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## Research Report

# Is there a new Brazilian development model?

Policy in Focus, No. 33

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# Policy In Focus



*Empowered lives.  
Resilient nations.*

*A publication of  
The International Policy Centre for Inclusive Growth  
United Nations Development Programme*

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## Is there a Brazilian model of development?



The International Policy Centre for Inclusive Growth (IPC-IG) is a partnership between the United Nations and the Government of Brazil to promote South–South learning on social policies. The Centre specialises in research-based policy recommendations to foster the reduction of poverty and inequality as well as promote inclusive growth. The IPC-IG is linked to the United Nations Development Programme (UNDP) in Brazil, the Ministry of Planning, Budget and Management of Brazil (MPOG) and the Institute for Applied Economic Research (Ipea) of the Government of Brazil.

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## Policy in Focus

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# Summary

- 04 Is there a new Brazilian development model?
- 08 What explains the intensification and diversification of Brazil's agricultural production and exports?
- 11 Transforming agriculture through productivity growth: lessons from Brazilian agricultural development
- 14 How EMBRAPA catalysed productivity gains in Brazil's soybean and pulp and paper industries
- 18 Anti-poverty transfers and inclusive growth in Brazil
- 21 The impact of the National Service for Industrial Training (SENAI) vocational training programme on employment, wages and mobility in Brazil: what lessons for sub-Saharan Africa?
- 24 Earmarking credit for investment, stability and growth: lessons from the Brazilian Development Bank
- 27 Institutions for macroeconomic stability in Brazil
- 30 Brazil: tackling corruption through institutional multiplicity
- 34 Infrastructure and its role in Brazil's development process
- 37 Taxation, redistribution and the social contract in Brazil
- 40 Explaining the decline in earnings inequality in Brazil: 1995–2012



As the world begins to wake up to the dire social and economic consequences of rising inequality, we must recognise that it is not an inevitable side-effect of economic growth and development. Many Latin American countries, and Brazil in particular, have demonstrated it is possible to achieve inclusive growth, which has reduced inequality and poverty.

Despite its current difficulties, Brazil offers a striking example of inclusive growth. Inequality has fallen sharply over the past decade and a half, a period which has also seen the country lift an estimated 40 million people out of poverty. Although growth rates have been modest in comparison to China or India, Brazil has implemented a raft of measures to ensure the results of such growth have been shared throughout society. While Brazilians have seen their incomes rise, the poorest have benefited most.

The growth experienced by Brazil hasn't simply been attained through the unsustainable exploitation of natural resources. Despite serious lingering problems, deforestation rates in the Amazon have fallen remarkably since 2004. New jobs have been created, child mortality has plummeted, and schooling rates have increased.

So how have these gains been achieved, are they sustainable, what challenges remain, and what can other developing countries learn from Brazil's experiences? These were the questions asked by a team of researchers from Brazil, Europe and the USA who formed the International Research Initiative on Brazil and Africa (IRIBA). This issue of *Policy in Focus* looks at the findings and insights they have produced.

The foundations of Brazilian progress can be traced back to the transition from a dictatorship to a democracy in the mid-1980s and the vision for the country which emerged. A firm consensus between citizens and politicians to address the 'social debt' created by soaring inequality set the country on a new path. After the economy was stabilised in the mid-1990s, the economic management pursued by successive governments enabled innovative social policies to flourish.

As a more inclusive and prosperous Brazil has developed, the public demand for further progress has also grown. The large protests surrounding the 2014 Football World Cup, worries about an economy mired in recession, and deep concern with serious corruption scandals demonstrate that the Brazilian consensus is under considerable strain. Public demand for better public services and transport infrastructure, less corruption and a more progressive tax system must be addressed by the country's leaders. While much has improved, Brazil faces pressing challenges. It must ensure that the development gains made over the past decade and a half throughout times of economic growth are not eroded or scaled back throughout the troubling economic times it presently faces. The sustainability of those gains may well be the most important piece of any such Brazilian model of development, yet the jury is still out as to what extent this may be possible.

While the Brazilian experience is the product of a unique set of circumstances, it contains many lessons that should inspire debate and critical appraisal in other developing countries. The world is changing rapidly, and there are more opportunities than ever for genuine cooperation between countries of the Global South with recent and direct experiences of radically reducing poverty. This edition of *Policy in Focus* is essential reading for anyone grappling with how to reduce poverty and inequality while promoting sustainable and inclusive growth.

# Is there a new Brazilian development model?<sup>1</sup>

by Edmund Amann<sup>2</sup> and Armando Barrientos<sup>2</sup>

In the decade and a half since the mid-1990s, Brazil has embarked on a new developmental trajectory in which, for much of the period, reasonable growth performance has been combined with an increasingly effective assault on poverty and inequality. The pro-poor character of economic growth in Brazil during the contemporary era stands in marked contrast to the experience of previous boom periods. Impressive though the record has been over the long term, a number of structural difficulties have not been sufficiently addressed. Partly as a result of this, Brazil is now facing significant challenges as it attempts to boost growth and continue its assault on poverty and inequality.

Analysing the progress made and the obstacles that remain to be tackled, the UK Department for International Development-funded International Research Initiative on Brazil and Africa (IRIBA) has examined key aspects of Brazil's development experience since the mid-1990s and concludes that a new Brazilian development model has indeed emerged. The key findings are as follows:

## 1. The Brazilian model is a blend of consensus and conjuncture

Our assessment is that a unique combination of economic and social policies is primarily responsible for the unexpected success shown by Brazil. There are specific features of the institutions of economic management developed after the stabilisation plan of 1994 which, together with innovative social policies emerging from municipal activism and a favourable social contract, set a new course for Brazil.

A renewed consensus or 'social contract' is acutely significant in ensuring the conditions for a positive evolution of these institutions. It ensures that economic and social policies work together, reinforcing each other. This is what we mean by a new 'model'. Of course, not all policies have always fitted together nicely. Important areas such as infrastructure lacked effective policies, while others such as the effective

prosecution of corruption cases were stymied by institutional bottlenecks.

## 2. Brazil's development model is based on inclusive growth

The defining feature of Brazil's recent economic success is not the fact that the economy grew steadily during the first years of the new century. Gross domestic product (GDP) growth rates have averaged 3 per cent since the mid-1990s; however, Brazil did not achieve rates of economic growth comparable to China or India. Rather, it is the quality of its economic growth that is noteworthy.

The lowest deciles of income grew at Chinese rates, while the wealthiest deciles of income did much less well, growing at Côte d'Ivoire rates. While all sections of society saw their incomes rise, the poorest benefited most. This has been reflected in declining levels of inequality in Brazil. The Gini index fell from 60.1 in 1997 to 52.7 in 2013 (Ipeadata).

## 3. Macro stability has underpinned progress

The cornerstone of Brazil's successful economic transition has been a process of cumulative institutional reforms. These have affected the formulation of fiscal and monetary policy in addition to the operation of the financial sector. Taken together, these reforms have underpinned the price and financial stability, which have in turn facilitated the pursuit of inclusive growth.

The critical turning point in the transition to inclusive growth came two decades ago with the elaboration and implementation of a complex stabilisation plan, the *Plano Real* (Real Plan), between 1993 and 1994. Introduced to combat hyperinflation, it was introduced gradually and cleverly employed a pegged exchange rate to the US Dollar. Allied with trade liberalisation, this maintained an external check on domestic price formation without stifling growth. The formal currency peg was replaced with an inflation-targeting framework at end of the 1990s.

## 4. Fiscal capacity and responsibility has been vital

Accompanying the introduction of a new and pegged currency, the Real policymakers added a firmly orthodox plank to their counter-inflationary strategy by setting targets for the fiscal balance. Their strategy combined more effective constraints on public spending with limited reform of the taxation system. The centrepiece of the reform programme was the formulation of a fiscal targeting framework, an institutional innovation which would go on to prove very effective in ensuring the continuation of price stability, while building credibility among foreign investors. The fiscal autonomy of states and municipalities was also reduced, providing an effective constraint on public spending.

Thanks to the effective reform of its financial system, Brazil has seen a considerable expansion of credit to households, to firms and for the financing of an expansion of the housing stock. The expansion of credit has proven an important driver of growth. The Brazilian Development Bank (BNDES) has played an active role, which helped limit the impact of international financial contagion following the collapse of Lehman Brothers.

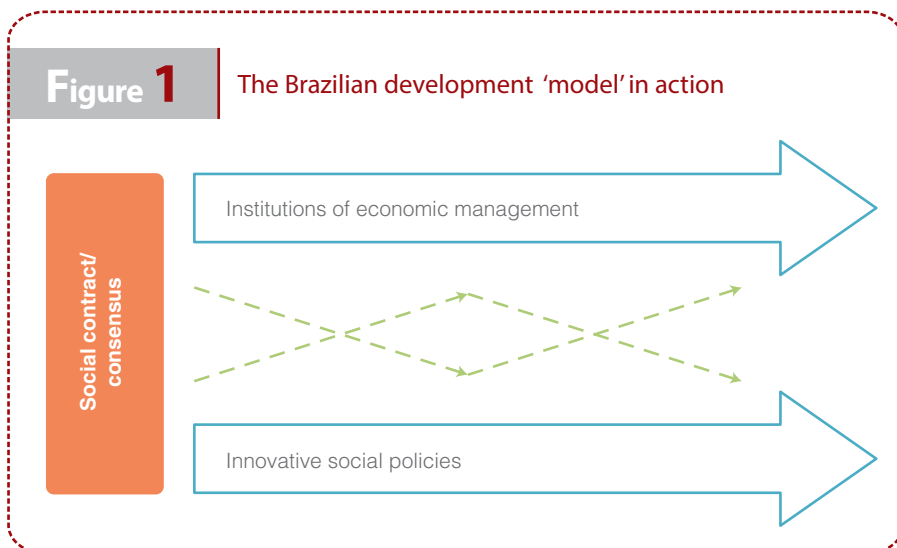
The tax raising powers of the various levels of government have proven impressive by the standards of emerging market economies, accounting for over 30 per cent of GDP. As growth accelerated following stabilisation, it has consequently been proven possible for the federal government to combine fiscal rectitude with a rise in spending on social programmes.

## 5. Agriculture has been transformed

One of the key elements of Brazil's economic transformation over the past two decades has been the resurgence of agricultural exports. Agriculture has undergone a dramatic transformation, making Brazil one of the major breadbaskets of the world: in 2010 the country was the world's foremost producer of sugar, coffee, orange juice and poultry,

Figure 1

The Brazilian development 'model' in action



Source: Authors' elaboration.

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A unique combination of economic and social policies is primarily responsible for the unexpected success shown by Brazil.

the second largest producer of soybeans, the third largest producer of corn and the fourth largest producer of pork. Yet any notion that the agricultural sector had the potential to become an export dynamo would have seemed highly improbable during the 1970s and 1980s.

Brazil has made dramatic improvements in its agricultural productivity. Whereas the total area of land in agriculture has remained basically the same since the mid-1970s, production has increased by nearly 300 per cent. The surge in agricultural productivity experienced by Brazil has comfortably outstripped that of other countries in the region and has outpaced that of both China and the USA.

While agricultural policymaking had a relatively limited impact on performance of the sector, broader institutional changes exercised a much more important role. The renaissance of Brazilian agriculture should not be considered in terms of the expansion of factors of production alone, but also in terms of institutional and technological innovations—not all of which could be described as sector-specific.

Brazil did not follow a carefully laid-out, pre-determined strategy whose aim was to turn the country into the international agricultural giant which it is today. It pragmatically adapted its light-touch, market-oriented agricultural policies<sup>3</sup> to seize opportunities opening up in both domestic and international markets (Bacha et al. 2014).

### 6. Brazil shows that the 'resource curse' is not inevitable

Brazil has never been dependent on a single commodity, and diversification under import substitution industrialisation met with moderate success in broadening the productive base. Recent export performance shows the effectiveness of exploiting underlying natural comparative advantages in agriculture and minerals as a platform to move up the value chain and develop a successful agro-industry.

A key driver of the productivity gains experienced by the Brazilian agricultural sector has been a strong record of innovation—one area where the State has played an active and consistent role. EMBRAPA, a federally funded agricultural research agency, has been central to funding research and has facilitated research networks linking agricultural producers, research laboratories and private-sector suppliers of agricultural seeds, technology and equipment.

The agricultural transformation of Brazil should not simply be understood in terms of a quantitative increase in production and exports; there have also been qualitative improvements, which have allowed producers to seek out new—and lucrative—market niches, whether domestically or in the global marketplace.

### 7. Social policy has focused on inclusion and productivity

Social policy has been a core component of the Brazilian development model, making a

significant contribution to inclusive growth. Transfers in kind, as in education, training and health care, and transfers in cash, as in social insurance and social assistance, have been the object of policy activism.

The 1988 Constitution was a watershed moment, enshrining the principle that the government has a responsibility to ensure minimum income security to all citizens independently of their capacity to contribute to social insurance. Two social pension schemes, the *Previdência Social Rural* and the *Benefício de Prestação Continuada*, were both established in the mid-1990s. Subsequently, the Lula administration implemented the *Bolsa Família* programme, which provides regular income supplements for households living in extreme poverty with conditions ensuring children's school attendance and utilisation of primary health care. Together with rising minimum wages, Brazilian anti-poverty transfers have played an important role in reducing overall poverty and inequality.

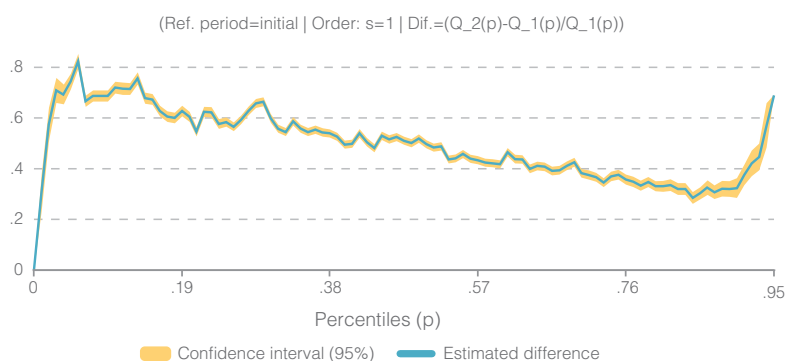
The recent increase in social expenditure in Brazil is likely to have a direct effect on growth through its effect on demand. Estimates of the multipliers applying to government expenditure suggest that the focus on disadvantaged groups in the expansion of social policy has had measurable effects on economic growth. The Brazilian Institute for Applied Economic Research (Ipea) has estimated that the GDP multiplier of social expenditure taken as a whole was of the order of 1.37 in the mid-2000s, while the social expenditure multiplier on

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A key driver of the productivity gains experienced by the Brazilian agricultural sector has been a strong record of innovation.

**Figure 2**

**Brazil growth incidence curve 2001-2012**



Source: Authors' calculations based on National Household Sample Survey (PNAD) data.

household income growth rates was higher, at 1.85 (Ipea 2010).

### 8. Rising tax revenues have been redistributed

Brazil managed a remarkable increase of 7 percentage points in tax revenue as a percentage of GDP between 1995 and 2010, from 26.9 per cent in 1995 to 34 per cent in 2010. This is intriguing because it is not associated with significant changes to the tax code or in tax administration.

IRIBA studies have found that a combination of baseline conditions—namely, strong bureaucratic capacity—and the process of democratisation, partisan competition, fiscally responsible centre-left coalitions, and the executive power

created the conditions within which strong preferences for redistribution became embedded in effective social policy.

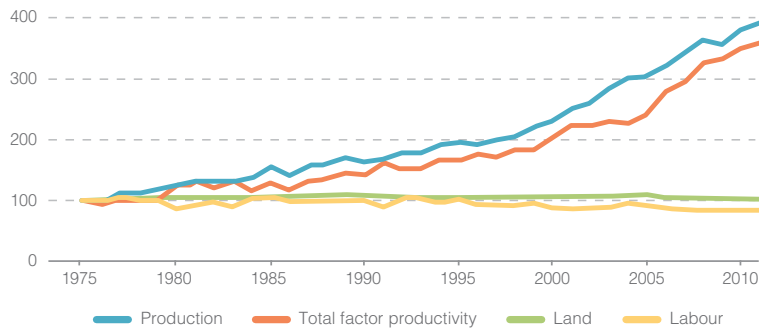
Social expenditures have received both an absolute and a relative increase in their share of resources. Until recently, the rise in tax/GDP ratio did not provoke public and political contestation, suggesting an underlying association with the social contract in Brazil. However, the recent public interest in tax and tax policy perhaps signals new tensions—and boundaries—of the social contract.

### 9. Labour market intuitions reduced earnings inequality

Not only have average earnings increased in Brazil, but they have increased the



Photo: Neil Palmer CIAT/CIFOR. Children of São Felix, Brazilian Amazon, 2011, Brazil <<https://goo.gl/cefU8>>.

**Figure 3****Rising agricultural productivity in Brazil**

Source: Authors' elaboration based on USDA data.

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Brazil's economic and social reforms are still very much works in progress.

most for groups of workers who used to earn the least. As the most important component of household income, the inequality in labour incomes reproduces the trends of declining inequality in household income. The Gini coefficient of labour incomes declined in Brazil from 0.54 to 0.41, a reduction of just below one quarter. Demographic and spatial factors, as well as informality jointly account for the bulk of the reduction in the Gini coefficient of labour incomes in Brazil. The decline in earnings inequality can be attributed to lower gender and race wage gaps, and to lower urban and regional wage premiums.

### 10. There are limitations to this new Brazilian model

In the last few years, a variety of signals suggest that the Brazilian model could be encountering more significant constraints. While the initial impact of the global financial crisis was muted, it arrived in Brazil later through other channels: the slowdown of growth experienced by the Chinese economy and other emerging economies added to the fall in demand for commodities associated with recession and austerity in high-income countries.

There is growing public concern with the incidence of taxation and the destination of government expenditure, which spilled over into opposition to the infrastructure investment associated with the 2014 FIFA World Cup. The eruption of popular protests in mid-2013, prior to and during the tournament, as well as the political

and economic crises of 2015 serve to underline the fact that Brazil's economic and social reforms are still very much works in progress.

There is a strong case for further fiscal reform in Brazil—an area where the initial impetus of reform of the 1990s has notably slowed down. In the field of infrastructure (a central issue in the 2013 demonstrations), sustained failure to finance and effectively regulate has led to significant deficiencies in transportation and communications networks. The uncovering of serious graft and corruption surrounding major projects in the energy sector now presents a further obstacle to sustained infrastructure planning and investment.

While there is a tightening of conditions in the policy environment, in some areas the model appears resilient. It is perhaps too early to assess whether the current conjuncture will lead to significant changes in Brazilian economic and social policy, and its aim to stimulate inclusive growth. Further progress here will be contingent on meaningful structural reform in critical areas such as education, infrastructure and fiscal policy. However, in the short term at least, the political consensus needed to push through such reforms appears to be lacking. Adding to Brazil's difficulties, prices for its key commodity exports remain subdued. Thus the prospects for a sustained resumption of growth via external stimulus are limited. ■

Amann, Ed, and Armando Barrientos. 2014. "Is there a new Brazilian model of development?" *IRIBA Working Paper*, No. 13. Manchester: International Research Initiative on Brazil and Africa. <<http://goo.gl/0a4TyQ>>. Accessed 10 November 2015.

Bacha, Carlos, and Leandro Vinicio de Carvalho. 2014. "What explains the intensification and diversification of Brazil's agricultural production and exports from 1990 to 2012?" *IRIBA Working Paper*, No. 2. Manchester: International Research Initiative on Brazil and Africa. <<http://goo.gl/ivcPae>>. Accessed 10 November 2015.

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1. This article is based on Amann and Barrientos (2014).
2. IRIBA, University of Manchester.
3. Such policies include support for agricultural innovation and the provision of official investment financing for larger agricultural enterprises.



# What explains the intensification and diversification of Brazil's agricultural production and exports?<sup>1</sup>

by Carlos Bacha<sup>2</sup> and Leandro Vinicio de Carvalho<sup>2</sup>

## Agricultural policy in Brazil

Since the second half of the 1960s, despite changes in focus and endowments, the Federal Government has maintained traditional agricultural policies such as rural credit, minimum prices, insurance, research and extension. Overall, these policies have stimulated market-oriented production rather than subsistence agriculture. Since the 1960s, three broad periods of Brazilian agricultural policymaking can be identified:

### 1964–1985

During the military dictatorship, economic policy focused on increasing the growth rate of gross domestic product (GDP), reducing inflation and generating a trade balance surplus. These targets aimed to modernise the labour market in rural areas and offered economic stimulus to market-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), which 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 stabilise the Brazilian currency by reducing the public deficit, government endowments to earlier-established agricultural policies were drastically reduced, and, simultaneously, new programmes were created to involve the private sector in the agricultural financing process.

### 2000–2012

From 2000 onwards, left-wing parties strengthened their position 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, the MDA and the MAPA have shared the responsibility for supporting Brazilian agriculture, by using the same policies (rural credit, minimum prices, rural extension and subsidised insurance) but with programmes tailored to 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 63 main crops (including sugar cane), agricultural production totalled 384 million tonnes in 1990, 485 million tonnes in 2000 and 966 million tonnes in 2012 (see Figure 1). The annual geometric rate of growth for crop quantity during the 1990s was 3.2 per cent, rising to 6.7 per cent between 2000 and 2012. This growth was achieved by increasing productivity, as shown in Figure 2.

Meat production also saw a large increase (see Figure 3). Total meat production in 1990 was 5.17 million tonnes, rising to 10.33 million tonnes by 2000 and 22.35 million

tonnes by 2012. The annual geometric rate of growth for meat production was 7.04 per cent during the 1990s and 6.39 per cent between 2000 and 2012.

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

- good availability of arable land, especially with the development of new agricultural frontiers in the Centre-West region in the 1970s to 1990s and in MATOPIBA<sup>3</sup> since 2000;
  - modern technology generated by a network that encompasses the Brazilian Enterprise for Agricultural Research (EMBRAPA), public universities, state-funded agricultural research institutes and privately funded organisations;
  - state-funded agricultural policies;
  - the availability of international markets for Brazilian production and the role of large multinational agribusiness companies; and
  - the presence of market-oriented farmers in the categories of both family and non-family farming.
- Brazil also has eco-climatic features conducive to raising cattle and cultivating crops. In some areas, it is

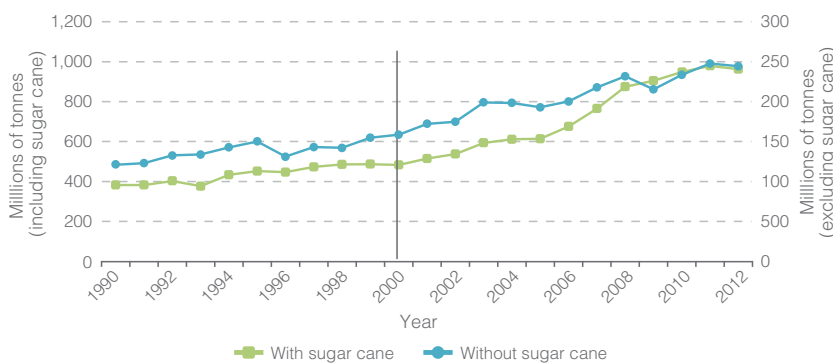
## BOX 1 Key findings

Agro-based product exports increased from USD9.6 billion in 1991 to USD87.6 billion in 2011. Agro-processed products have been responsible for almost two thirds of total exports. New econometric analysis undertaken demonstrates that:

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

**Figure 1**

**Evolution of crop production in Brazil (including and excluding sugar cane) - from 1990 through 2012**



Source: Brazil's Statistical Yearbook, IBGE 2012.

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 seeds 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 late 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, the third largest for corn and the fourth largest for cotton. Brazil is also the largest exporter of beef and poultry, with the largest commercial cattle herd (United States Department of Agriculture 2015).

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 USD10.2 billion in 1990 to almost USD87.5 billion in 2011, representing an eight-fold increase in 22 years. A particularly large increase has taken place since 2000, as the US and European Union (EU) shares of the global agricultural and agro-processed product markets have declined.

From 2000 to 2011, Brazil's exports of agricultural and agro-processed products to EU countries increased by almost 200 per cent, even though the share of overall Brazilian agricultural/agro-processed exports represented by these countries

actually decreased from 50 per cent to 27 per cent (Ipea).

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 purchased 27 per cent of Brazil's agricultural and agro-processed exports; by 2011, this percentage had climbed to 53 per cent. China alone accounted for 18 per cent of Brazil's exports of agricultural and agro-processed goods in 2011.

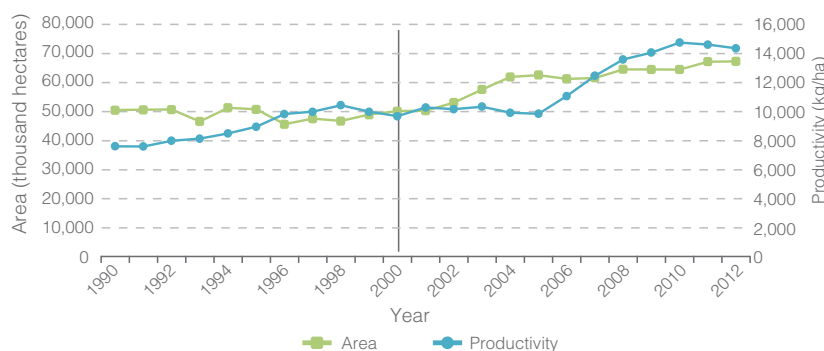
**The role of agribusiness**

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 subsidised farmers planting grains in Cerrado biome areas using the so-called *Contratos de Soja Verde* (Green Soybeans Contracts)—a forward sale not established by law, under 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.

**Figure 2**

**Evolution of area and productivity for the main 63 crops in Brazil - 1990 through 2012**



Source: Brazil's Statistical Yearbook, IBGE 2012.

**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 enable farmers to bring the Cerrado and other areas into production.

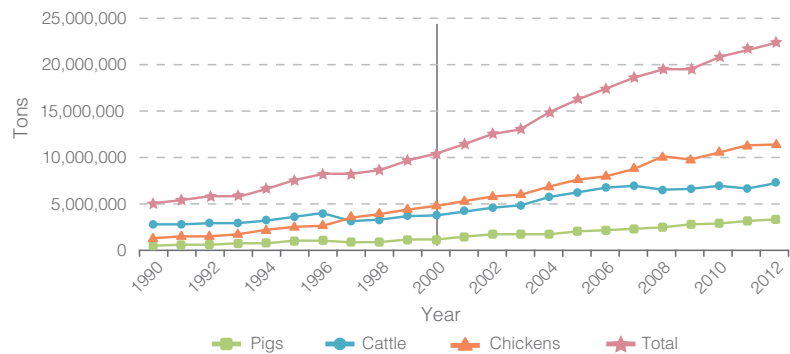
Some commentators tend to assume that the spread of agriculture throughout the Cerrado biome is entirely due to EMBRAPA research (e.g. *The Economist* 2010: 3). However, while EMBRAPA performs an important role coordinating a large range of crop and livestock research, it is only one among a huge network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

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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 enable farmers to bring the Cerrado and other areas into production.

**Figure 3**

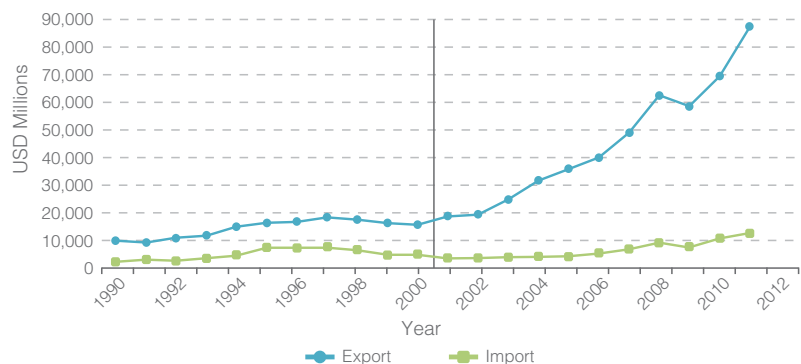
**Brazilian meat production from 1990 through 2012**



Source: IBGE (2012).

**Figure 4**

**Brazil's exports and imports of agricultural and agro-processed products from 1990 through 2011**



Source: FAO (2013).

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

**Future production potential**

Brazil still has a considerable amount of available arable land. In 2010, there were 85.3 million hectares of potential arable land available, which, if used, would double the currently farmed area without encroaching on legally established conservation areas. Most of the currently available arable land is located in the Cerrado areas, and over the past four decades the advancing agricultural frontier has brought about

major shifts in Brazilian agriculture. Although the South and Southeast regions have historically been and remain the main agricultural producers, these areas' share of overall agricultural production is decreasing, while that of the Centre-West region has increased, largely due to the good availability of arable lands covered with Cerrado vegetation. ■

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1. This article is based on Bacha and de Carvalho (2014).
2. Luiz de Queiroz College of Agriculture (ESALQ/USP).
3. An acronym composed of the initials of the states of Maranhão, Tocantins, Piauí and Bahia.

# Transforming agriculture through productivity growth: lessons from Brazilian agricultural development<sup>1</sup>

by Bernardo Mueller<sup>2</sup> and Charles Mueller<sup>2</sup>

## 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 characterised instead by inefficiency. 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, rather, through dramatic improvements in productivity led by technological research that has successfully developed methods and inputs specifically suited to the conditions of the country (see Figure 1). While the total area of arable land has remained basically the same since the mid-1970s, production has increased by nearly 300 per cent—a rate even faster than other high achievers in this field, including the USA and 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 significant attention as to what policies and programmes have been driving this transformation. Interest has centred on the fact that this transformation was achieved starting from a relatively under-developed agricultural setting, similar to that found in many other poor and developing countries. While many technological and organisational packages from developed countries have been adopted and implemented throughout the world, the results have often been disappointing. The Brazilian experience raises the possibility 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 decrease in poverty and inequality since 1995 has added to the allure of a Brazilian model, making it even more enticing for poor countries. In particular, a growing consensus has emerged that the Brazilian model would be particularly well suited for countries in Africa.

## The perils of planning, managing and controlling agriculture

How has Brazilian agriculture transitioned from low productivity to its current status as a major player in international markets and a role model for other developing countries? A temptation is to look back and, with the benefit of hindsight, fit an ex-post explanation to what has taken place. Such an approach tends to overestimate the influence and effectiveness of policymaking as well as the rationality of agents and agencies. Instead, it is important to factor in the imperfect foresight and bounded rationality among policymakers and the limited influence of policy in that period.

Admitting that we have not yet arrived at a full understanding of the factors behind

the Brazilian rise in agricultural productivity does not mean that its lessons cannot be useful for countries such as those in Africa. On the contrary, acknowledging gaps and uncertainties surrounding our assessment of Brazil's experience might prevent rash transplantations of policies that might not have the intended effect in different circumstances. Examining the Brazilian agricultural experience through this lens will help to identify which elements can be usefully emulated.

A striking example is the extreme concentration of agricultural output in a small number of productive units. Table 1 shows that under 1 per cent of the farms in Brazil produce over half of the gross income in agriculture, while nearly 3 million farms (66 per cent of the total) generate just 3.27 per cent of the gross income. This has happened despite a massive effort by the government at land reform over the years.

The land reform programme in Brazil has redistributed to landless peasants an area equal to that of France, Portugal, Austria and Ireland combined, benefiting over 1 million families. The fact that such a gargantuan amount of effort and resources have been expended in land reform programmes over the years—with their additional associated cost in terms

**Table 1** Gross income per farm by size (in minimum wages), 2006

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

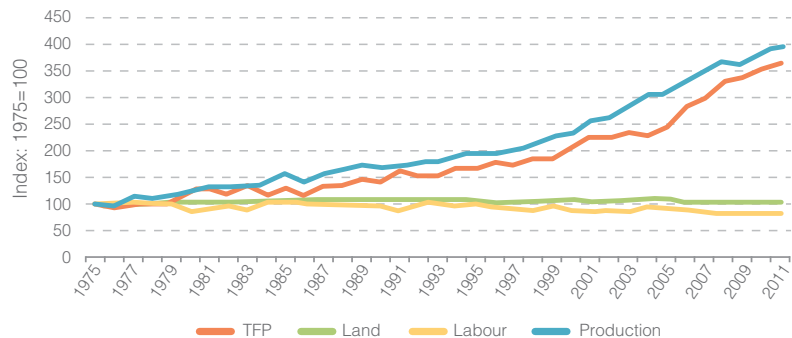
Source: Alves and Rocha (2010) using IBGE data.

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Brazil is one of the major producers of a series of agricultural commodities.

**Figure 1**

The evolution of production, land, labour and total factor productivity in Brazilian agriculture, 1975-2011



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

of environmental degradation (as many settlement projects are in the Amazon), violence and human suffering—to have such little impact on the distribution of output underlines the challenges facing policymaking that this area.

### Three stages of agricultural transformation

The evolution of Brazilian agriculture can be divided into three distinct periods. The first was a phase of horizontal expansion, from the end of 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 modernisation, from the early 1970s to the early 1990s, in which the exhaustion of fertile lands in the country's frontier regions led to the implementation of a system for technical innovation and the configuration of active policies of agricultural credit and price support, which led to massive distortions and inefficiencies in the sector.

The final phase was one of low governmental intervention, aside from credit provision which began in the early 1990s, characterised by increasing the participation of a substantially modernised and diversified agricultural sector in agribusiness complexes with an increasingly important role in supplying domestic and international markets.

### 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 which actors were in power in each period, what instruments they had access to and what their interests and motivations were.

During much of the early periods, agricultural policy which sought to enhance the modernisation and efficiency of the sector became side-lined and derailed by concerns over inflation or industrialisation.

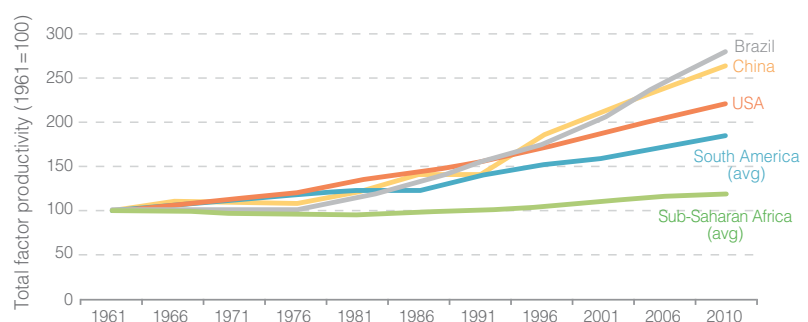
Rather than being seen as unfortunate policy mistakes, these choices should be understood as direct consequences of the country's extant economic and political institutions.

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

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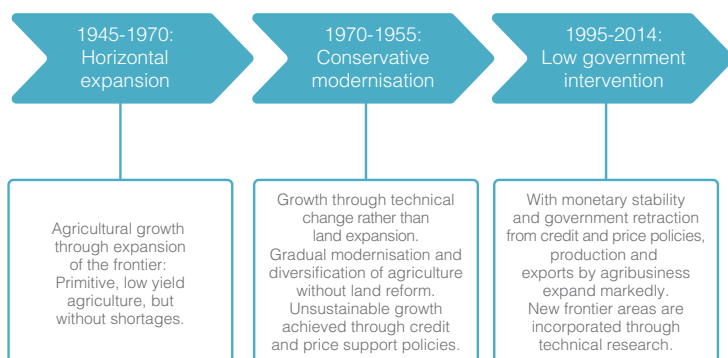
**Figure 2**

Total factor productivity in agriculture for selected countries, 1961-2010



Source: USDA Economic Research Service (2013).

**Figure 3** Three stages in Brazilian agriculture



“ The remarkable transformation in Brazilian agriculture only really emerged when inclusive institutions—strong presidentialism subject to a robust system of checks and balances—created a fiscal, monetary and political environment in which those policies could succeed.

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Photo: Sergio Amaral/MDS. Rural workers, Distrito Federal, 2015, Brazil.

1. This article is based on Mueller and Mueller (2014).
2. University of Brasília (UnB).

# How EMBRAPA catalysed productivity gains in Brazil's soybean and pulp and paper industries<sup>1</sup>

by Paulo Figueiredo<sup>2</sup>

## The issues

While there has been an unprecedented increase in demand for agricultural produce around the world, productivity growth has been slowing down. Globally, productivity is expected to rise by just 1 per cent a year over the next two decades, much slower than historical trends (IMF 2014). Meeting the likely demand for food and fuel in 2030 will require an additional 175–220 million hectares of cropland (FAO 2014; Heck and Rogers 2014).

An alternative way to meet the growing demand for resources over the next decades will be to expand innovation capabilities and institutional infrastructures to deliver large-scale and high-productivity crops, especially in developing economies. Yet the next so-called green revolution should also bring the benefits of agricultural innovation and research to the poorest farmers across the developing world.

This article summarises the main results of an exploratory study on the role of indigenous institutional infrastructures (knowledge-related institutions and government policies) in the accumulation of world-leading innovative capabilities (technological catch-up) in latecomer natural resource-related industries. These issues are examined from the perspective of the Brazilian Corporation for Agricultural Research (EMBRAPA) and Brazil's soybean and forestry-based pulp and paper industries.

## The role of EMBRAPA

Since its creation in 1973, EMBRAPA has operated under Brazil's Ministry of Agriculture, Livestock and Food Supply. EMBRAPA has a budget of approximately USD1 billion, largely funded by the federal government. It has approximately 9,600 employees, of which 25 per cent (2,400) are researchers. More than

80 per cent of EMBRAPA's researchers hold PhD degrees. It is organised on the basis of centralised units (e.g. financial management, IT), services units, national product centres, national thematic centres and eco-regional units. EMBRAPA also coordinates the National System of Agricultural Research (SNPA), as shown in Figure 1.

## Brazil's soybean industry: competitiveness and innovation

Brazil is the world's second largest soybean producer (behind the USA) and the world leader in soybean productivity (kg/ha). In the 2012/13 crop Brazil produced 81.5 million tonnes of soybeans, while the USA produced 82.1 million tonnes. Brazil's soybean production grew by 9.3 per cent from 2008/09 to 2012/13, while US production grew by 0.43 per cent over the same period. Brazil produces a quarter of the world's soybean exports on just 6 per cent of the country's arable land.

By 2012, the overall average yield for soybeans in Brazil (3,000 kg/ha) surpassed the average yield in the USA (2,800 kg/ha).

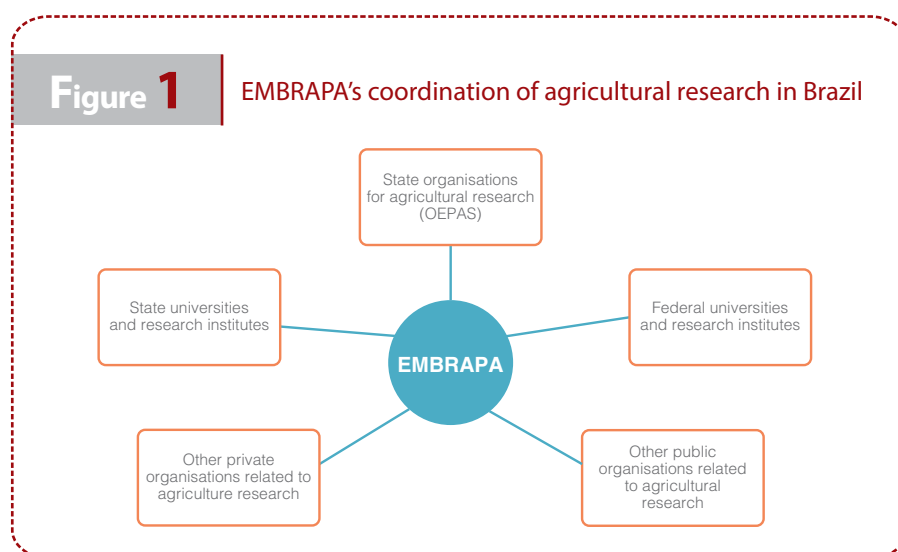
The cost of producing soybeans in Brazil fell to about USD6.23 per 60 kg bag, around half of the US cost of USD11.72 (CONAB, 2013). EMBRAPA has played a significant role in achieving such impressive productivity gains.

## Innovation in agricultural processes: adoption of zero tillage technology

Zero tillage (ZT) means planting with minimum soil disturbance, coverage of soil with plants and plant residues and rotation of crops. By 2009, Brazil had 25.5 million hectares of ZT-cultivated area, slightly more than the USA. ZT is sensitive to local ecological conditions, so Brazil could not simply replicate the same technique adopted in other countries. To adopt the ZT technique, Brazil had to engage in a process of creative imitation. This adoption process involved four phases (see Figure 2).

## Development of new soybean cultivars

EMBRAPA Soybean, one of EMBRAPA's crop-focused units, was created in the early 1970s. Since then it has developed over 300 new soybean cultivars to suit different regions of Brazil, which are



Source: Author's elaboration.



Photo: Alberto Coutinho/AGECOM. Soybean harvest, Bahia, 2010, Brazil <<http://bit.ly/1mhaR6e>>.

“ Of the pulp and paper produced in Brazil, 100 per cent is derived from planted forests, which are renewable resources.

resistant to major crop diseases and now account for over 50 per cent of the national seed market. New cultivars developed by EMBRAPA have seen yields almost triple since the 1970s.

**Brazil's forestry-based pulp and paper industry: competitiveness and innovation**

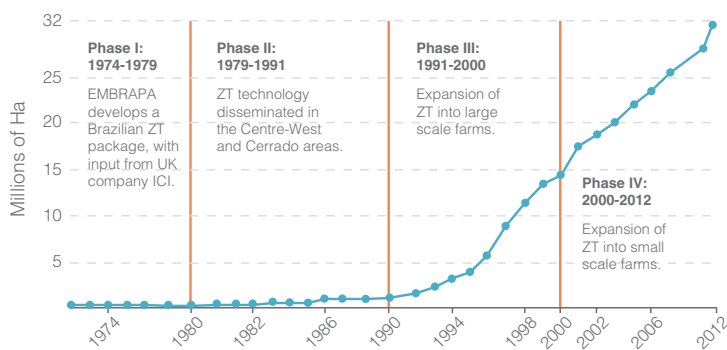
Brazil is the world's largest producer of hardwood pulp (‘eucalyptus pulp’), the world's fourth largest pulp producer and the ninth largest paper producer. Of the pulp and paper produced in Brazil, 100 per cent is derived from planted forests, which are renewable resources. Brazil has 2.2 million hectares of fully certified land planted for industrial use. In 2012, the revenue from Brazil's pulp and paper

industry approached USD17 billion, yielding exports of USD7.2 billion. From 1970 to 2012, Brazil's output of pulp grew by an average of 6.8 per cent and of paper by an average of 5.4 per cent per year (Bracelpa 2014).

In the forestry-based pulp and paper industry, EMBRAPA played a more significant role after leading firms accumulated world-class innovative capabilities. By the late 1990s, Brazil had already consolidated its world-leading technological position in the eucalyptus-derived pulp and paper industry.

During the early 2000s, EMBRAPA Forestry and EMBRAPA Genetic Resources

**Figure 2** Evolution of zero tillage development phases in Brazil (1974-2012)



Source: Author's elaboration, adapted from EMBRAPA (2012).

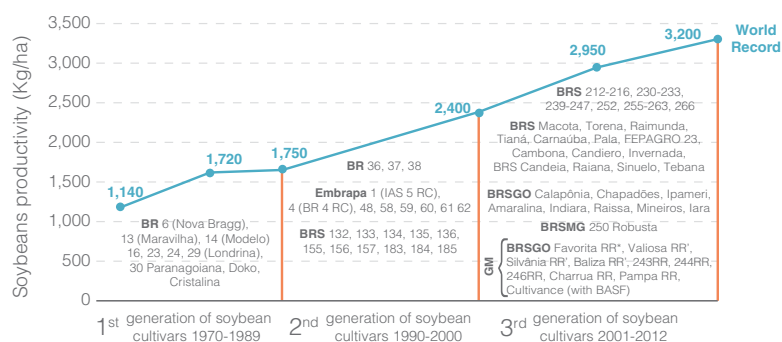


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In agriculture, public research organisations play an important role in catalysing industrial innovation.

**Figure 3**

The evolution and productivity increase of new soybean cultivars developed by EMBRAPA



Source: Author's elaboration.

Note: RR\* means Roundup Ready with Monsanto.

and Biotechnology led a remarkable nationwide research project on the eucalyptus genome. The Genolyptus network established a collection of over 150,000 DNA sequences generated from genes and genomes of four species of eucalyptus.

In addition to being an important organisational innovation for the forestry-based pulp and paper industry, Genolyptus also generated:

- the development of new human capital (e.g. MScs and PhDs);
- the development of new techniques for assisted molecular breeding;

- the development of new techniques for improving the quality of wood;
- new techniques for the physical analysis of wood; and
- an organised network of researchers.

**Relevance of increased technological capabilities**

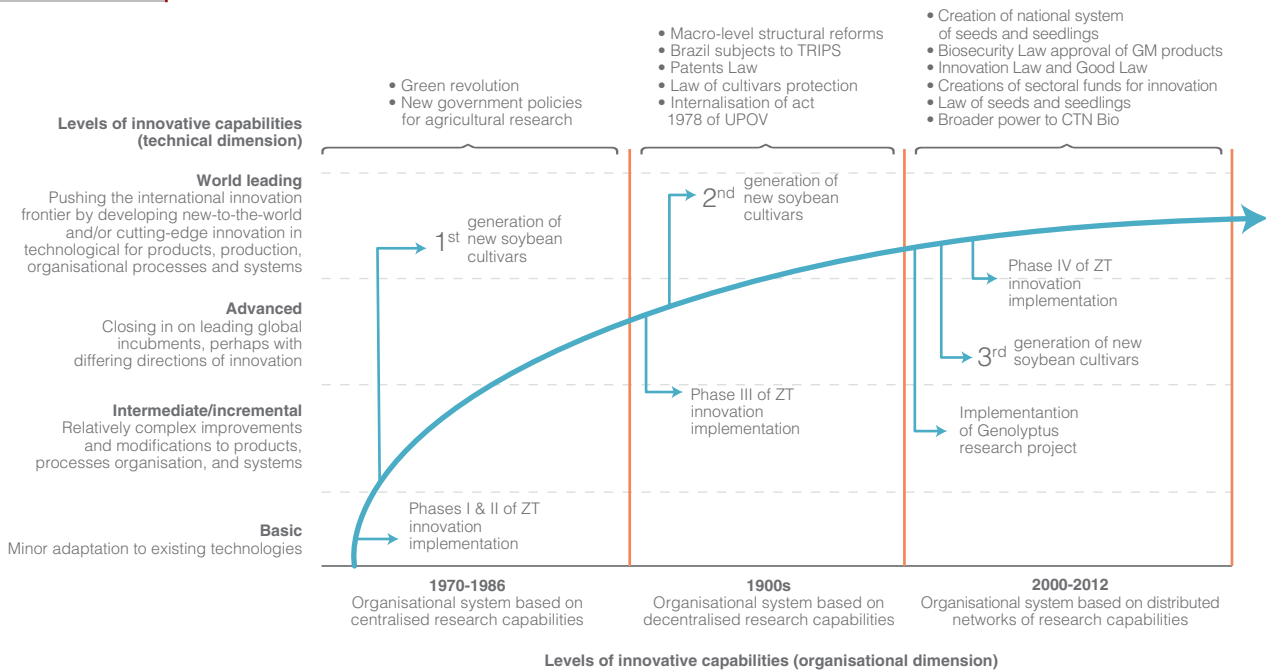
The aforementioned innovative activities have been implemented based on technological capabilities accumulated by EMBRAPA and increasingly distributed among its partners. These technological capabilities have a technical dimension centred on human resources, skills and knowledge bases, and an



Photo: Elói Corrêa/AGECOM. Eucalyptus plantation in Eunápolis, Bahia, 2010, Brazil <<http://bit.ly/1mhaR6e>>.

**Figure 4**

**The accumulation of technical and organisational capabilities within EMBRAPA**



Source: Author's elaboration.

organisational dimension centred on different forms of specialisation/ differentiation, integration/co-ordination and 'orchestration'.

As shown in Figure 4, as EMBRAPA's innovative capabilities increased, its organisational structure developed from a centralised approach towards more networked research capabilities. The accumulation and strengthening of this organisational basis over time has been decisive to support innovative activities in these two industries. Figure 4 also suggests that the accumulation of these innovative technological capabilities has been influenced by changes in government policies, particularly since the 1990s.

**Conclusions and policy implications**

In closing, the study has found that in agriculture, public research organisations play an important role in catalysing industrial innovation. However, they need to work together with key industry stakeholders to meet their needs and demands.

Moreover, while investment in science is not a guarantee for achieving relevant innovative performance, policymakers

should adopt a comprehensive perspective on innovation based on a spectrum of activities: from duplicative copy, creative imitation to progressive levels of innovation. Important innovative activities can be implemented on the basis of capabilities other than research and development.

Natural resource-related industries offer important opportunities for innovation and for achieving international competitiveness. Achievements in this area depend on the accumulation of innovative capabilities, connected with market needs and demands, at the level of industry and organisations. They also depend on the design and implementation of government policies to stimulate, support and fund the development of these capabilities. ■

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1. This article is based on Figueiredo (2014).
2. Brazilian School of Public and Business Administration at the Getúlio Vargas Foundation (EBAPE/FGV).

# Anti-poverty transfers and inclusive growth in Brazil<sup>1</sup>

by Armando Barrientos,<sup>2</sup> Dario Debowicz<sup>3</sup> and Ingrid Woolard<sup>4</sup>

## The evolution of social assistance in Brazil

Brazil emerged from dictatorship in 1985 with a huge 'social debt', a commitment to address this debt and a ferment of ideas on the way forward. The 1988 Constitution was a watershed moment in the development of social assistance in Brazil. It enshrined the principle that governments have a responsibility to address poverty and ensure minimum living standards for all citizens independently of their capacity to contribute to social insurance. Agreement on this point provided the basis for the expansion of social assistance in the following two decades and was a break from the contributory principle dominant in the past.

Conceptually, the policy instruments adopted in the period immediately following the new Constitution—*Previdência Social Rural* and the *Benefício de Prestação Continuada*—were not especially innovative or far-sighted. Their orientation was firmly rooted in conventional welfare policy—on a distinction between individuals with or without the ability to work. They focused on old-age poverty and on disability but failed to address child poverty. However, their reach has been impressive, pushing pension coverage of people aged 65 and over to just over 86 per cent, among the highest in the region.

The *Bolsa Família* programme, on the other hand, developed out of municipal experimentation with *Bolsa Escola*<sup>5</sup> in the early 1990s, rooted in a mix of guaranteed income proposals, multidimensional perspectives on poverty, and education interventions. *Bolsa Família* greatly expanded the coverage of *Bolsa Escola* and other income transfer programmes, with the number of households participating increasing from 6.5 million in 2004 to 14 million in 2013.

The evolution of anti-poverty policies in Brazil suggests a shift in focus over time from the extension of social

insurance to incorporate excluded sectors, to conventional social assistance directed at vulnerable groups, to human development-focused income transfers. In 2011, the government announced the *Plano Brasil Sem Miséria* as its strategy to eradicate extreme poverty. The plan articulates policies and programmes based on the view that eradicating extreme poverty requires a coordinated effort aimed at improving income/consumption, improving access to basic services and facilitating productive employment.

The primary social assistance programmes in Brazil:<sup>6</sup>

### *Benefício de Prestação Continuada*

- **Focus:** A nationwide non-contributory pension scheme for old people and people with disabilities living in extreme poverty
- **Eligibility:** Those aged over 65 years and those with disabilities (irrespective of age) in households with a per capita income of less than a quarter of the minimum wage
- **Monthly benefits:** One minimum wage: BRL788 (USD202)
- **Reach:** 3.7 million beneficiaries, split evenly between old age and disability
- **Outcomes:** Benefits are shared within households, leading to a lower incidence of child labour
- **Budget as a percentage of GDP:** 0.7

### *Previdência Social Rural*

- **Focus:** A semi-contributory pension scheme for rural workers with low contributory capacity
- **Eligibility:** Long-term rural informal workers (over 15 years) in family agriculture, fishing or mining
- **Monthly benefits:** One minimum wage BRL788 (USD202)
- **Reach:** 7.8 million beneficiaries
- **Outcomes:** Helped to lift an estimated 4 million people out of extreme poverty, and boosted economic activity in rural areas; has

reduced child labour and increased school enrolment rates when children co-reside with a pensioner

- **Budget as percentage of GDP:** 1.4

### *Bolsa Família*

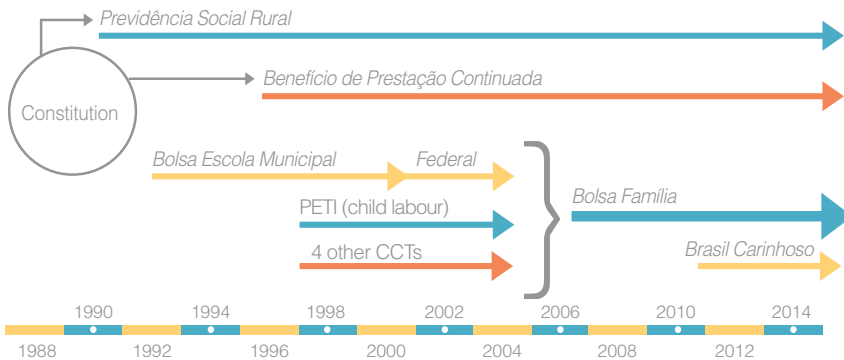
- **Focus:** A minimum income for households living in extreme poverty and households living in moderate poverty with children
- **Eligibility:** Households with per capita monthly income of less than BRL77 (USD19) and households with children with per capita income of less BRL154 (USD39)
- **Monthly benefits:** Basic transfers = BRL77 (USD1935); variable transfers = BRL35 (USD9) per child (aged 0–15, up to five); and BRL42 (USD11) for each youth (aged 16–17, up to two); top-up benefit closing the gap to the per capita income threshold of BRL77
- **Reach:** 14 million households
- **Outcomes:** Estimates suggest it has been responsible for around one third of the reduction in extreme poverty between 1999 and 2009, and has helped reduce inequality; children in participating households are healthier, spend more time in school, and infant mortality is reduced; labour force participation rates are largely unaffected
- **Budget as a percentage of GDP:** 0.6

### **Key finding: *Bolsa Família* has a stronger impact in poorer municipalities**

Studies on the impact of *Bolsa Família* on participant households focus mainly on mean outcomes at the national level. Some studies have estimated outcomes at a more disaggregated level—for example, by gender or by rural/urban location. We examined the variation across municipalities by estimating quantile regressions of municipal participation rates on selected outcomes using data from the National Household Sample Survey (PNAD) from 2001 to 2006.

**Figure 1**

**The evolution of social assistance components and programmes in Brazil**



“

The programme [Bolsa Família] has had positive and stronger effects on the more disadvantaged municipalities, suggesting that it will contribute to inclusive growth over and above its mean effects.

Source: Authors' elaboration.

We found significant differences in outcomes across municipalities for certain outcomes. The distribution of outcomes for girls' school attendance peaks in the bottom quantiles of municipalities ranked from low to high in attendance rates for girls in school. This result suggests that municipalities with low school attendance rates benefited the most from Bolsa Família. The programme has had positive and stronger effects on the more disadvantaged municipalities, suggesting that it will contribute to inclusive growth over and above its mean effects. By contrast, Bolsa Família does not appear to be associated with changes in adult labour supply rates across municipalities. This finding applies to the entire distribution of municipalities.

**The sustainability of social assistance programmes**

Two decades of rapid growth in social assistance institutions have secured important achievements, but institutional development in Brazil is far from complete. The Ministry of Social Development and Fight against Hunger is engaged in consolidating anti-poverty policy across government agencies and in strengthening its institutional framework. Combining the three main strategies for inclusion in Brazil is a challenge for the emerging welfare institutions. Extending the coverage of referral social assistance centres will provide ground-level support for families facing acute deprivation and poverty.



Photo: Ana Nascimento/MDS. Bolsa Família beneficiary family in Pará, 2013, Brazil.



Photo: Sergio Amaral/MDS. Social worker in Acre, 2014, Brazil.

The growth of social assistance reflects government efforts to shift the balance of public subsidies from social insurance to social assistance. While the emergence of social assistance is a step forward, the imbalance remains large. Public subsidies to the public-sector social insurance fund are roughly equal to of the sum of all public subsidies to social assistance. Looking into the future, further rebalancing public subsidies within social protection at large is an important challenge.

To date, social assistance in Brazil has enjoyed broad political support, ensuring its political sustainability. All presidential candidates in elections since 2000 have supported *Bolsa Família*, with the health and education conditions helping to bolster the consensus. Furthermore, there is little evidence that poverty reduction programmes have encouraged clientelism among beneficiaries. *Bolsa Família* is perceived as a rules-based federal programme, not subject to political patronage. Sustaining political support for social assistance is essential.

### Relevance to African countries

The effectiveness of *Bolsa Família*, combined with the Lula administration's focus on re-engaging with Africa, created an opportunity for knowledge sharing between Brazil and Africa. Brazil has hosted numerous study visits from African delegations and has given ongoing technical support for some of the countries seeking to implement or expand their provision of social

assistance. The *Mundo sem Miséria* (World Without Poverty, WWP) initiative, launched in 2014, supports a poverty reduction knowledge bank which can be used by other developing countries.

### Policy implications

To be effective and politically sustainable, anti-poverty transfers must be appropriate to the local context. Attempts to transplant Brazilian methods directly are unlikely to be successful. However, the Brazilian experience provides useful inspiration and guidance for policymakers in other developing countries.

Prioritising human development objectives within social assistance programmes has been vital. *Bolsa Escola* was established on the understanding that without strengthening human development, especially among children, income transfers are unlikely to have sustained effects on the households targeted.

Regarding whether the Brazilian experience can potentially inform social policies in African countries, *Bolsa Família* and the social pensions are more strongly productivist than most existing anti-poverty transfer programmes in Africa. Whereas in sub-Saharan Africa anti-poverty transfer programmes have focused on households without capacity to work, in Brazil assistance is provided to all households living in poverty, independently of their labour market status. This approach contributes to inclusive growth. ■

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2. University of Manchester.
3. Swansea University and University of Manchester.
4. University of Cape Town.
5. *Bolsa Escola* provided transfers to households with children in extreme poverty, conditional on children attending school. *Bolsa Família* provides transfers to households with per capita income below a quarter of the minimum wage, conditional on school attendance and primary health care utilisation.
6. Up-to-date information on the programmes is available at <<http://mds.gov.br/>>. More detailed information and sources on outcomes can be accessed from the Reference section and the working paper cited in footnote 1. All values are for 2014 (USD PPP 1= BRL1.713).

# The impact of the National Service for Industrial Training (SENAI) vocational training programme on employment, wages and mobility in Brazil: what lessons for sub-Saharan Africa?<sup>1</sup>

by Stephan Klasen<sup>2</sup> and Carlos Villalobos Barria<sup>2</sup>

## Labour market transitions in sub-Saharan Africa: a lack of productivity

The lack of skills of many young people without a post-secondary qualification in rural areas results in large numbers either remaining trapped in the declining traditional sector or migrating to urban areas. There, the scarcity of skills translates into poor labour market outcomes and a problematic school-to-work transition. This hurts not only the affected young people but also the economy as a whole, as skilled workers are critical for a country's productivity, growth and international competitiveness.

In sub-Saharan Africa there is ample evidence of the significant role that education plays on shaping the labour market transition of young people. When comparing Brazil with some countries in the region, the data suggest that the higher levels of secondary and tertiary education in Brazil (see Figure 1) have a positive impact on the probability of finding a full-time job but do not necessarily translate into lower levels of unemployment for discouraged individuals—i.e. those aged 15–29 who are not in employment, education or training (see Figure 2).

With these challenges for sub-Saharan Africa in mind, we investigate the Brazilian vocational training system, with an emphasis on the National Service for Industrial Training (SENAI) to determine what lessons this system of training can offer sub-Saharan African countries.

## The financing of SENAI and the supply of training

When it originated in the 1940s, SENAI was principally financed by all industrial companies, with a tax of 1 per cent on

all payrolls serving as a contribution to the social security system. The fully levy-based financing framework tended to generate a monopoly in the training market by binding enterprises to the training institution, and thus reducing the incentive for employers to provide on-the-job training. Moreover, the lack of competition in training resulted in reduced opportunities for shop-floor workers.

However, since the 1990s the revenues associated with the sale of training services to enterprises have grown rapidly, encouraging the supply of ad hoc training courses at an affordable cost. Thus, enterprises that are unable to run their own training courses (including informal firms) now have greater possibilities to find relevant vocational training courses in a context of increasing interdependence between economic sectors, high levels of informality, the incorporation of other agents

(universities, technical schools, consultants) and training modalities such as distance education.

## Who is most likely to enrol in SENAI vocational training?

On average, our study finds that younger males currently employed in the formal sector with a completed secondary education, and from relatively more educated families, are most likely to enrol in vocational training courses provided by the S-system.<sup>3</sup> Consequently, the current patterns of enrolment in vocational training confirm concerns expressed in the literature—that vocational education does not particularly meet the needs of the less skilled and disadvantaged populations. At the same time, ethnic and geographical factors do not appear to play a significant role in determining the probability of enrolment. Finally, we do not find that the S-system training is used as a substitute for formal education.



Photo: Everton Amaro/FIESP. 2013 Senai SP Skills Competition, São Paulo, 2013, Brazil <<https://goo.gl/cefU8>>.

### SENAI's training outcomes: improving labour market performance

Based on analysis of the Brazilian National Household Sample Survey (*Pesquisa Nacional por Amostra de Domicílios*, PNAD) from 2007, our findings (see Table 1) show a significant monthly labour earnings premium for trained workers aged 15–29 of 28.3 per cent in the S-system and 10.4 per cent in other training institutions, with a higher premium in rural areas and a lower premium in urban settings.

The sizeable impact of training on monthly earnings is not driven by changes in labour supply, but mainly by significant improvements in productivity (hourly labour earnings). Moreover, vocational training is associated with higher levels of formality. Unfortunately, the effects of training on women are negative in terms of hourly labour

earnings, although training increases their chances of employment by about 18 per cent, independently of the training institution.

Regarding labour mobility, we find that S-system graduates are, on average, more likely to migrate than their non-trained counterparts; therefore, claims suggesting that vocational training can induce labour immobility are partially compensated by this novel evidence.

According to our estimates, training contributes to equalising regional disparities, as it explains an additional migration flow of 82,000 workers between 2003 and 2007.

S-system training contributes to reducing the wage gap between rural and urban areas—across the whole distribution of

skills, rural workers benefit the most in relative terms.

Finally, the SENAI and S-system training premium on monthly labour earnings increases the gender pay gap; for workers with the same qualification level, returns to training are higher for men than for women.

### Policy implications

In African countries, policymakers should ensure that any intervention to create or modify the vocational training system can offer different ethnic/racial groups the same development chances—as SENAI does.

They should find a proper financing structure that avoids fluctuations and uncertainties. The SENAI financing balance of a market-driven component with a stable public source can be a model in African countries, given the high levels of informality.

**Table 1**

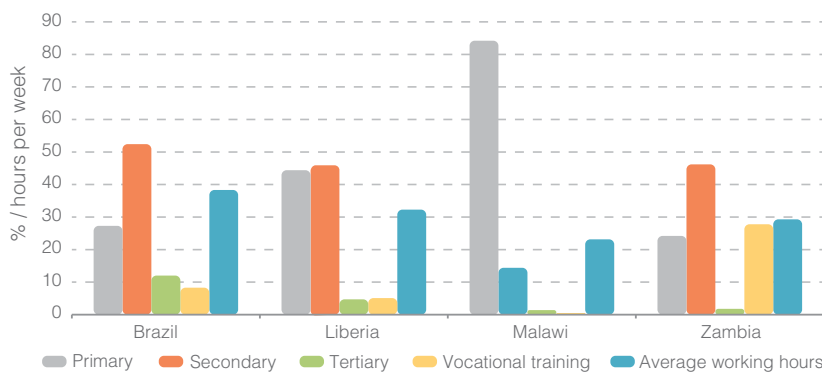
Average treatment effect of professional qualification training on selected variables in 2007: the S-system and other training institutions

Vocational training (all courses)										
Labour market outcomes	Monthly earnings (BRL, 2007)		Monthly working hours		Hourly labour earnings (BRL, 2007)		Formality (proportion)		Employment (proportion)	
	S-system	Other inst.	S-system	Other inst.	S-system	Other inst.	S-system	Other inst.	S-system	Other inst.
<b>Absolute effect of training (BRL 2007, hours, proportion)</b>										
Men and women aged 15-29	168	63	-1.1	2.0	0.86	0.35	0.09	0.09	0.07	0.09
Urban men and women aged 15-29	87	54	-0.4	1.6	0.26	0.25	0.06	0.08	0.07	0.06
Urban women aged 15-29	0	16	-0.2	2.0	-0.23	-0.02	-0.03	0.04	0.09	0.09
<b>Outcome without training (BRL, hours, proportion)</b>										
Men and women aged 15-29	593	607	182	182	3.74	3.85	0.54	0.56	0.58	0.59
Urban men and women aged 15-29	637	645	183	183	4.03	4.12	0.58	0.6	0.62	0.63
Urban women aged 15-29	595	600	170	171	4.24	4.26	0.59	0.61	0.49	0.51
<b>Relative effect of training (percentage)</b>										
Men and women aged 15-29	28.3	10.4	-0.6	1.1	23.1	9.0	16.1	16.6	12.3	14.7
Urban men and women aged 15-29	13.7	8.4	-0.2	0.9	6.5	6.0	9.9	13.4	10.5	10.0
Urban women aged 15-29	0.0	2.7	-0.1	1.2	-5.5	-0.5	6.0	6.0	17.6	17.6

Source: Authors' calculations based on PNAD 2007.

**Figure 1**

Education levels and working hours of the youth population (aged 15–29) in selected countries as of 2012

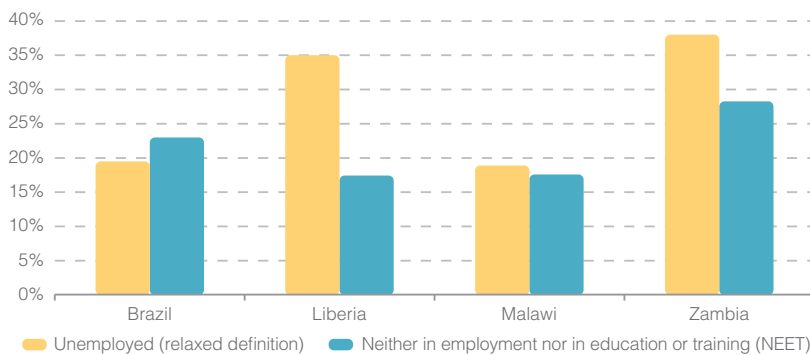


Source: Authors' calculations based on SWTS (2012).

Note: Liberian data on those aged 15-35.

**Figure 2**

Proportion of the youth population unemployed and those neither in employment nor in education or training as of 2012



Source: Authors' calculations based on SWTS (2012).

Note: Liberian data on those aged 15-35. Unemployment consists of individuals that (i) did not work in the reference period, (ii) were available to take up a job had one been offered in the previous week.

The focus should be on improving labour market outcomes of men and women, in urban and rural areas without increasing occupational segmentation. ■

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1. This article is based on Barria and Klasen (2014).
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3. A large set of vocational training institutions, financed with public money and managed by the private sector, of which SENAI is the main component.

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Policymakers should ensure that any intervention to create or modify the vocational training system can offer different ethnic/racial groups the same development chances.



# Earmarking credit for investment, stability and growth: lessons from the Brazilian Development Bank<sup>1</sup>

by Ernani Torres,<sup>2</sup> Luiz Macahyba and Rodrigo Zeidan<sup>3</sup>

## The transformation of the Brazilian credit system

Until the mid-2000s, credit in Brazil was characterised by five salient features:

- volatility;
- high costs;
- high concentrations in the banking industry, with the significant participation of state-owned institutions; and
- segmentation, with large quasi-fiscal funds earmarking credit for investments.

Today, the Brazilian financial market is very different from that of the early 2000s. According to the World Bank (2013), domestic credit to the private sector reached 61 per cent of Gross Domestic Product (GDP) in 2011, above the world average of 58 per cent. This transformation was concentrated on the second half of the 2000s and was centred on households and within the housing market (see Figure 1).

From the supply side, the rapid growth of the credit market from 2004 to 2008 was initially led by domestic private banks. They were liquid and sufficiently capitalised to meet the demand, while the state-owned banks lagged behind. They were financially healthy—but too slow to introduce new financial products to compete with the private sector.

After the bankruptcy of Lehman Brothers in September 2008, the situation changed. Private banks became more cautious and decided to curb the expansion of their lending rates. In order to avoid a recession in the manufacturing sector that would result in massive job losses, the government decided to step in. *Banco do Brasil*, a state-owned commercial bank, expanded its lending to compensate for the retreat of its private competitors. At the same time, the Brazilian Development Bank (BNDES) increased its disbursements, guaranteeing

the flow of funds to long-term projects. These measures helped stabilise the level of domestic investment (see Figure 2).

## The role of BNDES

BNDES was created in 1952 as an institutional innovation in the Brazilian banking system to fill an important gap: the provision of long-term loans for investment in manufacturing and infrastructure projects. The shortage of bank loans was considered one of the most important barriers to economic development. It is wholly controlled by the federal government, and today BNDES is one of the largest development banks in the world. It holds almost the same level of assets as the World Bank, but disburses five times more and is much more profitable.

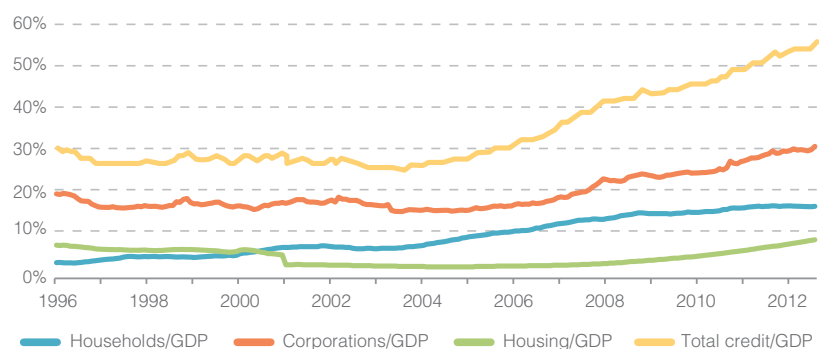
In the 1980s, BNDES started to fund social infrastructure projects in areas such as education, health, water and sewage, and urban transportation. In the 1990s, export finance was also included in its portfolio. However, its core business is still long-term finance—predominately loans but also equity—invested in manufacturing and infrastructure projects (see Figure 3).

BNDES has always been mainly funded by the public sector. Foreign resources were deliberately minimised to ensure independence from overseas political pressure, as well as to insulate it from international financial markets. Domestic private-sector funding was too scarce, short-term and costly to play a significant role. Therefore, most of the resources managed by BNDES came from the government sector by means of special funds. However, after the 2008 crisis, Treasury loans became increasingly important to leverage sufficient funding to offset the credit squeeze in the private sector. These loans rapidly became the main source of funds for BNDES (see Figure 4).

## BNDES in Africa

BNDES began to finance Brazilian exports to Africa in 2007. Between 2007 and 2010, credit to the continent totalled more than USD2 billion. Angola was by far the most important destination for loans, along with other Portuguese-speaking countries and South Africa. The loans were related to investment projects in

**Figure 1** The evolution of bank credit by sector



Source: Banco Central do Brasil (2014).



Photo: Dominic Chavez/World Bank. 2015, Ghana <<https://goo.gl/cefU8>>.

different sectors—including roads, power (generation and transmission lines), water and sewerage systems, and airports—that were awarded to large Brazilian private construction companies.

**National development banks as a tool to promote investment, growth and stability**

National development banks are a polarising subject. On the one hand, critiques highlight that loans have a

high level of state subsidies, a lack of transparency and a tendency to privilege certain economic groups; on the other hand, national development banks clearly address a market failure in the long-term credit market.

**Table 1** BNDES, Inter-American Development Bank and the World Bank (2013)

USD million	BNDES	IADB	World Bank
Total assets	333,835	97,007	324,367
Equity	25,880	23,550	39,523
Net income	3,479	1,307	218
Disbursements	81,285	10,558	16,030
Return on equity (%)	14.5	5.9	0.6

Source: BNDES.

In Brazil, BNDES has been an important purveyor of long-term credit and facilitator to capital market development, an agent for anti-cyclical responses to possible crises and an external financier to the internationalisation of Brazilian companies. However, there is evidence that when the bank strays from its main roles, it does not generate value for shareholders—especially when it is a minority shareholder in non-financial companies.

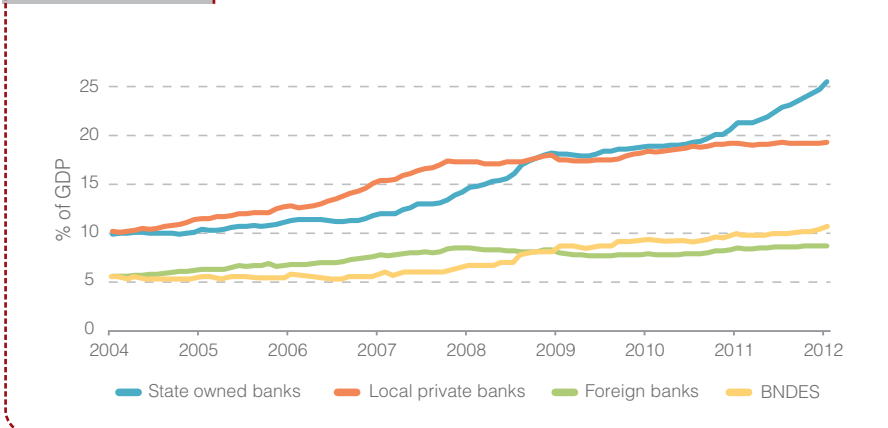
**Policy implications**

National development banks may not be necessary when financial markets are efficient and well established. But that is far from the reality of emerging markets, especially the poorer countries in the world.

The World Bank estimates that in infrastructure alone the growth in demand from developing countries will increase by around an additional USD1 trillion per annum through 2020. This is especially true in Africa, in which long-term financing is particularly precarious.

National development banks—such as BNDES—can be important institutions for the industrialisation and development process while financial markets mature, but become less relevant as financial

**Figure 2** Outstanding bank loans by ownership of commercial banks



Source: Authors' elaboration based on data from the Banco Central do Brasil (2014).

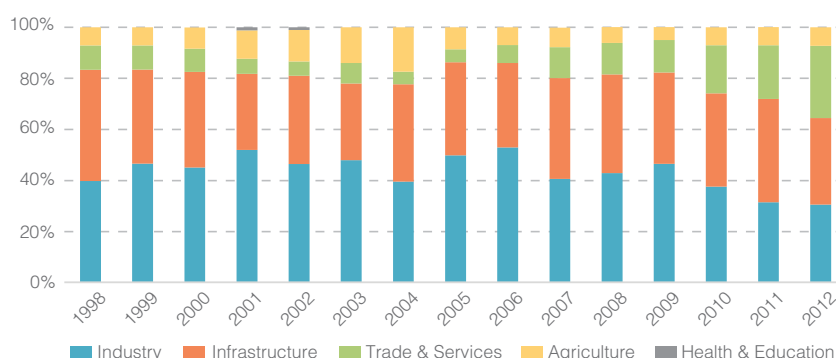
“ In Brazil, BNDES has been an important purveyor of long-term credit and facilitator to capital market development, an agent for anti-cyclical responses to possible crises and an external financier to the internationalisation of Brazilian companies.

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National development banks—such as BNDES—can be important institutions for the industrialisation and development process while financial markets mature, but become less relevant as financial markets develop.

**Figure 3**

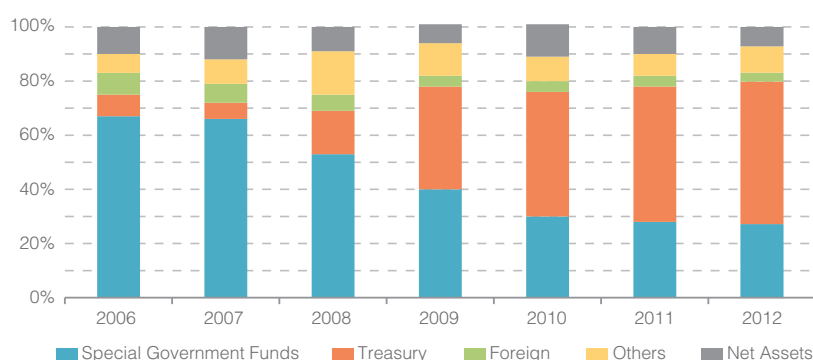
**BNDES' disbursements by business sector**



Source: Authors' elaboration based on data from BNDES (2014).

**Figure 4**

**BNDES: capital structure**



Source: Authors' elaboration based on data from BNDES (2014).

markets develop. While such institutions offer potential advantages to economies with less mature financial sectors (a situation typical of many sub-Saharan Africa economies, for example), their establishment involves significant resource costs. Whereas Brazil has been able to meet this challenge through reasonably good access to international capital markets and robust streams of taxation revenue, it should not be imagined that these conditions would always apply to other economies, especially those at an early stage of development. In setting up its own national development bank, Brazil was able to draw on a reasonably deep pool of local expertise and talent—an advantageous state of affairs not necessarily characteristic of many developing economies. ■

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1. This article is based on Torres, Macahyba and Zeidan (2014).
2. Federal University of Rio de Janeiro (UFRJ).
3. Dom Cabral Foundation.

# Institutions for macroeconomic stability in Brazil<sup>1</sup>

by José Roberto Afonso<sup>2</sup> and Eliane Cristina Araújo<sup>3</sup>

## Hardwiring inflation into the economy

In the 1960s, military governments promoted far-reaching structural economic reforms in Brazil, creating innovative and stable institutions based on standard international theories and best practice at the time.

In this context, the 1960s saw the launch of the Government Economic Action Plan (PAEG), which was intended to promote stabilisation and a return to growth. The fight against inflation became a priority because it was impossible for the country to progress while suffering from hyperinflation.

With an initial focus on monetary institutions, financial reform focused on driving growth by creating long-term financing mechanisms, avoiding inflationary public-sector financing and re-attracting private-sector investment to Brazilian industry.

With these goals in mind, important measures were adopted—such as the creation of index linking, under which public debt was issued in Re-adjustable National Treasury Obligations (ORTN) and private securities came under the capital market law. This guaranteed a positive rate of return, protecting savers against inflation and encouraging saving. Compulsory saving mechanisms were also implemented, while investment and financial institutions, the Central Bank of Brazil (BCB) and the National Monetary Board (CMN) were all created.

These measures restructured the financial system and led to a resurgence of the market for public bonds. However, they also introduced problems that later led to a great impasse in controlling the country's inflation.

Index-linking had the effect of adapting the economic system to high inflation and led to past inflation being projected into the future.

Brazil increasingly became recognised as an inflationary economy, allowing

further inflation-linking regulations to be introduced, which enabled Brazilians to peacefully coexist with inflation. Index-linking permeated all reforms, with rules for exchange rate and salary corrections, financial asset protection and tax system adjustment, which resulted in conditions that allowed inflation to embark on an apparently automatic trajectory.

## The return of hyperinflation

The 1973 and 1979 oil shocks marked the resurgence of inflation in Brazil (see Figure 1), with indexation mechanisms initially allowing the Brazilian population to live with increasingly high rates of inflation.

However, as inflation accelerated, the rest of the economy stagnated. The 1980s are now viewed as a lost decade due to the deep crisis the country suffered. Gross domestic product (GDP) growth practically stagnated, with years of major recession (1981: - 4.3 per cent; 1982: 0.8 per cent; and 1983: - 2.9 per cent). Inflation accelerated significantly even in years of low growth, reaching 100 per cent per year in 1980, accelerating again after the major devaluation of 1983 and reaching 224 per cent a year (on the General Price Index—IGP) in 1984.

The 1980s represented a crisis for the Brazilian development model, which had been in place for almost 50 years—sometimes called the import replacement model. This model had targeted 'final-stage' industrialisation, implemented in all sectors of industry, but most companies were unable to withstand international competition.

The second half of the 1980s and first half of the 1990s saw weak attempts to fight inflation in the form of economic plans: the Cruzado Plan in 1986, the Bresser Plan in 1987, the Verão Plan in 1989 and the Collor Plan in 1990, and were characterised by divergent views and theories about controlling inflation. These plans, along with their flaws,

eventually helped to formulate the Real Plan—a landmark that ended a cycle of nearly 10 years of ineffectual attempts to combat inflation.

## The Real Plan

The formulation of the Real Plan was a watershed moment. In an economy previously marked by hyperinflation, which had already tried a foreign debt moratorium, confiscation of domestic savings and accentuated fiscal indiscipline, the introduction of the Real led to controlled inflation and rebalanced external and public accounts.

The Real Plan was effectively a price stabilisation policy implemented in three distinct phases between May 1993 and January 1999, which can be summarised as: i) short-term fiscal adjustment; ii) de-indexing of the economy; and iii) use of a semi-fixed exchange rate.

Inflation fell significantly and remained at a low level. However, price stability was achieved by using extremely high interest rates and an overvalued exchange rate. It is notable that the period's macroeconomic system was efficient in controlling prices, despite its adverse consequences in terms of reduced growth, balance of payments deficits and expansion in public debt.

The revalued exchange rate policy altered the previous framework of relationships between the exchange rate, fiscal and monetary policies, and reduced uncertainty about the behaviour of basic prices in the economy, as agents could base their expectations on a predictable exchange rate.

It can be said that the exchange rate target system was highly successful in reversing the process of chronic inflation that affected the Brazilian economy. However, after the financial turbulence caused by the Mexican crisis in 1995, the Asian crisis in 1997 and the Russian crisis in 1998, the country abandoned its fixed exchange

## Table 1

### Selected indicators for the period 1994–1998

Indicator/year	1994	1995	1996	1997	1998
Growth in GDP (% p.a.)	5.3	4.4	2.2	3.4	0.0
Gross formation of fixed capital (% GDP)	20.7	18.3	16.9	17.4	17.0
Inflation (% p.a.)	2,075.827	66,008	15,757	6,926	3,196
Current transaction balance	-0,308	-2,388	-2,734	-3,477	-3,944
International reserves (USD millions)	38.806	51.840	60.110	52.173	44.546
Interest rate (%)	—	53.09	27.41	24.78	28.79
Real/dollar exchange rate	0.64	0.92	1.01	1.08	1.16
Primary surplus	5.2	0.2	-0.1	0.9	0.0
Public-sector net debt (% GDP)	30.0	28.0	30.7	31.8	38.9

Source: Ipeadata (2014), IMF (2013) and Banco Central do Brasil (2014).

rate system due to speculative attacks that reduced foreign reserves.

The exchange rate crisis in January 1999 resulted in a major devaluation of the Real against the US dollar, seeing it fall from a rate of 1.20 in December 1998 to 1.98 in January 1999. This period saw a three-fold change in the macroeconomic regime: the monetary system of exchange rate targets was replaced by an inflation target system; the system of semi-fixed exchange rates gave way to a managed floating exchange rate; and the fiscal system began to pursue targets to create a primary surplus and reduce net borrowing. These three items came to be called the Brazilian macroeconomic tripod.

It is notable that, by adopting the floating exchange rate, the BCB regained control of monetary policy, and the exchange rate became responsible for absorbing external shocks.

In regard to fiscal policy, after agreements with the International Monetary Fund were signed at the end of the 1990s, Brazil put in place a fiscal system with targets for the primary surplus, with the aim of maintaining debt stability and giving the government credibility, thus enabling it to reduce the interest paid on public borrowing at a later date.

In the 2000s, as crises gave way to the longest and most profound economic boom in Latin America since World War II, further reform of fiscal institutions was abandoned.

From the commodities boom to household consumption, increased growth enabled good fiscal outcomes without institutional change.

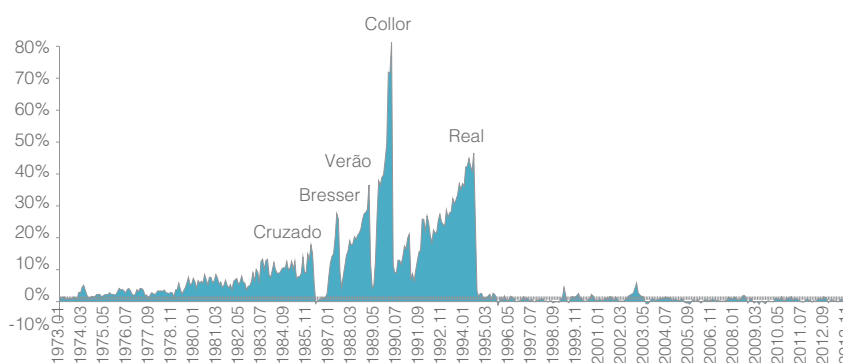
The 2008 global financial crisis naturally changed this scenario, but Brazil faced it in an idiosyncratic way: with state involvement, as in the rest of the world, but not in the form of higher public investment.

Instead, the authorities offered credit to the rest of the economy via state-owned banks at below-market interest rates.

The response to the global financial crisis broke away from the historic Brazilian tradition of addressing crisis with reform, although the government did still use fiscal policy: current expenditure, particularly on social security and benefits, grew faster than the economy and revenue. Fiscal benefits rapidly multiplied, from tax breaks to credit subsidies. In recent years, tax revenue fell and the federal government resorted to stratagems to create a primary

### Figure 1

### Inflation in Brazil — monthly change in IGP-DI, 1974 to 2013



Source: Ipeadata (2014).



Photo: Edilson Rodrigues/Agência Senado. *The Real Plan brought an end to hyperinflation, Distrito Federal, 2014, Brazil* <<https://goo.gl/l6d24W>>.

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surplus artificially,<sup>4</sup> rather than reducing the fiscal target.

### Prospects for the future

Among policymakers there is little impetus to review, much less restructure, monetary, tax and fiscal institutions. Macroeconomic policy remains based on the same tripod as in the late 1990s, with a floating exchange rate, inflation targets and fiscal austerity.

In this context, the outlook is rather confusing and troubling. Public debt and the tax burden have reached higher levels than in other emerging economies. Investment represents an ever-smaller share of the public budget, while the overwhelming volume of spending is committed contractually or politically.

Possibly the greatest contemporary challenge for Brazil is to return to the cycles of institutional reform that were implemented at the end of the 20th century, which could then serve as a reference or example for other emerging economies. ■

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2. Fundação Getúlio Vargas (FGV-RJ) and Instituto Brasileiro de Direito Público (IDP), Brazil.
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4. Such as borrowing from state banks to help finance expenditures.

# Brazil: tackling corruption through institutional multiplicity<sup>1</sup>

by Mariana Mota Prado<sup>2</sup> and Lindsey Carson<sup>3</sup>

## Anti-corruption mechanisms in Brazil

At the core of any effective strategy to combat corruption lies a strong system of accountability to discover and sanction those who participate in corrupt activities. Accountability institutions perform three primary functions: oversight, investigation and punishment.

These functions are highly interdependent. Indeed, the completion of each one of the steps in the accountability process is largely dependent on the preceding and successive steps. Thus, without oversight there is no investigation, and without investigation there can be no effective punishment. Interdependence goes in the other direction as well: if punishment is unlikely to happen, this reduces incentives for effective oversight and investigation.

The lesson from the Brazilian case concerns the potential advantages of having multiple institutions able to perform the same function within the accountability system.

Figure 1 illustrates this. If one of the regular avenues for performing one of these functions is blocked, the interested actors can pursue alternative avenues. This increases the likelihood that there will be accountability in one form or another at the end of the process.

Moreover, institutional multiplicity can generate institutional improvements within the system by triggering processes and mechanisms that improve the overall performance of the system in at least four ways:

- **Competition** can drive institutions to improve their performance in light of results or outcomes delivered by another institution performing a similar function.
- **Compensation** may also be a result of multiplicity. If one of the institutions fails to perform its functions, another is equipped to fill the resulting gap.

This could reduce the risk of failure in each step of the accountability process.

- **Collaboration** between organisations may be advantageous simply because there are more human, financial and other resources available for the performance of a single task.
- **Complementarity** may be especially advantageous due to specialisation (two different institutions may contribute different complementary skills to perform a particular task).

## Corruption in Brazil: an overview

Over the past few decades, the fight against corruption has emerged as a top priority on the global development agenda, as leaders in policy, academic, NGO and business communities around the world have recognised corruption as a force that undermines economic expansion and equality, accountable and transparent governance and social cohesion.

Characterised by strong economic growth and political stability over the past few decades, Brazil has taken steps to address corruption, but the persistence of the problem in the country's economic and governance systems has not been without cost. Recent studies estimate that corruption consumes between 1.4 per cent (FIESP 2010) and 5 per cent of the country's gross domestic product (GDP) each year, and surveys reveal that a large majority of the Brazilian public has little trust or confidence in the government.

International surveys regarding perceptions of corruption show that Brazil is ranked around the median among all countries, as well as in comparison with its regional peers; it also outperforms the other BRICS countries (see Figures 2 and 3). However, while the country boasts an impressively comprehensive array of anti-corruption laws, Brazil's corruption scores have remained relatively stable over the past two decades. Moreover, numerous scandals at the federal, state and municipal levels and across all branches of

government—most recently the *Mensalão* and *Petrolão* cases, as well as allegations surrounding the cost overruns associated with the World Cup preparations—confirm that corruption remains entrenched in the country's political system.

## The performance of Brazil's accountability system

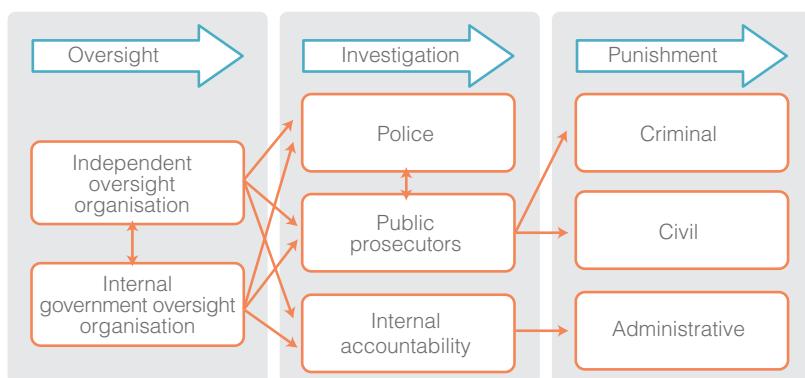
**Oversight:** At the federal level, oversight is primarily managed by two institutions—the Federal Accounting Tribunal (*Tribunal de Contas da União*, TCU) and the Office of the Comptroller General of the Union (*Controladoria-Geral da União*, CGU).

While both institutions occasionally communicate on cases, they generally conduct their oversight activities autonomously, an arrangement which appears to have provided beneficial safeguards in at least one case. After the auditing processes of the TCU failed to detect a municipal ambulance kickback scheme, the CGU uncovered the scandal through its own monitoring process in an operation that became known as 'Operation Leech' (*Operação Sanguessuga*).

The 'leech' scandal may be an example of institutional compensation or complementarity. Some may argue that the TCU's failure to detect the scheme reflects deficiencies in its auditing process (which is perceived to be formalistic and ossified), while the CGU's success in identifying the irregularities indicates that their auditing methods are more effective. If so, this would be a case of compensation.

On the other hand, one may claim that this is simply a result of distinct auditing methods. The monitoring techniques of the CGU were specifically designed to use different parameters than those used by the TCU, to increase the likelihood of each institution catching things undetected by the other. This is a case of complementarity.

**Figure 1** Institutional multiplicity in action



Source: Authors' elaboration.

Regardless of whether it is compensation or complementarity, this example illustrates how overlapping oversight functions may increase the chances of spotting wrongdoing.

**Investigation:** The central institutions performing investigative functions at the federal level in Brazil are the Federal Public Prosecutors' Office (*Ministério Público Federal*, MPF) and the Federal Police (*Departamento da Polícia Federal*, DPF).

Often the MPF will conduct criminal investigations in collaboration with the DPF, especially in criminal cases. Indeed, there has been an increase in the number of investigations in the last decade (see Table 1), which appears to be the result not only of an increase in resources for DPF but also increased cooperation between DPF, MPF and other investigative bodies, such as state public prosecutors' offices, revenue service inspectors and ministries. In many

cases, joint task forces have been formed to better coordinate investigations. The results appear positive, suggesting that institutional multiplicity has led to collaboration.

Despite being the exception rather than the rule, in a few cases the investigative powers of MPF seem to have led to compensation for the lack of police action. The cases in which MPF played a prominent role include the recent *mensalão* case.

**Punishment:** The most important institution involved in the punishment of corruption-related offences is the federal judiciary, through civil and criminal lawsuits. Recently administrative sanctions have gained a greater importance in the country.

The level of institutional multiplicity in punishment in Brazil is considerably lower than in oversight and investigation. Independently of the civil and criminal sanctions imposed by the judiciary, the

CGU, TCU and internal accountability bodies can impose administrative sanctions on actors found to have engaged in corrupt activities.

However, the ultimate sanctioning authority in Brazil remains the judiciary, which holds the power to review and overturn punishments imposed by other entities (CF 88 art. 5, XXXV).

This lack of institutional multiplicity reduces the likelihood of punishment. Indeed, the Brazilian judiciary is characterised by very low rates of corruption convictions. Such underperformance is attributable not to sporadic errors in execution but, rather, to fundamental structural problems such as excessively formalistic processes, burdensome procedural rules and judicial corruption. These problems not only affect the enforcement of civil and criminal sanctions but also interfere with the enforcement of administrative sanctions.

**Disadvantages of institutional multiplicity**

The Brazilian case suggests that significant benefits can be derived from having institutional multiplicity in a country's accountability system. There are, however, potential disadvantages associated with institutional multiplicity:

- **Inefficiency:** The creation of institutional overlaps may be interpreted as an inefficient allocation of resources, particularly in low-income developing countries where scarce fiscal resources already struggle to provide adequate coverage for other societal needs, such as education and health.

**Table 1** *Departamento da Polícia Federal (DPF) corruption-related operations*

	2005	2006	2007	2008	2009	2010	2011
Operations carried out	67	167	188	235	288	270	256
Public servants imprisoned	219	385	310	396	183	124	260
Police officers imprisoned	9	11	15	7	4	5	4
Total persons imprisoned	1,407	2,673	2,876	2,475	2,663	2,734	2,085

Source: MESICIC (2012).



## Table 2

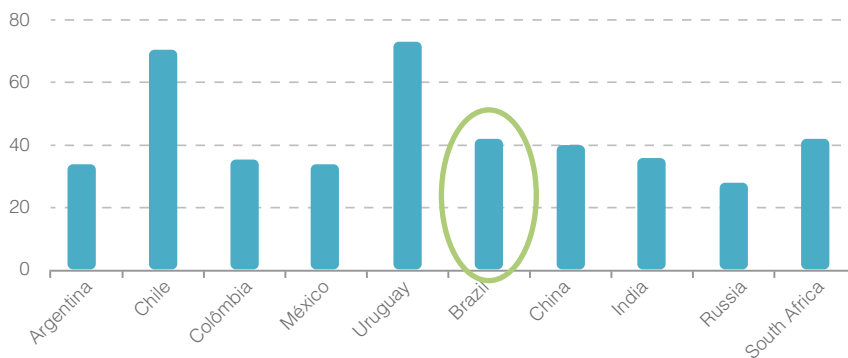
### Departamento da Polícia Federal (DPF) corruption-related operations

Notable scandals (1988 - 2015)			
Name	Type of corruption	Branches/Level of Government allegedly involved	Resolution
Collorgate (1992)	Extortion, influence- peddling	Executive: President Fernando Collor de Melo and his former campaign manager	Collor resigned but was acquitted of bribery charges by the Supreme Tribunal Federal (STF) in 1994. He currently serves as a Senator.
<i>Anões do Orçamento</i> (“Budget Dwarves” or “Budgetgate”) (1989-1993)	Kickback and bribery scheme	Legislative: 38 sitting government officials	19 members of Congress were expelled and 4 resigned, but none were convicted of corruption-related crimes in connection with the scandal.
Cardoso’s Vote-Buying Scandal (1997)	Vote-buying	Executive: administration of President Fernando Henrique Cardoso & legislative: at least 5 members of Congress	2 legislators resigned from Congress.
São Paulo Regional Labour Court (1992-1998)	Embezzlement	Legislative: Senator Luiz Estevão & judiciary: Judge Nicolau dos Santos Neto, “Lalau”	Estevão was impeached and stripped of his parliamentary immunity, although he was acquitted of criminal charges. Lalau was convicted of criminal embezzlement and sentenced to prison in 2002.
SUDAM & SUDENE (2001)	Embezzlement	Legislative: Senator Jader Barbalho & regional development banks	Barbalho resigned from office but was elected to the Chamber of Deputies in 2002 before returning to the Senate in 2011. In July 2013, the Federal Court of Tocantins convicted him and 10 others for misappropriating public funds. Appeals are pending.
<i>Mensalão</i> (“big monthly stipend”) (2005)	Vote-buying, embezzlement, money- laundering, misuse of public funds	Legislative: 18 deputies and 1 former deputy	In November 2012, the Supreme Federal Tribunal (STF) found 25 individuals guilty of related crimes and, in November 2013, the STF issued arrest warrants for 12 of the 25 although several of the convicted have appeals outstanding.
Operação Leech (“Operation Bloodsucker”) (2004-06)	Kickback scheme	Legislative: 90 incumbent and 25 former members of Congress	None of the 72 legislators alleged to have participated in the scheme were expelled or faced criminal charges. The Federal Court of Mato Grosso opened criminal cases against more than 300 defendants (mayors, former congressmen, advisors), but handed down only 31 sentences with 22 convictions.
“Petrolão” (the Petrobras affair) – “Operação Lava-jato” (Operation Car Wash)	Embezzlement, money-laundering, misuse of public funds	As of November 2015, events are still unfolding—though many individuals from the private sector have already been implicated.	As of November 2015, events are still unfolding

Source: Authors’ elaboration.

**Figure 2**

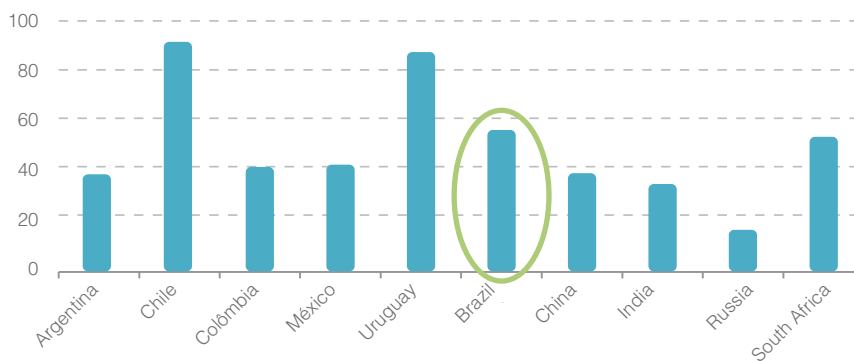
Transparency International's Corruption Perceptions Index (2013)



Source: Transparency International, Corruption Perceptions Index 2013.

**Figure 3**

The World Bank's Control of Corruption Indicator (2012) - % Rank



Source: World Bank (2012).

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Significant benefits can be derived from having institutional multiplicity in a country's accountability system.

- **Destructive competition:** The competition engendered through institutional multiplicity may create unproductive tensions between two institutions performing the same function, undermining their ability to effectively perform their functions.
- **More Corruption:** If accountability institutions themselves fall prey to corruption, institutional multiplicity may create more opportunities for corruption; for example, if authorities from multiple (corrupt) investigation institutions are able to extract bribes by threatening innocent citizens with false charges, the overall risk and incidence of corruption may increase.

We acknowledge these limitations, which should be considered in a careful

cost–benefit analysis on a case-by-case basis, taking into consideration the resources, capacities and policy needs within individual countries or societies. ■

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1. This article is based on Prado and Carson (2014a; 2014b).

2. University of Toronto.

3. Johns Hopkins University School of Advanced International Studies (SAIS); and Arnold & Porter, LLP.

# Infrastructure and its role in Brazil's development process

by Edmund Amann,<sup>1</sup> Werner Baer<sup>2</sup> and Thomas Trebat and Juan Villa<sup>3</sup>

## Historical problems

Until the 1930s, federal government involvement in infrastructure projects in Brazil was almost non-existent. Faced with thin domestic capital markets and a narrow tax base, local policymakers were obliged to draw heavily on inward foreign direct investment (FDI) to meet Brazil's fast expanding infrastructural requirements. Infrastructure projects were largely built and operated via concession contracts with companies.

As Brazil moved into the 1940s and 1950s, the State took on an increasing role as a direct provider of infrastructure in the transportation, power generation and distribution, and water and sanitation sectors. The progressive transfer of infrastructure to public ownership reflected not only the need to inject investment where the private sector had been unable or unwilling to do so but also an ideological shift that permeated Brazilian economic affairs. While significant improvements were achieved in power-generating facilities and some highways, other elements of infrastructure such as railroads were largely neglected.

During the 'lost decade' of the 1980s, when Brazil underwent a serious debt crisis, investments in infrastructure withered. By the early 1990s, Brazil faced the necessity of substantially modernising its infrastructure sector. From the second half of the 1990s, Brazil's policymakers were forced to confront the fact that the only way to deal with the need for infrastructure investment was to revert to the old model of appealing to the private sector through concession contracts or by offering public-private partnerships.

## Investments in infrastructure will boost growth

New econometric analysis<sup>4</sup> of regional and municipal data from Brazil demonstrates that infrastructure spending has a positive effect on local gross domestic product (GDP) growth. If Brazilian states increase

their infrastructure spending by 1 per cent, the regional GDP growth rate would increase by 0.11 per cent per year, while the GDP per capita growth rate would respond with an increase of 0.072 per cent per year. Investment in transport infrastructure is likely to yield better results than investment in communications or energy.

## Contemporary challenges

The most recent World Economic Forum (WEF) *Global Competitiveness Report (2013–14)* ranks the quality of Brazil's infrastructure as 114<sup>th</sup> out of 148 countries. Clear shortcomings exist in all sectors:

### Roads:

By 2011, although Brazil had the world's fourth largest road network, there remained significant quality issues associated with

it. According to a World Bank (2012) study, only 18 per cent of Brazil's 1.75 million kilometres of highway are paved. This represents an especially significant deficiency, bearing in mind that 60 per cent of Brazil's freight moves by road. As a result, spending on logistics represents a comparatively high 15.4 per cent of GDP. **WEF quality ranking: 120/148 countries.**

### Rail:

Unlike in other key emerging market economies, including China and India, rail transportation is almost exclusively the preserve of commercial freight. Freight itself is heavily dominated by iron ore, which accounts for 79 per cent of total rail cargo. Passenger rail is the almost exclusive preserve of a small network of commuter lines around Rio de Janeiro

## BOX 1

### Case study: Urban transportation

Brazilian cities are among the most car-dependent in the world, and sales doubled between 2005 and 2012. Cars are now the dominant mode of transport, competing for urban space with public buses, which are often the only other significant viable mode of transportation in cities.

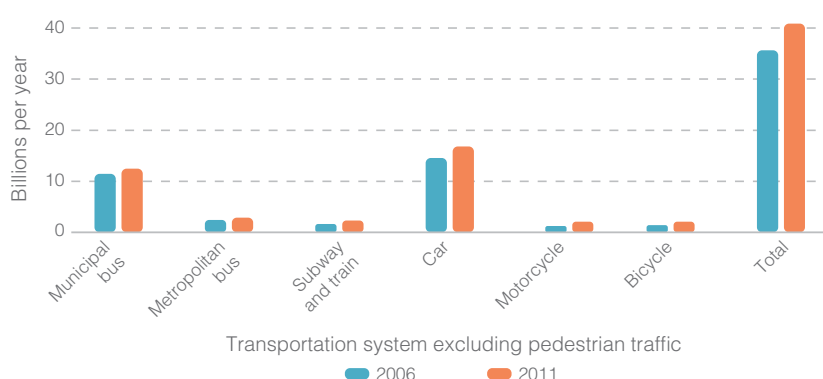
As streetcars disappeared, no light rail systems were built to replace them. At the same time the commuter rail network did not expand, while the underground rail systems in existence—notably those of Rio de Janeiro and São Paulo—are far less extensive than those found in major emerging-market cities such as Mexico City, Shanghai and Delhi. For this reason buses and related informal modes of transport (such as private vans) remain the dominant modes of public transport (see Figure 1).

As a result, congestion is mounting, and commuting times in Brazil are among the highest in the world. Most standard solutions, such as congestion charges or circulation restrictions, are not politically palatable. Seminars are regularly held in both Rio de Janeiro and São Paulo about what to do when these car-clogged cities eventually 'stop'.

Until relatively recently, there has been little federal oversight of urban transportation, with individual municipalities taking responsibility for infrastructure. However, this has begun to change, with the Ministry of Cities created in 2003—in part to address this concern at the federal level. In the aftermath of the public unrest sparked by the inadequacies of the transport systems across the country in 2013, the federal government announced an additional emphasis on urban mobility programmes, though without divulging detailed plans.

Brazil is at this policy crossroads right now, but whether its largest municipalities and the federal government will have the political courage and technical vision to make the right choices remains an open question.

**Figure 1** Urban trips taken by mode of transport



Source: Associação Nacional de Transportes Públicos (2007; 2012).

and São Paulo. **WEF quality ranking: 103/148 countries.**

#### Ports:

For an economy heavily dependent on exports of natural resources-based products, Brazil suffers to a surprising extent from quality and capacity limitations of its port infrastructure. Brazilian ports handle 95 per cent of the country's trade by volume and 85 per cent by value. Delays in loading, unloading and customs clearance mean that trucks frequently spend hours (sometimes days) queuing outside ports. Ships are forced to wait much longer to dock than in other countries in the region, while costs are also higher. **WEF quality ranking: 131/148 countries.**

#### Air:

The physical scale of the country, the absence of long-distance rail services and the poor quality of highways infrastructure outside the South and South East regions of the country mean that Brazil is highly reliant on air transportation. Here, as elsewhere, the infrastructure is associated with a legacy of under-investment and poor connectivity, placing Brazil at a disadvantage in terms of international trade, investment and tourism. **WEF quality ranking: 123/148 countries.**

#### Water and sanitation:

Only 80 per cent of the Brazilian population have access to 'improved sanitation facilities', compared to 83 per cent in South America overall and 97.5 per cent for Organisation for Economic Co-operation and Development (OECD) countries. Only

47 per cent of the population is provided with sewage collection and disposal.

#### Government response

Since 2007, the authorities have been attempting to engineer a step change in the scale and quality of infrastructure across a range of strategic sectors. This effort, known as the Growth Acceleration Programme (*Programa de Aceleração do Crescimento*—PAC), envisages significantly increased investments in highways, railways, energy, air transportation, telecommunications, housing, water and sanitation. The focus of the programme is concentrated on the energy, social and urban sectors, as Table 1 reveals. Within the social and urban investments there is a significant focus on housing finance.

PAC 1 (2007–2010) envisaged spending BRL503.9 billion, while the more ambitious PAC 2 (2010–2014) proposes spending BRL958.9 billion over its lifespan (around 2.7 per cent of 2010 GDP per year), with a further BRL631.6 billion in investments planned beyond 2014.

With the policy decision to tackle Brazil's legacy of ingrained underspending on infrastructure, two things became obvious: first, that the State did not have the technical or managerial means to accomplish these projects by itself; and, second, that it did not have the financial wherewithal to see these projects through to their completion. It was thus decided to turn to two models: public–private partnerships and the longer-established model of concession contracts.

“Brazil demonstrates that infrastructure spending has a positive effect on local gross domestic product (GDP) growth.”

The programme has come under criticism for not delivering on its ambitious targets sufficiently rapidly. A brief review of the data suggests that these concerns may be overblown. Between the beginning of 2007 and the end of 2010, 82 per cent of planned PAC 1 projects were completed, with public investment rising to 3.2 per cent of GDP, compared with around 2 per cent prior to the programme's launch.

Data released in February 2014 show that 82.3 per cent of PAC 2's projects had been completed by the end of 2013, with accumulated spending reaching BRL773.4 billion or 76.1 per cent of the programme's total budget. Despite the scale of the programme's achievements in overall terms, it remains true that investment in certain critical sub-sectors (notably, urban transportation and sanitation) have suffered significant delays.

Perhaps the most glaring obstacle to accelerated progress has centred on the delayed issuance of environmental permits. The delays here have largely concerned the slow operation of dispute-resolution procedures and the licensing mechanisms, rather than the environmental regulatory provisions themselves.

Furthermore, corruption remains a major issue, with estimates suggesting that Brazil lost BRL40 billion between 2002 and 2008. Most of this was attributed to the infrastructure sector.

#### Policy implications:

The Brazilian experience with infrastructural development illustrates the scale of the challenges that may need to be overcome if developing economies are to attempt to realise step changes in the

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Passenger rail is the almost exclusive preserve of a small network of commuter lines around Rio de Janeiro and São Paulo.



Photo: Dylan Passmore. Subway passengers in São Paulo, 2006, Brazil <<http://bit.ly/1jNlqZo>>.

**Table 1**

**PAC investments, percentage by sector**

Sectors	2007–2010	After 2010	Total
Logistics	14.9	7.2	11.5
Energy	45.7	92.4	66.1
Social and urban	39.5	0.4	22.2
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: PAC, Morgan Stanley LatAm Economics.

quality and extent of their transportation, energy and communications networks. Our research underscores just how important infrastructure is for growth, competitiveness and trade. Under-investment can severely retard progress, yet addressing a legacy of decades of under-investment is a huge challenge. Not only this; access to good-quality, affordable infrastructural services is increasingly an issue of real political salience. In tackling this issue the role of the foreign private sector is key, given fiscal constraints and thin domestic capital markets. There will be regulatory conflicts between the need to incentivise investment and the need to address social objectives. Effective regulation is not just about balancing the interests of investors and consumers; it is about ensuring predictability of the *de facto* regulatory arrangements and speed in decision-making. Finally, efforts to ramp up infrastructural spending need to take into account the availability of domestic technical capacity. This can be spread very thinly once projects begin to multiply. ■

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1. University of Manchester.
2. University of Illinois.
3. Columbia University.
4. The main data source for the estimation of this model, derived from Hausman and Taylor, is provided by the IPEAD data service <<http://ipeadata.gov.br/>>, which collects several sources of public data, including regional and municipal information on several topics.

# Taxation, redistribution and the social contract in Brazil<sup>1</sup>

by Marcus André Melo,<sup>2</sup> Armando Barrientos<sup>3</sup> and André Canuto Coelho<sup>2</sup>

## Political change and tax reform

Historically, Brazil has avoided both the resource curse and exposure to the ups and downs of a globalising world economy, which have affected many Latin American countries.

Furthermore, Brazil has shown longstanding capacity to collect tax revenue. As part of its state-building effort, the military enacted major tax reform in 1966, introducing innovative measures that had a strong fiscal impact. Brazil adopted a modern tax code, became the first country to introduce value-added taxes (VAT) and revamped its tax administration. In the following seven years, the tax burden doubled as a percentage of gross domestic product (GDP), reaching 26 per cent in 1971.

There were no significant tax reforms in the 1990s and 2000s to explain the rapid increase in taxation in this period. The implementation of inclusion policies following the 1988 Constitution was financed by earmarked social contributions, which the federal government did not have to share with state governments or municipalities. The changes in the tax rules in the democratic period have been incremental. They

typically reflect technically driven, marginal efficiency improvements and piecemeal responses to advocacy by pressure groups.

Proposals for more substantial tax reform have failed to secure approval by the legislative. This is in part because comprehensive reforms would require changing the Constitution, which has discouraged significant changes. Successive governments have opted to maintain a regressive, and increasingly less efficient, tax system with high extractive capacity in preference to a more efficient system with uncertain future revenues.

Additionally, policymakers have converged on the view that redistributive objectives are best secured via spending, not taxation. The current Brazilian tax system is beset by complexity and inefficiencies. In distributional terms, the tax system is neutral in the sense that rates of tax are roughly similar across the income distribution, as shown in Figure 1. The progressivity of direct taxes is neutralised by the regressivity of indirect taxes.

## The structure of Brazil's tax system

The 1988 Federal Constitution provides the institutional framework for the current

Brazilian tax system. The Constitution assigns tax competencies to the different tiers of government, allowing the imposition of taxes on a wide range of economic activities as well as revenue-sharing schemes.

In 2012, tax revenues amounted to 36.3 per cent of GDP, the bulk of which was collected by the federal government (25.38 per cent), followed by the state governments (8.96 per cent) and the municipal government (1.93 per cent) (IBPT 2012).

The tax system consists of taxes, fees and contributions. The so-called contributions (*contribuições*) are levied on payrolls, but also on employers' profit, as well as on lottery winnings, government revenues and licensing. The complexity of Brazil's tax system is a consequence of the proliferation of taxes covering a common base.

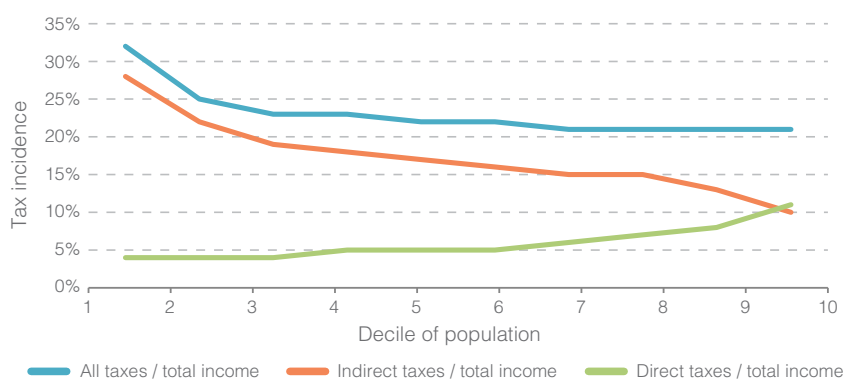
The most important federal taxes are the income tax and tax on manufactured goods (IPI), which account for over 90 per cent of federal revenues. The personal income tax is levied on the income and proceeds of any nature earned by Brazilian-based individuals at a progressive rate of 15 per cent or 27.5 per cent, contingent on the taxpayer's ability to pay.

Corporations pay a 15 per cent Corporate Income Tax (IRPJ), based on their actual or estimated earnings, or on earnings ascertained by the tax authorities. The IPI is a value-added, single-stage tax on production collected based on the sales price when a product leaves the manufacturing stage, or on import, at a rate dependent on the classification of the product.

Additionally, the federal government collects a Tax on Financial Transactions (IOF), comprising credit, foreign exchange, insurance and security operations.

The states collect their own VAT (the ICMS), which is imposed on sales of goods and

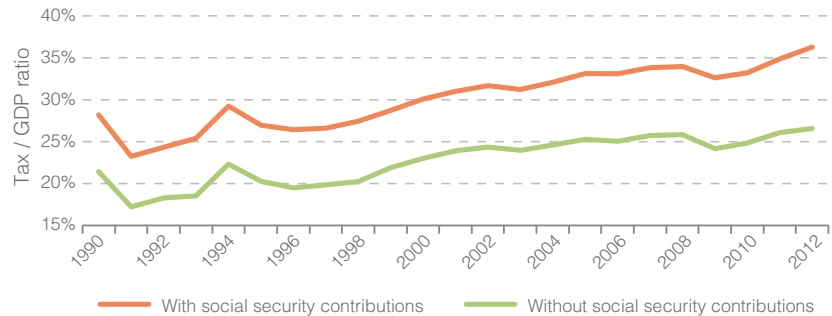
**Figure 1** Brazil: tax incidence by decile of per capita household income 2008/2009



Source: Authors' elaboration based on data from Silveira et al. (2011).

**Figure 2**

Brazil: tax/GDP ratio 1990-2012



Source: BID-CIAT (2013).

carrier/telecommunications services. The ICMS represents over 20 per cent of total tax revenue (a significant 7.22 per cent of GDP). In turn, municipalities collect taxes on services (ISS), urban property (IPTU) and transfers of real estate ownership.

**The politics of the recent rise in the tax/GDP ratio**

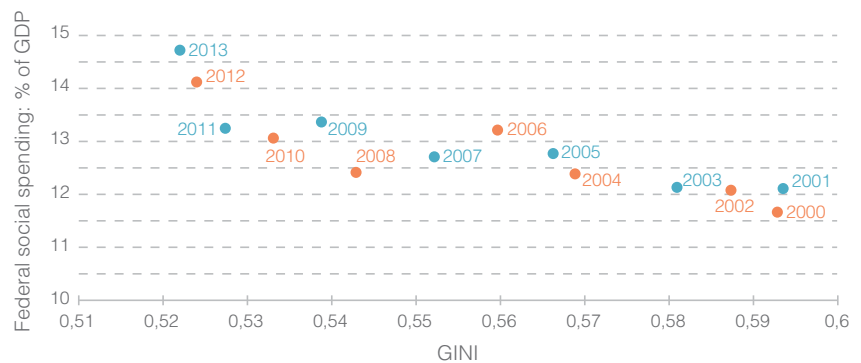
The rise in the tax/GDP ratio in Brazil has not been the result of radical tax reform or improvements in tax administration. This suggests that policy models are of less relevance than political factors in explaining the rise. Political consent to the rise in tax revenues is linked to the renewal of Brazil's social contract after democratisation.

The extension of the vote to illiterates in 1985 incorporated a large share of the population in informal and low-income employment. In line with median voter models, there was increased pressure for redistribution, set against a context of wide polarisation and vast inequalities within society. Political competition and the influence of large governing coalitions from the left and centre-left helped translate popular demand into effective redistribution policies.

The ramping up of social pressure was a necessary but insufficient condition for sustained redistribution to occur. Fiscal sustainability and institutional capabilities were also a fundamental

**Figure 3**

Changing levels of inequality and redistribution over time

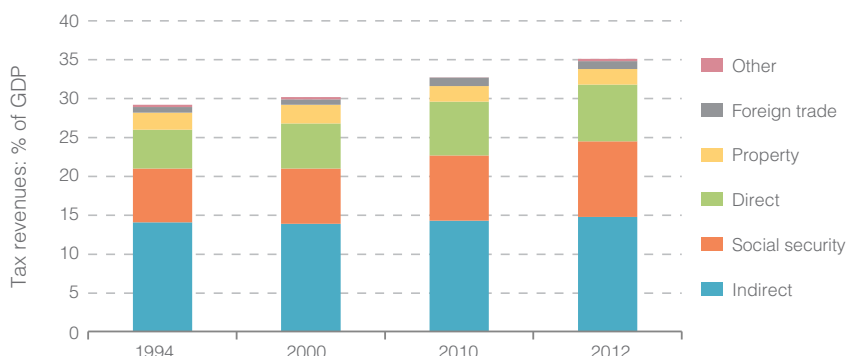


Source: Authors' elaboration from Federal Social Spending data for 1995 to 2009 from Ipea (2011). Data for 1980, 1985 and 1990 calculated using estimates of total (federal, state and municipal social spending) in Ipea (2009: 42-44). Gini data from <[www.ipeadata.gov.br/](http://www.ipeadata.gov.br/)>.



Political competition and the influence of large governing coalitions from the left and centre-left helped translate popular demand into effective redistribution policies.

**Figure 4** Tax revenues by components



Source: BID-CIAT (2013).

component of reducing inequality. Defeating hyperinflation, with prudent fiscal policies set against a context of rising tax revenues, enabled a balanced approach to redistribution. Political incentives responded to the new fiscal contract.

#### How sustainable is the fiscal contract?

Economic growth and the rise of the tax/GDP ratio in Brazil have enabled successive governments to expand inclusive social policies without the need to reallocate resources from existing programmes and, therefore, avoid damaging conflict. An enhanced fiscal space has enabled social policy activism without undermining pre-existing entitlements.

However, this approach has been placed under stress as the space for tax-and-spend policies has diminished with a slowing economy. According to data from *Latinobarómetro*, taxpayers have become increasingly disgruntled by high taxes. More Brazilians agree that taxes are too high than any other nationality in the region.

Members of the middle classes have been described as having a 'dissatisfied customer' relationship with the State (Daude and Melguizo 2010); they are not satisfied by the quality of public services they receive for their contribution in practice.

Low-income households have become increasingly aware of high taxation. Some 66.7 per cent of Brazilian respondents to the *Latinobarómetro* survey in 2011 agreed that taxes were too high.

Brazil is now at a critical juncture. The high level of taxation, the politicisation of the issue and the pressures for better quality in public services are engendering a new accountability. This may see people demand less corruption and better services in exchange for tolerating high taxes, but the final outcome is far from certain.

#### Policy implications

The Brazilian experience may help to better inform taxation and redistribution policies in other countries. Some key findings include reiterating that:

- governments that want to increase their tax/GDP ratios should not take a purely technocratic approach, but should strive to establish a strong social contract with citizens, based on a shared vision of society;
- reforms to the tax code require the institutional capacity to implement them, and may take decades to realise their full potential; and
- it is feasible to prioritise redistribution through spending, rather than taxation, but this may result in public dissatisfaction over time. ■

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# Explaining the decline in earnings inequality in Brazil: 1995–2012

by Francisco Ferreira,<sup>1</sup> Sergio Firpo<sup>2</sup> and Julián Messina<sup>3</sup>

## Declining inequality levels in Brazil

Long one of the world's most unequal countries, Brazil has experienced a significant reduction in income inequality since its macroeconomic stabilisation around 1994-1995. The Gini coefficient for the country's distribution of household per capita income fell by 12 per cent from 0.59 in 1995 to 0.52 in 2012.

The decline was particularly pronounced after 2003, when average incomes grew relatively rapidly—by as much as 40 per cent overall—and poverty fell sharply. Brazil was not alone: similar trajectories were observed in a number of other Latin American countries, such as Argentina, Peru and Ecuador, over the same period.<sup>4</sup>

Figure 1 suggests that it may be helpful to distinguish between two sub-periods. From 1995 to 2002, earnings and household incomes were stable or declining. The situation changed around 2002-2003, when all three series began to trend sharply upward. Average earnings in the labour market, for example, experienced an increase of about 40 per cent between 2002 and 2012. Median earnings and household income also grew rapidly in this second sub-period.

However, there is no correspondingly sharp break when one looks at the trends in inequality, rather than in levels.

Figure 2 shows the point estimates and 95 per cent confidence intervals for the Gini coefficients of total household income per capita (in purple) and of labour earnings (in red).

Between 1995 and 2002, the decline in income inequality is clearly less rapid than that in labour earnings, for which the Gini coefficient loses three points. But both appear to be falling throughout the period. The second sub-period sees a continuation of the decline in inequality in labour earnings and an acceleration of the decline in household incomes.

Over the full 17-year period, income inequality falls by about 12 per cent, and earnings inequality by as much as 20 per cent, when both are measured by the Gini coefficient.

Furthermore, Figure 3 shows that the decline in earnings inequality is robust to the choice of index: the reductions are actually larger when measured by the Theil (T) index, and by the 90–10 percentile ratio, at 34 per cent and 37 per cent, respectively.

## Key findings

Unlike most of the previous literature on the subject, our results highlight the importance of demographic, spatial and institutional factors in explaining the decrease in earnings inequality over the period being analysed.

While increases in the stock of human capital in the Brazilian labour force—both in terms of years of education and experience—account for an important share of the increase in levels of pay, human capital is a relatively small contributor to the decline in inequality—and then only because of falling returns to schooling and experience

(The endowment component of the human capital effect increased inequality).

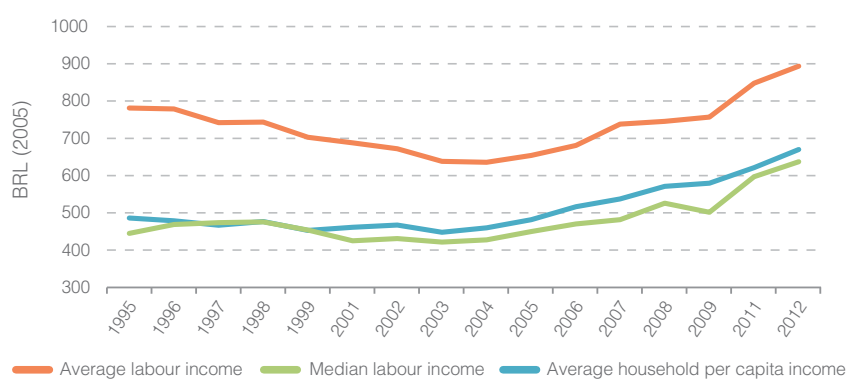
Institutional factors play a role—largely through the increase in the share of formal employment. Perhaps most surprisingly, a substantial share of the decline in earnings inequality can be attributed to lower gender and race wage gaps, and to lower urban and regional wage premiums, conditional on educational and institutional factors. Together, these factors account for the reduction of 6.3 of the change of 10 Gini points between 1995 and 2012.

## Which factors have helped to reduce inequality?

Much of the popular discourse on this subject has typically stressed the role of fiscal redistribution as a key driver of Brazil's decline in inequality. In 2003, Brazil's federal government launched a conditional cash transfer (CCT) programme—*Bolsa Família*—which has since reached upwards of 50 million people and become one of the world's largest CCT programmes.

Although *Bolsa Família* and other fiscal redistribution programmes—such as the

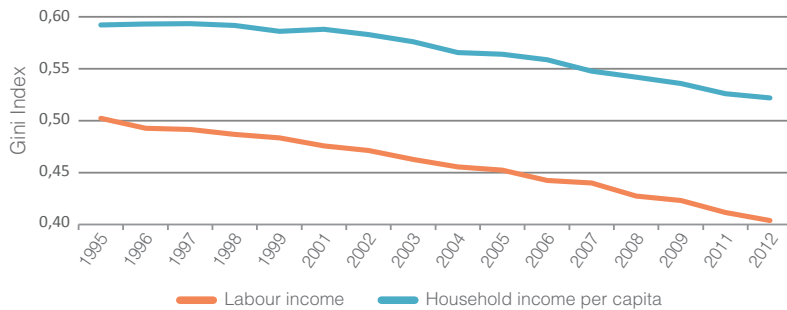
**Figure 1** Household incomes and labour earnings in Brazil, 1995-2012: levels



Source: Authors' elaboration.

Figure 2

Household incomes and labour earnings in Brazil, 1995-2012: inequality



Source: Authors' estimation using IBGE data.

Note: The Gini index of labour income covers all occupied employees between 18 and 65 years. The Gini index of household per capita income covers the entire population.

*Benefício de Prestação Continuada* (BPC) and non-contributory rural pensions—have indeed contributed to the reduction in household income inequality, the best available estimates put this contribution at 35–50 per cent of the overall decline (Barros et al. 2010; Azevedo et al. 2013).

Another 10 per cent or so has been attributed to demographic factors—chiefly the rapid decline in family size, which has been most pronounced among poorer households.

The remaining 40–55 per cent of the decline in inequality in household

incomes is attributed to changes in the distribution of labour earnings.

The dominant narrative in the literature attributes that decline primarily to human capital dynamics: a substantial increase in years of schooling for working-age adults has translated into a rising supply of skills, followed by a decline in the returns to those skills in the labour market (revealing, presumably, that demand for skills has failed to keep pace with supply).

We find that the decline in earnings inequality between 1995 and 2012



Photo: Sergio Amaral/MDS. Law student from the Rio de Janeiro State University and former Bolsa Família beneficiary, 2014, Brazil.

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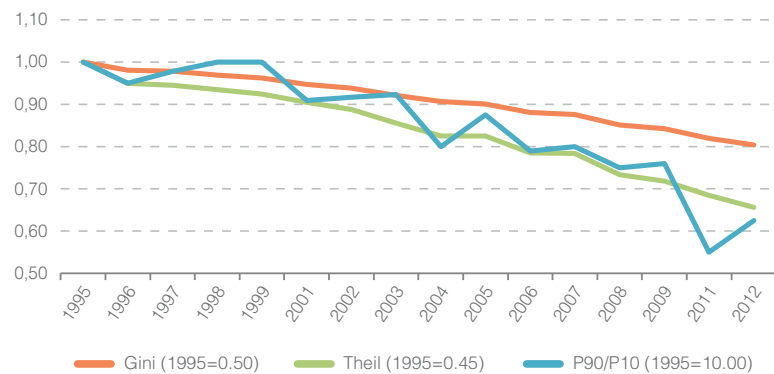
Brazil has experienced a significant reduction in income inequality since its macroeconomic stabilisation around 1994-1995.

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A substantial share of the decline in earnings inequality can be attributed to lower gender and race wage gaps, and to lower urban and regional wage premiums, conditional on educational and institutional factors.

**Figure 3**

Changes in earnings inequality in Brazil, 1995-2012: different indices



Source: Authors' estimation using IBGE data.

Note: The Gini index of labour income covers all occupied employees between 18 and 65 years. The Gini index of household per capita income covers the entire population.

was driven primarily by changes in the structure of remuneration in the Brazilian labour market, rather than directly by changes in the distribution of worker characteristics.

These changes in pay structure can be understood very straightforwardly as declines in various different wage premiums. In addition to falling schooling and experience premiums, the period was also characterised by reductions in the gender wage gap (with women's earnings rising faster than men's), the racial wage gaps (with wages for people of colour rising faster than for whites) and the urban-rural wage gap (with wages rising faster in rural areas). Each of these gaps was, of course, estimated conditionally on the full set of observable characteristics.

Another gap whose narrowing contributed to the overall equalisation was that between formal (*com carteira*) and informal (*sem carteira*) employees. While these changes in the structure of the labour market are equilibrium phenomena, which reflect market forces such as an increase in the bargaining power of workers vis-à-vis their employers, we argue that they also reflect changes in enforcement patterns by government institutions.

Minimum wages and informality had very different effects during the two examined sub-periods. Starting with the most recent

changes, the joint impact of formalisation and minimum wages was very positive for average earnings between 2004 and 2012.

This positive impact was largely driven by the evolution of the returns to formal employment, which contributed to an increase in average earnings of some 4 per cent, and by changes in the composition of workers affected by the minimum wage—which contributed with a 3.5 per cent increase in earnings, while changes in the returns added 1.8 per cent.

In sharp contrast, even if 1995–2003 was a period of relatively slow growth

in the minimum wage, an increasing number of Brazilian workers fell below mandated minimum wages.

Compositional changes associated with a rising share of workers below the minimum wage between 1995 and 2003 account for some 2 per cent of the observed reduction in average earnings during this period.

All in all—and in stark contrast to earlier documented periods—the story of these 17 years was a happy one for Brazilian labour markets. Unemployment fell, and earnings rose. Not only did



Photo: Sergio Amaral/MDS. Quilombola community in Goiás receives the Luz para Todos programme, 2014, Brazil.

earnings rise on average, but they rose the most for those groups of workers who used to earn the least.

There was indeed a compression in the schooling wage premium, which used to be unusually large in Brazil. But equally impressive were the reductions in wage gaps among workers who are observationally equivalent in terms of their human capital but differ along such dimensions as race, gender, location and type of job.

### Is the Brazilian experience relevant to African countries?

Brazil's performance has naturally attracted widespread attention, among both researchers and policymakers in other countries. Interest has been piqued in Africa, for example, among a handful of countries—including South Africa, Namibia and Botswana—which are also characterised by high levels of inequality.

Brazil is often seen as a more relevant case study for these countries than, say, nations in Europe or North America; given that it is also a developing country, albeit with somewhat higher levels of per capita income. It is also a primary commodity exporter, benefiting, at the time, from the commodity price booms. It is natural, therefore, that there should be any interest in whether there might be any lessons from the Brazilian experience with poverty and inequality reduction in a context of rising incomes.

### Policy implications

Are there any lessons to be drawn from this analysis for African countries embarking on their own policy struggles for a fairer and less unequal labour market? This is a difficult question, because local context and institutions matter a great deal, and there are non-trivial differences between Brazil's economy and those of most African countries. Nevertheless, four general implications appear to be broad enough that they must apply, in some locally coherent form, to most other countries:

- An educated labour force is more productive, and, if education is promoted wisely, with a focus on primary and secondary levels, it leads to greater prosperity and greater equity.
- All forms of discrimination—among the sexes, ethnic groups, etc.—tend to be both inefficient and inequitable. Encouraging female education, a reduction in fertility rates and greater labour force participation has contributed to growth in average earnings, and to a less unequal income distribution in Brazil.
- Integrate the rural areas, and the workers who live there: greater connectivity and less labour market segmentation between cities and the countryside are pieces of Brazil's recently successful strategy in the fight against poverty and inequality.
- And finally, do not fear fiscal redistribution: well-designed transfer

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Unlike most of the previous literature on the subject, our results highlight the importance of demographic, spatial and institutional factors in explaining the decrease in earnings inequality over the period being analysed.

programmes are perfectly consistent with vibrant labour markets, with rising average wages and declining dispersion. ■

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Photo: Otavio de Souza/MDS. Children at school in Bahia, 2014, Brazil.

1. The World Bank and the Institute for the Study of Labor (IZA).
2. Escola de Economia de São Paulo and IZA.
3. Inter-American Development Bank and IZA.
4. See López-Calva and Lustig (2010) for the classic account of this recent decline in Latin American inequality.

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Brazil shows that the 'resource curse' is not inevitable.

**Edmund Amann and Armando Barrientos**

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Policymakers should ensure that any intervention to create or modify the vocational training system can offer different ethnic/racial groups the same development chances.

**Stephan Klasen and Carlos Villalobos Barría**

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National development banks may not be necessary when financial markets are efficient and well established. But that is far from the reality of emerging markets, especially the poorer countries in the world.

**Ernani Torres, Luiz Macahyba and Rodrigo Zeidan**

