Deutsche Bank

Brazil: The Quest for Growth

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Passion to Perform

Contents

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Overview

- Large fluctuations in Brazil's GDP growth in the 2008-2011 period and the decline in productivity growth have rekindled the debate about Brazil's sustainable growth rate.
- We start by looking at Brazil's growth performance over the last 50 years, showing that this has been the history of a constant struggle to solve the saving-investment equation.
- Given that domestic saving is low, Brazil needs external savings to grow, thus depending on global liquidity and commodity prices. Persistently high inflation can be interpreted as a mechanism to transfer income from those who save less (workers) to those who save more, and from the private sector to the government. The imbalance between savings and investment is also behind towering interest rates.
- Our estimates suggest that Brazil's potential growth rate is currently below 4%, and higher growth will require much more investment. Since private saving is relatively stable, a possible solution could be to raise total saving by boosting its external component (the current account deficit). However, this could increase the country's vulnerability to external shocks. Another solution would be to increase public sector saving. However, given the rising demand for public spending and an aging population, this would be more easily achieved through structural reforms.
- Reforms could also enhance productivity growth by improving the quality of public investment, infrastructure and educational system, and also reducing taxes and excessive red tape. Unfortunately, the economic prosperity of the last few years has given rise to complacency and significantly reduced the momentum of economic reforms.

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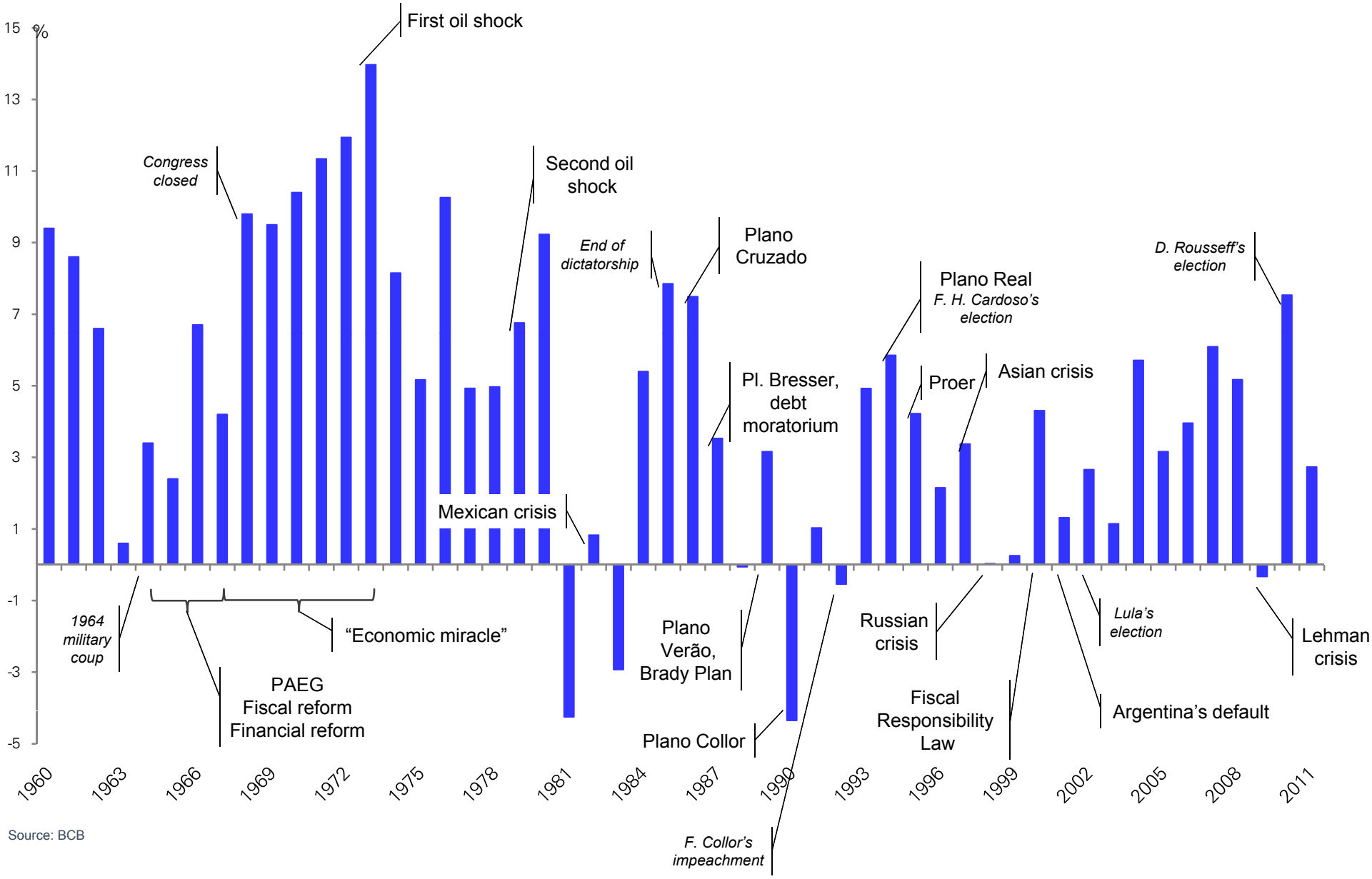
GDP growth since 1960



Source: BCB

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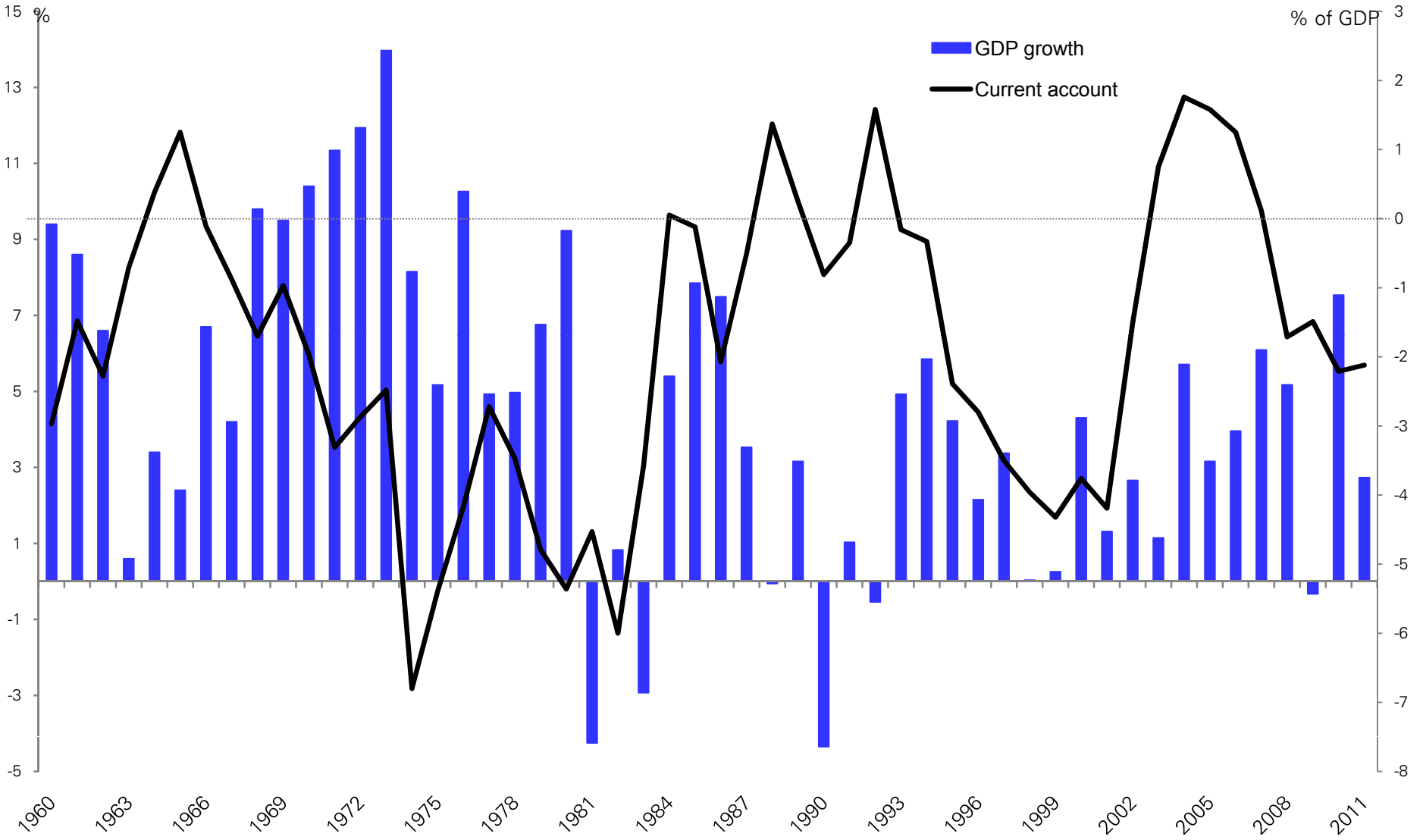
The Brazilian economy in the 1960s and 1970s

- **1964 – 1967**: The military government that took office in the 1964 coup implemented a series of important economic reforms. These reforms included a fiscal reform aimed at boosting government revenues (which created the basic structure of the tax system that exists today), a financial reform (which created the Central Bank and the National Monetary Council), and a labor reform (which replaced the employment stability model with the FGTS unemployment benefit fund system). The government also introduced the first mechanisms of public debt indexation to deal with persistently high inflation.
- **1968 – 1973**: The so-called "economic miracle," when GDP grew 11% per year on average, a consequence of the reforms, strong government investment (around 6% of GDP), heavy foreign investment, and a combination of lax monetary policy and price controls to curb inflation. Growth led to a sharp increase in the current account deficit.
- **1974 – 1978**: The first oil shock led to higher inflation and in the current account deficit. However, the government decided to tackle the crisis by stepping up investments (the II PND program) aimed to reduce the dependence on imported oil and capital goods, and stimulate exports. The external debt grew rapidly to finance the large current account deficits, fueled by abundant "petrodollars" in external financial markets.
- **1979 – 1983**: The second oil shock increased the current account deficit, while the "Volcker shock" (large increase in interest rates in the US) led to a global recession. Brazil devalued its currency, adding fuel to inflation. Mexico's 1982 default cut capital flows to emerging markets, forcing Brazil to sign an IMF agreement. The economy went into a deep recession in 1981-83, but continued to produce higher inflation rates.

Growth and current account deficit



Source: BCB

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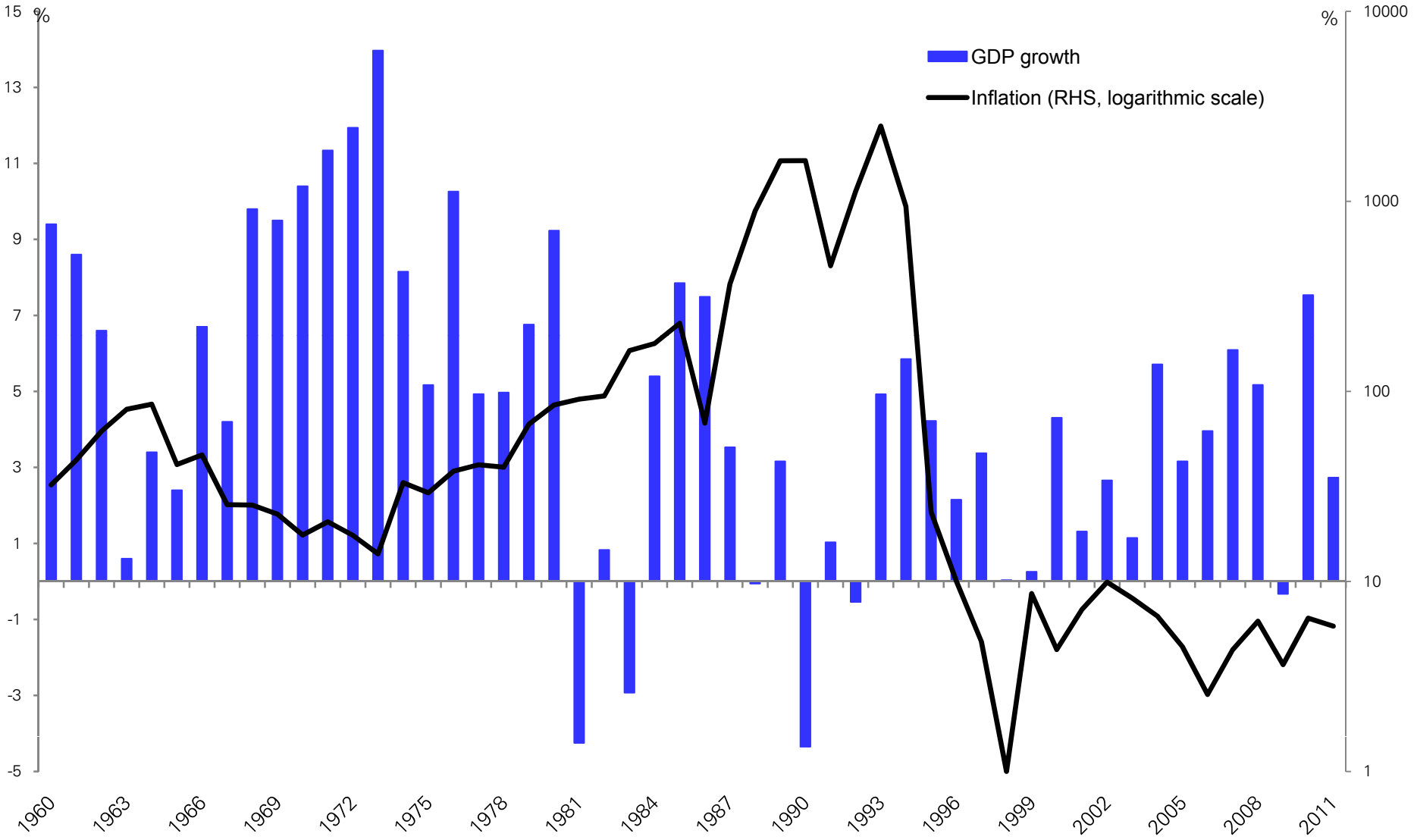
Hyperinflation and stabilization

- **1980s**: Brazil suffered from hyperinflation and choppy growth. High inflation provided "inflationary tax" revenues to finance public spending, at the same time that a complex mechanism of indexation (especially of wages) led to constant acceleration of inflation. The government tried to put out inflation through several stabilization plans: Cruzado I (1986), Cruzado II (1987), Bresser (1987), Verão (1989), Collor I (1990), and Collor II (1991). Since the plans did not address the structural cause of inflation (fiscal imbalance) and failed to eliminate indexation, inflation always came back stronger after each plan.
- **1990s**: The enormous turbulence produced by the Collor Plan in 1990 and President Collor's impeachment in 1992 was followed by the Real Plan, which was finally able to kill hyperinflation in 1994. The Real Plan included a monetary reform to eliminate indexation, a fiscal adjustment plan, monetary tightening, and the adoption of a fixed exchange rate regime. The economy also benefitted from trade liberalization and an ambitious privatization program in this period.
- **2000s**: The fixed exchange rate regime led to an increase in the current account deficit and to speculative attacks against the currency following the Asian crisis and the Russian default. The government floated the BRL and adopted the inflation targeting regime in January 1999. The IMF agreement signed that year imposed a severe fiscal adjustment, which was reinforced by the Fiscal Responsibility Law enacted in 2000 imposing several constraints on public spending and indebtedness. Despite the adjustment, the current account deficit persisted and the economy remained vulnerable to shocks, such as Argentina's default and Brazil's own energy crisis in 2001, when GDP grew a mere 1.3%.

Growth and inflation



Source: BCB, FIPE

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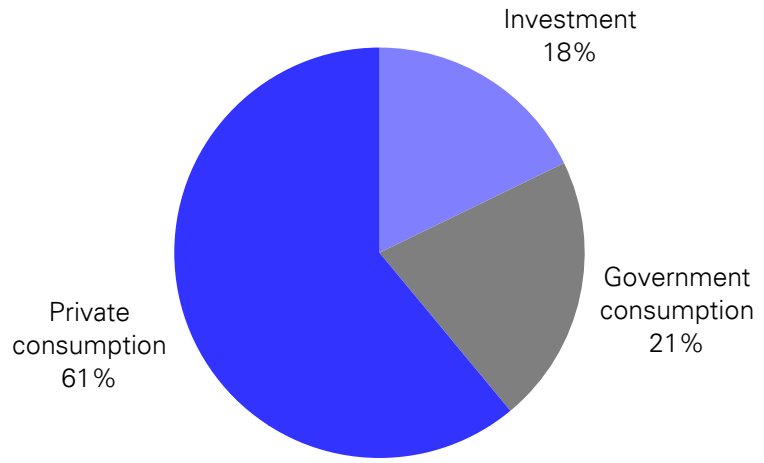
The Lula years

- **2002**: President Fernando Henrique Cardoso, the "father" of the Real Plan, watched his popularity plummet in the aftermath of the BRL depreciation and energy crisis, and failed to elect his successor. The election of Luis Inácio Lula da Silva of the Workers' Party (PT) produced enormous financial volatility, as market participants feared that the PT would deliver on its old promise to restructure the public debt. Given that a large share of the public debt was indexed to the exchange rate, capital flight and depreciation fed each other.
- **2003 – 2004**: President Lula managed to regain market confidence by pledging to respect contracts, immediately tightening fiscal and monetary policies, and submitting market-friendly reforms to Congress. Terms of trade began to improve due to higher commodity prices, reducing the current account deficit. Interest rates fell from 26.5% in February 2003 to 16.0% in April 2004.
- **2004 – 2008**: Large trade surpluses prevented the current account deficit from returning before 2008, at the same time that Brazil received increasing flows of foreign investment. The currency appreciated from BRL3.5/USD in January 2003 to BRL1.6/USD in June 2008. Financial stabilization, lower interest rates, and the introduction of "payroll-debit loans" led to a sharp increase in credit penetration, which rose from 25% of GDP in 2003 to 40% of GDP in 2008, boosting consumption. The economy grew on average 4.8% per year. In 2007, the government announced that the pre-salt oil fields would dramatically increase the country's reserves. On the other hand, the privatization program came to a halt, and few reforms were passed.
- **2009 – 2011**: The "Lehman shock" led to a recession in 2009, but the economy recovered in 2010 amid strong fiscal and monetary expansion. High inflation forced the newly-elected government of President Dilma Rousseff (PT) to tighten policies in 2011, slowing the economy again. Monetary easing began again in August 2011. The government is now struggling to jumpstart the economy, making a strong effort to protect the local industry from the competition of imported goods.

Consumption accounts for 60% of GDP

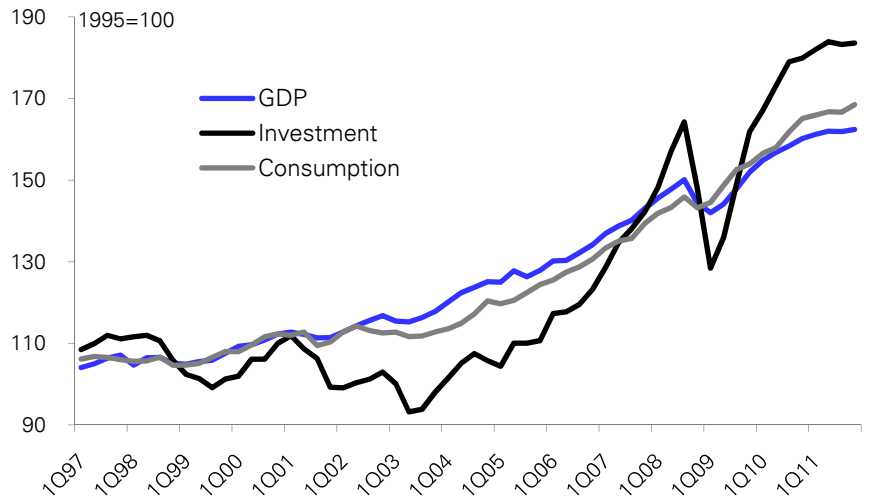
GDP composition



Source: IBGE (2009)

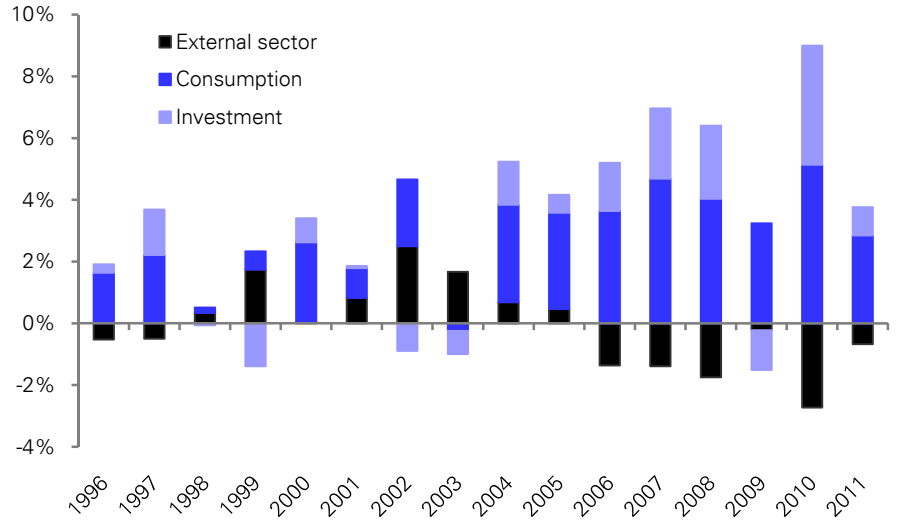
- Consumption accounts for roughly 80% of Brazil's GDP, including the private sector (60%) and the government (20%).
- Investment has been lower than 20% of GDP since 1995.
- Investment comprises mainly capital goods (50%) and construction (40%).
- Over the last ten years (when real GDP grew 45%), consumption contributed with roughly 75% of total growth, while investment contributed with 25%.

Growth



Source: IBGE

Contribution to growth



Source: IBGE

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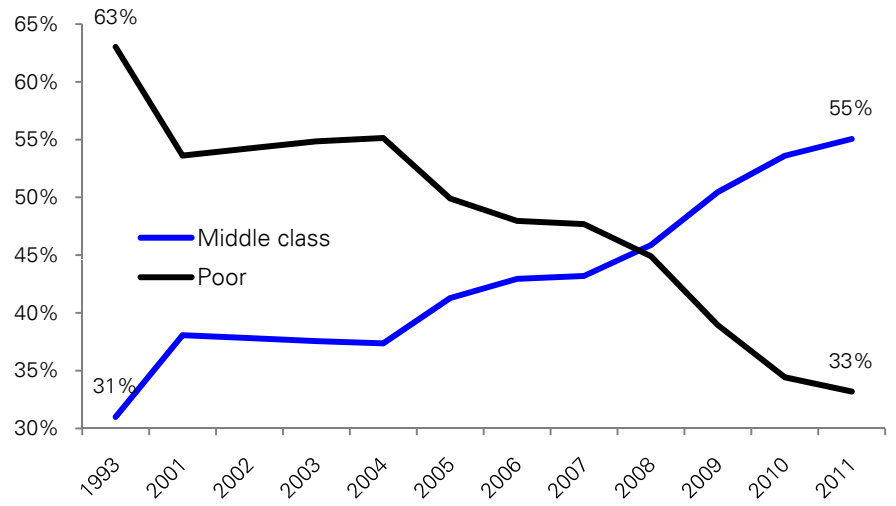
Low unemployment and credit support consumption

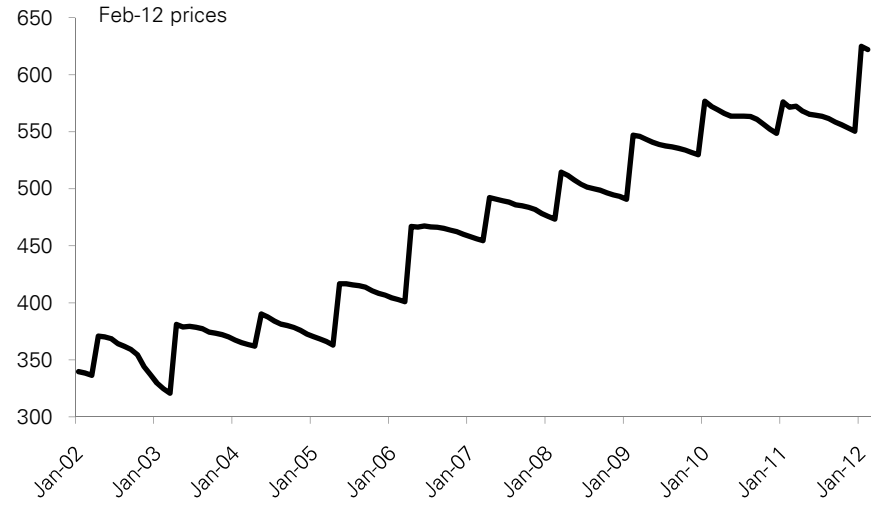
Income distribution



Source: FGV

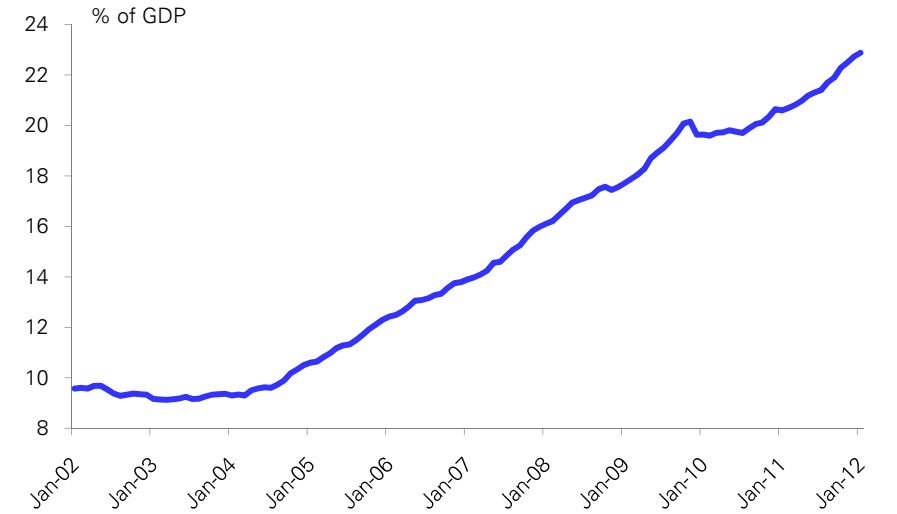
- Consumption has benefitted from an increase in labor income resulting from record low unemployment levels and a policy to raise the real minimum wage.
- Higher labor income has raised the participation of the “middle class” (households with monthly income between BRL1200 and BRL5200), which now comprises roughly 55% of the population.
- An increase in credit penetration related to financial stabilization and lower interest rates has boosted consumption as well. However, consumer credit has grown considerably and further expansion will depend on lower interest rates and longer debt duration.

Inflation-adjusted minimum wage



Source: Ministério do Trabalho, IBGE

Loans to households



Source: BCB

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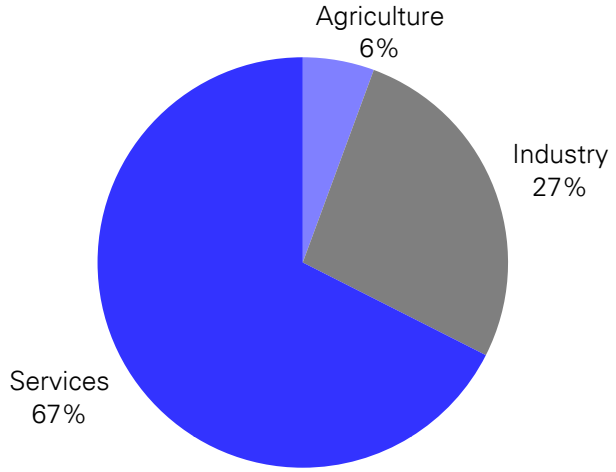
Services account for more than 60% of GDP

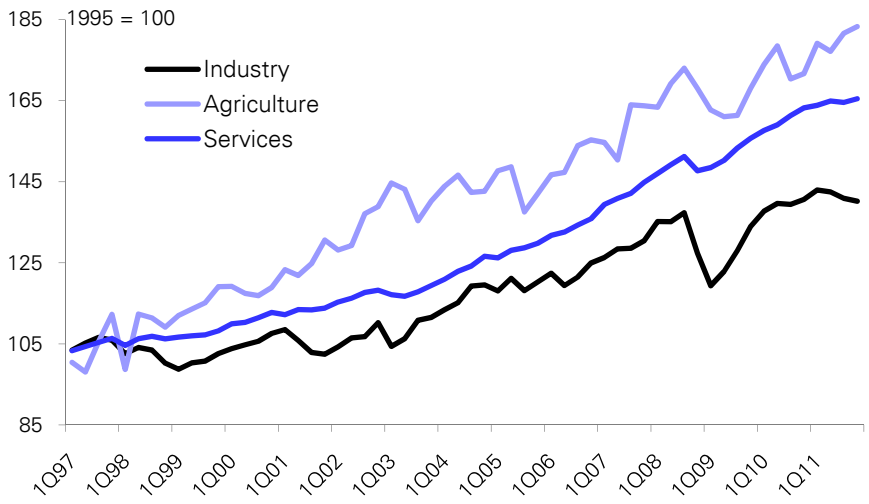
GDP composition



Source: IBGE (2009)

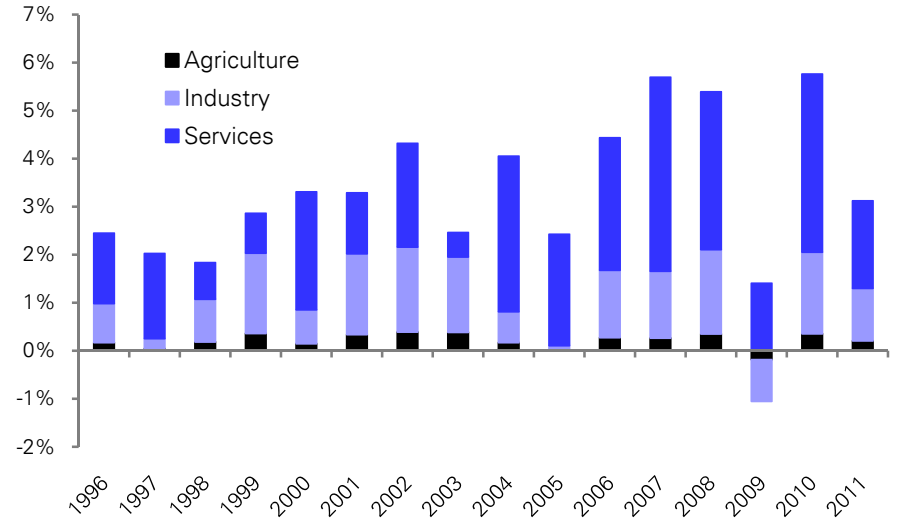
- The services sector accounts for almost 70% of GDP. The industrial sector accounts for slightly less than 30% of GDP.
- Within services, the main sectors are government services, retail, real estate services, and financial services.
- The public sector (including healthcare and education services) accounts for approximately 16% of GDP.
- The main industrial sectors are construction, oil, processed food, and vehicles.

Growth



Source: IBGE

Contribution to growth



Source: IBGE

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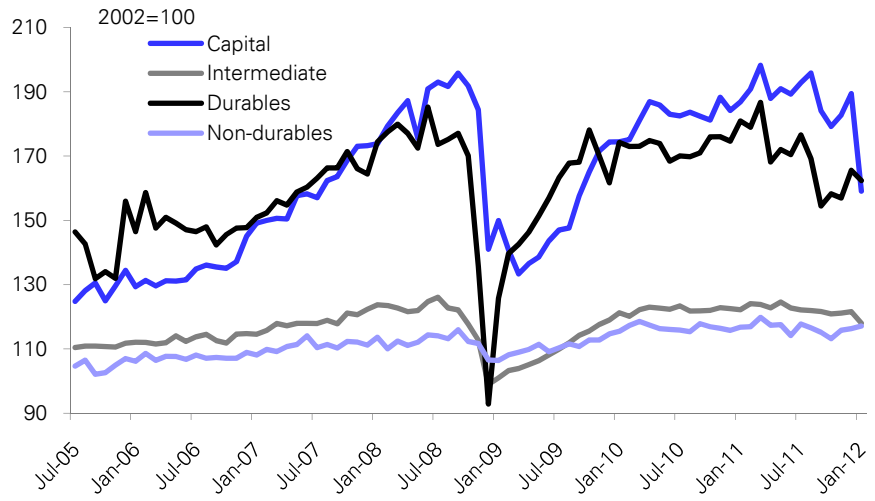
The industrial sector has lost momentum

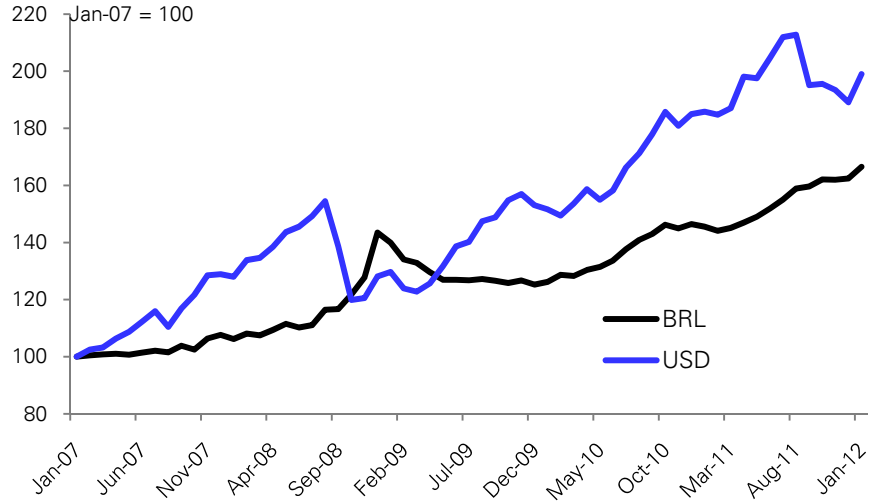
Industrial production



Source: IBGE

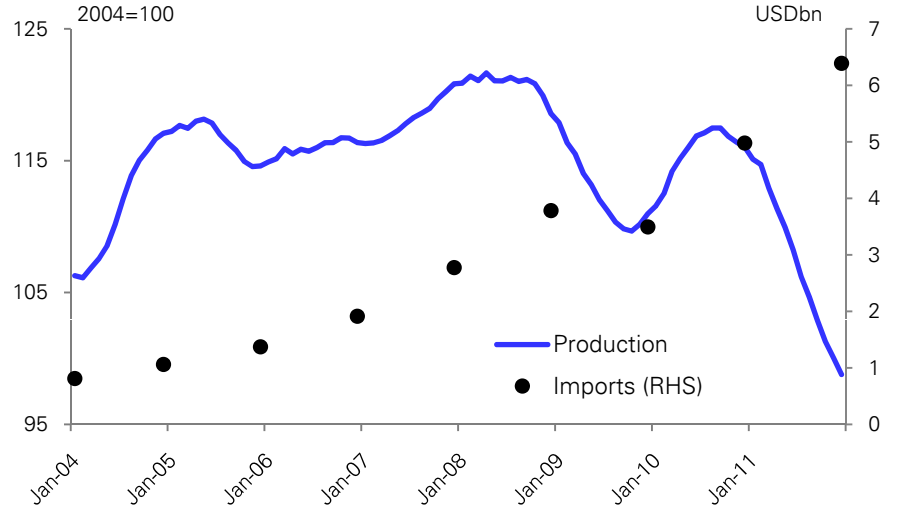
- Industrial production has been stagnant for two years. Although domestic demand remains strong, it continues to leak abroad due to the strong exchange rate.
- The sector is facing a sharp increase in unit labor costs. In the textile sector, for example, local production has declined markedly at the same time that imports have surged.
- As Brazil seems to be suffering from a weak version of "Dutch disease" due to the buoyancy of commodity prices, the industrial sector's share in GDP is poised to decline.

Manufacturing unit labor cost, BRL and USD



Source: IBGE

Textile industry: production and imports



Source: IBGE, SECEX

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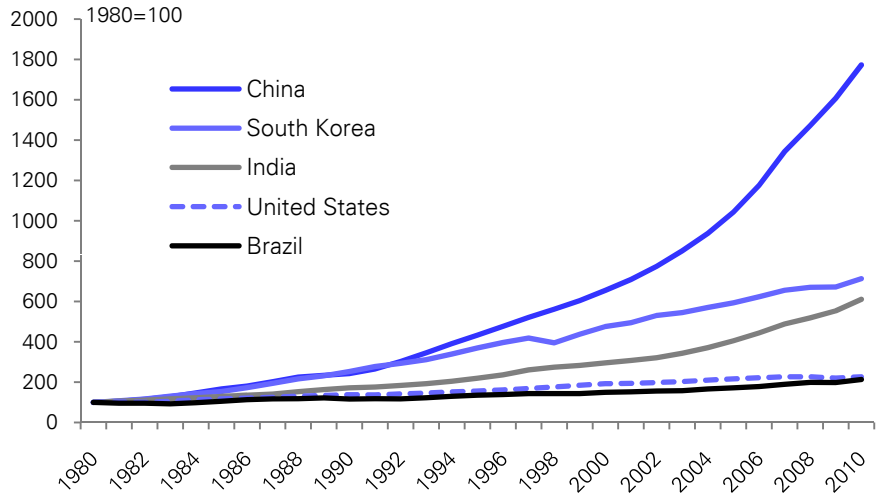
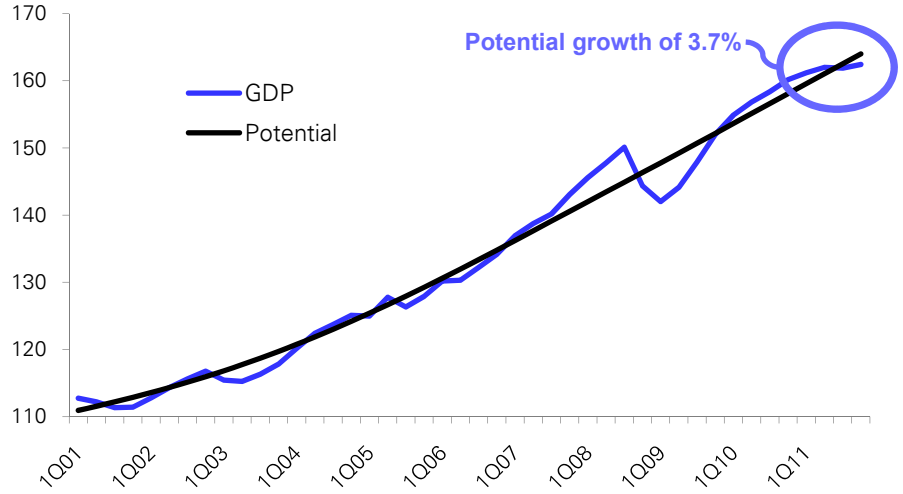
Potential growth is currently below 4%

Real GDP, selected countries (1980=100)



Source: IMF

Brazil's potential growth



Source: IBGE

- Despite improvement in the last eight years, Brazil growth has been historically slow, especially when compared to other "BRIC" countries.
- Our estimates suggest that potential growth was only 3.7% in 2011, when actual GDP grew 2.7%. We forecast GDP growth of only 3.2% this year, and do not expect the output gap to turn positive before 4Q12.
- A simple model to estimate potential growth is based on the Cobb-Douglas production function with constant returns to scale:

$$Y_t = A_t(K_t C_t)^{\alpha}[L_t(1-U_t)]^{(1-\alpha)}$$

where Y is GDP, A is total factor productivity, K is the stock of capital, C is capacity utilization, L is the labor force, U is the unemployment rate, and α is the share of capital in national income.

- Growth of the stock of capital depends on investment (I):

$$K_t = (1-\delta)K_{t-1} + I_t$$

- We assumed α of 40% and annual capital depreciation (δ) of 3.5%. We used FGV's capacity utilization in the industrial sector as a proxy for the whole economy, and labor data from IBGE.
- The next slides focus on labor force growth, investment, and productivity.

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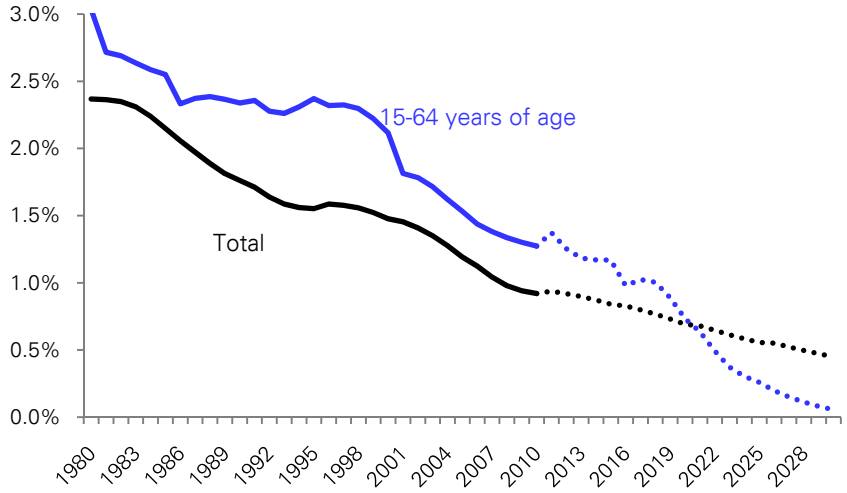
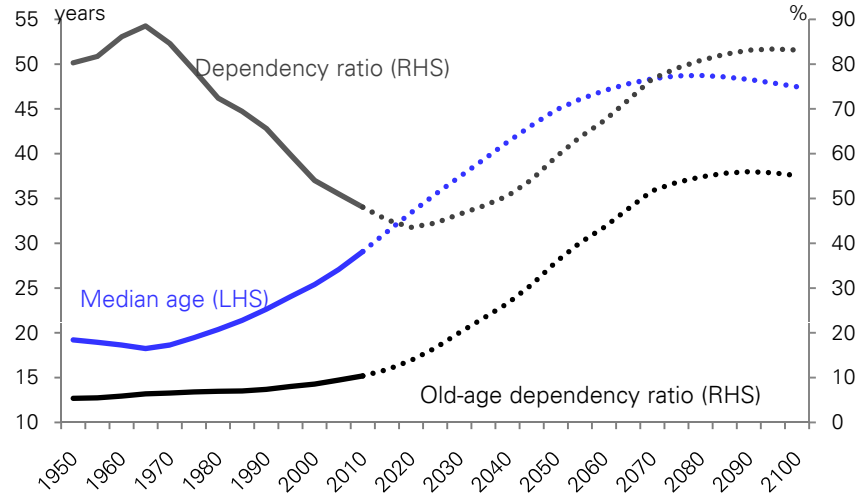
Labor force growth is on a declining trend

Population growth



Source: United Nations

Population age and dependency ratio



Source: United Nations

- The unemployment rate is at a record low level (5.5%) and the participation rate is quite high, which indicates that further increases in labor supply depend on population growth.
- Population growth is on a declining trend due to a strong drop in fertility rates. On average, women had more than six children in the 1960s and currently have less than two.
- Although Brazil is in a "demographic window" (characterized by a falling dependency ratio) that will probably extend until 2020, the growth rate of the working age population is on a declining trend.
- The United Nations estimates that population growth will slow from approximately 1% currently to 0.7% in 2020, and labor force growth to decelerate from 1.3% to 0.7%.
- Immigration could help alleviate the problem, but it remains to be seen whether Brazil will be willing to accept an increase in immigration flows that could potentially hurt domestic wages.
- Since the average population age is rising rapidly, the old-age dependency ratio (ratio of people older than 64 to people between 15 and 64 years of age) is already rising, which could lead to a decline in the saving rate.

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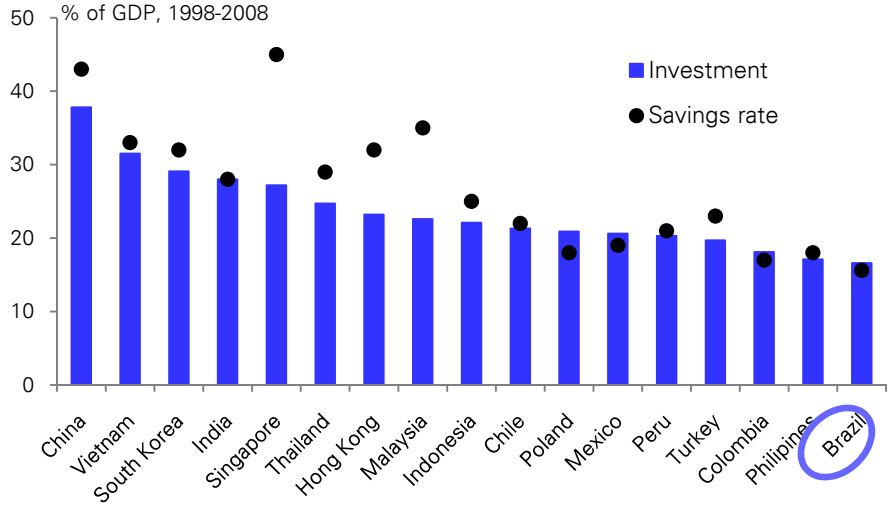
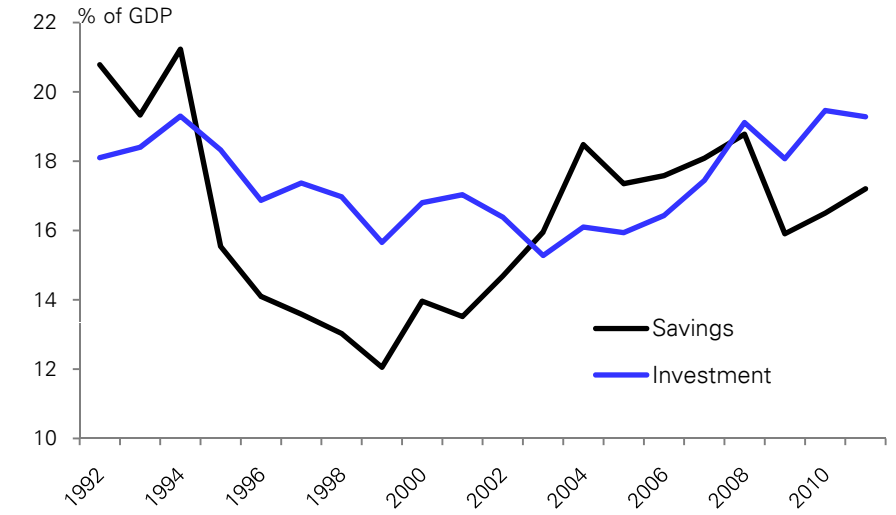
Low saving rate constrains investment

Investment and saving rate, selected countries



Source: FGV

Investment and saving over time



Source: IBGE

- Investment in Brazil averaged only 17.3% of GDP in the last ten years.
- Low investment reflects, to a large extent, the low saving rate (16.9% in the last ten years).
- The gap between investment and domestic saving is filled by the current account deficit ("external saving"), hence the negative correlation between GDP growth and the current account balance.
- Corporate saving accounts for approximately 14% of GDP, while household saving accounts for roughly 5% of GDP. The public sector has negative saving around 2% of GDP.
- The household saving rate depends on structural factors such as the age structure, tax system, and social security system.
- We believe that Brazil's generous public social security system is one of the reasons why the saving rate is so low.
- As the previous slide showed, the age structure does not bode well for an increase in personal savings in the next years.
- Lower interest rates and higher taxes could reduce the personal saving rate too.
- The heavy tax burden on corporate profits does not help increase corporate savings either.

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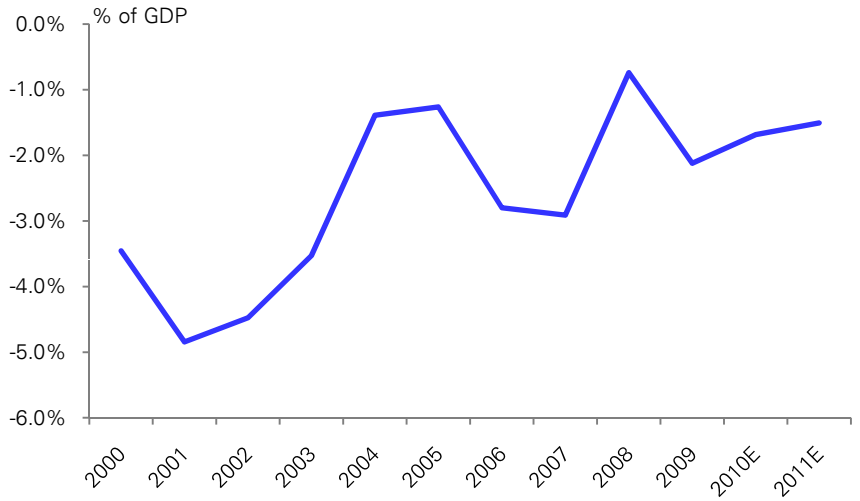
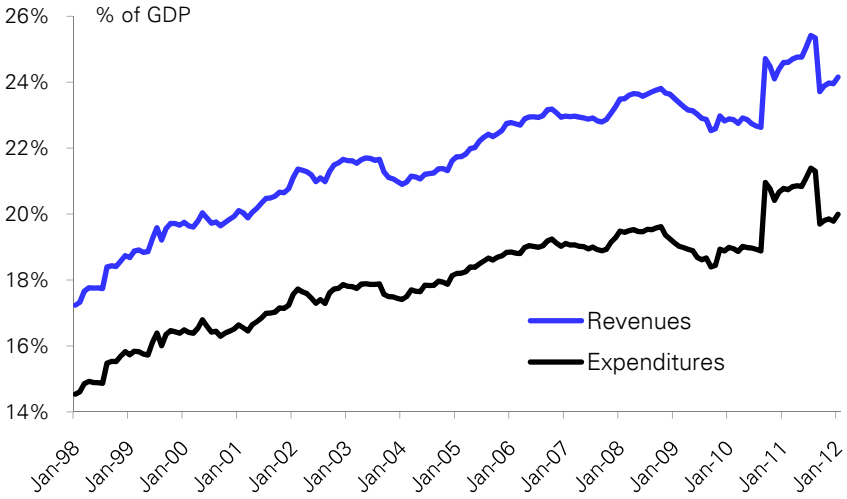
Raising public sector saving is crucial

Public sector savings



Source: IBGE, DB Research

Primary federal revenues and expenditures



Source: STN (The spike in 2010 was caused by the capitalization of oil company Petrobras.)

- Given the stability of private saving, raising Brazil's saving rate demands an increase in public sector saving.
- Public sector saving will probably continue to improve due to lower interest rates. However, lower rates reduce government transfers to the private sector and affect inter-temporal choices, potentially reducing private saving.
- An increase in the primary surplus (which excludes interest payments on the public debt) could boost public saving. However, the primary fiscal surplus has been above 3% of GDP since 2000 (except for 2009 and 2010), and we believe that it is more likely to fall than to increase in the next years due to rising demand for more government spending.
- Public primary spending is strongly endogenous, mainly due to widespread budget earmarking. As a result, spending usually moves in tandem with revenues. Thus, it is not clear whether the government will be able to take advantage of the increase in tax revenues arising from economic growth or new sources (such as the pre-salt oil fields) to raise public saving.
- Brazil's political system is prone to "voracity effects," which means that the executive branch has little control over tax revenues.

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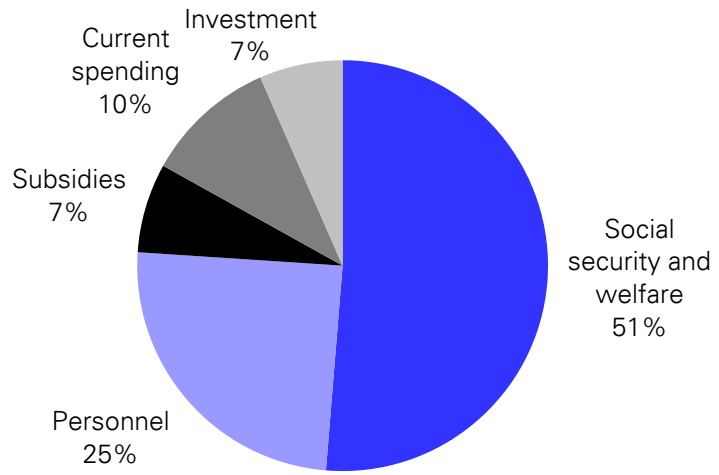
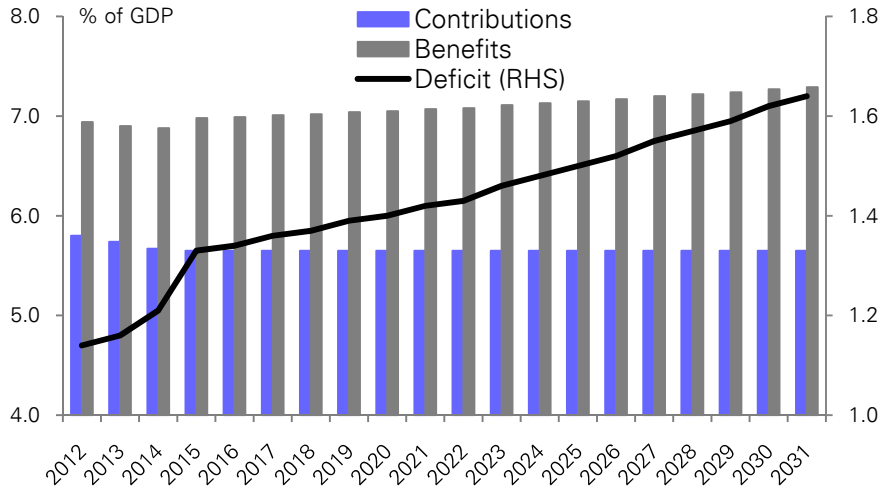
There is increasing demand for public spending

Federal spending breakdown (2011)



Source: STN

INSS social security deficit forecasts



Source: Ministério do Planejamento

- The strong correlation between public spending and revenues is, to a large extent, caused by the widespread earmarking of revenues.
- As the chart on the upper left shows, roughly 80% of the government's budget is directed to mandatory spending on social security, welfare, healthcare, personnel, and subsidies. If we exclude investment, the government controls only 10% of its budget, approximately.
- The aging of Brazil's population and resulting increase in the old-age dependency ratio will increase the pressure on the social security system in the next years. The government expects a steady increase in the INSS social security deficit, as the chart on the lower left shows.
- Brazil's social security deficit is aggravated by early retirement due to the low age limit and retirement program based on length of contribution.
- The aging process will probably increase demand for public healthcare services as well.
- The bottom line is that public sector savings could benefit enormously from reforms reducing budget earmarking and cutting incentives for early retirement.

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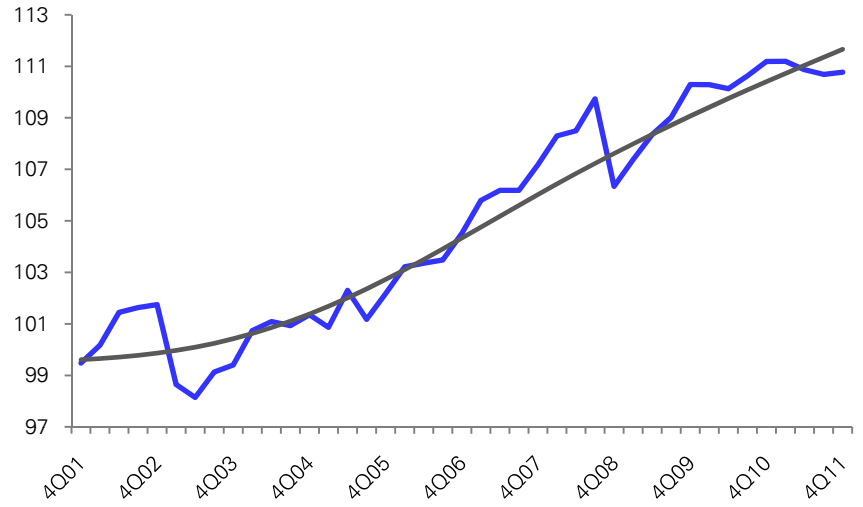
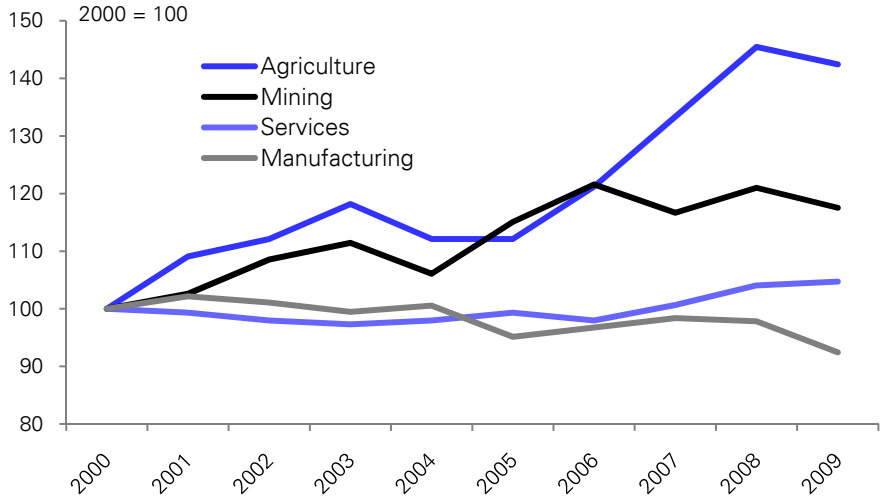
Productivity growth remains slow

Total factor productivity



Source: DB Research

Labor productivity

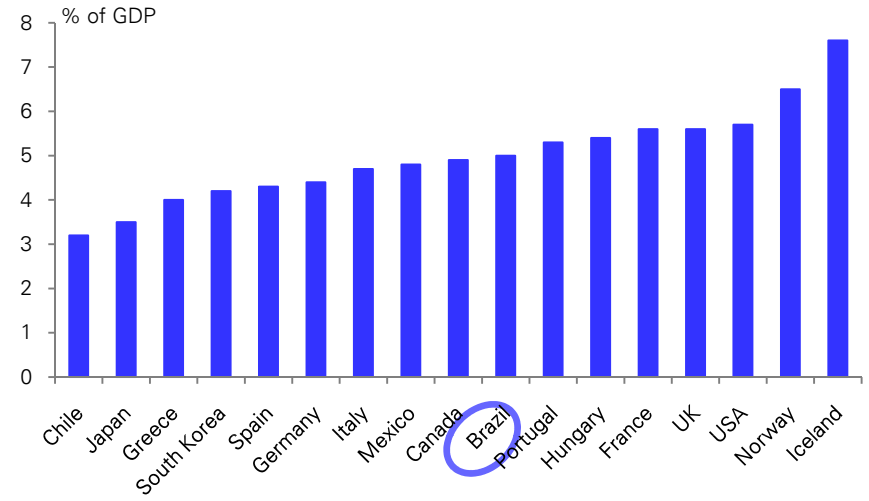


Source: IPEA

- Total factor productivity (TFP) is a crucial measure of technical progress, even though it is estimated by residual (the "Solow residual") and is therefore quite vulnerable to measurement error.
- We estimate that total factor productivity grew only 0.3% in 2011. The drop in productivity growth was influenced by an economic deceleration that was not accompanied by an increase in unemployment (maybe because employers perceived the slowdown as temporary).
- We estimate that the TFP trend (the grey line in the chart on the upper left) is growing at a rate of 1.2% per year, still a relatively slow pace.
- While we do not have TFP data for sectors, data on labor productivity suggests that the largest sectors of the economy (services and industry) are the ones with relatively slower productivity growth.
- In the case of services, slow productivity growth may be caused by scarce supply of human capital.
- Industrial productivity growth has been slow despite the increase in imports of capital goods enabled by exchange appreciation, maybe due to "Dutch disease" effects.
- The increase in the relative price of commodities increased investment in these sectors, probably boosting productivity growth.

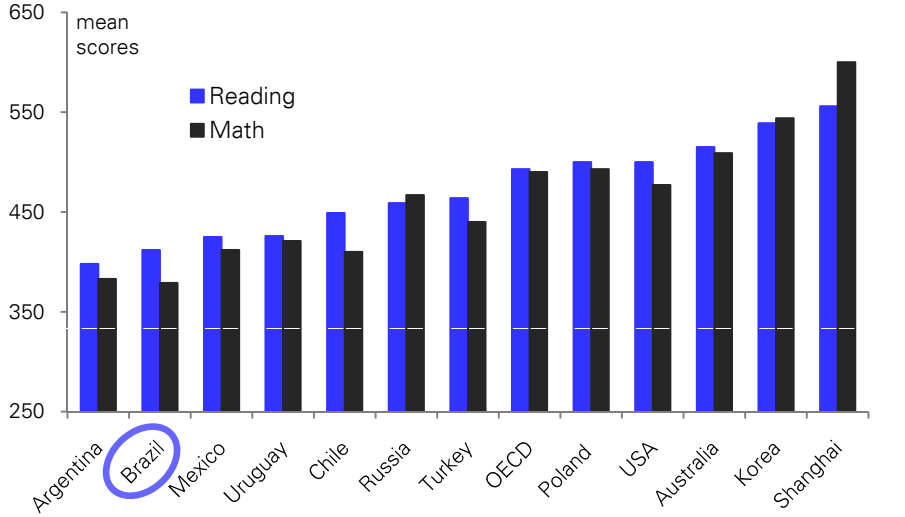
There is a long way to go to improve education

Public expenditure on education (2006)



Source: UNESCO

PISA evaluation test (2009), selected countries



Source: OECD

- The education system is crucial to develop the country's human capital, a key ingredient for productivity and technological progress.
- Although Brazil spends a relatively large share of GDP on public education (as the chart on the upper left shows), it continues to lag behind in performance, which calls into question the efficiency of government spending.
- There is evidence that the quality of Brazil's education system has improved. Moreover, there have been positive initiatives to increase school enrolment rates, such as the well-known "Bolsa Família" conditional cash transfer program.
- In OECD's Program for International Student Assessment (PISA) test, Brazil showed the greatest improvement in mathematics performance between 2003 and 2009 after Mexico.
- Nevertheless, in the PISA tests, only three countries scored lower than Brazil, and Brazil was at the bottom of its income tier.

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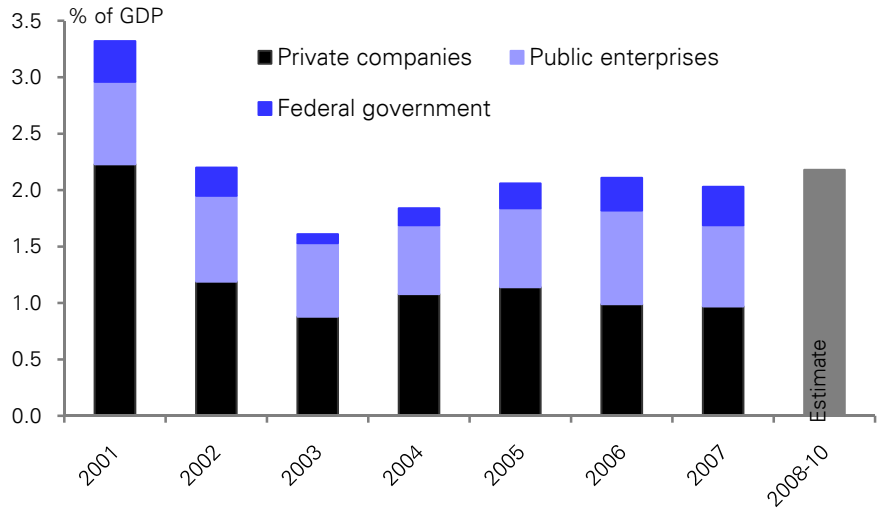
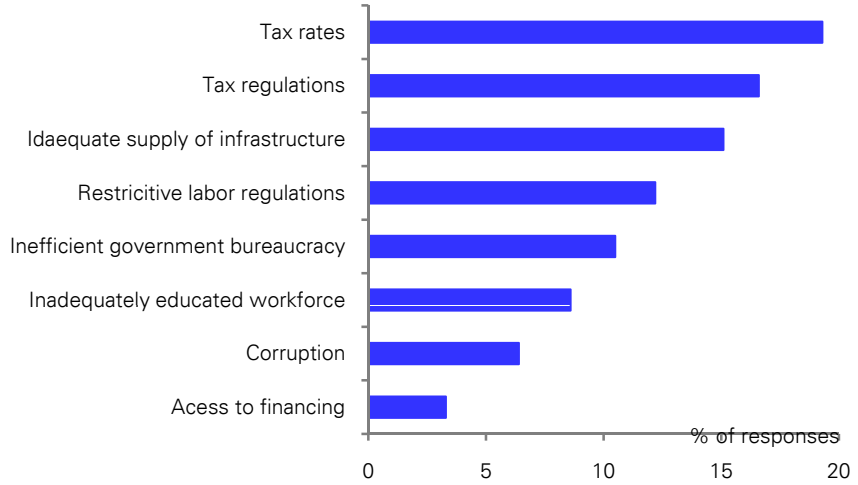
Poor infrastructure hurts productivity

Investment in infrastructure



Source: Frischtak, Claudio, "O Investimento em Infra-estrutura no Brasil", PPE, v.38, n.2, August 2008

Most problematic factors for doing business in Brazil



Source: World Economic Forum , The Global Competitiveness Report, 2011-2012

- Brazil invests approximately 2.0% of GDP in infrastructure, which is barely enough to compensate for depreciation and keep up with population growth. Brazil would have to double or even triple investment in infrastructure for the next 20 years to reach the same level of a country like South Korea.
- Public investment in infrastructure declined in the last ten years, as it was one of the few items that the government could cut to adjust its fiscal accounts. Excessive bureaucracy also impairs investments.
- The government estimates that the FIFA World Cup in 2014 and the Olympic Games in 2016 will demand investments that will exceed all investments done by the federal government in seven years.
- The government is making an effort to raise investments through the National Development Bank (BNDES), and also offers tax incentives for bonds aimed at financing infrastructure projects.
- The decision to offer airport concessions to the private sector reflected the government's inability to invest in the sector and concern about the World Cup. However, the concessions were mainly awarded to pension funds of state-owned enterprises, and there is strong ideological resistance against privatization.
- The lack of public investment in infrastructure and high regulatory risk depress private investment too.

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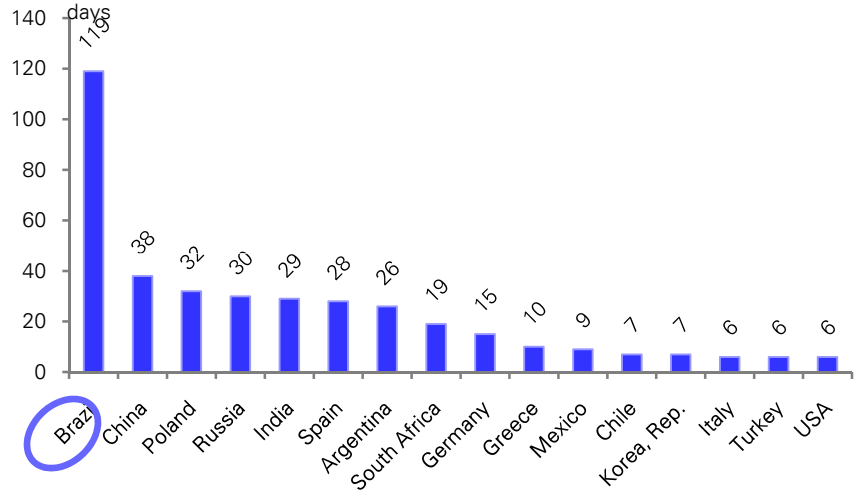
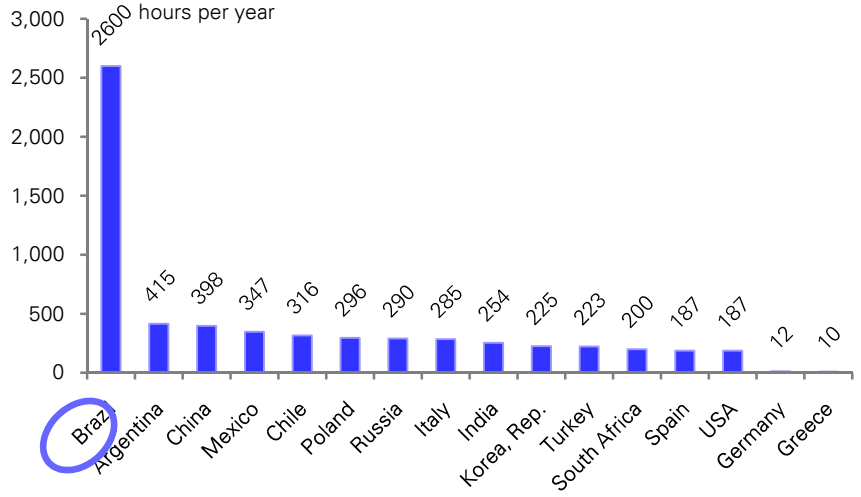
Other causes of low productivity

Time to start a business



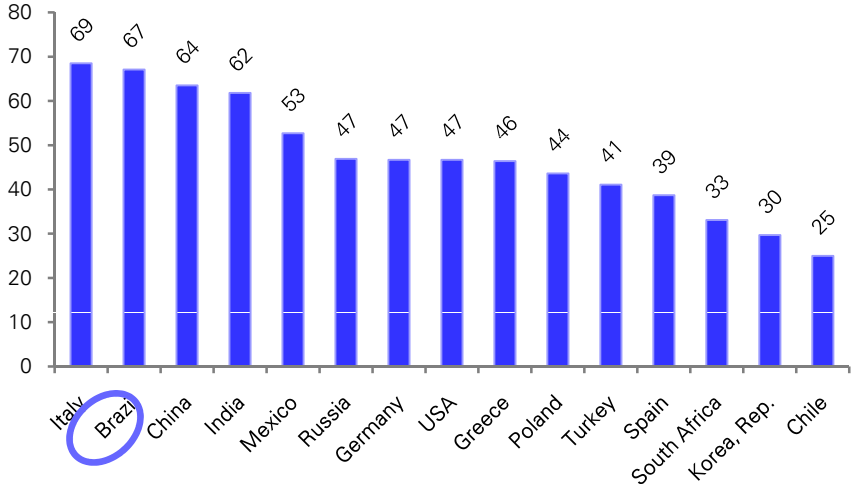
Source: World Bank, Ease of Doing Business 2012

Paying taxes – hours per year



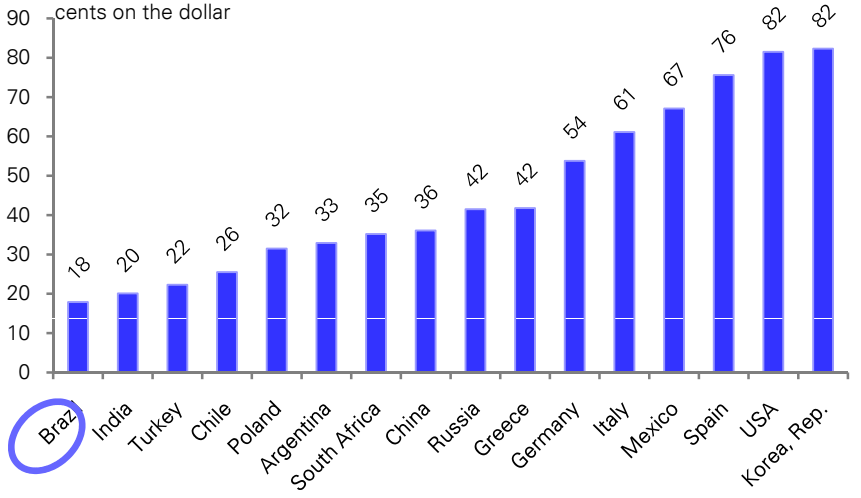
Source: World Bank, Ease of Doing Business 2012

Total tax rate (% of profits)



Source: World Bank, Ease of Doing Business 2012

Resolving insolvency – recovery rate



Source: World Bank, Ease of Doing Business 2012

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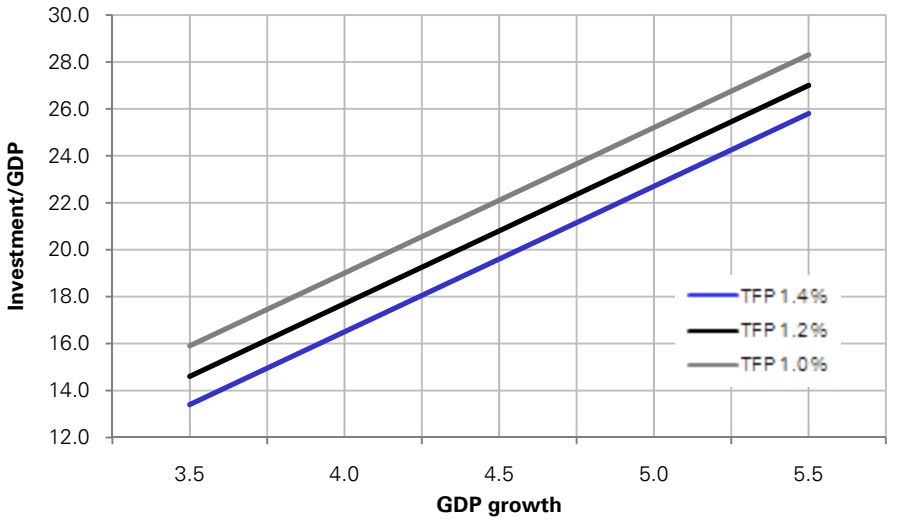
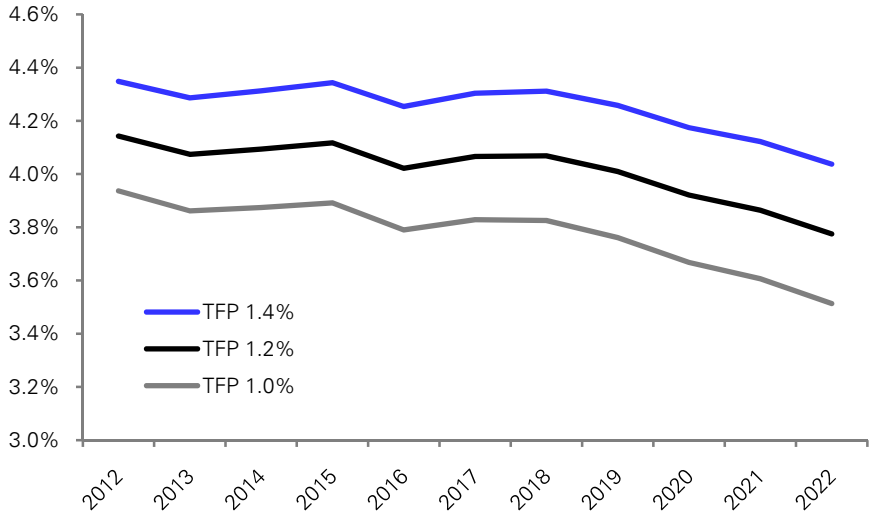
Growth scenarios

Investment, productivity and growth



Source: DB Research

Scenarios for potential GDP growth



Source: DB Research

- Potential GDP growth depends on labor force growth, investment, and total factor productivity.
- The chart on the upper left assumes labor growth of 1.5%. In this case, for example, investment of 22% of GDP and total factor productivity of 1.0% would lead to GDP growth of 4.5%.
- In another simulation, we assume a steady deceleration in labor supply growth, in line with the scenario described above.
- We also assume a steady increase in investment to 23% of GDP in ten years. Such increase in investment would be financed by an increase in public saving from -2% of GDP to zero (despite the challenges described above) and a current account deficit of 4% of GDP (private saving would be stable around 19% of GDP).
- The results in terms of potential growth are showed in the chart on the lower left. We make three assumptions for TFP growth. The declining trend persists mainly due to the expected deceleration in population growth.
- In the best case scenario (TFP of 1.4%), our simulation shows that potential growth would slow from 4.4% to 4.0% in 2012. Faster growth would probably depend on the country's ability to implement structural reforms to enhance economic efficiency.

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Potential reforms

- **Fiscal reform**: it could reduce budget earmarking, introduce a mandatory budget, impose a ceiling on current spending, and rationalize personnel spending.
- **Social security reform**: it could introduce a minimum retirement age, increase contributions, raise the period for the retirement by age, unify the retirement rules for men and women, limit special retirement regimes, and separate social security benefits from the minimum wage.
- **Tax reform:** it could reduce distortions, simplify the cumbersome ICMS value-added tax system of the states. It could also lessen the tax burden on payroll and corporate profits, so as to shrink the informal sector of the economy. Lower taxes on financial transactions could reduce bank spreads.
- **Labor reform:** it could increase labor union flexibility, promote direct negotiations between employers and workers, reduce labor taxes, and reform the FGTS system.
- **Financial reform:** it could introduce central bank independence, reduce the weight of directed credit in the economy (such as the subsidized loans provided by the National Development Bank), and eliminate compulsory saving schemes (FGTS, FAT).
- **Privatization**: it could give an important boost to infrastructure investment, especially in the transportation sector, through more efficient public-private partnership agreements.
- **Judiciary reform**: it could increase transparency, speed up processes, and reduce legal uncertainty.

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Appendix 1
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