



What can African countries learn from Brazil's inclusive growth and development?

Research briefing:

What explains the intensification and diversification of Brazil's agricultural production and exports?

Summary

Since 2000, Brazilian agricultural production and exports have increased enormously. The production of crops rose by over 150%, while exports multiplied eightfold from 1990 to 2012.

We have undertaken new econometric analysis to understand the factors driving this growth and have found:

1. Brazil is no longer predominantly an agricultural country, despite the fact that agriculture continues to represent around 5.2% of GDP and supports a diversified and fast-growing agribusiness sector which in turn amounts to 22.2% of GDP.
2. Agricultural and agro-industrial production and exports have increased and diversified simultaneously since the 1970s with the farming of new areas.
3. The location of the fastest-growing farming areas shifted during 1970-1990 from the South and Southeast regions to the Central-West region. Since 2000 a new agricultural frontier has emerged in the Cerrado (savannah) areas bordering the states of Maranhão, Tocantins, Piauí and Bahia (known as MATOPIBA).
4. Global GDP growth and increased Brazilian agricultural and agro-processed production have been the main drivers of rising Brazilian agricultural and agro-industrial exports, rather than international prices. In the international market Brazil has taken over a share vacated by the USA and European Union countries.

Brazil does not have a predetermined 'model' for intensifying its agricultural performance. Instead Brazil has adjusted its agricultural policies in response to the constraints and opportunities arising in both domestic and international markets, while maximising the advantages it has in terms of agricultural land availability and a good climate.

Agricultural policy in Brazil

Since the second half of the 1960s, in spite of changes in focus and endowments, the Federal Government has maintained traditional agricultural policies such as rural credit, minimum prices, insurance, research and extension. On the whole these policies have stimulated market-oriented production rather than subsistence agriculture.

Since the 1960's three broad periods in agricultural policy making can be identified:

1964-1985

During the military dictatorship, economic policy focused on increasing the GDP growth rate, reducing inflation and generating a trade balance surplus. These targets were aimed at modernizing the labour market in rural areas and offered economic stimulus to market-

Key IRIBA findings

Agro-based product exports increased from US\$ 9.6 billion in 1991 to US\$ 87.6 billion in 2011. Agro-processed products have been responsible for almost two thirds of total exports. New econometric analysis undertaken for the IRIBA project demonstrates:

- World GDP has the biggest impact on the increase of Brazil's agricultural and agro-processed product exports. A 1% increase in world GDP leads to an increase of 1.56% in Brazil's agricultural and agro-industrial exports.
- The second biggest impact comes from the expansion of Brazil's agricultural production. International price was not a significant factor behind Brazil's agricultural and agro-processed product export growth.

oriented farmers, rather than the agrarian reform advocated by some groups in the late 1950s to early 1960s. In 1965, the Federal Government created the National System of Rural Credit (SNCR); this became a crucial source of low-interest loans for farmers looking to purchase industrial inputs and machinery and was therefore a key step in increasing agricultural productivity.

1987-1999

As the new democratic administrations struggled to stabilize the Brazilian currency by reducing the public deficit, government endowments to the earlier-established agricultural policies were drastically reduced and simultaneously new programmes were created to involve the private sector in agricultural financing.

2000-2012

From 2000, left-wing parties strengthened both inside and outside the Federal Government resulting in increased support to family farmers. At the end of 1999, the Ministry of Agrarian Development (MDA) was created to support family farming, while the

Ministry of Agriculture, Livestock and Supply (MAPA) continued to focus on non-family farming. Since then, MDA and MAPA have shared the responsibility for supporting Brazilian agriculture by using the same policies (rural credit, minimum prices, rural extension and subsidized insurance) but with programs tailored for their respective sectors (family and non-family).

The success of Brazilian agriculture

Both agricultural and livestock production have increased enormously in Brazil since the 1990s, particularly since 2000. Looking at the main 63 crops (including sugarcane), agricultural production totalled 384 million tons in 1990, 485 million tons in 2000 and reached 966 million tons in 2012 (Figure 1). The annual geometric rate of growth for crop quantity during the 1990s was 3.2%, and this rose to 6.7% from 2000 through 2012. This growth was achieved with increasing productivity, as shown in Figure 2.

Figure 1 - Evolution of crop production in Brazil (including and excluding sugarcane) - from 1990 thru 2012

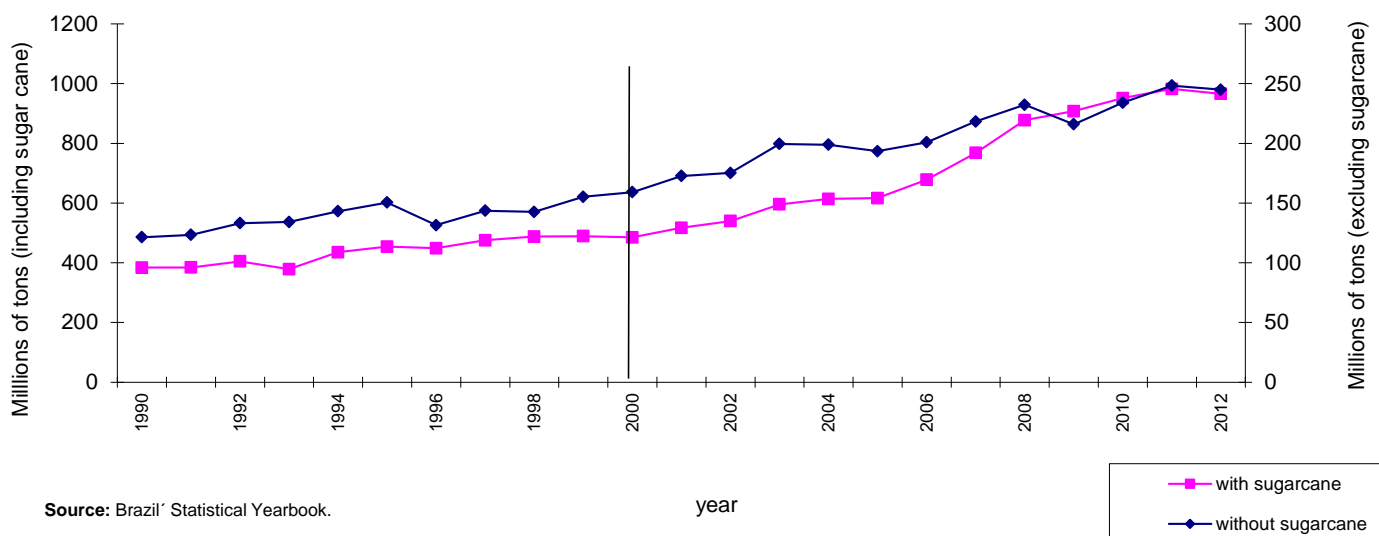
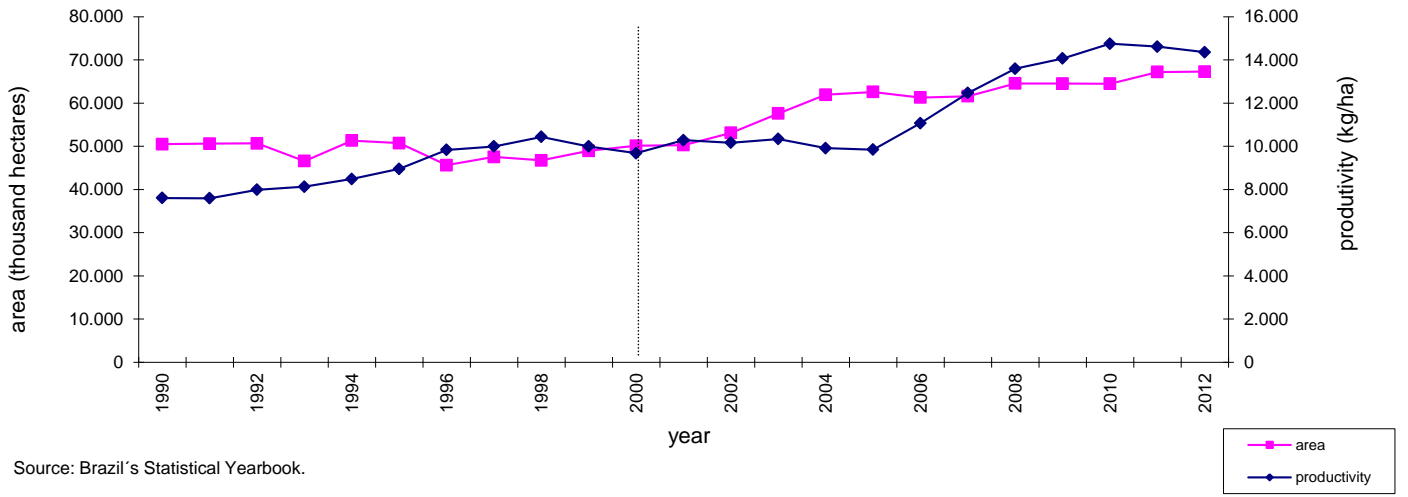


Figure 2 - Evolution of area and productivity for the main 63 crops in Brazil - 1990 thru 2012



Meat production also saw a large increase (Figure 3). Total meat production in 1990 was 5.17 million tons, rising to 10.33 million tons by 2000 and 22.35 million tons by 2012. The annual geometric rate of growth for meat was 7.04% during the 1990s and 6.39% from 2000 through 2012.

The key drivers behind Brazil's increasing agricultural production have been:

- (a) good availability of arable land, especially with the development of new agricultural frontiers in the Centre-West and MATOPIBA regions in the 1970s-1990s and post-2000 respectively;
- (b) modern technology generated by a network that encompasses Brazilian Enterprise for Agricultural Research (EMBRAPA), public universities, state-funded agricultural research institutes and private-funded organizations;
- (c) state-funded agricultural policies;
- (d) the availability of international markets for Brazilian production and the role of large multinational agribusiness companies;
- (e) the presence of market-oriented farmers in the categories of both family and non-family farming.

Brazil also has eco-climatic features favourable to the raising of cattle and cultivation of crops. In some areas, it is possible to plant three crops in the same area during the same farming year without needing to leave the land fallow. For example, with good seed and fertiliser, in the state of Paraná it is possible to plant and harvest soybean from September to March, beans from March to April and corn from later April to August, before restarting the same sequence in the next farming year.

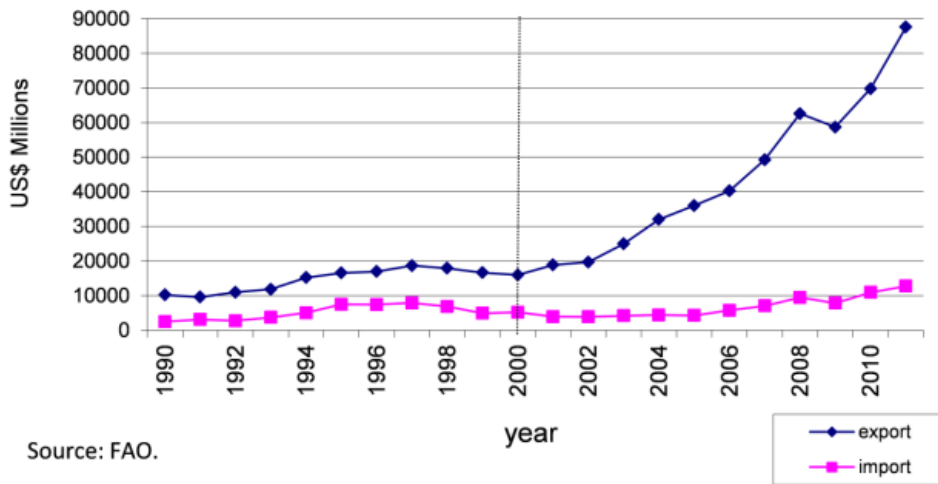
Export growth

Brazil is currently the world's largest producer and exporter of coffee, sugar and orange juice; the second largest exporter of soybeans, and holds the third and the fourth rank respectively as exporter of corn and cotton. Also, Brazil is the largest exporter of beef and poultry, holding the largest commercial cattle herd.

Figure 3: Brazilian meat production from 1990 through 2012



Figure 4: Brazil's exports and imports of agricultural and agro-processed products from 1990 through 2012



Source: FAO.

Figure 4 shows the evolution of Brazil's exports and imports of agricultural and agro-processed goods from 1990 to 2011. Brazil's exports of agricultural and agro-processed products rose from US\$ 10.2 billion in 1990 to almost US\$ 87.5 billion in 2011, multiplying eightfold in twenty-two years.

A particularly large increase has taken place since 2000, as the USA's and European countries' share of the world agricultural and agro-processed product markets has declined.

From 2000 to 2011, Brazil's exports of agricultural and agro-processed products to European Union countries increased almost 200%, despite the fact that the share of overall Brazilian agricultural/agro-processed exports represented by these countries actually decreased from 50% to 27%.

African, Asian and Middle Eastern countries, especially China, have increased their imports of agricultural and agro-processed products from Brazil. In 2000, countries from these regions bought 27% of Brazil's agricultural and agro-processed exports; by 2011 this percentage was 53%. China alone accounted for 18% of Brazil's exports of agricultural and agro-processed goods in 2011.

The role of agribusiness

Large multinational agribusiness companies have backed medium- and large-sized farmers in Brazil, encouraging them to produce exportable agricultural products. During the 1970s and 1980s, these companies funded

farmers to plant grains in Cerrado areas using the so-called Green soybeans contract, a forward sale not established by law, in which agribusiness companies lent money and/or agricultural inputs to the farmers and later received reimbursements in the form of agricultural products (soybeans). In the 1990s, this type of contract became

regulated as a Note of Agricultural Product ('Cédula de Produto Rural'), and has been widely used since then.

Large multinational agribusinesses have consistently bought a large share of Brazilian agricultural production and exports; foreign markets have been an important destination for a sizeable proportion of Brazil's agricultural production.

The role of agricultural research

Agricultural research has played a vital role in the growth of Brazilian agriculture. The development of new seeds and production techniques was a pre-requisite to enabling farmers to bring the Cerrado and other areas into production.

Some commentators tend to assume that the spread of agriculture through the Cerrado area is entirely due to EMBRAPA research (e.g. The Economist 2010, 3). However, while EMBRAPA performs an important role coordinating a large range of crop and livestock research, it is only one among a huge network of agencies undertaking agricultural research in Brazil.

EMBRAPA accounts for 57% of the total investment and expenditure on agricultural research in 2006, while state-funded institutes comprised 21% and universities 16%. Shares for personnel involved meanwhile were 41%, 38% and 16% respectively.

Future production potential

Brazil still has considerable arable land available. In 2010, there were 85.3 million hectares of arable land available for new plantation, an expanse that if planted would double the currently-farmed area without encroaching on legally established conservation areas.

Most of the currently available arable land is located inside the Cerrado areas and in the last four decades the advancing agricultural frontier has inaugurated major shifts in Brazilian agriculture.

Although the South and Southeast regions have been and remain the main agricultural producers, these areas' share of overall agricultural production is falling, while the Central-West has increased its share, largely due to the good availability of arable lands covered with Cerrado vegetation.

This briefing is based upon an IRIBA working paper 2, What explains the intensification and diversification of Brazil's agricultural production and exports from 1990 to 2012? By Carlos Bacha and Leandro Vinicio de Carvalho, available at <http://www.brazil4africa.org>

Further reading:

- Bacha, C.J.C. The evolution of Brazilian agriculture from 1987 to 2009. In Baer, W. and Fleischer, D. The Economics of Argentina and Brazil – A Comparative Perspective, Edgard Elgar Publishing, Inc., USA, 2011, pages 97 - 129.
- Goldin, I. & Rezende, G.C. A agricultura brasileira na década de 80 - crescimento numa economia em crise. IPEA, série IPEA, 138, Rio de Janeiro, 1993.
- Mueller, C. "A política agrícola no Brasil – Uma visão de longo prazo", In Revista de Política Agrícola, Ano XIX, Edição Especial, julho de 2010, p. 9 thru 23.

IRIBA is a DFID funded research programme, based at the University of Manchester. It brings together an international team of researchers, examining how lessons from Brazil's development experience can be learned and adapted for African countries.

August 2014

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