



## Between economic growth and sustainability: Which model for Brazil's agricultural development?

Brazil is now an emerging powerhouse and ranks among the global top ten economies. Agriculture has contributed greatly to this expansion, thanks to the country's size, the importance of its natural resources, and sweeping reforms that fueled development. Yet, beyond the economic achievements and international advancement—confirmed not least of all by its export capabilities—Brazil is facing serious challenges. Its development model obscures tensions and deep-seated geographic and social disparities inherited from its past. Confronted with economic, social and environmental limitations that could impede economic growth, Brazil will have to make choices to reconcile food and energy security, environmental preservation, and confirm its status as strategic player in the international arena<sup>1</sup>.

**T**he world's fifth largest country in terms of land size and South America's largest nation in terms of land and population size, Brazil is currently a key player in the international arena and a major power among emerging nations. As the world's sixth largest economy, Brazil ranks third among the world's major agricultural exporters and fourth for food products. With 25% of global investment, the country is the principal recipient and source of foreign direct investment in Latin America<sup>2</sup> and the fifth recipient nation in the world<sup>3</sup>. Thanks to its agricultural and oil resources, Brazil also ranks second worldwide for bioethanol production. Blessed with the world's largest reserves of farmable and not cultivated land, Brazil has carved out its regional and international rank thanks to strong exporting agricultural operations, radical economic reforms and an aggressive

trade and influence policy. Nevertheless, Brazil is currently facing challenges that could test its economic vitality—persistent income inequalities, social tensions, environmental limitations, weak infrastructures and debt, among others.

This paper first brings to light the vitality of agriculture as one of the drivers of the Brazilian economic growth. It then provides an analysis of the key challenges facing agriculture, and the potential consequences of political decisions that could be made.

### 1 - Agriculture, a strategic sector for Brazil's economic growth

Although manufacturing and services are showing a steep growth, agriculture is still a driving force of the Brazilian economy with 5.8% of

GDP (against 2% in France)<sup>4</sup>. The agribusiness<sup>5</sup> share rises to 23%. In 2009, agriculture accounted for 19.3% of the workforce<sup>6</sup>—over 19 million people—thus strongly contributing to poverty reduction<sup>7</sup>. Agribusiness employment accounted for 2.7% of the workforce. Enjoying a vigorous growth of agricultural GDP, Brazil is today the

1. The author thanks the Regional economic service of Brasilia and Jean-Guillaume Bretienoux for the review of this note

2. UNCTAD, *World Investment Report 2011: Non-equity modes of international production and development*, July 2011.

3. UNCTAD database.

4. OECD (a), *OECD Economic Surveys: Brazil 2011*, OECD publishing, October 2011.

5. Inputs, processing, retailing.

6. OECD (b), *Agricultural Policy Monitoring and Evaluation 2011: OECD Countries and Emerging Economies*, OECD editions, 2011.

7. More than half of the poverty reduction in Brazil is attributable to growth in farm incomes over the last 25 years. Read Cervantes-Godoy D., Dewbre J., *Importance économique de l'agriculture dans la lutte contre la pauvreté*, OECD editions, 2010.

world's largest producer and exporter of a wide range of products: soybean, coffee, cane sugar, orange juice, meat and tobacco. In spite of weak governmental support to producers<sup>8</sup> compared with OECD countries, and a domestic consumption that captures 79% of agricultural production<sup>9</sup>, agribusiness accounts for over 38% of Brazil's exports, and a \$77.5 billion trade surplus in 2011<sup>10</sup>, while the country was still a net importer of agricultural goods in the 1970s. In fact, agriculture has been a strong factor in the country's macroeconomic stability through currency flows on one hand, and on the other, its contribution to energy security with bioethanol development<sup>11</sup>.

Agriculture also benefited from macroeconomic and structural reforms initiated since the 1990s, and aiming for more economic stability, inflation reduction and trade expansion. These reforms paved the way for competitive farming, through reduced production costs (inputs) and governmental interventions to control prices for key commodities (coffee, sugar and wheat). A significant expansion of lending

and the simplification of the tax system, combined with a social policy for the underprivileged sections of the population under the Lula presidency (2003-2010), strongly benefited companies, spurred investment and boosted domestic consumption. Still impacted by the financial crises, agricultural growth has accelerated starting in 2003, partly thanks to a productivity model based on high mechanization, improved concentration and significant workforce reserves. With a mind to move away from social conflicts linked to land overcrowding and the colonization of new production areas, investment in agricultural research boosted crop productivity by over 151% in 30 years<sup>12</sup>. In the framework of the ambitious Growth Acceleration Program (PAC) launched in 2007 and followed by a second program phase in 2010, investments in infrastructure<sup>13</sup> should also boost agriculture, which has been long penalized in terms of logistics in the country's inland regions. The specialization and development of single-crop farming, together with the man-made enhancement of soils through pastureland

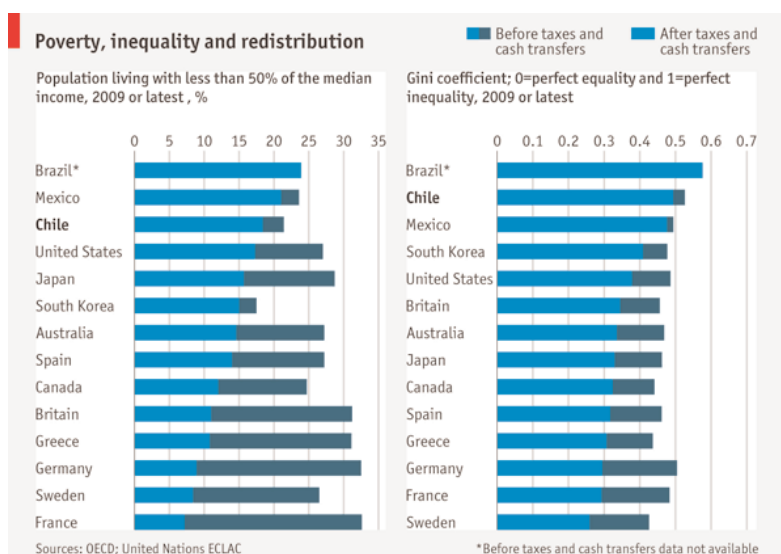
management and irrigation<sup>14</sup>, have bolstered economic growth. Today, five commodities (soybean, sugar, meat, corn and milk) account for 68% of the total national agricultural production value, with soybean and related products making up 38.7% of Brazilian agribusiness exports<sup>15</sup>.

## 2 - Economic growth facing multiple challenges

### 2.1 - Persistence of a dual and unfair agricultural model that breeds social unrest

Brazil inherited an **agrarian configuration that is highly polarized** between family farming and commercial farming on one hand, and on the other, between small- and large-scale farms. The wide-ranging latifundium-type properties (over 2,500 acres) held by a small number of landowners are coexisting with small family-owned farms, which account for 84% of the farming population, 38% of output and only 24% of land<sup>16</sup>. The average family farm covers 45 acres, against

Diagram 1 -



Source: *The Economist*, January 17, 2012 (from OECD and UNECLAC data)

8. According to the OECD calculation methods which, for example, do not take into account the debt relief measures. Read the *CEP* newswatch n° 51, *Les subventions agricoles des pays émergents : incompatibles avec les règles de l'OMC ?* : <http://agriculture.gouv.fr/Veille-no51-janvier-2012-Les>

9. EMBRAPA, 2011.

10. This figure includes non-food agricultural products such as wood products, basic textiles, etc.

11. De Almeida A.O., *Exports, Energy, Food : The multiple functions of Brazilian agriculture*, July 2009.

12. K. Abreu, President of CNA, the main Brazilian agricultural union (July 2011). Production has been multiplied by 2,5 between 1990 and 2000 while the cultivated area increased by "only" 30%. Read in *Le Monde*, « Brésil, la nouvelle ferme du monde », June 2011.

13. Infrastructure spending reached 3,2% of GDP in 2010 according to OECD figures.

14. Tonneau J.P., Sidersky P., Eloy L., Sabourin E., « Dynamiques et enjeux des agricultures familiales au Brésil », *Géconfluences*, 2010.

15. Brazilian Institute of Geography and Statistics (IBGE), January 2012.

16. IBGE (2009) based on the 2006 agricultural census.

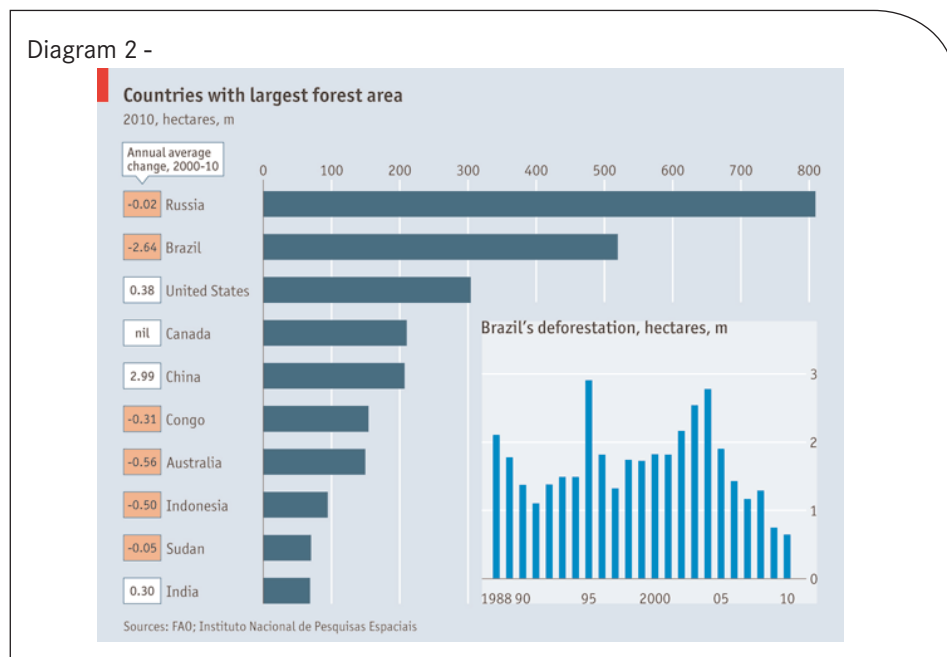
an average of over 740 acres for commercial farming operations. In spite of proactive government policies fostering the two types of farming (support to include technical packages<sup>17</sup>, social policies and reform of the rural labor code), Brazil has yet to succeed in balancing the two models. Today, 79% of the value of Brazil's agricultural output is carried out by 5% of farms. A result of the modernization of agriculture, these involve very intensive farming practices that are combined with powerful agribusinesses, and profit from export revenues (sugar cane, soybean and corn). In contrast, and even if some modern family farms are successful<sup>18</sup>, small-scale farming is slow to penetrate

markets and generate revenues<sup>19</sup>. With 75% of the rural workforce, it focuses on food crops that are staples of the Brazilian diet (beans, cassava and rice) and require less capital. While land appropriation, especially in Amazonia, was historically undertaken by small-scale farming—clearing the soil and eschewing agricultural overcrowding farming areas—it is repetitively confronted to pressure from large landowners whose expansion imposes new territorial occupancy models that become prevalent (extensive livestock or soybean crop), and breed **poverty, conflicts and migrations**. Although currently falling, poverty still affects 21.4%<sup>20</sup> of the Brazilian population, and one

out of four person is considered as “extremely needy” (less than R\$30 per month) among the 30 million Brazilians living in rural areas<sup>21</sup> (diagram 1).

## 2.2 - Tensions on land tenure and natural resources

Access to land is a recurring problem in the Brazilian rural community, as landless families repeatedly expose land waste by large properties. While agricultural policies have, for a long time, focused on the goal of modernizing agriculture to improve the low yields at the root of rural migrations, the technical advances did not necessarily resolve the issue of land concentration, farmland use, and the tensions they generate<sup>22</sup>. Because it concerns not only conflicts between small and large farmers, but also conflicts regarding land use between natives, small producers as well as agricultural and forestry operations, among others. Today, fewer than 2% of farms of over 1,250 acres cover 55% of farmed areas. Such concentration breeds violence in some rural communities, because access to land and work is limited for many under-capitalized farmers or agricultural entrepreneurs. The declining demand for labor and rising land prices—both the results of agricultural modernization—also contributed to the exclusion of a great section of the farming population.



Source: *The Economist* (according to FAO and INPE data)

Chart 1 - Contribution of various economic sectors to GHG emissions

Sector	2008		2030 Baseline scenario		2030 Low emission scenario	
	Mt CO <sub>2</sub>	%	Mt CO <sub>2</sub>	%	Mt CO <sub>2</sub>	%
Forestry	536	42	533	31	196	19
Livestock	237	18	272	16	249	24
Energy	232	18	458	27	297	29
Transportation	149	12	245	14	174	17
Agriculture	72	6	111	6	89	9
Waste	62	5	99	6	18	2
<b>TOTAL</b>	<b>1,288</b>		<b>1,718</b>		<b>1,023</b>	

Source: OECD (2011) according to the World Bank (2010)

17. Sets of bounded products or services, used for the modernization of agriculture.

18. Small entrepreneurial farms exist and are specialized in vegetable crops and poultry meat. They reduce a large share of rural underemployment (*The Economist*, October 2011).

19. Yet, according to the latest agricultural census of 2006, family farming is responsible for 70% of food in Brazil.

20. World Bank (2009), last available data.

21. *Le Monde*, “Le Brésil lance un programme d'éradication de la grande pauvreté”, June 4, 2011.

22. Bühler E.A., *Les mobilités des exploitations rizicoles du Rio Grande do Sul (Brésil) vers l'Uruguay : territorialités et stratégies transfrontalières d'accès aux ressources*, PhD thesis, 2006.

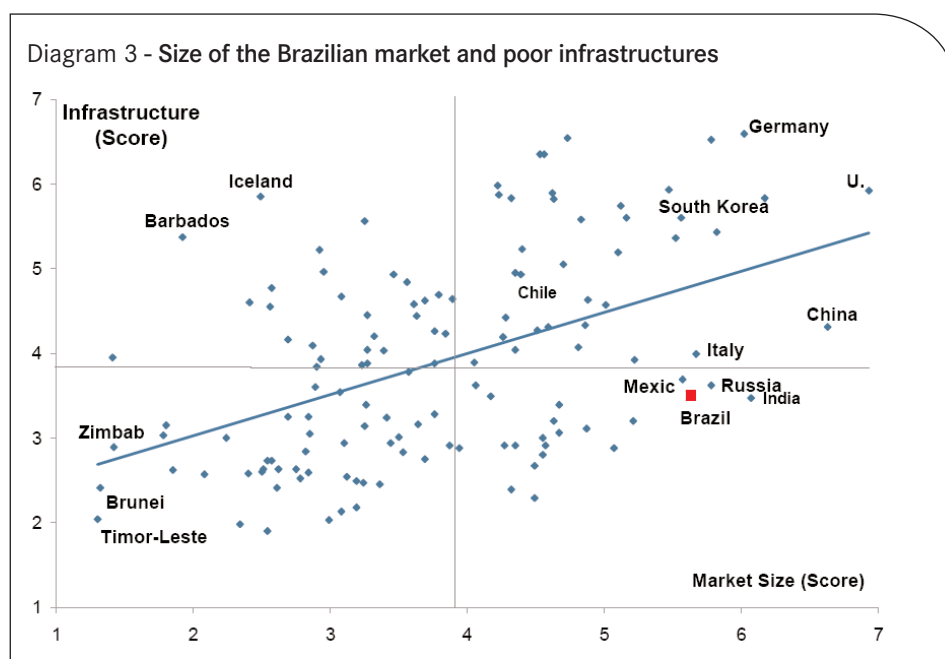
The colonization of new land by migrants, which is characteristic of Brazil's central and Amazonian areas, provides an alternative to land disputes. Of course, situations can vary according to regions. In the South for instance, small-scale farming is a worthwhile pursuit in spite of a lack of available farmland. The consecutive administrations of President Cardoso and President Lula endorsed significant increases in land occupation and improvement of social conditions, thus curbing the demand of land. A policy targeting family farming is also leading to positive results. However, the agricultural development model has far-reaching social consequences for many small farmers, in the absence of an actual land reform that tackles the root of inequalities<sup>23</sup>.

More recently, strong clearing operations by highly specialized large-scale farms (soybean or livestock) have constantly modified agricultural boundaries, even sometimes pushing them beyond national borders. Since 1996, Brazil's farmed areas

grew by 30% (moving from the coasts toward inland, in the direction of the central-western and north-western regions)<sup>24</sup>. This development has spread to neighboring countries (Paraguay, Argentina, Bolivia, Uruguay and Venezuela). Considered by social movements as the intensification of the land saturation and concentration trend, the right to purchase Brazilian land by foreign corporations has led to the acquisition of over 11 million acres—0.5 % of the national territory<sup>25</sup>—by multinational corporations. While purchases of Brazilian land seem to be better governed by law in order to control natural resources, the current reform of the forestry code (which sets environmental requirements for farming operations) is slow to succeed, due to conflicts of interest between environmentalists and large-scale agricultural investors.

As farming now covers 26% of the Amazonian area<sup>26</sup>, such expansion seems to maintain a predatory relationship with wasteland and the

environment. In spite of the Government's commitment to curb deforestation by 80% by 2010, advances made in reducing greenhouse gas (GHG) emissions, excessive land valuation, soil depletion, destruction of environmentally protected zones through extensive livestock farming, felling or burning of the Amazonian forest, in addition to slave labor, are all factors that threaten the sustainability of long-term agricultural production system (diagram 2). Admittedly, programs to support agriculture are paying more attention to environmental and sustainability criteria. Several initiatives were organized under the auspices of the low carbon program (*Programa ABC*) that is yet to achieve its targeted objectives. Brazil is still currently the sixth global emitter of GHG<sup>27</sup>, with illegal logging responsible for close of half of emissions, while livestock farming ranks second for such emissions (chart 1). The Brazilian government's main objective is to double organic farming by 2015. However, use of mineral fertilizers remains very high—six% of global NPK use—and imports account for 75%. The consequences of pesticides on water quality and water consumption for farming are significant challenges for the Brazilian agricultural system<sup>28</sup>, and are getting little attention in public policies.



Lower left: small-sized markets and weak infrastructures  
Upper right: large-sized economies and developed infrastructures  
Scale from 1 to 7 (with 7 as best score)  
Source: Global Economic Forum, Morgan Stanley (2010)

23. According to a recent study by *Fundação Getúlio Vargas* on the incomes of farmers in Brazil, only one third of poor farmers' incomes is generated by their agricultural activity.

24. *The Economist*, "Brazilian agriculture: the miracle of the Cerrado", August 2010.

25. *La Croix*, « Au Brésil, l'achat des terres est placé sous contrôle », November 2011.

26. *AgraEurope*, "Brazilian Farm lobby defends record on deforestation", September 2011.

27. Ranking published by Maplecroft, a British company specializing in risk analysis, at the UN climate annual conference in Durban (December 2011).

28. OECD, *Policies in non-OECD countries: monitoring and evaluation*, 2007.



### 2.3 - Considerable economic dependence and debt

Debt remains an area of vulnerability for Brazilian agriculture. The agro-business model expansion shows an increased dependency of agriculture towards the internationalized industrial sector (input supply is mostly imported), and a concentration of agricultural production in export crops. The competitiveness of Brazilian agricultural production involves the financing of “modernizing high-tech packages”<sup>29</sup> giving access to the standardization conditions required by international markets, but it can also mean, for many farmers, being caught in a cycle of debt with banks and public credit systems that apply high interest rates compared with international averages. This leads the government to regularly adopt debt restructuring and remission programs in order to support farmers’ investment capacity.

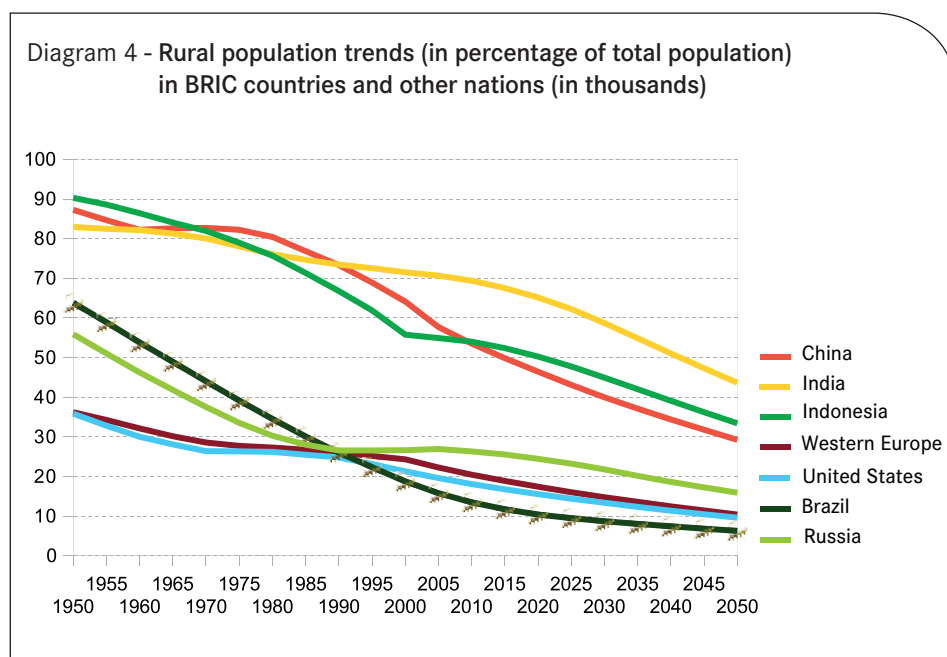
While agricultural foreign trade surpluses have been a significant step in reducing the Brazilian debt,

the limitation of this strategy stems from the fact that it buttresses the sector’s reliance on international economies, with heavy consequences on both public finances that subsidize rural credit systems, and on small- or medium-sized farms that get little benefit. Restructuring the debt of the agricultural sector—a current practice in Brazil that has been increasingly used since 2005–06<sup>30</sup>—is an “invisible” instrument to support agriculture, and is incidentally keenly decried by various nations in the framework of the World Trade Organization (WTO) talks. Today, supporting farmers is achieved through the official lending system (National System of Rural Credit), through upstream or downstream national firms or international lenders. Due to the selectivity of types of aided farms, the subsidies to modernize agriculture (tax breaks, preferential loans and debt waivers, among others) are upholding a historical trend of “conservative modernization” that is conducted to the detriment of a land reform aiming for better land and revenue repartition. The soa-

ring agricultural prices on international markets, which intensified inflationary pressure on land due to speculation, only complicated land distribution in Brazil because of expropriation costs<sup>31</sup>. At the same time, it backs the expansion of agricultural operations in areas where land prices are the most attractive (Amazonia or *Cerrado*). Consequently, the deforestation, which in 2010 recorded its lowest level in 12 years, advanced by 500% between 2010 and 2011<sup>32</sup>, particularly in the State of *Mato Grosso*, the cradle of soybean cultivation.

### 3. Moving towards a more sustainable development model, or the stability of agricultural functions

The challenge of Brazilian agriculture thus appears to be maintaining the balance between the multiple roles that contributed to the country’s development. In the medium term, arbitrations with profound implications will have to be made between **priority to food, energy security and export** as guarantor of macroeconomic stability.



Source: Author’s formulation based on *World Urbanization Prospects 2009*

29. Bursztyn M., « Endettement et crise du monde agricole brésilien », *Tiers-Monde*, vol. 25, n°99, p.649-658, 1984.

30. According to the study conducted by DTB Associates (September 2011), the estimation of the “subsidy equivalent” of Brazilian agricultural debt would reach 50 billion US dollars. For CNA, main farmers’ union in Brazil, 58 measures of debt restructuring have been adopted since 1996. The latest support program for producers announced January 12, 2012 by the Brazilian government would cost 440 million euros (primarily for debt restructuring).

31. Alentejano P.B., Porto-Gonçalves C.W., « Brésil : mouvements paysans face aux conséquences foncières de la hausse des prix », *Alternatives Sud*, 15 (4), p.197-202, 2009.

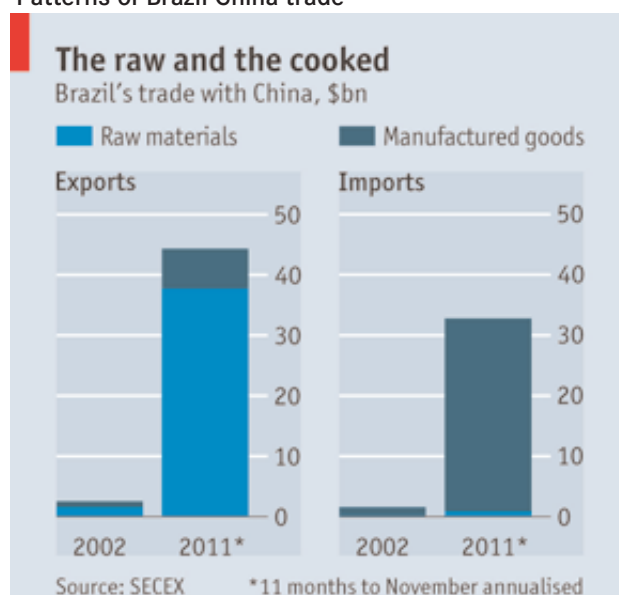
32. “Climate Change and Environment Risk Atlas 2012”, study conducted by Maplecroft (November 2011) and data from the National Institute for Space Research of Brazil (<http://maplecroft.com/about/news/deforestation.html>)

The current prevalence of the export aspect of agriculture follows a historic trend that, if maintained, raises the question of the resilience of the agro-food system and its ability to supply the domestic market with adequate food in terms of quantity (accessible to all) and quality. While **health safety** remains to be fine-tuned on the domestic market, **access to food** is a challenge for Brazilians with low purchasing power, and for **infrastructure policies**, which, in spite of ambitious targets, are slow to reduce land isolation, and provide favorable tax effects (diagram 3). Reallocating production is indeed one of the top goals of policies implemented by CONAB, the national supply company (crop storage and transportation financing among others). Today, **the issue of food security in Brazil is not one of quantity but of distribution**. Managing abundant resources therefore seems to pose a challenge in a context of growing population—a rural and highly depressed population (diagram 4) with high levels of socio-economic inequalities.

So far, if sources of productivity can still be exploited, Brazil's food and energy strategies seem to hold up and encourage export crops and biofuel production, to the detriment of livelihood farming, and this in spite of a rising international debate on the effects of competition in land use and environmental impact<sup>33</sup>. The growth of cattle and poultry meat production, which doubled in less than 15 years<sup>34</sup> and now ranks Brazil as the world's leading exporter, first raises the issue of food security on a global scale, and of the role of Brazil in global grain markets. The difficult conciliation between crops for domestic animal fodder (corn in particular) and export production might heighten tensions on international markets, and increase price volatility, when the global supply architecture is rebuilding and that demand is intensifying (especially in China)<sup>35</sup>. The expanding livestock production is also raising the question of the Brazilian nutritional transition and disruption of the consumption pattern, which substitutes animal fats to traditional staple diets (rice, beans and cassava), thus

contributing to increased obesity and excess weight (affecting over half of the population). The declining domestic demand for food crops—in particular rice (minus 2.8% for the past five years<sup>36</sup>)—underpins Brazil's strategy to capture international markets, especially in deficit zones with strong domestic demand (such as Africa where the ECOWAS accounts for 25% of global rice imports)<sup>37</sup>. On the other hand, it is not clear that such directions can support a pattern of sustainable production, given the fact that the farming mobility of Brazilian investors leads to relocations causing land pressure on neighboring South-American countries. While Brazil greatly benefit from the deregulation of European markets and the strong economic growth of emerging nations to access markets, due consideration must be given on the implications of this expansion on the Brazilian economy and its de-industrialization. In fact, a strong imbalance has developed between Brazilian exports to China—almost exclusively in raw materials such as soybean and iron ore—and Brazil's importations of manufactured goods from China (diagram 5). The situation could lead Brazil to implement an industrial policy for competitiveness and infrastructure investment to support the

Diagram 5 - Patterns of Brazil-China trade



Source: *The Economist*, January 14, 2012 (based on SECEX data)

33. This question does not arise in Brazil: according to the government, energy crops represent a limited area (+10 million acres in 10 years against 32 million for soybean) and palm oil crops are seen as a source of economic development in some areas.

34. *AGRAlimentation*, « La peur du Brésil gagne les dirigeants agroalimentaires français », July 2011.

35. A study published January 3, 2012 by Rabobank, *Will there be any corn left? Brazil as a swing factor in the international market*, estimated at less than 2 million tons only the exportable surplus of maize in 2015, while he is positioning itself as the third largest producer.

36. "The Americas have two faces", *Rice Today*, July-September 2011.

37. « Les céréales au cœur de la souveraineté alimentaire en Afrique de l'Ouest », *Grain de sel*, n°54-56, April-December 2011.

country's businesses towards a sustained international integration. Supplemented by an economic and monetary policy<sup>38</sup>—counteracting the appreciation of exchange rates—such policy could reverse the trend to overdevelop the primary sector in the Brazilian economy and its dependence on foreign markets.

Undoubtedly, the government seems to have sized up the threats linked to the dominant model by consolidating its strategy for family farming to supply the domestic market. The wealth of programs devoted to small-scale farmers and the fight against poverty is an illustration<sup>39</sup>. In spite of increased support to agriculture (credit and price policies as well as measures to renegotiate rural debts), there is an uncertainty regarding the effectiveness of these measures in terms of resource allocations and agricultural income consequences. For the time being, social policies seem to favor reducing social inequalities, at the cost of expensive measures. Added to the accelerated ageing of the population (diagram 6), which

slows down the potential production growth, this trend could lead Brazil to redirect, in the medium term, its public spending at the expense of agriculture (health and pensions).

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Drawing on its natural comparative assets, Brazil's "economic miracle" is also the result of bold reforms and policies that paved the way for its international advancement. As part of its global goal and beyond the need to think in terms of more effective complementarity between the various agricultural activities,

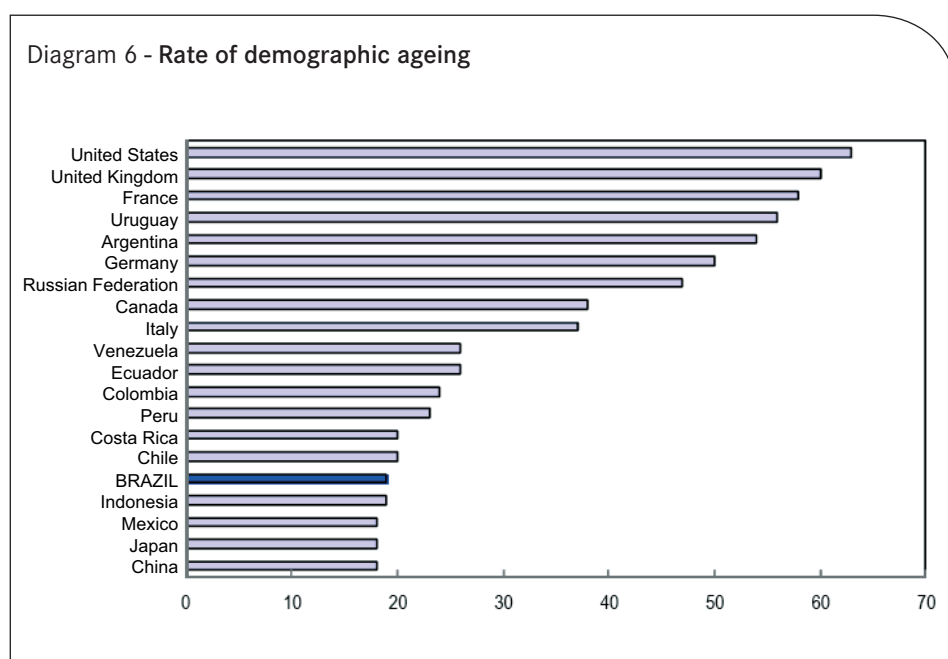
38. Salama P., « Chine-Brésil : industrialisation et "dés-industrialisation précoce" », Working Paper, BRICS, conference, MSH Paris, october 2011.

39. The so-called "Zero Hunger" strategy initiated by Lula comes in several programs including the "National Program to support family farming" (PRONAF), the "Program of the Peasant Agriculture Acquisition" (PAA), the National Program for scholar food and "Borsa Familia". "Brazil without poverty" is the program of extreme poverty eradication of D. Roussef, launched in June 2011 and a continuation of "Zero Hunger".

the challenges of more balanced economic growth will lead to difficult trade-offs. The choice of an export-led growth will imply readjusting the country's trade strategy in line with a diversification of partnerships, a path already taken by Brazil by betting on lead markets (particularly in the Mediterranean Basin and in Africa). Its strategic ties with southern countries (through regional alliances), although they are not solely commercial, should give Brazil a growing political and diplomatic role in international organizations, such as the WTO. Such trend should nevertheless be put in the context of rising protectionism in the Mercosur aiming to rebalance the terms of trade and maintain growth and employment in the zone on one hand, and, on the other, in the context of the will of southern agro-importing countries to boost local productions to achieve self-sufficiency and food security. While the most dynamic export markets are still focused outside of the OECD, Brazil could claim access to European opportunities considered as priorities, through significant efforts in terms of traceability, animal welfare, social equality and environmental protection. The upcoming Earth Summit (Rio+20) could provide Brazil with an opportunity to politically declare its commitments for a more sustainable agricultural model, whose factual interpretation remains nevertheless uncertain. For the traditional powerhouses—including Europe—it is essential to closely monitor the dynamics of this emerging nation in a context of CAP reform and resumption of trade negotiations with Mercosur.

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Diagram 6 - Rate of demographic ageing



Number of years required for doubling the over-65 population, from close to 10% to close to 20%  
Source: OECD (2011) based on UN data

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