



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

Research briefing:

Transforming Agriculture through Productivity Growth: Lessons from Brazilian Agricultural Development

Summary

- Prior to the mid-1990s Brazilian agriculture was highly dysfunctional and backward, in large part due to erratic government intervention.
- In the past two decades the agricultural sector in Brazil has achieved remarkable productivity growth making it one of the main producer and exporter of a long list of commodities.
- In many ways this transformation was not a smooth and controlled process, but rather one full of reversals and unintended consequences.
- The establishment of inclusive institutions in creating an appropriate business environment through rule of law, political openness and economic stability was essential for the change in investment and growth in agriculture.
- A key component of the rise in agricultural productivity has been technological research done by the governmental agricultural research institute EMBRAPA.

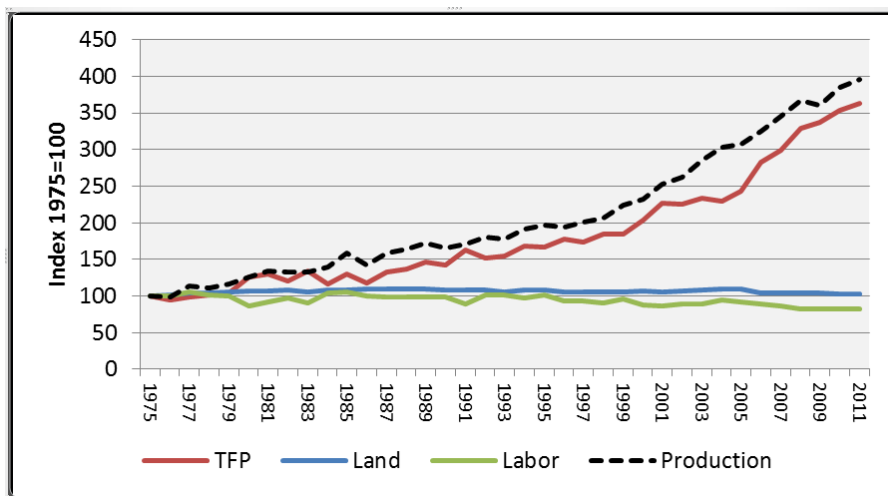
The Transformation in Brazilian Agriculture

The position of Brazilian agriculture as one of the breadbaskets of the world is quite remarkable given that just two decades ago this sector was marked instead by backwardness and inefficiencies. Although the details of how this transformation took place are specific to Brazil, the experience holds lessons for other developing countries seeking to make a similar transition. Today Brazil is one of the major producers of a series of agricultural commodities, such as soybeans, sugar, orange juice, maize, cotton, chicken, meat and pigs, with strong participation in a long list of others. This has been achieved not by simply incorporating more land, but by dramatic improvements in productivity, led by technological research that developed methods and inputs specifically suited to the

country's conditions (see Figure 1). Whereas the total area of land in agriculture has remained basically the same since the mid-seventies, production has increased by nearly 300%, a rate even faster than other high achievers including the US or China, and dramatically higher than the average for Latin America or Africa (see Figure 2).

The success of Brazilian agriculture in increasing production and productivity in a relatively short period of time has attracted much attention to what policies and programs have been behind this transformation. Interest has centred on the fact that the transformation was achieved starting from a relatively backward agricultural setting, similar to that found in many other poor and developing countries. Whereas many technological and organizational packages from developed countries have been tried

Figure 1: The Evolution of Production, Land, Labor and Total Factor Productivity in Brazilian Agriculture



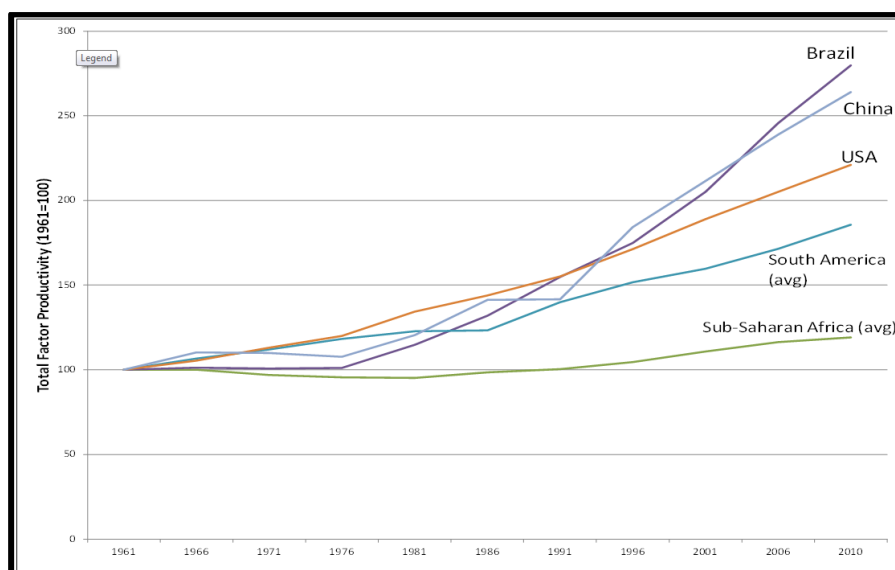
Source: Data from Gasques, Bastos, Valdez and Bacchi (2012)

throughout the world, the results have often been disappointing. The Brazilian example sparked the notion that south-south cooperation in agriculture could fare better, given the similarities involved and a purported lack of colonial vestiges. The fact that the changes in Brazilian agriculture were achieved simultaneously, though not necessarily causally, with a significant and unprecedented drop in poverty and inequality since 1995, made the lure of a Brazilian model even more enticing for poor countries. In particular a sense arose that the Brazilian model would be particularly well suited for Africa.

The Perils of Planning, Managing and Controlling Agriculture

How has Brazilian agriculture transitioned from low productivity and backwardness to its current status as major player in international markets and role model for other developing countries? Rather than simply looking back and trying to find an ex-post reasoning that explains what has taken place, it is important to realize that throughout this period, policy had very limited control over what actually took place and most agents had, and still have, a very poor understanding of how things actually work.

Figure 2: Total Factor Productivity in Agriculture for Selected Countries 1961-2010



Source: USDA Economic Research Service (2013)

Admitting to the fact that the Brazilian experience in agriculture is still not entirely understood does not mean that it cannot be useful for countries such as those in Africa. On the contrary, doing so may preclude making rash transplantations of policies that may not have the intended effect in different circumstances. Similarly, examining the Brazilian agricultural experience through this lens will help to sort out what elements can be usefully emulated and how that can best be accomplished.

Table 1: Gross income per farm by size (2006)

Bracket (in min. wages)	Number of farms	% of farms	Gross income %	Gross income per farm
0 - 2	2,904,769	66%	3.27%	0.52
2 - 10	995,750	23.6%	10.28%	4.66
10- 200	472,702	10.7%	35.46%	34.49
> 200	27,306	0.6%	51.19%	861.91
Total	4,400,527	100%	100%	10.45

Source: Alves and Rocha (2010) using IBGE data

A striking example of the policy's lack of control over outcomes even in the midst of the growth in productivity is the extreme concentration of production in a small number of productive units. Table 1 shows that under 1% of the farms in Brazil produce over half of the gross income in agriculture, while nearly 3 million farms (66% of the total) generate just 3.27% of the gross income. This has come to be despite a massive effort at land reform over the years by the government.

The land reform program in Brazil has redistributed to landless peasants an area equal to that of France, Portugal, Austria and Ireland, benefiting over one million families. The fact that so much effort and resources could have been expended in land reform programs over the years, with their additional cost in terms of environmental degradation (many settlement projects are in the Amazon), violence and human suffering, to have such little impact in their intended objectives, reiterates the challenge of policymaking in this area in Brazil.

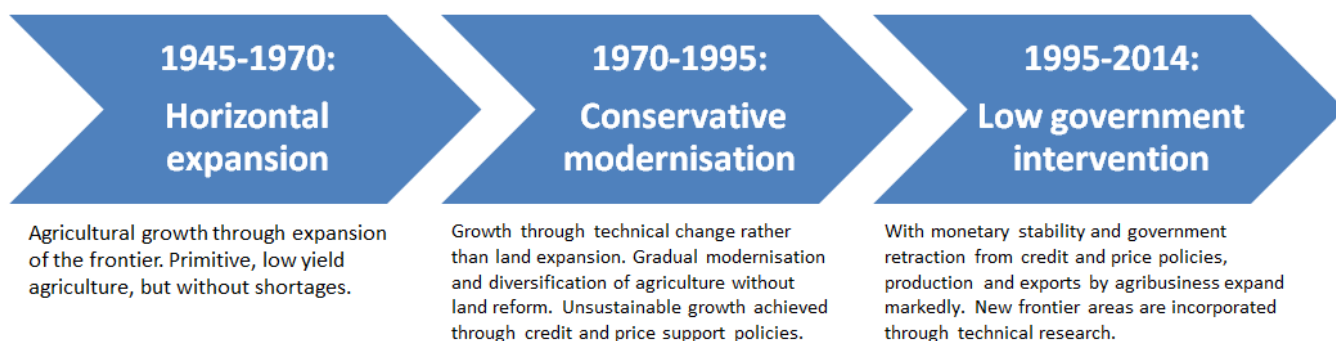
Three Stages of Agricultural Transformation

The evolution of Brazilian agricultural can be divided in three distinct periods. The first was a phase of horizontal expansion, from the end of the World War II to the beginning of the 1970s, in which the growth of agricultural production was mainly due to the expansion of the agricultural frontier.

This was followed by a phase of conservative modernization, from the early 1970s to the early 1990s in which the exhaustion of fertile lands in the frontier led to the implementation of a system for technical innovation and to the configuration of active policies of agricultural credit and price support, which lead to massive distortions and inefficiencies in the sector.

The final phase was one of low governmental intervention, which began in the early 1990s, marked by increasing participation of a substantially modernized and diversified agricultural sector in agribusiness complexes with growing importance in supplying domestic and international markets.

Figure 3: Three stages in Brazilian agriculture



Getting Institutions Right to Get Agricultural Policy Right

The key to understanding the erratic performance of Brazilian agricultural policy over time, as well as its eventual success in fostering productivity and growth, is the underlying institutional setting which determined in each period which actors were in power, what instruments they had access to and what were their interests and motivations.

During much of the early periods agricultural policy which sought to enhance the modernization and efficiency of this sector got side-lined and derailed by concerns over inflation or industrialization.

Rather than being seen as unfortunate policy mistakes, these choices should be understood as direct consequences of the country's extant economic and political institutions.

The remarkable transformation in Brazilian agriculture only really emerged when inclusive institutions – strong presidentialism subject to strong checks and balances – created a fiscal, monetary and political environment in which those policies would succeed. Any country seeking to learn from Brazil's agricultural success will do well to also consider its institutional transformation.

This briefing is based upon an IRIBA working paper, 'The Economics of the Brazilian Model of Agricultural Development' by Bernardo Mueller and Charles Mueller, available at <http://www.brazil4africa.org>

Further reading:

- "Brazilian Agriculture: The Miracle of the Cerrado." The Economist, 2010. <http://econ.st/1rlikR8>
- J. Gasques, E.T. Bastos, C. Valdes and M. Bacchi, 2012. "Total Factor Productivity in Brazilian Agriculture," in K. Fuglie, S.L. Wang, S.L. and E. Ball, (eds.). Productivity Growth in Agriculture: An International Perspective.
- G. Martha Jr, E. Contini and E. Alves, 2012, "Embrapa: its origins and changes". In: W. Baer (org.), The Regional Impact of National Policies – the Case of Brazil.
- C.C Mueller, 2012. "Regional Development and Agricultural Expansion in Brazil's Legal Amazon: the Case of Mato Grosso". In: W. Baer (org.), The Regional Impact of National Policies – the Case of Brazil.
- C.C. Mueller, 2011. "Inflation and Income Transfers During the Golden Phase of Import Substitution Industrialization of the 1950s: the Contribution of an Expanding Agricultural Frontier". In: S. Ranincheski, C. Negri & C. Mueller (orgs.) The Brazilian Economy in Historical Perspective.
- C.C. Mueller, 2009, "Agricultural, Agrarian and Environmental Policy Formation under Lula: the Role of Policy Networks". In: J. Love and W. Baer, Brazil Under Lula – Economy, Politics and Society Under the Worker-President.

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.

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