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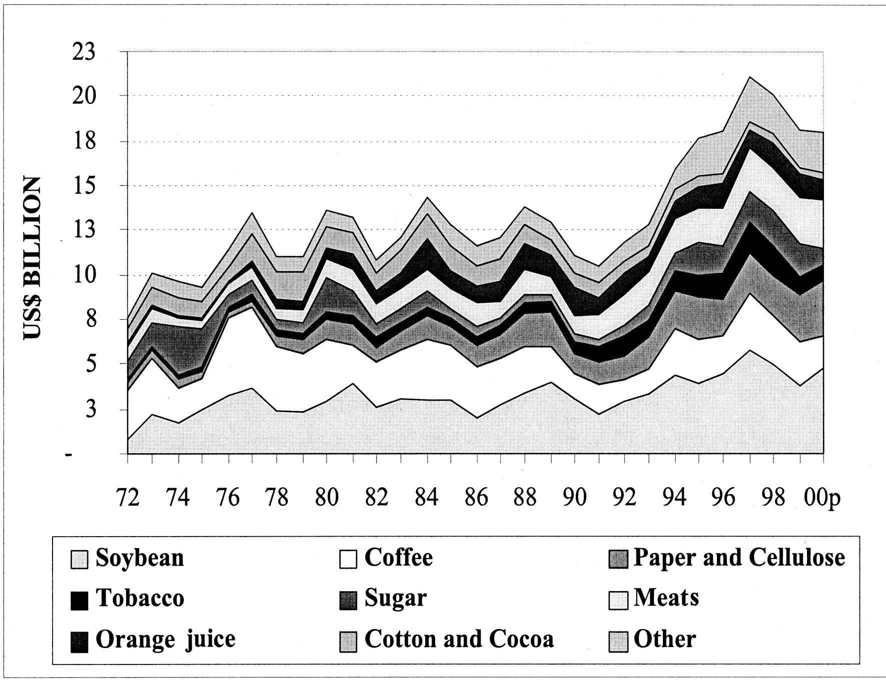
Marcos Sawaya Jank
Maristela Franco Paes Leme
André Meloni Nassar
PENSA/University of São Paulo

Paulo Faveret Filho
BNDES/National Bank of Economic and Social Development

Concentration and Internationalization of Brazilian Agribusiness Exporters

ABSTRACT: By using an unprecedently disaggregated data set, this article analyzes rapid concentration and internationalization (the growing presence of multinational firms) in the agribusiness of Brazil in the past decade. The article: (1) analyzes the concentration of exports over the 1990s of seven subsectors; (2) analyzes internationalization, and mergers and acquisitions in these and other subsectors; (3) describes the managerial strategies adopted by firms to cope with the increased competition arising from concentration and internationalization; (4) discusses the particular conditions in each of the major subsectors; and (5) draws managerial and policy implications in an era of globalization.

Direct all correspondence to: Marcos Sawaya Jank, Department of Economics, Business and Sociology (ESALQ) and the Agribusiness Research Program (PENSA), University of São Paulo (USP), USP-ESALQ-DEAS, C.P. 9, 13418-900, Piracicaba/SP, Brazil. <msjank@usp.br>



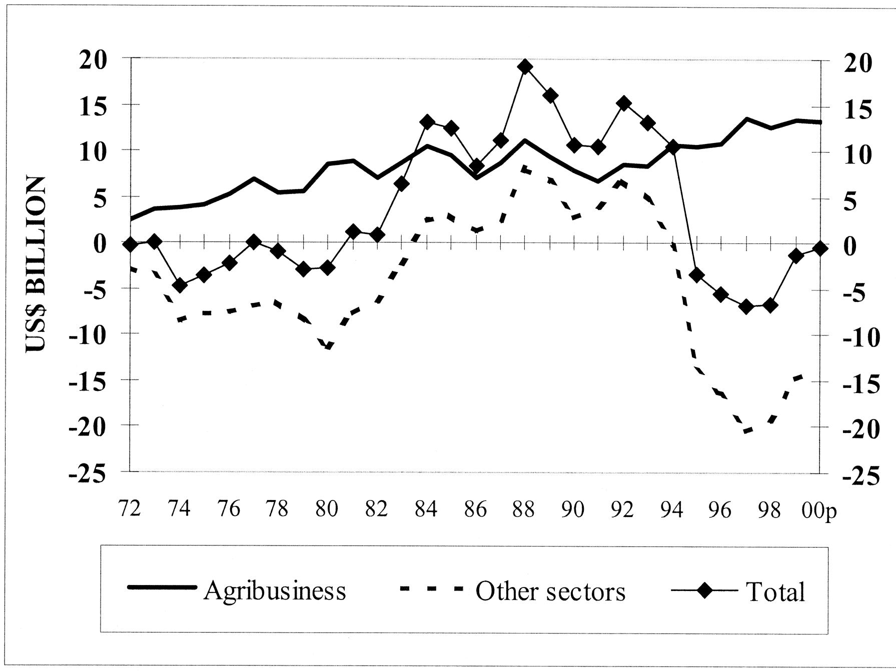
Source: SECEX, deflated by WPI-USA.

Figure 1. Brazilian Agribusiness Exports (real prices 1999).

INTRODUCTION

Brazil is a major player in world agribusiness. Brazilian agribusiness annual value-added reached $230 billion in 1998; exports constitute around $20 billion (MDIC-SECEX, 1998). This puts Brazil in fourth place in world agribusiness exports, after the European Union, the United States, and Australia.[1]

Figure 1 shows that the agro-export model was established in the 1970s, stimulated by strong international demand and government credit and infrastructure investments. Exports dipped in the 1980s, through 1992, because of global recession and an overvalued Brazilian currency. But exports picked up in 1993 and then grew steadily in the 1990s, led in particular by soy, coffee, meat, cellulose, sugar, and tobacco. Figure 2 shows that total agribusiness exports grew quickly, outstripping growing food imports and thus creating an agrifood trade surplus. But exports also diversified by country of destination, and diversified into value-added products. In general terms, the sector's exports were marked by a growing diversification of product destinations and by the addition of value in the set of commercialized products. Figure 3 shows that the relative share of



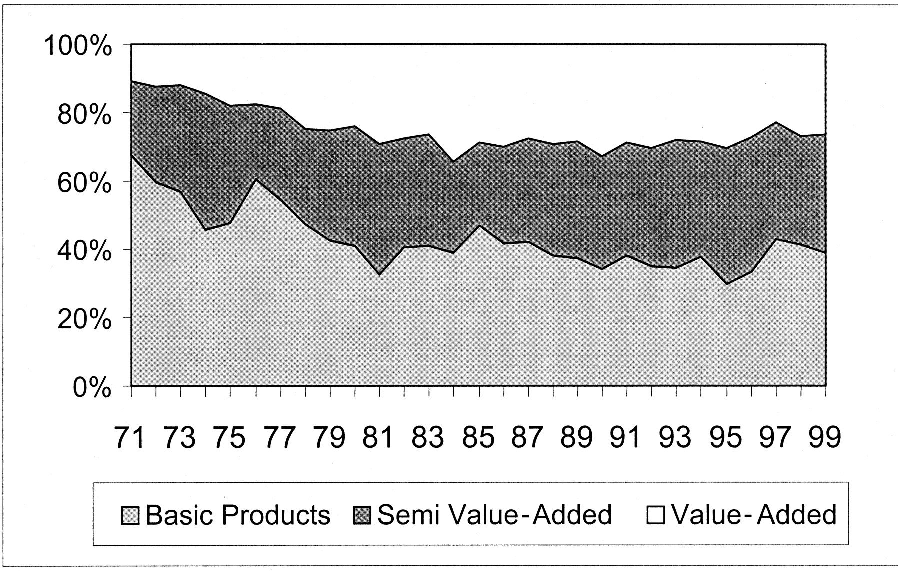
Source: SECEX.

Figure 2. Brazilian Trade Balance.

agricultural basic products fell from 70% of the total at the beginning of the 1970s to less than 40% at the end of the 1990s.

Accompanying the booming growth in exports in the 1990s were deep changes in Brazil's agribusiness subsectors. That change was induced by policy changes—trade and foreign investment liberalization, domestic market deregulation, the formation of the Mercosur common market in the region in 1991 (see Farina, this volume), and the stabilization of the economy through structural adjustment programs. These policy changes created growth in market opportunities and incomes, but also ushered in a period of intense competition.

That competition led to two sets of changes in the agribusiness subsectors. (1) The structure of the agribusiness subsectors changed with rapid concentration (mainly via mergers and acquisitions) and internationalization (the increased presence of foreign firms). (2) The institutions, organization, and management strategies changed. Agribusiness chain coordination increased via new contractual and governance forms. Increased coordination plus technological modernization helped agribusinesses in the commodity subsectors, such as soybeans and coffee, to reduce costs by drawing on economies of scale and scope, and pursuing more efficient finance and logistics. Mainly this helped the large firms, fueling concentration. In the specialty product



Source: SECEX.

Figure 3. Brazilian Agribusiness Exports by Value Added Level

subsectors, businesses invested in new products and global brands, focused on market niches, and instituted quality and certification programs. Together these two sets of changes increased competition.

This article contributes to the literature by analyzing data disaggregated to an unprecedented degree in Brazil. This is the first analysis in Brazil using data by product and by exporting firm, covering all 5,860 firms that exported agribusiness products between 1990 and 1998, grouping firms by holding, and covering all M&A operations. Although we do not explore to what degree the findings can be generalized to other developing countries, this unique window into the subsectoral details of the agribusiness concentration and industrialization processes, given the weight of Brazil in the agribusiness economy of the developing world, portends important general lessons.

Moreover, the article focuses on exports, for two main reasons: (1) exports are a focus of the policy debate at present because of the severe balance of trade deficits suffered since the Asian crisis in 1997; (2) Brazil exports mainly agro-industrial commodities, and giant multinationals are increasingly controlling these markets all over the world, and thus the processes of concentration and internationalization need to be examined together.

We begin with an analysis of concentration and internationalization based on data from the Secretary of Foreign Trade of the Federal Government of Brazil. We then discuss the managerial strategies used by firms to cope with the context of heightened competition accompanying concentration and internationalization. We then go into more detail subsector by subsector. The last section offers policy and managerial implications in an era of globalization.

CONCENTRATION, INTERNATIONALIZATION AND MANAGEMENT STRATEGY CHANGE—OVERVIEW

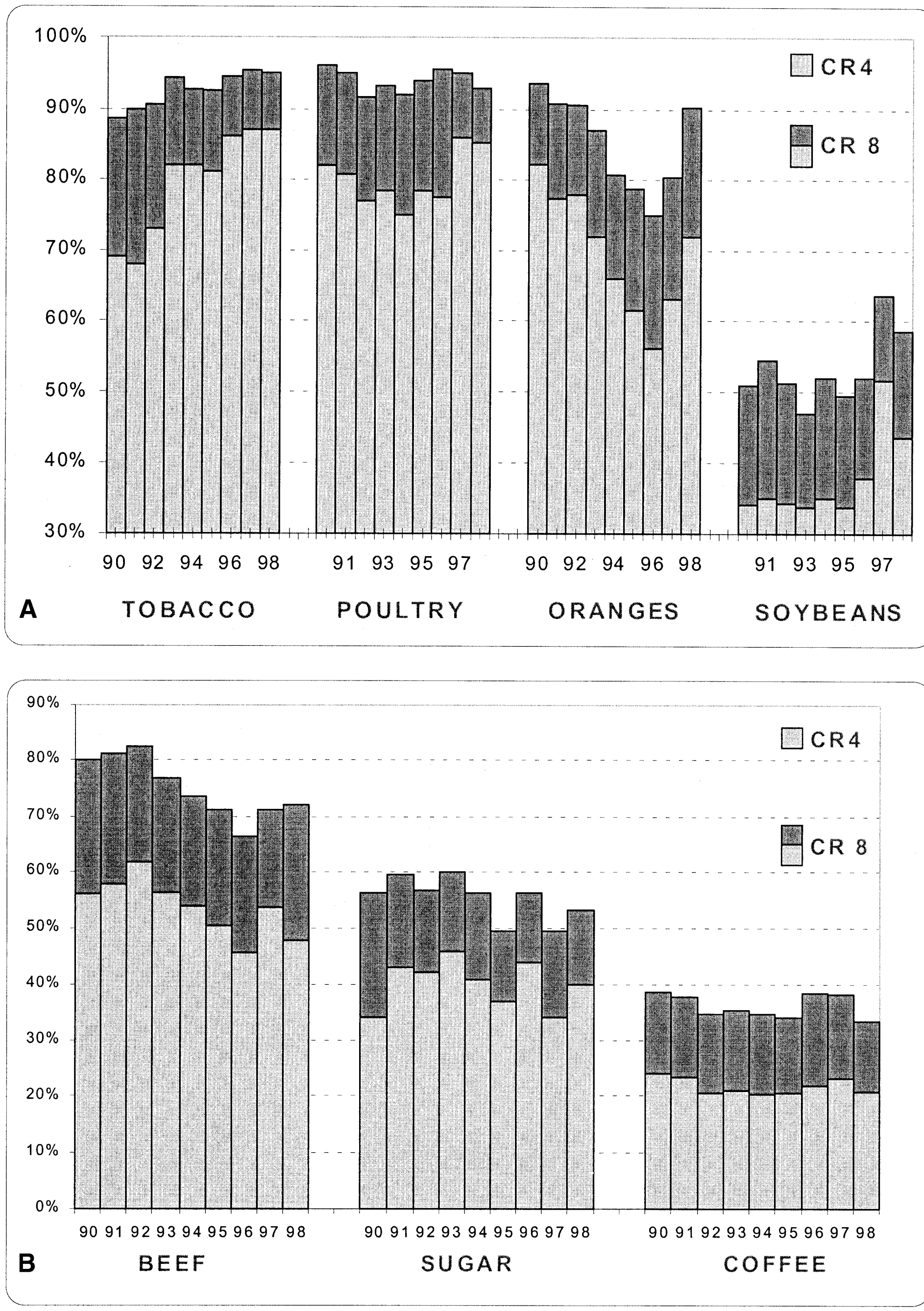
Overview of Concentration

Our analysis uses the Concentration Ratio (CR) and the Hirschman–Herfindahl Index (HHI) to demonstrate concentration in agribusiness. The CR expresses the share of the largest firms in the total of the industry in terms of exports, domestic sales, employment, value added, or other variables. The share of the four (CR4) or of the eight largest firms (CR8) is calculated over the total of the particular industry. The HHI is the sum of the squares of the market shares of all the firms in the industry. The index thus combines measures of concentration and inequality, reaching the maximum value of 1 in the case of monopoly.

Table 4 shows that Brazilian agribusiness was very concentrated in the aggregate in the 1990s. Seventeen firms controlled, on average over 1990 through 1998, 43% of all agribusiness exports; 42 firms were responsible for almost 60% of exports and 156 firms for 80%. At the other extreme, more than 4,000 firms (70% of the exporters), most of them of the "in-and-out" market type, were responsible for only 1% of the exports in the period!

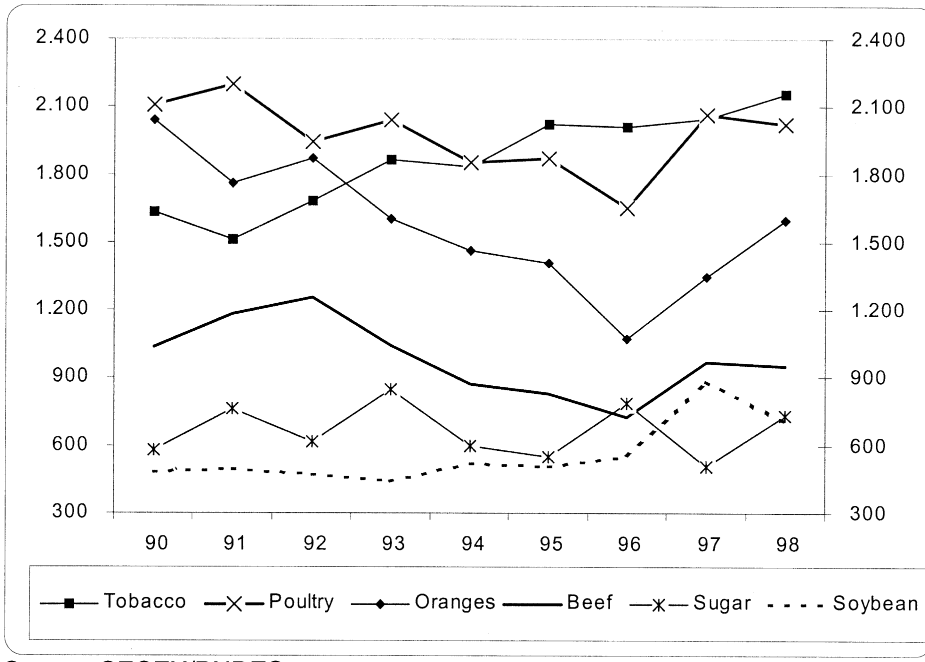
Figure 4A and B show the export concentration measures for the main seven subsectors of all Brazilian agribusiness exports (87% of the total over 1990–1998). Four subsectors (tobacco, poultry, orange juice, and beef) have CR4's of greater than 60% over most of the 1990s, two are near that cutoff point (sugar and soy at 40%), and only coffee is low, 20%. Connor (1997) notes that empirical studies tend to find that a CR4 equal to or greater than 60% offers the leaders considerable opportunity for oligopolistic behavior.

Moreover, observe from Figure 4A and B that concentration increased over 1990 to 1998 (using the two end points of the series) in four of the seven subsectors in terms of the CR4: tobacco, from 70 to 87%; poultry, 82 to 85%; soy, from 34 to 43%; sugar, from 35 to 40%. Orange juice, beef, and coffee de-concentrated slightly (82 to 72, 55 to 48, and 23 to 21). In the following section, we discuss in more depth the change in the 1990s in each of the subsectors. Figure 5 shows the evolution of the HHI for the same products. As in the case of the CR, there was greater industrial concentration in the exports of tobacco, poultry, and oranges. Soy shows a growing HHI, sugar is found to be stable, and beef a falling HHI over the 1990s.



Source: SECEX/BNDES.

Figure 4. Concentration Ratio of Agricubusiness Exports (Top 4 and 8 companies).



Source: SECEX/BNDES.

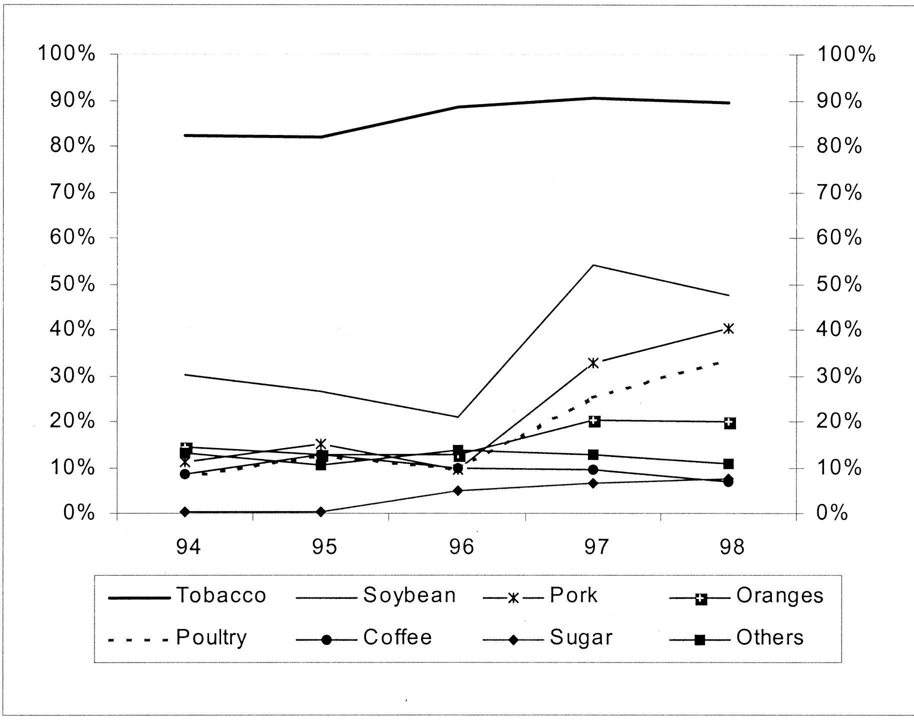
Figure 5. Concentration of Agribusiness Exports: Hirschman–Herfindahl Index.

Overview of Internationalization

Internationalization also increased over the 1990s. Figure 6 shows the share of international firms in agribusiness exports in 1994 through 1998. Note that in all cases but coffee (that stayed at a steady 10%) the share of foreign ownership soared: for tobacco, from 82 to 90%; for soy, from 30 to 48; for pork, from 11 to 40; for poultry, from 8 to 34; for sugar, from 0 to 8%.

The government actively stimulated foreign direct investments both for the expansion of the industrial units of multinational firms and for the acquisition of firms in the country. The stimulation was manifested in changes in laws and regulations that opened the economy (both for trade and for investment), and in financial measures. But at the same time, as a check and balance, the government created three agencies and has recently improved the whole system for the maintenance of competition, with antitrust and anticollusion objectives.

In the food and beverages industry, 81% of the foreign direct investments from 1994 to 1998 were undertaken for the acquisition and association of enterprises, whereas 13.2% were directed at creating new firms and 5.8% at expansion and modernization of already existing firms. The FDI destined to the food industry corresponded to 6.4% of the total flow of foreign investment in Brazil, where



Source: SECEX/BNDES.

Figure 6. Brazilian Agribusiness Exporters: Share of the Foreign Companies.

foreign firms already in Brazil account for 69% of these investments, and 31% correspond to investments by new foreign firms (Laplane and Sarti, 1997).

By becoming a productive base for the expansion of multinationals, the national economy will certainly profit from the growing entry of foreign investments, and the global improvement of agro-industrial competitiveness. On the other hand, the internationalization of productive capital and the consequent remittances of profits and dividends have negatively affected the equilibrium of the Balance of Payments. The deficit in the account of "remittances of profits and dividends" of the BP went from 600 million in 1992 to 7.2 billion in 1998.

Thus, concentration and internationalization together took place mainly via mergers and acquisitions (M&A). New organizational formats such as strategic alliances, joint ventures, and franchises were also used, but were of secondary importance (Sato and Vegro, 1995). Table 2 presents the subsector ranking of M&A from 1994 to 1999, and shows that the food, beverages, and tobacco industries are the main target of M&A initiated by international firms. Table 3 presents an extensive list of the main M&A in Brazilian agro-industry between 1996 and 2000; one can observe the diversity of subsectors represented.

The acquisitions were mainly undertaken by multinationals such as Nestlé, Parmalat, ADM, Cargill, Unilever, Bunge, Dreyfus, Carrefour, Ahold, Danone, and Sara Lee. These are examples of firms that have increased their investments or market-share in the Brazilian market throughout the1990s. Belik (1994) and Belik and Santos (2000) show that most of the multinationals came to Brazil with the objective of penetrating the domestic market, enjoying the multiple advantages created by trade liberalization, market deregulation, privatization, and economic stabilization. This strategy was common across the world for EU and U.S. multinationals. Henderson et al. (1996) show that sales from U.S.-owned foreign affiliates in the world reached $110 billion in 1995, but only 2% of those sales were direct toward the U.S., and 19% to third countries. In other words, almost 80% of foreign sales of U.S. multinationals were absorbed in host country markets, which is a number much greater than total U.S. agricultural exports ($55 billion in 1995), and FDI from U.S. food industries ($25 billion).

Links between Concentration and Agribusiness Strategic Change

The generalized concentration of Brazilian agribusiness arose from, as well as created, intense competition. That competition spurred changes in firms' operations and management approach to survive. In turn, those strategic responses fed competition and thus further concentration. The strategic responses include the following.

First, firms are changing the technologies they use. In those subsectors where economies of scale and scope have the greatest potential—grains, meat, dairy, sugar, coffee, orange juice, and cellulose—managers are rapidly making shifts in factories and equipment to capture those economies. For the farming sector, Gasques and Conceição (2000) estimate that from 1970 to 1995 the productivity of land, labor, and capital increased 130%, 128%, and 79%, respectively.

Second, managers have shifted from broad operations to a focus on their core business. A good example is the Brazilian firm SADIA (annual turnover of $2.5 billion), which sold its grain and by-product business to ADM and deactivated its beef business to concentrate on poultry, pork, and "ready to cook" products. Between 1993 and 1998, the SADIA group reduced its number of enterprises from 20 to 5, industrial units from 24 to 11, and employees from 32,000 to 22,000. We could also cite examples from Perdigão, Itambé, Nestlé, Bunge, Corn Products, Aurora, and many cooperatives.

Third, firms sought cost reductions through increases in logistics efficiency. Deregulation and privatization after the early 1990s reduced port, rail, and trucking costs. This led to a shift toward areas with cheap land on the agricultural frontier in the Midwest Brazilian *Cerrados* region of production of soy, corn, cotton, meat (beef, pork, and poultry), coffee, and milk (e.g., Caixeta Filho et al., 1998).

Fourth, managers are responding to pressures from consumers, importers, the government, and civil society for better plant and animal health, food safety, traceability, quality and origin certification, and use of “good practices” in farming (see PENSA, 1999).

Concentration and Internationalization by Subsector

Poultry

The degree of concentration in the exports of the poultry industry is high and remained practically stable in the1990s (CR4 of 82 to 85% over the period), as shown in Figure 4a. The share of foreign capital increased from 10% to 32% with the entry of Doux (France), Bunge (U.S.), and Macri (Argentina). The industry also partially shifted to the Brazilian Midwest region because of cheaper and more abundant grain supply, as well as road and rail networks that recently opened the area to easy access. Two factors explain the high concentration of the poultry exports. First, from the beginning of Brazilian poultry exports in the 1980s, a small consortium of firms decided to export the surplus not absorbed in the internal market; hence the subsector was concentrated from the start. Second, the export market requires meeting high quality standards which tend to be too costly for medium and small firms. Note that in the domestic market (concerning total sales) the CR5 (note CR5, not CR4) for 1995 to 2000 went from 32% to 38% in poultry, from 61% to 68% in pork, and from 74% to 84% in ham. Thus, concentration is also important in domestic market, but is much more important in exports (personal communication to Jank from industry managers, January, 2000).

Orange Juice

The concentration curve over the 1990s was U-shaped: the export CR4 was 82% in 1990, then deconcentrated to only 55% in 1996 as new firms entered, but after 1996 reconcentrated through M&A, and reached 72% in 1998. Foreign firms have increased their share in total exports, as Figure 6 shows, from 10% to 20% over the decade. Our interviews with managers in the subsector revealed widespread expectations that, despite the already high concentration, further M&A and even strategic alliances could still occur, mainly aimed at increased scale, better position in the world market, or alliances with large firms that control distribution. In this industry, the logistics of transport are fundamental and the firms that use bulk transport have advantages. Furthermore, several recent relationship problems point to the development of new types of contracts between producers and industries. (Exploration of this point goes beyond the scope of this article, but the reader is encouraged to consult Leme, 1999 for details.)

Table 1. Soybeans Crushing Capacity by Firm and Concentration Ratios

Company	*Crushing Capacity (t/day)* 1995	1997
Ceval	16.280	—
Santista	6.980	—
Sadia	5.815	—
Incobrasa	5.815	—
Gessy Lever	4.650	—
Bunge	—	29.180
Coinbra-Dreyfus	—	7.450
ADM	—	6.890
Cargill	6.980	6.700
Granóleo	4.700	4.700
Bianchini	3.490	4.000
Caramuru	3.490	3.000
Olvepar	N.d.	3.000
CR4	31,0%	42,6%
CR8	47,0%	55,0%

Source: Leme, M.F.P. (1999) based on ABIOVE data.

Soy

This industry underwent rapid concentration since 1995 because of the acquisition of 12 large domestic firms, with substantial unused capacity, by four multinationals (Bunge, Dreyfus, ADM, and Cargill). Table 1 shows that the top four multinationals controlled 43% of the soy crushing capacity in 1997, up from 31% in 1995. The top eight firms controlled 55% of soy crushing (to produce meal and oil), compared to 47% just two years earlier.

Table 2. Mergers and Acquisitions Ranked by Number in Brazil

Sector	*1994*	*1995*	*1996*	*1997*	*1998*	*1999**	*Total*
Food and Beverages	18	19	38	49	36	11	171
Banks and finance institutions	15	16	31	36	28	9	135
Chemicals and petrochemicals	13	19	18	22	25	4	101
Metallurgy	8	8	17	18	23	3	77
Insurance	6	9	16	24	15	6	76
Electronics	5	10	15	19	9	3	61
Automobile parts	2	10	11	16	20	8	67
Civil construction	1	3	15	8	10	5	42
Telecommunication	5	8	5	14	31	26	89
Supermarkets	2	0	2	9	13	12	38
TOTAL	175	212	328	372	351	142	1580
Cross Border	94	130	167	204	221	100	916
Domestic	81	82	161	168	130	42	664

Source: KPMG.
Note: (*) First Semester.

Table 3. M&A Activity in the Brazilian Food Industry

Year	*Acquired Company (IES)*	*Country*	*Buyer*	*Country*	*Agri-chain*
1996	Lacta	BRA	Phillip Moris	USA	Chocolate
	Molinos de La Plata	ARG	CTM Citrus	BRA	Grains
	Visconti, Pardelli	BRA	Arisco	BRA	Bakery
	São Valentin	BRA	Cargill	USA	Mills
	Olvebasa, Oleos Brasil, Plus Vita	BRA	Bunge	USA	Soy, Bakery
	Anderson Clayton	USA	Unilever	NED	Soybean
	Terra Branca, Frescarini	BRA	Pillsbury	USA	Pastry
	Moinho Água Branca	BRA	Pena Branca	BRA	Mills
	Bethânia	BRA	Parmalat	ITA	Dairy
	Pilar, Frigorificos Gumz	BRA	Fleischmann Royal	USA	General
	Naturalat (Leitesol)	BRA	Mastellone (La Sereníssima)	ARG	Dairy
	CCGL Co-op	BRA	Avipal	BRA	Dairy
	Biscoitos Aymoré	BRA	Danone (BSN)	FRA	Bakery
1997	Incobrasa, Ceval	BRA	Bunge	USA	Soybean
	Kibon (Phillip Morris)	USA	Unilever	NED	Ice Cream
	Glencore, Sadia (Grain)	BRA	Archer-Daniels-Midland	USA	Soybean
	Unilever/Anderson Clayton	NED	Louis Dreyfus	FRA	Soybean
	Etti (Fenícia)	BRA	Parmalat	ITA	General
	Matosul	BRA	Cargill	USA	Soybean
1998	Café do Ponto	BRA	Sara Lee	USA	Coffee
	Batavo Co-op	BRA	Parmalat	ITA	Dairy
	Peixe	BRA	Cirio Gragnotti	ITA	General
	Laticínios Ivoti	BRA	Milkaut	ARG	Dairy
	Frangosul	BRA	Doux	FRA	Poultry/Pork
	Cambuhy Citrus, Montecitrus	BRA	Citrovita	BRA	Orange Juice
1999	Mococa	BRA	Royal Numico	NED	Dairy
	Café Seleto	BRA	Mellita	GER	Coffee
	Chapecó	BRA	Grupo Macri	ARG	Poultry/Pork
2000	Rezende	BRA	Archer-Daniels-Midland	USA	Soybean
	Prenda	BRA	Chapecó/Grupo Macri	ARG	Poultry/Pork
	Granja Rezende	BRA	Sadia	BRA	Poultry/Pork
	Uniao	BRA	Sara Lee	USA	Coffee
	Arisco	BRA	Best Foods/Unilever	NED	General
	Paulista Co-op	BRA	Danone	FRA	Dairy

Source: authors (press information).

In 1998, the sector began to de-concentrate because of the growth of soybean grain exports relative to the sales of soy meal and oil; this was because of the elimination, in 1997, of the export tax that affected all products of low value added. The large firms lost share to a large group of small domestic soybean traders. But our interviews with managers in the subsector reveal widespread expectations that, in the future, concentration will resume.

Tobacco

The high concentration of tobacco exports (growing from 70% to 87% over the 1990s) results from the structure of this industry in the global market, and from the nature of the export products. The dynamic export sector's products are of high value-added value, ready for consumption. The subsector in Brazil is

Table 4. Brazilian Agribusiness Exports: Companies Ranked By Exports (1990/1998)

	Companies			*Agribusiness Exports*		
Band (U\$) (Sum 1990 to 98)	*Number*	*Sum*	*%*	*%*	*% Sum*	*Annual Avg per Co (U\$)*
Over 1 billion	17	17	0,3%	43%	43%	300.458.000
500 million to 1 billion	25	42	0,4%	16%	59%	77.967.778
100 million to 500 million	114	156	1,9%	21%	80%	22.382.685
10 million to 100 million	511	667	8,7%	15%	96%	3.614.701
1 million to 10 million	1091	1758	19%	4%	99%	393.933
Under 1 million	4102	5860	70%	1%	100%	16.592
Total	5860		100%	100%		2.039.857

Source: SECEX/BNDES.

dominated by global players, with their share growing from 80% to 90% of the industry's capital over the 1990s (Fensterseifer and Gralow, 1995). Domestic firms produce products with low value-added, and their already low share of exports (10%) is on the wane.

Beef

Contrary to the cases of the poultry and pork industries, the beef industry shows de-concentration (with a CR4 of 55 in 1990 and 48 in 1998). The 1990s were also a period of declining export volumes. Jank (1996) and I.E.L. (2000) note that the reductions in export volumes was because of three sets of reasons: (1) There were growing sanitary restrictions on exports (mainly because of *foot-and-mouth disease*). (2) There was a shift in beef cattle production to the new regions of the center-north, for reasons noted previously. This left a number of slaughterhouses in other regions undersupplied. (3) There is poor coordination in the beef chain. (For details see Jank (1996) and I.E.L. (2000) texts.) Exports traditionally were secondary operations for meat processors, which developed via strategies of disassembling carcasses for the internal market. In general, Brazilian exported beef is directed toward less demanding segments of consumers.

A fourth reason deserves discussion. Large international firms operating in the world beef market, such as Cargill, IBP, and Conagra are not operating in the Brazilian meat sector. Even the large Brazilian firms producing hogs and chickens (such as Sadia, Perdigão, and Bunge–Seara) do not want to enter the beef subsector (either in the domestic or the export market). The reason is tax evasion in the informal sector. Tax evasion has been very widespread, and it is mainly small and medium firms that evades taxes because of the ease of inspection, giving them huge cost advantages over the large domestic and foreign firms that must pay taxes.

After the devaluation of the Brazilian currency in January 1999, beef exports gained momentum and Brazilian beef became quite competitive internationally.

Moreover, new diseases and supply crises in other countries such as Argentina and EU are making way for Brazilian exports in world markets. At the same time, large areas decreed free of *foot-and-mouth disease* will probably be opened in the south of Brazil, greatly increasing export supply.

It is probable that accompanying this increase in export supply will be a tendency toward concentration. Indeed, preliminary data point to a CR4 of 61% in 1999, up from 48% in 1998, which indicates the beginning of a new cycle of concentration in the beef export sector, similar to the paths taken in the soy, poultry, and tobacco subsectors.

Sugar and Alcohol

Compared to most of the other subsectors, the sugar industry is still not very concentrated, and has meager penetration of international enterprises (CR4 of 40% in 1998, and only 10% share of foreign capital). The industry responds to short-run opportunities according to the relative prices of sugar and alcohol. The export market is small because developed countries impose barriers to imports, and protect their domestic production of sugar. The largest exporter in the world, Brazil is restricted to markets that are neither dynamic nor attractive, which leads firms to have little confidence in the export market and to act according to short-term opportunities. Deregulation brought to light vast disparities in the efficiency of the refineries in the various regions of the country (see Moraes, 2000, for details). The existence of such disparities implies that there are a number of inefficient plants that are ripe for merging with or acquisition by more efficient companies, and so we expect concentration in the subsector. That expectation was also heard often in our recent interviews in the industry.

Coffee

This industry has a relatively low degree of concentration and internationalization of capital (a CR4 of 21% in 1998, and only 10% foreign ownership of capital). However, concentration is just beginning to emerge in the domestic roasting industry, and there is incipient entry of foreign capital firms such as Sara Lee and Melitta (Table 3). Our interviews in the industry suggest that strong internationalization will occur in the industry in the next decade. Moreover, it is probable that increasing investments and scale will be required to assure standardization of quality and image of the exported product, following the example of the effort that has been realized in the region of the Cerrados (Saes et al., 1999).

Conclusions

This paper analyzed the concentration and internationalization (increase in the share owned by foreign capital) of seven key agribusiness subsectors in Brazil over the 1990s. Both processes were rapid for tobacco, poultry, orange juice, and soy products. Coffee and sugar, two traditional export agribusinesses, were slow to concentrate and internationalize, but even in those subsectors these processes are beginning to accelerate.

Managers of businesses that have survived the intense competition, acquisitions and mergers, and bankruptcies have done so by concentrating on core business, cutting costs through expanding scale and scope where such economies could be gained, making logistics more efficient, and shifting primary production to areas with cheap land, labor, and taxes. Chains have also increased coordination to improve quality and cut costs by instituting new contracts, and by quality standards and certification systems. Where their products are not the broad commodities such as soy, they have sought niches and product differentiation. In fact, all these strategies are reminiscent of the strategies of U.S. agribusiness in the past decade as well.

But there are limits to reducing costs, and limits to seeking niche markets globally (not the least of which are imposed by tariff and nontariff trade barriers in OECD countries that constrain Brazilian exports of traditional commodities like poultry, orange juice and sugar). We have showed that, in all seven major subsectors, concentration has already reached levels that imply oligopoly behavior, or are expected to reach those levels in the next 5 to 10 years. This has raised an alarm in Brazilian government and domestic business circles. They are in a dilemma: on the one hand, if one restricts acquisitions and FDI, one limits the ability of Brazilian agribusiness to attain the scale needed to compete globally, and one reduces needed investment flows; it also goes against the tide of economic liberalization. On the other hand, a fully *laissez-passer* approach may reduce the competition that is needed to induce innovation and competitiveness in the Brazilian agribusiness sector. To address that dilemma, the Brazilian government has recently begun instituting rules requiring disclosure of information on transactions and investments, and has reformed the agencies charged with antitrust actions for the maintenance of fair competition.

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Notes

1. We use Goldberg's broad definition of agribusiness as comprising actors in the whole chain, including farm input supply, farming, processing, and distribution. The product categories discussed comprise raw, semi-processed (like soy meal or citrus pellets), and fully processed products (like orange juice and soy oil).

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