Economist Intelligence Unit

The Economist

The global power of Brazilian agribusiness

A report from the Economist Intelligence Unit

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Preface

The global power of Brazilian agribusiness is an Economist Intelligence Unit research report, sponsored by Accenture. The Economist Intelligence Unit conducted the research and analysis and wrote the report. The author was Kieran Gartlan and the editor was Katherine Dorr Abreu.

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Executive summary

Brazil is world's fifth-largest country by geographical area and the largest in terms of arable land. Although only a fraction of its land is exploited, the country produces a highly diverse array of agricultural goods. This puts Brazil in a unique position to lead the global agricultural sector in the medium to long term. With an abundant supply of natural resources—water, land and a favourable climate—it has the opportunity to be the largest agribusiness superpower, supplying the world market while also providing affordable food for its own population.

The country already ranks as the top global supplier of products as diverse as beef, orange juice and ethanol, and is expected to continue to expand its exports in other areas as well, such as cotton, soybean oil and cellulose. Its markets are also diverse: China is now the largest market for Brazilian agribusiness products, and sales to Eastern Europe, the Middle East and Africa are also growing rapidly.

To maintain this trajectory, Brazil must build on the significant improvements in productivity that underpin its current success and overcome the barriers to full realisation of its potential. Obstacles range from scarcity of credit to logistical logjams, from protectionist measures in key markets to environmental concerns.

Frontier regions are a testament to what is right, and wrong, with Brazil's agribusiness sector. The rich harvests from the country's vast hinterland have more than paid back public and private investment in research to create new plant varieties adapted to the region's soil and climate. Large-scale production and professional management have helped to offset the high costs and tight margins of farming such areas. Attracted by the promise of growth, investors have both financed agriculture's expansion and provided technological know-how. Yet agricultural endeavours in these regions are burdened by inadequate transport and insufficient storage capacity. Productivity in such segments as beef production and corn remains low. Margins remain tight.

The industry's strong performance today is based on changes in business models, farming practices and technology over the past 30 years. For Brazil to fulfil its potential as a global agribusiness powerhouse in the coming decades, companies must continue to innovate, transforming how and where they do business.

Leading companies have successfully tested different paths to expanding Brazil's agribusiness beyond the country's borders. To overcome protectionist barriers in the US and Europe, they have diversified their offerings, improved sanitary controls and acquired foreign competitors. They have increased the value of products sold in developed markets, but also have penetrated emerging markets worldwide.

Further investments and transformations are needed so that the agribusiness sector can thrive in the coming decades. These include:

- Infrastructure—transport, port and storage—must be upgraded to meet current and future needs.
- Land must be used more productively through innovative farming techniques. Growth will come through better use of existing crop and pasture land, not just the opening of new areas.
- Research must continue to ensure development of crop varieties adapted to Brazil's climate and soil conditions.

The lay of the land

Much is made of Brazil's vast supply of available frontier land—71m hectares, according to the Ministry of Agriculture. But it may be greater efficiencies and new farming techniques that allow the country to meet the needs of its own population, while supplying growing global food demand over coming decades. The challenge for Brazilian farmers is to live up to the country's promise of becoming the world's food basket. By all accounts, they have the capacity to do so.

The country has a number of competitive advantages. These include:

- a favourable climate that allows for two or more harvests per year;
- large extensions of cheap arable land with potential to double crop area;
- abundant supplies of water—nearly three times the fresh water supply of the US;
- technology-savvy producers and agro-industries; and
- varied soils and climates that encourage product diversity.

Brazil is already the world's biggest beef exporter. It is also the leading international supplier of sugar, coffee, orange juice, ethanol, tobacco and chicken. It ranks second in soybean exports and fourth in pork and cotton.

Brazil's global market share projections
(%)

Product	2009/10	2014/15	2019/20
Sugar*	47	47	50
Green Coffee*	27	27	27
Soybeans	30	33	36
Soybean meal	22	21	20
Soybean oil	21	16	18
Corn	10	11	13
Beef	25	31	30
Pork	12	14	14
Poultry	41	48	48

* There are no projections, so market share is maintained constant.
Sources: US Department of Agriculture 2010; Food and Agriculture Policy Research Institute, 2009; and AGE/ Ministério da Agricultura, Pesca e Abastecimento 2010

Despite this strength, Brazil can do more. Only 50m hectares are used for crop production, of more than 400m hectares of total potential arable land, according to the United Nation's Food and Agriculture Organisation (FAO). The country still has one of the lowest planted acres to total area ratios of all major

producers, at just 7% in crops compared with around 18% in the US, according to Marcus Vinicius Pratini de Moraes, former minister for agriculture and a board member of JBS, the world's largest beef producer.

It would seem logical that Brazil should tap into this vast resource of available land to increase agricultural production over coming decades and satisfy growing world food demand. Yet that may not occur. Farmers who have ventured into frontier regions find it extremely difficult to open up new areas because of current environmental pressures, high costs and poor logistics. As a result, the country's Agribusiness Association (ABAG) forecasts that planted area will expand by just 15m hectares over the next ten years. Most of this will come from degraded pasture land as opposed to clearing new areas.

With the world population expected to grow from 7bn to 9bn by 2050, the FAO estimates that meat production will need to double and grain output should increase by 50% in order to meet changing diets and higher food demand. This is both a challenge and an opportunity for Brazil's agribusiness industry.

Even with a modest expansion of cultivated land, ABAG forecasts steady growth in agricultural production over the next decade. By 2020, grain output will increase by 37%, to 180m tonnes, and meat production will grow by 38%, to 30.5m tonnes. The biggest growth will occur in the sugarcane sector: ABAG estimates that ethanol production will expand by 127%, to 63bn litres, and sugar output will grow by 48%, to 46.7m tonnes.

Forecasts of selected exports by Brazil's agribusiness sector

Product	Units	2009/10	2019/20	Variation (%)	Compound annual growth rate (%)
Corn	mmt	7.6	12.6	65.2	5.2
Soybeans	mmt	28.5	37.9	32.7	2.9
Soybean meal	mmt	12.4	13.6	9.8	0.9
Soybean oil	mmt	2.1	2.3	7.5	4.4
Cotton	mmt	0.5	0.8	76.6	5.9
Orange Juice	mmt	2.1	2.7	27.4	3.5
Poultry	mmt carcass weight equivalent	4.0	6.1	52.3	4.3
Beef	mmt carcass weight equivalent	2.1	3.1	46.4	3.9
Pork	mmt carcass weight equivalent	0.6	0.8	31.7	2.9
Milk	m liters	1.1	1.9	76.4	5.8
Sugar	mmt	22.2	31.2	40.3	3.4
Ethanol	bn liters	5.4	13.7	155.1	9.8
Cellulose	mmt	7.4	11.1	49.9	4.1
Paper	mmt	2.2	2.8	31.2	2.8

Source: AGE/Ministério da Agricultura, Pesca e Abastecimento. 2010

This surge will reflect better farming techniques and more professional management, according to André M. Nassar, an agricultural economist and director-general of the Institute for International Trade Negotiations (ICONE), a São Paulo-based think tank. Economies of scale and new farm techniques will help to boost yields and profits in coming years.

Brazil's farm belt is undergoing consolidation, as large, well-run corporate farm groups take advantage of economies of scale to offset tight margins and the high cost of doing business in frontier regions. The 20 largest producers in Mato Grosso state planted 1.2m hectares last season, up by 130% from 500,000

SLC Agrícola: reaping the benefits of corporate farming

SLC Agrícola demonstrates how professional management and good use of technology and capital markets can lead to rapid growth. The company made history in 2007, when it became the world's first grain and cotton producer to list shares on a stock exchange, raising more than R309m (US$181m) to help with its ambitious expansion plans. Since then, it has more than doubled planted area to 220,000 hectares, and plans to reach 450,000 hectares by 2015. Its net operating revenue grew from R269m (US$138.7m) in 2007 to R597m (US$303.4m) in 2009.

SLC was founded in 1945 by three German immigrant families. It produced agricultural machinery and later became a pioneer in automated grain harvesters in Brazil. The transition into farming only occurred in 1977, as soybean fever hit South America.

The company continued to produce machinery, however. Its 20-year partnership with John Deere, starting in 1979, inspired SLC to create a professional management team.

In sharp contrast to the family-run, small-scale model common at the time, SLC implemented a model of "corporate farming" from a very early stage. "Our business model is based on high technology, research and state-of-the-art machinery," explains Arlindo Moura, the company's CEO.

Part of the company's strategy is to diversify production into different crops and regions in order to lower the production risk from drought and disease. SLC plants soybeans, corn and cotton in six states—Maranhão, Bahia, Mato Grosso, Goiás, Mato Grosso do Sul and Piauí.

Over the last five years, SLC's average cotton yields have been 70% greater than those in the US—the world's main cotton exporter—and 22% higher than average cotton yields in Brazil. Its soybean yields during the same period were 21% higher than those in the US and 29% higher than the Brazilian average.[1] The company has also boosted overall production in recent years by leasing land bordering its existing farms and increasing the use of double cropping (producing two different crops on the same area during the same growing season, normally soybeans followed by corn or cotton). This reduces production unit costs and increases cash flow throughout the year.

Part of this impressive performance is a result of the company's dedication to research. In the 2009-10 season, it had 190 experimental projects on 1,300 hectares of land, with a team of four agronomists, nine research technicians, and nine assistant technicians conducting proprietary research. It also participates in joint research projects with Embrapa, the government's agricultural research institute, and state research foundations.

"We like to try out different plant varieties, different fertiliser applications, and different line spacings. Once we achieve satisfactory results, we immediately implement the change on a commercial scale," explains Mr Moura. This openness to innovation, combined with professional management, provides a model other companies can follow.

1. SLC reports that genetically modified (GM) seeds are used almost universally in the US, resulting in higher yields than in Brazil, where the practice is growing but not yet ubiquitous. Drought in the south and Asian rust in the centre-west region (2004-07) have further undermined soybean yields in Brazil over the past five years.

hectares five years ago, according to the Mato Grosso Agricultural Economic Research body (IMEA). As a result, mega farms now represent 20% of the state's crop area, compared with just 9% five years ago.

Meanwhile, new farming giants such as El Tejar, which will plant more than 1m hectares in South America next season,[2] have brought know-how and technology from neighbouring Argentina as well as access to international credit lines. Traditional family-run Brazilian farm groups such as Cosan and SLC Agrícola have brought in professional management and are now listed on the local stockmarket in order to help finance the huge cost of expanding in frontier regions. And smaller farmers are trading tractor seats for swivel chairs, allowing them more time to manage risk and make better marketing decisions. Many are turning their farms into corporate entities, which gives them access to cheaper credit.

Agriculture plays a critical role in Brazil's economy today. "As it evolves towards new models of organisation, it will set an example for other sectors," says Decio Zylbersztajn, an agricultural economist and professor at the University of São Paulo (FEA-USP).

2. The South American season normally starts in September, but dry weather delayed it in 2010 and planting started in early October.

Taking advantage of opportunities

Brazil's agricultural growth over the past 20 years has been astounding. For example, although planted area increased by only 30%, farmers more than doubled crop production. And growth is likely to continue over coming decades: although traditional segments such as beef, coffee, soybeans and sugar will remain strong, Brazil is expected to take the lead in other areas, including chicken meat, ethanol, cotton, soybean oil and cellulose. "These products have a very high growth potential in the coming years," says Paulo Roberto de Souza, president of Copersucar, one of Brazil's largest sugar and ethanol traders. According to the Ministry of Agriculture, Brazil's share in world chicken meat exports will grow from 41% to 48% in the next ten years. Its share in the sugar market will rise from 47% to 50% in the same period.

What is behind Brazil's increasing agricultural success? Brazil's natural advantages provide the foundation. But long-term government policies to encourage investment in research and education while providing price and credit incentives have also created a favourable environment, according to Geraldo Sant'Ana de Camargo Barros, professor and co-ordinator of CEPEA, a research centre at the University of São Paulo. The efforts of individuals, enterprises and institutions have been crucial as well

- **The conversion of new land**. Over the past 20 years, farmers have successfully converted the country's *cerrado*, or savannah region, into a vast new agricultural frontier responsible for nearly 70% of the country's farm output.
- **The development of innovative crops**. Embrapa and the Fundação Mato Grosso, a private research foundation set up and funded by local farmers, have adapted soybean seeds, a temperate-climate crop originally from China, to the tropics.
- **The efforts of pioneering individual farmers**. Brazil's farmers have also played their part. During the 1970s and 1980s, land-hungry frontiersmen travelled from the overcrowded southern farming regions to convert the rugged frontier into an agricultural Mecca. Small farmers have also been resourceful, joining together to buy in bulk and get better deals for their produce. In Parana state alone, there are now six agricultural co-operatives with more than R1bn (US$580m) in annual revenue.
- **The wave of capital-rich corporate producers**. Large, professionally run international groups have invested in Brazil, bringing technological know-how and financial resources. Local companies, involved in both farming and processing, have grown rapidly as well, expanding beyond Brazil's borders to gain access to new markets. A new wave of corporate investors and mega producers will support further growth.

Brazil's agribusiness companies

The profile of agribusiness companies in Brazil has changed dramatically over the past five to ten years. Previously, the so-called "A,B,C,D" multinational trading companies—Archer Daniel Midlands (ADM), Bunge, Cargill and Louis Dreyfus—dominated the market, riding the wave of rapid expansion in soybean and grain production in frontier regions such as Mato Grosso.

Local companies are catching up, however. There are currently around 20 agribusiness companies in Brazil's so-called billionaires' club—with annual sales of more than US$1bn—and others will soon join either through organic growth or through consolidation. Between 2006 and 2009, for example, Cosan's net operating revenue increased by 153%, Marfrig's rose by 351% and JBS's grew by 698%. The paths to growth followed by these and other forward-looking agribusinesses can provide lessons for ambitious Brazilian companies.

Fill gaps. High risks and the global credit squeeze led multinational trading firms to pull back in Brazilian frontier regions in recent years. Multigrain, a local trading company, took advantage to double its sales revenue in 2009 to US$972.2m, up from US$475.6m in 2008, and is looking for further growth in 2010. Other significant local traders include AMaggi and Caramuru.

Consolidate. The merger of Citrosuco and Citrovita, announced in May 2010 but pending approval by Brazil's anti-trust agency, CADE, will create the world's largest orange juice producer, with US$1.1bn in annual revenue. The company will have orchards in Brazil and the US, and port terminals in North America, Asia and Europe. Another major player, Brasil Foods, also resulted from the merger of two leading Brazilian companies, one-time fierce rivals Sadia and Perdigão. It is now among the largest frozen food producers in the world, with annual sales of nearly US$6bn.

Consolidation has positioned several Brazilian companies to expand into foreign markets, increasing their global profile. Two beef processors, Marfrig, with net operating revenue of R9.6bn (US$4.9bn) in 2009, and JBS, with net operating revenue of R34.3bn (US$17.4bn) in the same year, exemplify this strategy.

Diversify. Companies like Grupo Maggi, headed by "soybean king" and former governor of Mato Grosso, Blairo Maggi, have gone from focusing strictly on production to offering a wide range of services including trading, processing and transport. In the sugar and ethanol segment, companies have innovated by moving up the value chain, adding ethanol and now energy to their list of offerings. Cosan's biofuel joint venture with Shell builds on the sugar and ethanol giant's earlier acquisition of Exxon assets and will encompass the companies' retail sites.

Seek foreign sources of financing. Obtaining credit is a constant concern for Brazil's farm sector. Interest rates are high—the annual base rate is 10.75%—and banks are reluctant to service what they consider a high risk sector. As a result, some corporate farms have sought backing from foreign investment funds and professional management. Adecoagro, funded by a billionaire investor, George Soros, and Agrifirma, backed by British investors including Lord Rothschild, have been actively buying land in frontier regions such as Bahia and Maranhão. An August 2010 law limits foreign ownership of land in Brazil and may inhibit new inflows, although seasoned investors are likely to remain committed to the sector.

The recent inflow of capital has provided a cheaper source of credit for the development of frontier regions, but has also brought important know-how. Argentinian groups such as El Tejar and Los Grobo, for example, introduced silo bags for short-term grain storage, while US investors have helped to develop precision farming using GPS and auto-steer technology.

Use stockmarkets to raise capital. Companies in the sugar, ethanol and beef segments, including Cosan, JBS, Marfrig and Minerva, have carried out initial public offerings (IPOs). SLC was the first grains producer to list on the Bovespa exchange. (See the SLC case study.) Others such as Vanguarda, Maggi, ETH and Caramuru may take advantage of renewed global appetite for Brazilian equities to set off a new wave of public offerings from Brazil's agricultural sector.

Selected IPOs in the Brazilian agribusiness sector

			Value	
Company	Sector	IPO Date	In million reais	In million US dollars*
SLC	Agricultural Producer	Jun-07	490	254
Marfrig	Meatpacker	Jun-07	1021	529
JBS	Meatpacker	Mar-07	1,600	766
São Martinho	Sugar and Ethanol	Feb-07	260	124
Brasilagro	Agricultural Producer	May-06	553	256
Cosan	Sugar and Ethanol	Nov-05	886	401

*At the average exchange rate for the month in which the IPO occurred. Sources: Company reports.

Brazil's leading agribusiness companies

2008-09

				Sales (in millions of dollars)	
Ranking* (by sales)	**Company**	**Activity**	**Control**	**2009**	**2008**
15 (9)	Bunge	Trading	Netherlands	$9,747	$14,157
22 (19)	Cargill	Trading	US	$8,406	$8,691
36 (224)	Brasil Foods	Food Processor	Brazil	$5,992	$1,176
50 (81)	Copersucar	Sugar/Ethanol	Brazil	$4,047	$2,923
61 (67)	JBS	Beef Processor	Brazil	$3,376	$3,355
63 (69)	ADM	Trading	US	$3,295	$3,295
75 (66)	Louis Dreyfus	Trading	France	$2,890	$3,450
81 (89)	Coamo	Coop	Brazil	$2,573	$2,811
91 (78)	Suzano	Paper & Pulp	Brazil	$2,426	$3,033
95 (114)	AMaggi	Producer/Trader	Brazil	$2,359	$2,180
103 (101)	Klabin	Paper & Pulp	Brazil	$2,136	$2,390
131 (135)	Seara	Meat Processor	Brazil	$1,753	$1,916
137 (184)	Marfrig	Beef Processor	Brazil	$1,642	$1,421
152 (185)	Minerva	Beef Processor	Brazil	$1,565	$1,420
164 (155)	Fibria	Paper & Pulp	Brazil	$1,464	$1,680
166 (156)	Imcopa	Exporter/Crusher	Brazil	$1,452	$1,673
197 (196)	Caramuru	Food producer	Brazil	$1,216	$1,329
198 (214)	C. Vale	Coop	Brazil	$1,207	$1,210
249 (509)	Multigrain	Trading	Brazil	$972.2	$475.6
297 (284)	Lar	Coop	Brazil	$822.7	$895.7
302 (280)	Agrenco	Trader	Brazil	$806.5	$901.5
324 (324)	Cocamar	Coop	Brazil	$752.0	$798.0
337 (358)	Algar Agro	Trading	Brazil	$725.5	$710.0
339 (295)	Carol	Coop	Brazil	$723.8	$863.5
351 (348)	Cosan	Sugar/Ethanol	Brazil	$687.6	$743.3
353 (494)	Arosuco	Fruit Juice	Belgium	$684.1	$491.6
363 (270)	Cooperativa Agraria	Coop	Brazil	$662.0	$940.5
381 (870)	Fiagril	Supplier of products and services	Brazil	$616.7	$226.9
394 (552)	Mataboi	Beef Processor	Brazil	$599.4	$432.0
434 (590)	Guarani	Sugar	France	$530.4	$395.1
489	Vanguarda	Producer—multiple crops	Brazil	$456.7	NA
530	Big Frango	Chicken Processor	Brazil	$415.7	NA
565 (790)	Bom Gosto	Dairy Producer	Brazil	$383.0	$259.8
630	Bela Vista	Dairy Producer	Brazil	$332.5	NA
715	Abengoa	Sugar/Ethanol	Spain	$283.3	NA
728 (932)	Barra Grande	Sugar/Ethanol	Brazil	$279.0	$211.0
736 (683)	Cacique	Coffee Producer	Brazil	$276.0	$320.9
774	Citrosuco	Orange Juice	Brazil	$255.8	NA
863	SLC	Producer—multiple crops	Brazil	$223.7	NA
946 (881)	Café Tres Corações	Coffee Producer	Israel	$193.4	$223.3

* Ranking among largest Brazilian firms; 2008 rank in parentheses. Source: Exame, Brazil's 1,000 biggest companies

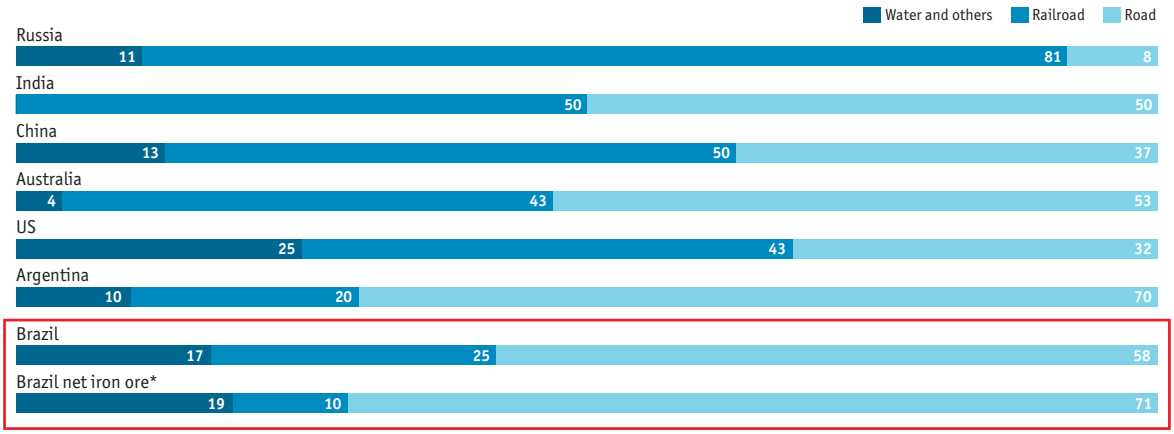
Meeting the challenges

Brazil's many natural advantages notwithstanding, deficiencies in infrastructure, including poor transportation and storage facilities, and high port costs, have offset some of the benefits for agribusiness in recent years. Other challenges include the need to import fertilisers, environmental pressures and labour issues, as well as the double-edged sword of a strong local currency. Although many companies have found workarounds that enable them to flourish, only a systematic effort to overcome these barriers will enable the agribusiness sector to fulfil its potential.

Insufficient infrastructure adds to costs

Transport infrastructure is a major constraint for Brazilian agriculture. Only 10% of the country's road network is paved, yet more than 60% of agricultural production is transported by truck, often across thousands of kilometres. Brazil's rail system, meanwhile, is one-seventh the size of that of the US and consists of several short-line railroads that do not interconnect because of different gauge sizes. Thousands of grade crossings limit train speeds.

Road transportation dominates in Brazil



* Iron ore accounts for a large portion of rail freight in Brazil, and much is transported by railways owned and operated by Vale.
Sources: Brazilian Ministry of Tranpsortation; CIA Factbook

Brazil's river network is about 20% longer than that of the US. But it is vastly underutilised as a result of environmental pressures and lack of investment in ports and dredging. As a result of a lack of foresight, most hydroelectric plants were built without locks, preventing the passage of barges.

The country's port system, in turn, is expensive and inefficient. Lines at the major grain ports can stretch up to 50 km long (about 31 miles) during the peak harvest period and trucks can wait up to 20 days to unload. This mainly reflects the use of outdated equipment and labour-intensive processes. Trade unions are also strong at the ports, and strikes, while less common than in the past, remain a concern.

In addition, the country suffers from a 43 m tonnes deficit in grain storage,[3] according to the Ministry of Agriculture. Poor distribution aggravates the problem: only 11% of capacity is on farms, compared with 40% in Argentina and 80% in Canada. Furthermore, infrastructure build-out has not kept pace with agriculture's very rapid expansion, and storage is still concentrated in southern Brazil rather than in frontier regions, which account for 70% of the country's production.

According to analysts, Brazilian farmers lose an average US$1 per bushel of soybeans because they lack on-farm storage and must sell at harvest time, when prices are at their lowest level. This loss can be much greater depending on market conditions: in 2010 prices were around US$8 per bushel in Mato Grosso at harvest time (April), while in late September they had reached US$11 per bushel.

Environmental pressure

Agribusiness's challenges are not limited to infrastructure. Imported fertiliser accounts for more than 70% of Brazil's supply and is essential to improve soil fertility, particularly in frontier regions. The logistics of transporting it long distances, by ship and truck, increase its cost and put pressure on the country's already overburdened transport system.

Pressure to preserve the environment has grown considerably in recent years, thus slowing or halting infrastructure projects and land development, especially in frontier regions. Strict environmental rules, including requirements that farms set aside large areas as reserves (ranging from 20% to 80% of total area, depending on the region), are now being enforced, placing further restrictions on farmers.

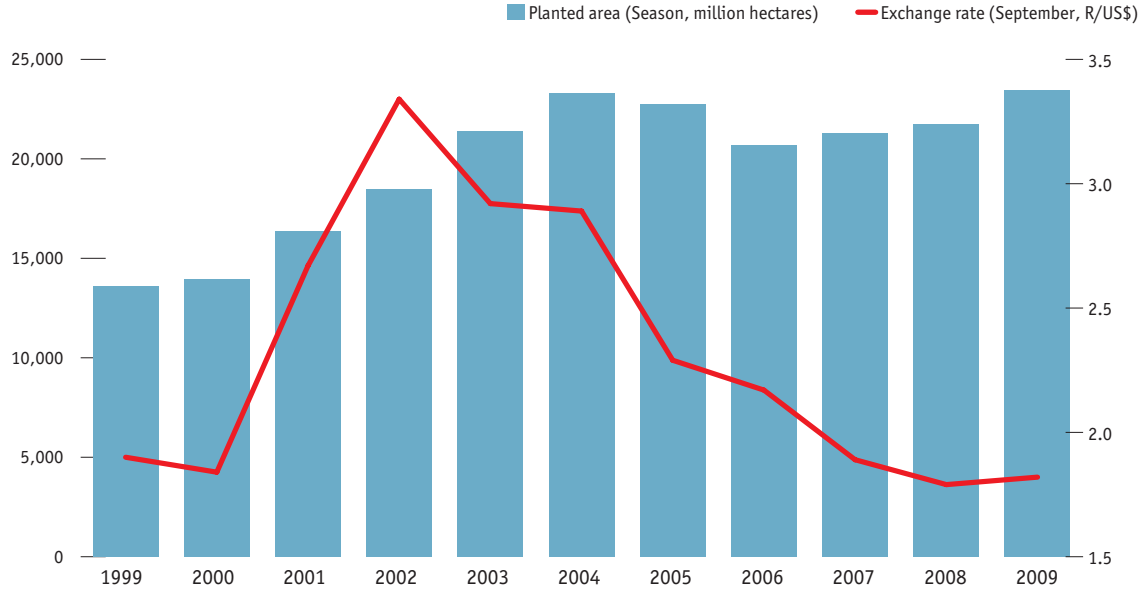
Objections from environmentalists have also slowed the arrival of new technology. Genetically modified (GM) crops, which improve yields and can help to reduce costs, were approved for commercial use only in 2003. Brazil now accounts for 16% of global GM crop production, and has 21.4m hectares under cultivation. While there are still objections to GM products in Europe, this is not an issue in other major markets such as China.

Labour and currency concerns

Competitors often cite cheap labour as an advantage in Brazil, but the reality is that high taxes and strict and often confusing labour laws make hiring in Brazil less attractive than it initially appears. This is aggravated by a shortage of skilled labour, especially in frontier regions, which can be a significant problem when employees are expected to manage machinery and equipment that cost hundreds of thousands of dollars.

3. The Ministry of Agriculture considers ideal storage capacity as 20% more than total production. Thus with production of 149m tonnes and total storage of 136m tonnes, the deficit is 43m tonnes.

Soybean acreage grows as currency weakens



Sources: CONAB; Brazilian Central Bank.

A major obstacle to agricultural expansion in recent years has been the rise in the local currency, the Real. Although a stronger Real results in cheaper inputs such as imported fertiliser, chemicals and machinery, it makes Brazilian farmers less competitive on the international market and cuts into already tight profit margins. Soybeans provide a clear example of the impact of currency variations on competitiveness. When the Real was devalued at the end of the 1990s, making Brazilian products more competitive on the global market, the area planted to soybeans expanded rapidly, peaking in 2004. When the Real started to strengthen in 2003, the expansion of soybean acreage halted. (There is a lag between the decision to plant, which is influenced, among other things, by currency expectations, and the actual planting. Since 2007, acreage has increased again despite the strong Real as a result of factors such as vibrant demand from China and low corn prices.)

Company workarounds lead to change

Many companies have successfully circumvented these obstacles or turned them into advantages. Farmers and researchers have collaborated in addressing such problems as Asian rust disease, which in 2004 destroyed 8% of the country's soybean crop. Both the Fundação Mato Grosso and Embrapa have worked with farmers in researching and combating the disease. Also in Mato Grosso, farmers have built roads linking farms to federal and state highways. In Bahia, farmers are using plastic silo bags to solve storage problems—know-how imported by two Argentinian firms, El Tejar and Los Grobo.

Even macroeconomic challenges, such as the strengthening local currency, have been used to advantage by some companies. JBS and Marfrig have purchased overseas competitors to gain access to restricted markets. Poultry and pork producers could well follow their example and start diversifying their operations overseas.

JBS leverages strong Real to grow internationally

JBS, the meatpacker, is one of Brazil's big success stories. Through an aggressive campaign of acquisitions, the Brazilian company has become the world's largest beef processor and among the largest poultry and pork processors.

The company, originally called Friboi, began modestly in 1953 with slaughterhouse capacity of just 5 heads per day. It only began to expand about 30 years later through acquisitions and investments to increase production. By 2002, its slaughter capacity was around 5,800 animals per day.

The company changed its name to JBS, the founder's initials, when it began to expand internationally in 2005. Its first move was to acquire Swift Armour, Argentina's largest beef producer and exporter. More acquisitions followed, and slaughter capacity had quadrupled by 2006.

In 2007 the company made history as the first beef company in the world to launch an initial public offering (IPO), issuing shares on the Bovespa stock exchange. Also in 2007, it entered the US market by acquiring Swift Foods Company and then purchased 50% of Inalca, one of Europe's largest beef-producing companies. Today it operates in all of the world's major meat-producing markets.

It took more than an IPO to finance the company's appetite for overseas competitors, however. In 2009 the Banco Nacional de Desenvolvimento Econômico e Social (BNDES, the state development bank) provided JBS with a heavily subsidised short-term loan for the acquisition of Pilgrim's Pride, the largest chicken producer in the US.

Expansion has not been without challenges. Cattle supply in Argentina has dwindled following a severe drought last year and government measures that limited beef exports and capped local prices. JBS recently announced that it has suspended production at several of its beef processing plants and may sell out because of a lack of animals. In the US, the company faces allegations of religious discrimination at a plant in Colorado. Its partnership in Inalca is reportedly under stress. In addition, JBS may face a fine if it is unable to meet the deadline for repayment of the BNDES loan as a result of weak financial market conditions, which have delayed the launch of Pilgrim's Pride on the New York Stock Exchange.

Such challenges are typical of a rapidly growing company. To support its aggressive strategy, JBS has relied on its extensive knowledge of the beef sector. But perhaps what sets the company apart is its use of Brazil's strengthening currency as an opportunity to expand abroad, buying competitors and gaining access to every major market, notes Marcus Vinicius Pratini de Moraes, a JBS board member.

The agricultural market is becoming more globalised, but trade barriers still block access to markets in the US and Europe. JBS's strategy was perfect for overcoming those obstacles and gaining access to the final consumer. Going forward, the company plans to add value to its products, developing ready-to-eat, cured and other products. These are strategies that can help other Brazilian companies to gain prominence in the global market.

The agriculture sector may also look to the sugarcane industry for inspiration in how to overcome challenges and increase efficiency. The sector has been a leader in innovation in recent years, first diversifying production into sugar and ethanol and then building cogeneration power plants that use waste cane bagasse (the fibrous residue left after the juice is extracted from the cane) to produce energy.

Faced with sluggish demand for ethanol, the sector helped to develop flex-fuel technology. This has led to an increase in ethanol consumption in Brazil, surpassing that of gasoline (petrol). In anticipation of a deadline imposed by law, the sector has already agreed to phase out manual sugarcane harvesting, which involves a burning process and was targeted by environmentalists. Now the sector is contributing to the country's energy supply through cogeneration. Not only is it self-sufficient in energy, it supplies surplus electricity to the local grid. By 2030, it could account for nearly 20% of Brazil's total energy supply, according to ABAG.

While other companies can learn from such examples, these are not long-term solutions. For Brazil's agribusiness sector to thrive, it must address the barriers to its growth.

Powering continued growth

Brazil's agribusiness sector has the potential to gain an even larger share of the global market in coming decades, helping to meet the expected growth in domestic and world food demand. But despite the limited natural resources available in other major producing countries, Brazil will be restricted to filling shortfalls in international supply over coming years if it does not overcome the high cost of producing in frontier regions and the financial constraints facing its producers (including credit scarcity and a strong currency). Unless it successfully addresses these issues, Brazil is unlikely to displace existing supplies.

Innovation is essential for Brazil's agribusiness sector to maintain its dynamic growth and increase its share of the global market. Just as investments in research, education and agricultural credit begun in the 1980s are bearing fruit today, measures adopted now will lay the groundwork for further transformation and growth. As the past three decades have shown, all stakeholders must play a part. They need to:

- **Step up double cropping and livestock-crop integration**. There is significant potential for growth through conversion of pasture to crop land and from improving productivity through better farm management. "We will see an improvement in agricultural production systems," says Mr Nassar. "This will include more double cropping, no-till farming and more livestock-crop integration providing year-round cash flow." Farms as a whole will become more efficient and profitable, allowing farmers to invest in better technology and higher input usage.

  Beef production is also ripe for change. The current system for producing beef in Brazil is cheap but inefficient. Stocking rates are only one animal per hectare, compared with four animals per hectare in other countries, because farmers invest little in fertiliser or reseeding. Mr Pratini de Moraes foresees more intensive use of pastures as well as an increase in the number of feedlots in the next five years. Currently, just 5% of cattle slaughtered in Brazil come from feedlots, compared with 80% in the US.

- **Transform company structures**. Brazilian agribusiness operations should continue to evolve. Consolidation can provide the scale necessary for global competition. Becoming a multinational or transnational company can help to circumvent trade barriers. Whatever strategy is chosen, however, growth requires ongoing transformation of company management and operations.

- **Expand research into new crop varieties**. Increasing yields on individual crops takes time and money, but can revolutionise the industry. For example, average corn yields in Brazil are only around 60 bushels per acre, or one-third of the average in the US and around one-half of the level in Argentina. More research is needed to develop varieties of corn and other plants that are better suited to the tropics.
- **Re-evaluate agricultural mix in frontier regions to maximise potential**. Brazilian producers are already moving up the value chain in agribusiness, but more can be done. Converting some of the plant protein to higher-value animal protein will increase efficiency in frontier regions and also reduce the impact of high transport costs. For example, the cost of transporting corn to port from Mato Grosso was US$200/tonne at harvest time in 2010, while the crop was worth just US$170/tonne. Using this corn to fatten more cattle in Mato Grosso and then shipping the beef would reduce the relative cost of transport, since beef has a much higher value.

  The government can also stimulate the processing industry, perhaps by following the example of Argentina, where strong fiscal incentives encourage the crushing of soybeans and production of biodiesel. This would not only create jobs in remote farming regions, it would also reduce transport costs and add to Brazil's bioenergy production.
- **Increase investment in waterways and railways**. Brazil obviously needs more investment in transport infrastructure, especially waterways and railways. The government's Programa de Aceleração do Crescimento (PAC), an economic programme that aims to accelerate economic growth through increased investment, has helped to initiate projects, but overall progress is still very slow, mainly because of strict environmental rules that add to project cost and development time. Although new rail projects have been implemented in recent years, farmers complain that they have not reduced costs. Freight prices on the ALL (América Latina Logística) railway line running from Alto Araguaia in Mato Grosso to Santos port, for example, are equivalent to truck transport. Alternative transport modes, such as by water, are needed in order to stimulate competition and push down costs.

Such measures will create the necessary conditions for Brazil's agribusiness sector to thrive in the coming decades. They will strengthen companies' bottom lines, enable them to take advantage of new opportunities in existing and emerging markets, and position Brazil at the forefront of innovation in agribusiness.

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