group E, firms from 21st to 25th; Group F, firms from 26th to 30th; Group G, firms from 31st to 50th; Group H, firms from 51st to 100th; Group I, firms from 101st to 150th; Group J, firms from 151st to 200th; Group K, firms from 201st to 250th; and Group L, firms from 251st to 300th.

The results displayed in Chart 1 show that 140 firms which were among the top 300 in 2001 had either broken down or left the top 300 group by 2006. The numbers in the diagonal, corresponding to the number of firms that continued into the same group, show that even in the top 5 group there were sharp changes whereas only two companies continued in this group. It is also possible to identify that more firms ascended than descended throughout the period: 73 firms ascended to higher ranked groups, while only 12 descended. This result raises the hypothesis that most firms have either grown or closed, reinforcing the importance of scale and pecuniary economies in retail competition.

Chart 1. Turnover among the 300 largest supermarket chains in Brazil, 2001-2006

Groups In 2001	Position of firms into the groups in 2006												Number of firms that broke down or left the group of top 300
	A	B	C	D	E	F	G	H	I	J	K	L	
A (1-5)	2												3
B (6-10)	3	1											1
C (11-15)		3	2										0
D (16-20)			2	2									1
E (21-25)			1	2	1	1							0
F (26-30)						2							3
G (31-50)				1		2	4						13
H (51-100)							5	18	3				24
I (101-150)							3	12	11	5			19
J (151-200)								1	11	16	1	1	20
K (201-250)								1	4	1	8	1	28
L (251-300)								1	2	8	10	8	28
TOTAL	5	4	5	5	1	5	12	33	31	30	19	10	140

Source: calculated by the author using data from Abras.

In order to compare the level of turnover verified in the beginning of the current decade with the level found in the last decade, we calculate a turnover index as:

$$Turnover_i(\%) = 100 \left(\frac{NT_i - NC_i}{NT_i} \right) \quad (1)$$

Where,

NT_i = total number of firms into group i ;

NC_i = number of firms that continued in the group i .

Using expression (1), it is possible to calculate turnover indexes as done by Concha-Amin and Aguiar. Looking at table 4 we see sharp changes between the two periods. Though the average turnover was higher in the first period, it was restricted to small and middle size firms. The top 5 firms were the same throughout the first period, when 60% of the firms (3 firms) were maintained in Group B. On the other hand, in the second period the turnover in Group A reached 60%, meaning that only 40% of the firms (2 firms) remained in this group from 2001 and 2006. The turnover in group B was also significantly larger in the second period (80%), as only one firm (20% of the group) remained in the same group. Comparing the two periods, the rate of turnover in the last period does not differ much when we compare the groups of the largest firms and the groups of the smallest firms, contrary to the pattern found in the first period.

Table 4. Turnover among the 300 largest supermarket chains, 1991-1997 and 2001-2006

GROUP	Turnover_i between 1991 and 1997 (%)	Turnover_i between 2001 and 2006 (%)
A (1-5)	0	60
B (6-10)	40	80
C (11-15)	60	60
D (16-20)	60	60
E (21-25)	80	80
F (26-30)	100	60
G (31-50)	75	80
H (51-100)	68	64
I (101-150)	76	78
J (151-200)	88	68
K (201-250)	94	84
L (251-300)	96	84
AVERAGE	81	75

Source: Concha-Amin and Aguiar (2006) for 1991-1997; calculated by the author using data from Abras for 2001-2006.

The increase in rivalry among the largest supermarket chains is one aspect identified in the recent pattern of Brazilian retail. The average turnover of the last period was quite similar to the first period, continuing to be very high, as a turnover of 75% indicates that only 25% of the firms did not move to other groups during the last five years, but later instability also reached the largest firms.

Focusing on the top five firms, Chart 2 shows that over the last 17 years nine firms have been in this group. Carrefour and CBD have been the top two retail firms in 15 of 17 years, and both have always been among the top three. Carrefour was the leader during the whole decade of 1990, and CBD has been the leader in the current decade with the

exception of year 2007. Four of the nine firms which have been among the top five were acquired by other firms: Wal-Mart acquired both Bom Preço and Sonae, while CBD acquired Sendas and Paes Mendonça.

Chart 2. Top five supermarket chains in Brazil, 1991-2007*

Year	Position				
	1 st	2 nd	3 rd	4 th	5 th
1991	Carrefour	Paes Mendonça	CBD	Sendas	Bom Preço
1992	Carrefour	CBD	Paes Mendonça	Sendas	Bom Preço
1993	Carrefour	CBD	Sendas	Paes Mendonça	Bom Preço
1994	Carrefour	CBD	Sendas	Bom Preço	Paes Mendonça
1995	Carrefour	CBD	Sendas	Bom Preço	Paes Mendonça
1996	Carrefour	CBD	Sendas	Bom Preço	Paes Mendonça
1997	Carrefour	CBD	Bom Preço	Sendas	Paes Mendonça
1998	Carrefour	CBD	Bom Preço	Sendas	Sonae
1999	Carrefour	CBD	Sonae	Bom Preço	Sendas
2000	CBD	Carrefour	Bom Preço	Sonae	Sendas
2001	CBD	Carrefour	Sonae	Bom Preço	Sendas
2002	CBD	Carrefour	Bom Preço	Sonae	Sendas
2003	CBD	Carrefour	Sonae	Bom Preço	Sendas
2004	CBD	Carrefour	Wal-Mart	Sonae	Zaffari
2005	CBD	Carrefour	Wal-Mart	Zaffari	G. Barbosa
2006	CBD	Wal-Mart	Carrefour	G. Barbosa	Zaffari
2007*	Carrefour	CBD	Wal-Mart	G. Barbosa	Zaffari

*Simulation considering the gross revenues of 2006 and adding the revenue of Atacadão to Carrefour's gross revenue.

Source: Abras.

3. PERFORMANCE

The previous section reported the evolution of the retail market structure in Brazil since 1994, when at least three phases can be identified: Phase I, from 1994 to 1999, characterized by the sharpest increase in market concentration (CR5 reaching approximately 40%) and Carrefour's leadership; (b) Phase II, from 2000 to 2004, presented a stable level of concentration (CR5 around 40%), *CBD* as the new leader followed by *Carrefour*, and a high level of turnover in the top five group; and phase III, beginning in 2005, characterized by three leaders (shared by *CBD*, *Carrefour* and *Wal-Mart*), with the leading firms changing places each year. Therefore, the structure has become more concentrated bringing about the increased opportunity to exert market power,

but there are also hints of an increase in rivalry, which may preclude the manifestation of market power.

Therefore, two different outcomes are possible. On one hand, if there is a prevalence of market power gain due to market concentration, performance indicators point to increases in the participation of retailers on consumers' expenses. On the other hand, if efficiency gains predominance over market power, performance indicators would indicate better performance. Such efficiency gains would come up due to scale economies, especially related to logistic efficiencies, as well as pecuniary gains obtained when retailers negotiate large volume purchases with their suppliers.

Several international studies have been carried out aiming to test the so-called trade-off between market power and market efficiency in the food industry, specifically the retail industry, with mixed results.⁷ Very recent studies carried out by Sharkey and Stiegert (2006) and Munisamy and Pick (2007) found support for the market power hypothesis in food retailing, while Cleary and Lopez (2007) found that the entrance of Wal-Mart in local markets reduced the collusive market power of incumbent supermarkets and promoted lower retail prices. In Brazil, a few studies carried out in the beginning of this century had non-conclusive results, as Farina and Nunes (2002) did not find evidence of market power manifestation in food retailing and two other studies, done by Aguiar and Silva (2002) and Cunha and Machado (2003), found that retailers have exerted market power.

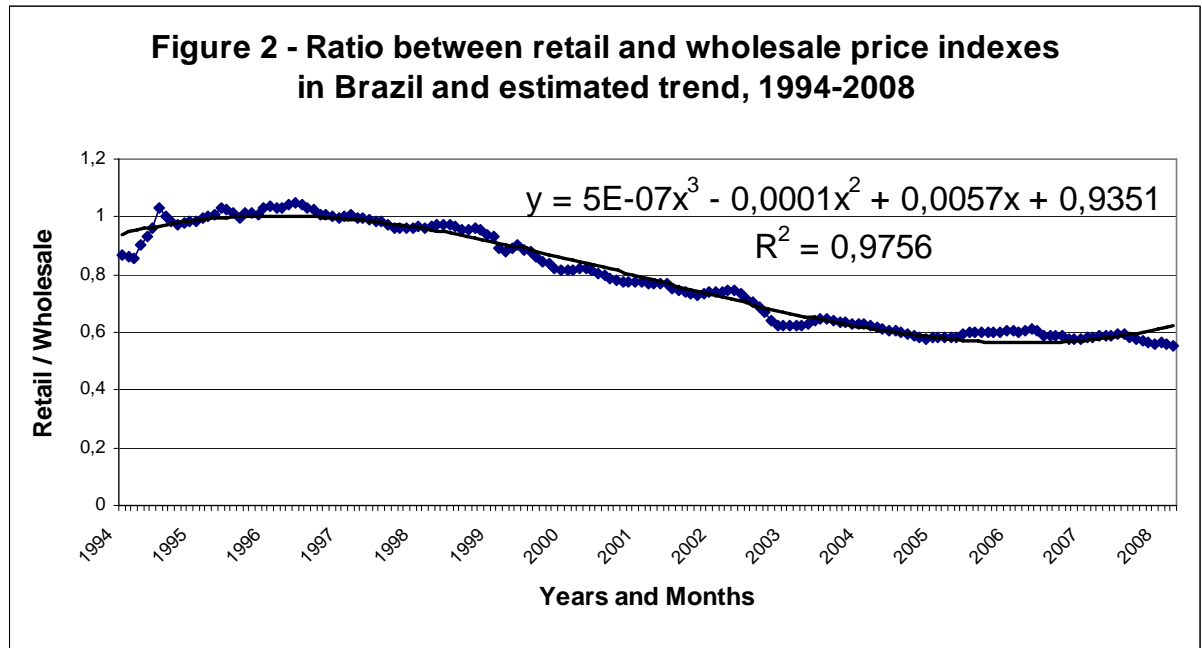
With a lack of studies capturing the effects of recent changes in Brazil's retail market structure, we will examine the behavior of some performance indicators through the beginning of 2008.

3.1 An Aggregated Performance Indicator

In order to verify if efficiency gains have predominated over market power manifestation, we investigated the behavior of an aggregate measure of performance. Figure 2 presents the pattern of a ratio of the Brazilian index of food retail prices by the index of wholesale food prices, from January 1994 to March 2008.⁸ As we can see, from 1994 to 1997 retail prices increase more than wholesale prices, decreases sharply from 1997 to 2004, and stabilized after 2004. To explore more deeply the behavior of the retail/wholesale price ratio, we estimated the best-fitting trend using a cubic function. As shown in Figure 3, this function produces a coefficient of determination larger than 0.97. Clearly, the trend implies that retail prices have not kept pace with wholesale prices. As the retail sector restructures toward greater concentration, it seems likely that the trend will eventually return back to higher levels.

⁷ See Lopez, Azzam and Lirón-España (2002) and Lopez and Lirón-España (2003), for instance.

⁸ To construct the retail/wholesale price ratio, we used both retail and wholesale price indexes provided by Fundação Getúlio Vargas (FGV).



The downward trend of the retail/wholesale price ratio may, or may not, be related to market concentration. To evaluate this possibility we estimated six models regressing the annual average of the retail/wholesale price ratio to six different concentration parameters (Table 5). As the coefficient of determination suggests, the H index and the concentration ratio of the three largest firms are the main parameters to explain changes in market performance. However, all concentration ratios, from the CR3 to the CR30, as well as the H index, present significant and negative parameters.

The negative effect of concentration on market performance gives some support to the idea that efficiency gains surpassed the losses originated by market power. This was only possible because of the increase in rivalry.

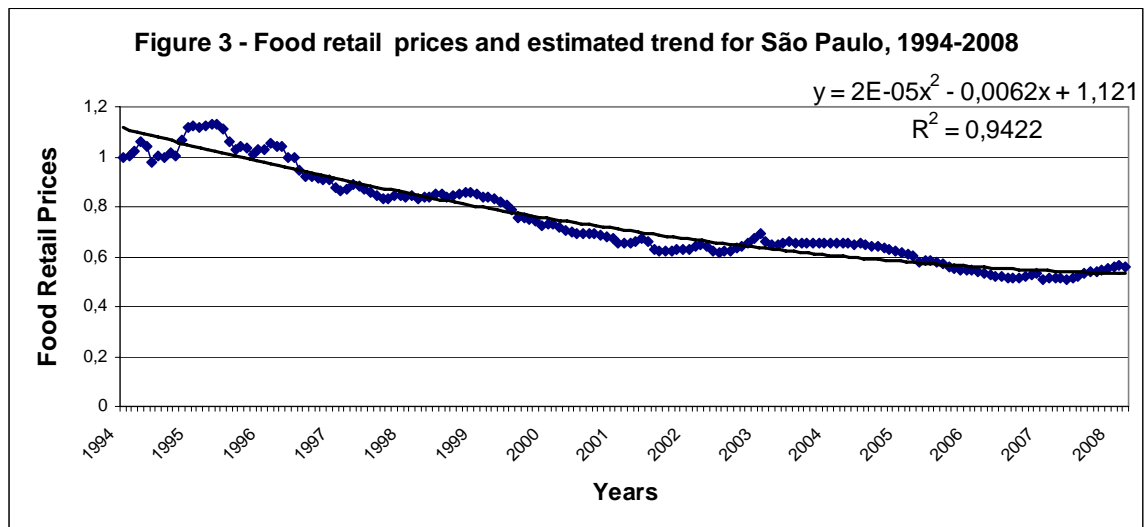
Looking specifically at the food sector, Figure 3 exhibits the behavior of an index of food prices in the retail market of São Paulo city (the largest city in the country).⁹ Food retail prices present a downward trend through the entire period, despite the increase in market concentration verified in the same period. The short increase in prices during the last few months is more related to the increase in international commodity prices than to retailing strategies. The same figure reports the trend function estimated to represent the behavior of the food prices, which is a polynomial of second degree with a coefficient of determination larger than 0.94. As the trend suggests, the food retail prices have moved downward over part of a parabola.

⁹ To construct the series showed in Figure 3 we deflated the index of food retail prices by the general consumer price index, both provided by Fundacao Instituto de Pesquisa Economica” at University of São Paulo (FIPE).

Table 5. Parameter estimations for six performance-concentration models, 1994-2006

Model*	Coefficient	Std. Error	t-Statistic	Prob.	R-squared
PERF=C(1)+C(2)*H					0.845740
C(1)	1.243710	0.059694	20.83468	0.0000	
C(2)	-5.236200	0.674260	-7.765848	0.0000	
PERF=C(1)+C(2)*CR3					0.806791
C(1)	1.526.294	0.106293	1.435.933	0.0000	
C(2)	-2.494.412	0.352379	-7.078.769	0.0000	
PERF=C(1)+C(2)*CR5					0.619779
C(1)	1.533.525	0.174690	8.778.524	0.0000	
C(2)	-2.101.333	0.496247	-4.234.451	0.0014	
PERF=C(1)+C(2)*CR10					0.558635
C(1)	1.646.853	0.227964	7.224.181	0.0000	
C(2)	-2.068.023	0.554235	-3.731.308	0.0033	
PERF=C(1)+C(2)*CR20					0.511178
C(1)	1.870.133	0.315918	5.919.683	0.0001	
C(2)	-2.272.546	0.670047	-3.391.622	0.0060	
PERF=C(1)+C(2)*CR30					0.439391
C(1)	1.942.768	0.389229	4.991.321	0.0004	
C(2)	-2.254.363	0.767771	-2.936.245	0.0135	
PERF=C(1)+C(2)*CR300					0.300866
C(1)	-0.837782	0.756173	-1.107.924	0.2915	
C(2)	2.486.180	1.142.694	2.175.718	0.0523	

* PERF = annual average of the retail/wholesale price ratio; CR3, CR5, CR10, CR20, CR30 and CR300 are, respectively, the concentration ratio of the 3, 5, 10, 20, 30 and 300 largest supermarket chains; H is the Herfindhal-Hirschman Index.



In conclusion, the exam of price indexes did not present evidence of retailers exploring market power for either general retail products or food retail products. Moreover, food prices have decreased in relation to the general consumer price index, indicating a relative enhancement of consumers' food purchase power. Such a reduction in prices is in part the result of efficiency gains at retail level and is certainly associated with high levels of rivalry in the sector.

3.2 Additional Performance Evidences

The analysis in the previous section suggests that retailers have not exerted market power in Brazil, despite the high level of market concentration. However, such results need to be evaluated carefully due to the nature of the variables employed in the empirical analysis. Performance indicators used are too aggregated, as they were built based on national level data and on a large range of products, and are restricted because they use only prices. Given such shortcomings, we can say that, in general, there is no evidence of market power use in the Brazilian retail sector, but we cannot assume that retailers are not exerting market power at all. Supermarkets may be exploring their market power in local markets where they face less rivalry and in product markets where they have stronger bargaining power. The type of analysis we have carried out does not allow us to verify such hypotheses.

Moreover, other studies carried out in Brazil have come up with contradictory results as we reported earlier. Farina and Nunes (2002) studied the food marketing system also using aggregate measures of market power and found evidence that the prices of food products have been maintained at a low level and that marketing margins have not presented upward trends. On the other hand, using less aggregated performance indicators, Cunha and Machado (2003) verified that after an increase in retail concentration in Belo Horizonte (the state capital of Minas Gerais and sixth largest city in the country), the price levels in the largest supermarket chains were larger than the price levels charged by middle- and small-size supermarkets. Likewise, Aguiar and Silva (2002), in other disaggregated study, found that the marketing margin of beef retailers in São Paulo increased around 30% from 1994 to 1997, a period when the process of retail concentration was more intense.¹⁰

The sharp difference between the studies cited above is that Farina and Nunes analyzed several aggregate indexes for Brazil and for São Paulo, while Aguiar and Silva analyzed only one sector, and Cunha and Machado analyzed separately large and small retail stores in a local market. Comparing those studies, we can raise the hypothesis that it is more likely to identify market power by means of more disaggregated variables and data. In addition, the results of Cunha and Machado showing that the largest supermarket chains charge higher prices indicate that the firms' market share might be more important

¹⁰ Curiously, Armah (2007) carried out a very similar study on the American beef industry and reached similar results.

for explaining market power in the retail sector than concentration ratios, which is consistent with results found in several other sectors and countries.¹¹

The use of price-based performance indicators also limits the study, since retailers can explore market power by means of cost reductions instead of price changes. Brazilian supermarkets commonly impose several rules to their suppliers, transferring part of retail costs to the suppliers. For instance, large supermarkets require suppliers to hire sale promoters who will work in the retail store, though paid by the suppliers. Sometimes, retailers require suppliers to pay for shelf space or require them to offer products on a free trial basis, or ask for cash contributions, to support the launching of new retail stores. Such requirements show how retailers abuse market power to the detriment of suppliers, abuses not captured by regular price analyses.

Another way supermarkets use to increase their market power is when they register a large number of potential suppliers when buying directly from suppliers/farmers. Supermarkets then request specific product requirements, but don't assure the suppliers their produce will be purchased. When the supermarket needs to buy, it carries out an auction with its potential suppliers, buying from the ones who offer the lowest price. The remaining suppliers need to sell their produce in the regular market, which will not pay adequately for the products' special attributes—originally requested by supermarkets.

4. FINAL REMARKS

The Brazilian retail sector has gone through sharp transformations since 1990. A process of market concentration has been maintained throughout the years, being more intense with the increase in the CR5 during the decade of 1990 and in the CR3 in recent years. As a consequence, the retail market has been dominated by three firms, which have changed places as the leading retailers each year. Moreover, an intense turnover process has existed in the retail industry, and such turnover has even affected the top five firms over the last few years.

In terms of performance, the increase in market concentration may strengthen firms' market power, allowing them to hold abnormal profits. However, the intense turnover process may coerce firms to seek efficiency as a growth strategy and may preclude them from using market power. The main issue is to identify which effect has prevailed in Brazilian retail. The prevalence of market power would indicate the necessity of a more severe enforcement of antitrust policy.

Nevertheless, mixed results found in the literature do not allow an accurate conclusion on the trade-off between market power and efficiency in Brazilian retail. The empirical analysis carried out in this study as well as other empirical analyses using aggregated variables appear to indicate the prevalence of efficiency gains. In opposition, some studies that used less aggregated variables found support for the market power hypothesis. In addition, the Brazilian experience suggests that retailers use their market power mainly as a means of transferring their costs to suppliers, which cannot be identified through price

¹¹ See Shepherd (1999).

behavior. Several mechanisms are employed by retailers to obligate suppliers to be responsible for cost items that should be, in fact, retailers' duty.

Future studies aiming to identify the degree of market power in Brazilian retail could try to estimate the indirect costs imposed by retailers to suppliers. Moreover, in the case of price analysis, the focus should be on local markets and/or on specific products, since retail price strategies seem to change according to the demand they face.

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