

# Chapter 2

## Recent Development Patterns and Challenges of Brazilian Agriculture

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### 2.1 Introduction

In the past decade the determinants of Brazilian agribusiness<sup>1</sup> development have changed considerably. On the domestic scene, the government has undergone broad institutional restructuring and in terms of reorientation strategies and policies for economic development, and this has had significant impacts on agribusiness and consequently on the agriculture sector. Between 1999 and 2009, the share of Brazilian agriculture exports on the international market had increased: chicken meat, from 12 to 30%; maize, from 0.01 to 7.8%; and soybeans, from 22 to 35% (FAOSTAT 2011).

The performance of Brazilian agribusiness has denied well-established beliefs amongst policy makers that for decades have sustained the need to protect domestic markets and cut down foreign trade incentives on the grounds of ensuring food security. In fact, during the same time span, in the wake of monetary stabilisation, income redistribution and economic growth, domestic food markets have expanded at a sustained high pace without any supply disruptions and price surges well known in the past.

In this context, we will argue that the presence and competitiveness of Brazilian agribusiness on the international market and overall positive economic performance is mostly the result of broad long-term domestic structural transformations, both at the macroeconomic level and within the sector, in which innovation has played a central role. In addition, we will show that recent developments have not been

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<sup>1</sup> Agribusiness is composed of four sectors: raw materials, agriculture, industry and distribution.

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free of contradictions. Although productivity gains have operated as a powerful growth driver, new land at frontier zones was brought into cultivation, deforestation has continued, etc. Environmental and social relations have become sensitive issues whose consequences upon both the agricultural pattern of growth and sector governance cannot be ignored. Finally, the Brazilian policy experience is quite rich, particularly on land policy (agrarian reform) and in supporting the family farm segment. It will not be easy to deal with these issues in the frame of the paper, but it might be of interest to foreign colleagues to have some hints on these issues.

## 2.2 Agrarian Structure, Role and Performance of Brazilian Agribusiness

One of the marks of the Brazilian agrarian structure is its exacerbated concentration of land property. According to Hoffmann and Ney (2010), in 2006, the Gini Index of land property was 0.856.

The 2006 Agricultural Census registered 5.17 million holdings occupying an area of 330 million ha. Of the total, 2.5 million holdings had an area of 10 ha and below and a share of only 2.4% of the total area; and only 47,000 holdings held 147 million ha (Table 2.1). It is important to notice that in the past 15 years, the official programmes for agrarian reform redistributed 58.5–80.6 million ha and settled 1 million families (NEAD/MDA 2008), however, without impacting the overall pattern of land distribution.

It is not easy to produce hard evidence associating property rights to land use (Buainain 2008), but it is legitimate to raise the issue of weak property rights with poverty and deforestation. Around 1.23 million producers are tenants, sharecroppers, occupants and producers with no area declaration (IBGE 2006) (Table 2.1), most of them are *minifundistas* or very small poor producers, whose economic viability is increasingly contested (see Alves and Rocha 2010). Deforestation in the frontier zones is still used as proof of previous occupation of the land, which is still a strong argument for acquiring property rights over unclaimed land or in cases of conflicts over land ownership.

The heterogeneity has been evidenced in different Brazilian regions. In the Northeast, the poorest region, vastly dominated by semi-arid territory, 60% of the holdings had less than 10 ha in 2006. The majority was of poor producers without prospects for a viable market-oriented activity. In the Centre-West holdings with 10 ha and below represented only 16% of the total, while 43% were larger than 1000 ha and covered 72.3 million ha (IBGE 2006). Even though 10 ha might allow sustainable exploitation in the Centre-West *Cerrados*, viability is hindered by poor infrastructure, which requires larger-scale operations.

The levels of development and use of technology are highly differentiated amongst farmers and regions. Around 70% of holdings are served by electricity supply, but only 830,000 used electric power in agricultural activity. 2.8 million holdings use some kind of traction force, where 44% used animal traction, 34% mechanical traction and the remaining used both (Table 2.2). 47% of the holdings

**Table 2.1** Number of holdings and area for condition of the producer by groups of total area: 2006. (Source: Prepared by the authors based on *Censo Agropecuário 2006/IBGE 2006*)

Condition of the producer	Total		0 < 10 ha		10 < 1000 ha		> 1000 ha	
	Holding	Area (ha)	Holding	Area (ha)	Holding	Area (ha)	Holding	Area (ha)
Total	5,175,489	329,941,393	2,477,071	7,798,608	2,396,483	175,589,570	46,911	146,553,218
Owner	3,946,276	306,847,605	1,787,949	6,284,733	2,113,167	159,683,709	45,160	140,879,163
Settlers without ownership title	189,191	5,750,283	67,367	242,377	121,547	4,713,318	277	794,589
Tenant	230,110	9,005,203	156,836	360,539	72,208	5,701,504	1066	2,943,162
Partner	142,531	1,985,085	124,512	252,041	17,866	1,154,868	153	578,180
Occupier	412,357	6,353,218	340,407	658,918	71,695	4,336,173	255	1,358,125
Producer with no declaration of area	255,024	0	0	0	0	0	0	0

**Table 2.2** Share of family farming that use components for the modernisation of agriculture in Brazil: 2006. (Source: Authors modified data from Di Sabatto et al. 2011, p 16)

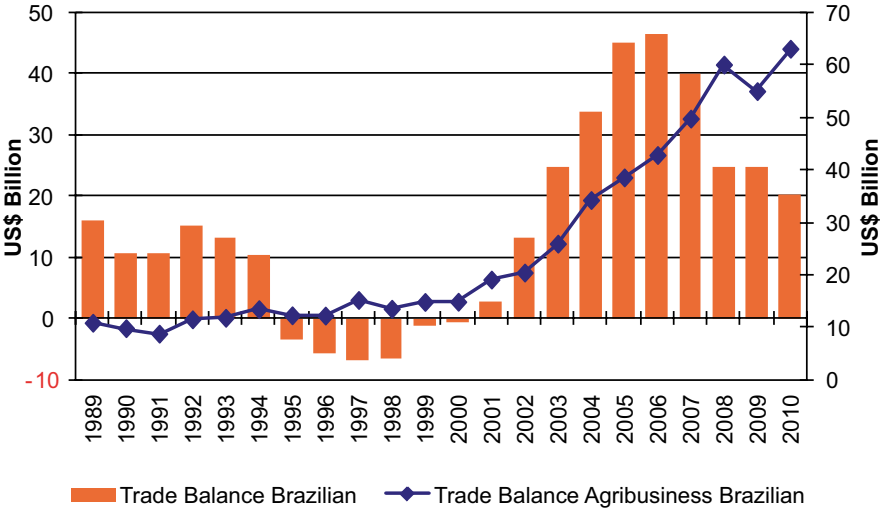
Technologies	%
Technical assistance	20.88
Associated with cooperative	4.18
Use electricity	74.10
Use animal force	38.75
Use mechanical force	30.21
Use manual force	31.04
Use irrigation	6.23
Use fertilisers and correctives	37.79

with an area below 100 ha used only animal force and 34% used mechanical force. Notwithstanding, the primary use of human force and hand-held working instruments is still dominant amongst the vast majority of poor small peasant producers. In fact, 55% of smallholdings use no other source of traction than human force. However, it is important to highlight that technological heterogeneity is also a feature amongst large holdings: about 132,000 holdings with more than 100 ha also do not use any kind of traction force (IBGE 2006).

Only 61% of large holdings use some kind of agronomic practices, thus confirming deep differences in the production process even amongst larger holdings. To reinforce the rudimentary characteristic of the productive process, around 57% of the Brazilian holdings did not carry out any type of soil preparation and only 10% use direct tilling techniques. Amongst smallholdings below 100 ha, holdings that did not carry out any kind of soil preparation were 55% and amongst larger holdings it was 58%. Overall, 65% of the holdings did not use any kind of green manure. The most surprising result is that around 90% of the holdings do not use any kind of methods to control pests (IBGE 2006).

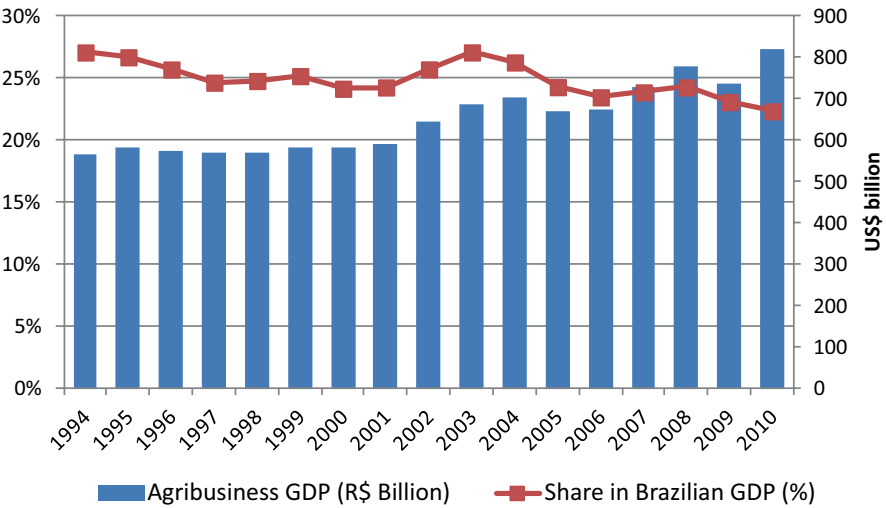
Brazilian agribusiness has been always a strategic sector and as such has played relevant roles in the structural configuration of Brazilian society as well as in the evolution and performance of the economy. In recent decades, it has been playing an anti-cyclical role, as a factor stimulating the economy as a whole. While up to the mid-90s the surge in agricultural prices have fed inflation and were subject to various types of price control policies (which proved always ineffective), since the launch of the Real Plan in 1994 the behaviour of real agricultural prices has been one of the anchors of the successful stabilisation plan. In addition, agribusiness exports have been the main source of foreign currency, whose availability has played a fundamental role in the transition from unsustainable foreign indebtedness status to the current creditor position and high credibility achieved by the Brazilian economy (Fig. 2.1).

Between 1980 and 1990 the real Agricultural GDP (Gross Domestic Product) grew 3.3% per year; between 1990 and 2000 it grew 3.1% and between 2000 and 2010 it grew 3.9%, whereas Brazilian GDP grew 3% in the first period, in the second one 1.65% and the last one 3.7% (Ipeadata 2011). In 2010, Agricultural GDP was



**Fig. 2.1** Trade balance—total and Brazilian agribusiness: 1989–2010. (Source: Prepared by authors based on AgroStat 2011)

R\$ 171 billion (US\$ 97 billion), or 5.3 % of Brazilian GDP, and Agribusiness GDP reached R\$ 821 billion (US\$ 467 billion). The agriculture sector represented 26.5 % of Agribusiness GDP (Cepea-USP/CNA 2011) (Fig. 2.2). According to the National Agriculture Confederation—CNA (2008), agribusiness was responsible for the employment and occupation of 37 % of the employed Brazilian labour force.

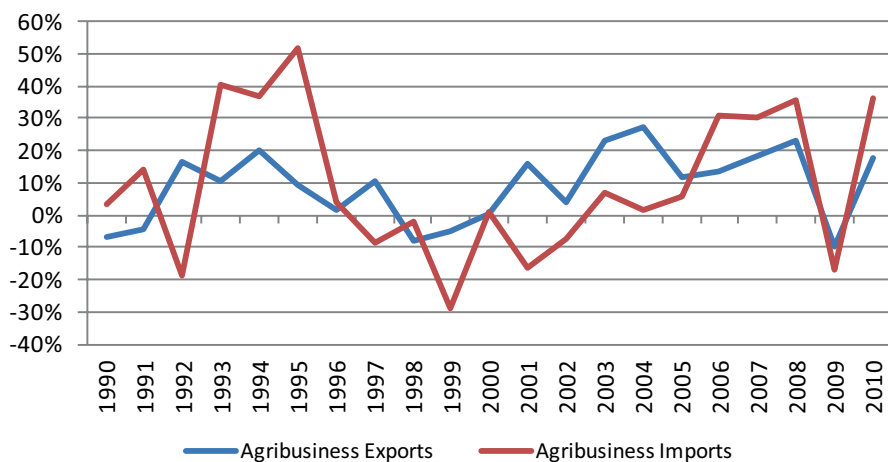


**Fig. 2.2** Share in Brazilian GDP (%) and value (R\$) of Brazilian agribusiness GDP: 1994–2010. (Source: Prepared by authors based on CEPEA/USP/CNA 2011)

Agribusiness has contributed most to the favourable performance of Brazilian foreign trade in recent years. Though international price increases have actually assisted in such performance, the expansion of physical exports accounts for 124% of the gains in 2000–2009 (Cepea-USP/CNA 2011)<sup>2</sup>. Agribusiness exports expanded at an average annual rate of 9% between 1989 and 2010—jumping from US\$ 14 billion to US\$ 76.4 billion—and its share of Brazilian exports has remained stable around 40%, whereas agriculture's share of imports fell to approximately 7% in 2010 (Fig. 2.3).

The recognition of the importance of agribusiness to the national economy as well as the expansion of agribusiness exports has contributed to the creation of a favourable context for investments and production; it has certainly exerted positive roles regarding policy support and fostering public and private investments as well as attracting new investors. However, at different periods, agriculture's positive performance has slid to excessive euphoria, which has probably led to overconfidence and disguised structural debilities in Brazilian agriculture.

Moreover, the expansion was not merely horizontal, sustained by the incorporation of new land and the growth of traditional tropical commodities, such as sugar and coffee, which characterise the traditional extensive pattern of growth. Both domestic institutional changes and innovation in production had a positive impact on the competitiveness and productivity of Brazilian agriculture, and allowed diversification to a broader variety of products, including fruit that, until then, had rarely been exported; it also opened up market opportunities and access to new markets



**Fig. 2.3** Brazilian annual growth rate of agricultural exports and imports: 1990–2010. (Source: Prepared by authors based on AgroStat 2011)

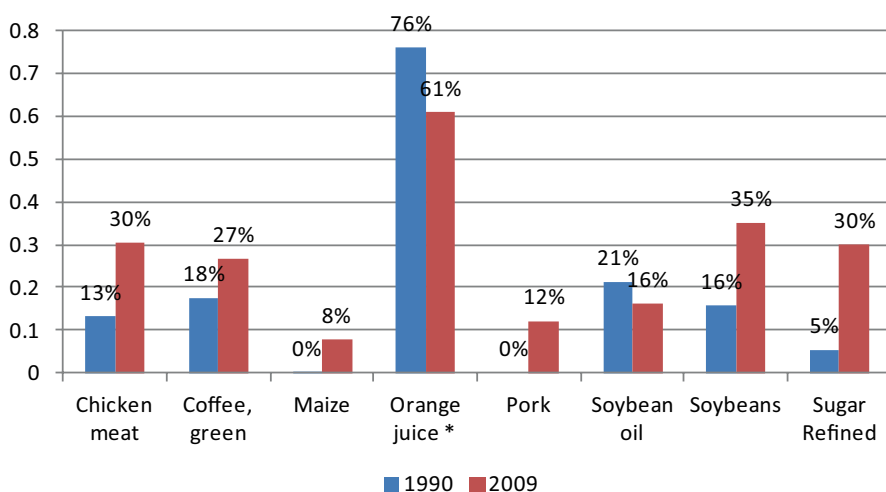
<sup>2</sup> This performance is the result of the re-negotiation of farmers' debts, elimination of taxes on exports of non-manufactured products (Kandir Act), the 1999 devaluation of the Brazilian currency, high international prices of the commodities, and the emergence of animal health problems, such as mad cow disease.

(Russia, China, Middle Eastern countries, Chile, and Indonesia). The considerable increase of Brazilian share in world trade of several products, from soybeans to beef, pork and poultry, timber, sugar, bio-ethanol, paper and cellulose pulp, to quote the most important, can be taken as direct evidence of the revealed competitiveness of Brazilian producers (Silveira et al. 2005) (Fig. 2.4).

In recent decades, in the wake of institutional reforms, Brazilian agriculture and agribusiness have undergone broad economic restructuring, which is at the base of productivity gains and their competitiveness. As far as agriculture is concerned, at least four main interrelated dimensions should be mentioned: (i) innovation and technological changes; (ii) land use shifts; (iii) diversification of production; and (iv) the role of public policy.

The annual Brazilian production of grains<sup>3</sup> increased from 54 million t in 1990 to more than 140 million t in 2010. The new cycle of growth of agricultural production began in 1999 and gained strength recently, responding specifically to stimuli resulting from increased demand for grain in the world market, led by China. It is worth mentioning the performance of some agricultural products, which showed significant growth between 1980 and 2007: soybeans (284 %), sugar cane (254 %), maize (153 %) and oranges (67 %) (PAM/IBGE 2010) (Table 2.3).

This dynamism is related to trade liberalisation as well as to the shift in domestic agricultural policies, particularly the removal of ad hoc interventions on food price levels and on food supply flows. These included the elimination of export taxes for *in natura* products, and quotas and other imposed ad hoc restrictions due to domestic market conditions. In addition, the adoption of restrictive rules binding State



**Fig. 2.4** Brazilian share in world trade by select products: 1990–2009 (Note: \* concentrated). (Source: Prepared by the authors based on FAOSTAT 2011)

<sup>3</sup> Includes production of rice, oats, rye, barley, peas, broad beans, beans, sunflower, maize, soybeans, sorghum, wheat, and triticale.

**Table 2.3** Evolution of production index of the quantity produced, productivity and harvested area by selected crops in Brazil: 1990–2010. (Source: Prepared by authors based on PAM/IBGE 2010)

Crops	Quantity produced				Harvest area (hectare)				Productivity			
	1990	2000	2010		1990	2000	2010		1990	2000	2010	
Pineapple	100	182	200		100	182	176		100	100	113	
Cotton (in seed)	100	113	165		100	58	60		100	195	277	
Rice (paddy)	100	150	151		100	93	69		100	162	219	
Sugar cane	100	124	273		100	112	212		100	110	129	
Bean (grain)	100	137	141		100	93	73		100	148	193	
Manioc	100	95	101		100	88	92		100	107	109	
Watermelon	100	156	1409		100	118	140		100	131	1009	
Melon	100	294	806		100	145	241		100	202	335	
Maize (grain)	100	151	259		100	104	111		100	145	233	
Soybean (grain)	100	165	346		100	119	203		100	139	170	
Tomato	100	133	182		100	93	112		100	143	163	
Wheat (grain)	100	56	199		100	42	81		100	131	245	



interventions in agricultural markets has reduced negative market interventions and the so-called institutional risk.

Though the positive performance of Brazilian agriculture has indeed played the relevant role of securing sustainable food supply at stable and even decreasing real prices, the improvement in the food security situation is the result of a combination of several factors, among which we highlight the following: (i) price stabilisation and low rates of inflation; (ii) minimum wage real valorisation policy; and (iii) implementation and scale-up of universal pension benefits established by the 1988 Constitution. Nevertheless, these ‘favourable’ roles and performance cannot mask the structural changes in Brazilian agribusiness that made it possible to profit dynamically from the opportunities that arose.

### 2.2.1 *Agriculture, Price Stabilisation, Income Redistribution and Food Security*

Agriculture’s positive performance is not confined to production expansion, growth of exports and trade balance surplus, but has contributed to monetary stabilisation, to improved food security, and the redistribution of income.

Brazilian food prices have shown remarkable stability since the Real Plan, and many have decreased in real terms (Fig. 2.5). In fact, the behaviour of agricultural prices—the green anchor—has been one of the successes of the Real Plan in bringing down inflation. The positive effects of food prices stability (Real Plan) and of the decrease in basic foodstuff real prices on food consumption, particularly for low-income groups, cannot be neglected. In fact, there is enough evidence to sustain the view that low-income groups have increased their consumption of poultry meat, dairy products, pasta and other industrialised food items, such as soups, canned



**Fig. 2.5** Evolution of the price index of commodities (grains, oleaginous and fruits): 1994–2009 (July 1994 = 100). (Source: Prepared by authors based on IPEADATA 2011)

tomatoes and soft drinks. Data showing the rise in poultry meat consumption have been used for official propaganda to symbolise the positive social effects of the Real Plan.

While the behaviour of agricultural prices frustrated producers and added to the negative heritage of the inflationary period, it has certainly mitigated food security and the nutritional problems of the poor population. In fact, price stabilisation has played a significant positive role in improving the condition of the poor population.

In previous stabilisation experiences, as inflation rates fell abruptly, food demand and food prices increased. The food price increases contributed to jeopardising the heterodoxy stabilisation attempts. Short-term rigidity of agricultural supply in the context of a closed economy explains the behaviour of food prices before 1994.

After the Real Plan, this context changed and agricultural prices have indeed played a positive role in the stabilisation process. Food price trends were the result of various factors. On the one hand, trade liberalisation and import tariff cuts set an upper limit on agricultural prices and flattened seasonal fluctuations caused either by seasonal shortages or by market speculation. On the other hand, as agricultural products are mostly tradable, prices fell because of foreign exchange valorisation following the Real.

Beyond its positive macro effects, decrease in real food prices has certainly played a significant role in improving the food security status of the poor population. Food consumption increased and poverty decreased after the Real Plan. As the food needs of higher income groups are mostly satisfied, it can be assumed that lower-income groups were the main beneficiaries of cheaper food prices.

As Barros (2008) puts it, “in the 1990s, minimum wage increases took place at a time of decreasing real food prices, thus leading to higher real wages; poor families were able to spend more, not only on food but on other consumer goods as well. The redistribution of income through several sequential government programs, which culminated with the so-called *Bolsa Família*, which transferred cash to more than 11 million poor families” (p. 9).

In 2004, the *Instituto Brasileiro de Geografia e Estatística*—Brazilian Institute of Geography and Statistics (IBGE)—held the first national survey on food security; the same survey was replicated in 2009 (Table 2.4). The comparison between 2004 and 2009 allows an accurate view of the recent evolution as well as the current food security status in Brazil.

In 2004, 35% of Brazilian households were living in some degree of food insecurity and in 2009, this percentage fell to 30.2%, representing 65.6 million people. In 2009 there were nearly 40.1 million people in a low food insecurity situation; 14.3 million people in a moderate food insecurity situation and over 11 million people suffering from severe food insecurity. Interestingly, the percentage of households in situations of low food insecurity remained stable between 2004 and 2009 (18% of the total), while moderate and severe food insecurity status declined from 10 and 7% to 6.5 and 5%, respectively (Table 2.5).

This reduction in the percentage of households with moderate and severe food insecurity cannot be attributed solely, or primarily, to the expansion of food production and the stability and/or reduction in real prices of food; nor can it be attributed

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