



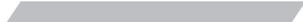
**INVESTMENTS IN
INFRASTRUCTURE
IN BRAZIL:
KEEP INVESTING
DESPITE THE ECONOMIC
ADJUSTMENT**

CBIC



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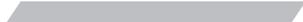
**INVESTMENTS IN INFRASTRUCTURE IN BRAZIL:
KEEP INVESTING DESPITE THE ECONOMIC ADJUSTMENT**

Brasília-DF, maio de 2015

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The image features a large red rectangle in the top-left corner and a white rectangle in the top-right corner. Below these, a grayscale photograph shows a bridge structure with a house-like roofline in the foreground. The text "[SUMÁRIO EXECUTIVO]" is centered in a white box.

[SUMÁRIO EXECUTIVO]



[EXECUTIVE SUMMARY]

Infrastructure investments in Brazil are small - between 2% and 2.5% of the GDP. This is a low figure by all means: compared to our history, to countries with similar income levels and to our needs. From the 1970s to the 2000s, investments in infrastructure fell steadily to an average of 2.2% of the GDP from an average of 5.4 of the GDP. This performance is strongly tied to the reduction of spending by the public sector. In fact, public sector's investments fell to 1.2% of the GDP in the 2000s from 3.7% of the GDP in the 1970s. In the same period, private sector's investments fell to 1.0% of the GDP from 1.3% of the GDP.

Two key factors help to understand why investment in infrastructure in Brazil is short: i) economic adjustment programs and ii) the private sector have not replaced investments made by the public sector. Since the 1980s, Brazil has been experiencing several economic crises, being forced in many of them (such as in 1982, 1990, 1999, and 2003) to make fiscal adjustments. Traditionally fiscal adjustments focus on slashing investments as opposed to operational expenditure. Despite the poor quality of this type of adjustment, it is easier to be implemented. There is less political pressure when services that still do not exist are cut. Additionally, as larger works cost more, there is a lot of savings to achieve by eliminating expenses with few works.

The second reason for the fall in investment rates in infrastructure is that the private sector did not replace the public sector. When the privatization program was launched, the State expected to perform the role of regulator, transferring to the private sector the job of investing. Improper regulatory benchmark, lack of autonomy for the regulating entities, high capital cost, legal insecurity, and an excessive policy focus on low fees made difficult for the private sector to entry.

Investments in infrastructure, after reaching the bottom in the 2000s, resumed growth after the launch of PAC, achieving 2.45% of the GDP in 2013. There is no data for 2014, but facing the perspectives of overall investment rate reduction, it is expected that the investment in infrastructure have also been reduced. It is feared now that due to another fiscal adjustment, once more the government cuts investments more intensely than current expenses.

We understand that this policy is risky and unnecessary. It is risky because the lack of infrastructure is huge, both quantitative and qualitative. Even admitting that some infrastructure sectors are performing well, such as telecom, the overall situation is quite poor. The most recent World Economic Forum report for 2014/15, for instance, ranked Brazil's infrastructure in 120th place out of 144 countries, with a negative highlight on highways and ports.

We cannot be surprised with the problems of Brazilian infrastructure. According to the international experience, investment in infrastructure should be at least of 3% of the GDP to keep the current capital stock. This is a higher rate than the current one, which is around 2.5% of the GDP. In other words, we are barely managing to keep our infrastructure stock. This is terrible for a country such so many needs in this area. In order to achieve East Asia's emerging countries levels, investment in infrastructure should be at around 5% of the GDP, which would equal to a yearly additional effort of approximately R\$ 125 billion.

Brazil cannot afford to let its infrastructure to drag behind other countries, despite the investment needs are high. The literature shows how investing in infrastructure supported the strong growth in East Asia. For Latin America, there are evidences that

these investments are able to increase the potential GDP growth rate and to reduce inequality. For Brazil, particularly, to improve and expand infrastructure is even more important face to the low productivity growth.

As a long term strategy to increase investments in infrastructure, it is necessary: i) to increase local savings rate to generate the funds required to finance expenditures; ii) to make investing more attractive to the private sector, which requires to build a business environment more favorable and a behavior more inclined to privatizations by the public sector; iii) better planning to avoid waste.

In the short term, even admitting the need for macroeconomic adjustment, we understand that it is not necessary or recommendable to cut investments. It is not necessary because, in the current crisis, there is no exchange rate crisis and Brazil does not face liquidity restriction, instead of past's crises. In this case, financially sound projects, i.e., those in which the internal return rate is equal or higher than debt cost, should prosper. When there is liquidity restriction, the country does not have the funds required to cover the initial expenses incurred by the project's implementation.

It is not advisable to cut investments in infrastructure for two key reasons. First, the current crisis is mainly a demand crisis. Both the installed capacity utilization rate as unemployment rates indicate that there is no idle capacity in the economy, albeit we are undergoing a stagnation period. In this context, it is critical to increase productivity. In the long term, this is achievable by investing heavily in human capital. But, in the short term, the best strategy is to expand the aggregated supply with investments. Investments in infrastructure are particularly desirable

in the current environment, as they positively impact economy's productivity across the board.

Secondly, we understand that despite there is no idle capacity, a macroeconomic adjustment program should lead to more unemployment and reduction of the installed capacity utilization. In normal crises, a well executed adjustment program restores economic agent trust, that resume purchasing and investing. The problem is that in the current crisis, the prognostics are not favorable to recover the aggregated demand components, especially for investing. Adding to the current uncertain environment, which is common in times of crisis, the consequences of the so-called "Carwash Operation", high debt levels and the worsening of risk perceptions shall force Petrobras, the state-owned oil company in charge of some 10 of investments made in Brazil, to review its expenditure plans. A looming rationing of water and energy shall cause private sector investments to reduce even further. If the private sector is not investing, then the public sector should do it.

Finally, we consider the My House My Life housing program (known for its initials in Portuguese, MCMV). This is one of the most important social programs in terms of reach, both for expenditures and the number of beneficiaries. Despite it does not bring any future tax revenue for the government, as other investments do, MCMV directly impacts the country investment rate and causes the GDP to increase due to rents saved.

MCMV has high costs, but its social reach is also of relevance. Low income families cannot afford to rent or buy a house. Poorer families will not be able to live in decent houses if some subsidy is offered to them. Despite the program's increasing expenditures, housing deficit remains high in Brazil, reaching almost 6 million houses. Credit is still low at



approximately 8%, below the emerging economies average that is near 12%. Thus, it is necessary to expand the housing market in Brazil. Finally, incentives to the civil construction industry may be important in periods of economic stagnation, such as the one we are in now, as it is a workforce-intensive industry that can contribute to prevent a spike in the unemployment rate.





[INTRODUCTION]



[INTRODUCTION]

Infrastructure investments in Brazil are small - between 2% and 2.5% of the GDP. These low rates led us to a poor infrastructure both in quantitative and qualitative terms. Gaps are particularly obvious in areas as highways, ports, railroads, sanitation and energy. According to experts, we would have to invest at least 3% of the GDP to keep the current infrastructure stock. To catch up with fast-growth emerging countries such as those in East Asia, we should be investing at least 5% of the GDP on an ongoing basis.

Challenges to invest in infrastructure are enormous. Both the public sector and the private sector have relevant contributions for these investments. It turns out that in order to the private sector to invest, it is necessary to enhance the legal framework so to attract companies with higher technical and financial capabilities to operate in the industry, and to create a business-friendly environment. Particularly, the Grantor must establish clear, stable, and foreseeable rules.

Investments by the public sector are largely constrained by the fragile fiscal situation. Government spends most of the resources in funding expenses (social insurance, employees and social programs), and little is left to invest. The current situation is even more concerning. Brazil faces stagnation, which requires a fiscal adjustment. In the other hand, adjustment programs usually imply in expense reduction, and investments tend to be proportionally even more reduced.

The main goal of this study is to show that the government should avoid cutting investments in infrastructure even when required to perform a fiscal adjustment. In simple terms, we justify this conclusion through the following facts:

I) This is an aggregated supply crisis so that a conventional adjustment program, in which investments are cut to the bone, would make the country's situation worse in the long term, as it will limit future supply expansion

II) Instead of past crises, there is no liquidity gaps in this one, which allows Treasury to increase debt if the plan is to invest in infrastructure

III) The need for the Central Bank to adopt severe measures against inflation is lower today than in the 1999 and 2003 crises, so that incentives for the aggregated demand by public investments shall not cause strong reactions from the Central Bank

IV) Investments in infrastructure, if well selected, will not alter government financial health from a long-term standpoint, as expenses today will be matched by larger tax revenues or by cutting other expenses in the future.

To develop this line of thought, we divided this Report into four chapters, in addition to this Introduction and the Conclusion.

Chapter One describes where investments, in general and in infrastructure, stand in Brazil today. As we shall see, Brazil invests little in infrastructure: little when compared to the past, little in relation to countries with similar income levels, and little in relation to our needs. From the 1970s until the mid 2000s, investments in infrastructure in proportion to the GDP fell continuously. Since then, investments rose for some years by it threatens to fall again since 2014.

The goal of Chapter Two is to explain why we invest so little. As we stated before, the public sector is fiscally restrained and the public sector

faces a not so much friendly business environment. Additionally, Brazil saves little, which limits available funds for investing.

Chapter Three shows that investing in infrastructure is important. The Chapter begins by showing that Brazil presents low growth levels in historical terms. However, in the past, productivity gains were obtained easier. The stagnation in the Brazilian productivity in the last years, added to the low growth of the population able to work, implies that it is necessary to expand the stock of capital available to the economy for Brazil to resume growth. It is critical that low funds available are invested in activities that generate higher returns. Investments in infrastructure

should be prioritized as they allow for efficiency gains all over the economy.

Finally, Chapter Four discusses the need for investing in infrastructure during fiscal adjustment. We start the Chapter by showing the need for implementing an adjustment policy. Later on, we discuss the particularities of the current stagnation situation to conclude that investments in infrastructure shall be preserved. The Chapter ends with a brief explanation on the My House, My Life housing program (MCMV).

The last section summarizes the results found and presents the main conclusions.





**#1 [EVOLUTION OF INVESTMENTS IN
INFRASTRUCTURE IN BRAZIL]**



#1 [EVOLUTION OF INVESTMENTS IN INFRASTRUCTURE IN BRAZIL]

Poor quality infrastructure is often pointed as one of the barriers to be overcome so that Brazil presents sustainable growth rates at levels that are compatible with our development stage. Our needs in this arose from low investments that, in turn, are caused by mistaken policies and actions that will be discussed in Chapter Two. In this Chapter 1, we will focus on numbers more than in causes.

As we shall see, investments in infrastructure in Brazil are low in relation to the past, in relation to countries with similar development levels, and in relation to our needs.

Since 1970, investments in infrastructure has fallen, as well as aggregated investments. Table I.1 shows average investment amounts per decade.

We see a double phenomenon: from the 1970s to the 2000s, aggregate investment and investment in infrastructure rates fell. However, the fall in infrastructure investments were deeper. Thus, in 1970, 75% of total investments were directed to infrastructure. Currently, this ration fell to near 1/8.

Qualitative aspects for this fall are also worrisome. A 50% reduction in investments

brings different impacts to the economy, depending on the starting level. Thus, if the infrastructure investment rate falls to 5% from 10% of the GDP, the consequences for the economy are less damaging than if the fall is to 2.5% from 5% of the GDP. This is because, as pointed by Frischtak and Davies (2014), there is some consensus in the international literature that it is necessary to spend at least 3% of the GDP to ensure that the infrastructure stock is maintained. Investments below this rate would lead to capital stock depreciation in the long term, without the corresponding maintenance. Investments in infrastructure are between 2 percent and 3 percent of the GDP for almost three decades in Brazil - in other words, the country is being able to replace capital depreciating on infrastructure.

If we break down the evolution of investments in infrastructure by investor type, public or private, we will see a strong reduction on public investments. It would be expected a reduction on public investments due to the privatization programs that took place in that period. Such privatization programs should cause an increase in private investments, but this did not happen. The table below was ex-

1 - Argentina, Bolívia, Brasil, Chile, Colômbia, México e Peru.

TABLE I.1: EVOLUTION OF THE AGGREGATED INVESTMENTS AND INVESTMENTS IN INFRASTRUCTURE IN BRAZIL, PER DECADE, AS % OF THE GDP

	Investments (GDP%)		Infrastructure/ Total (%)
	Infrastructure	Total	
1970s	5,4	22,9	23,7
1980s	3,6	21,0	17,2
1990s	2,3	18,8	12,2
2000s	2,2	17,5	12,3
2010s	2,4	18,8	12,8

Note: Data related to the decade of 2010 include estimates for 2014.
Sources: Bielschowky (2002), Frischtak and Davies (2014) and IBGE

TABLE I.2: EVOLUTION OF THE INFRASTRUCTURE INVESTMENT LEVELS AS PERCENTAGE OF THE GDP BROKEN DOWN IN PUBLIC AND PRIVATE INVESTMENTS FROM 1980 TO 2006.²

	Total	Public	Private
1980-89	5,0%	3,7%	1,3%
1990-99	2,3%	1,3%	1,0%
2000-06	2,2%	1,2%	1,0%

Fonte: Calderón e Servén, 2010.

² Numbers from Calderón and Servén are different from those submitted by Bielschowky, and Frischtak and Davies. This is common when investment historical series is discussed. Firstly, National Accounts reviews may change the series significantly. Secondly, investments can be measured by current values or by constante prices from a basis-year. In this last case, relative prices (of investment goods in relation to other economy goods) of the basis-year are maintained. For this reason, investment series assessments shall be made by paying more attention to the numbers order and evolution than to the indicator's precise value.

tracted from Calderón and Servén (2010) and shows that the public investment in infrastructure in Brazil, as measured in proportion to the GDP, fell approximately two thirds between the 1980s and 2000s whilst private investments fell less than 30% or 0.3 percentage point in the same period.

Private investments reduction in infrastructure is somehow unexpected. In the seven Latin American economies³ analyzed by Calderón and Servén (2010), public investments in infrastructure fell due to fiscal adjustment programs and privatization, but private investments have risen, albeit not in the same magnitude.

Table I.3 shows the recent evolution of investments in infrastructure broken down by sector.²

From the end of the 2000s, perhaps due to the Growth Acceleration Program (PAC, as for its initials in Portuguese), investment levels in infrastructure are rising. Numbers for 2014 are still not available. Projections for 2014 that appear in Table I.3 were obtained from using data from 2013. It is probably that most recent numbers for the Quarterly National Accounts for the third quarter of 2014 will show that projections of investments in infrastructure will be revised down. This is because there was a reduction in the aggregated investment rate, which is probably reflecting a reduction in the investments in infrastructure.

Irrespective of 2014 results, perspectives for 2015 and beyond are particularly worrisome. Brazil already invests little in infrastructure. As

we shall discuss in Chapter Four, there is the need for fiscal adjustment. Historically, such adjustments prioritize cuts in investments. In a context of low investment rates, additional cuts bring higher costs to the country.

Investments in infrastructure in Brazil are not small just when compared to the past. These are also low when compared to the experience of countries that are growing faster than us. The chart below was extracted from Frischtak and Davis (2014) and shows investment rates from other countries in different times.

As it is possible to see, Asian emerging countries have invested much more than Brazil. In Latin America, Chile and Peru are highlights by investing approximately 5% of their GDP in infrastructure - both countries are enjoying the largest growth rates in the region.

The chart also shows the impact of investment rates upon infrastructure. As we have already commented before, investing 3% of the GDP would be enough for just maintaining the infrastructure stock. Investing 5% of the GDP by long periods is required to reach the current levels of South Korea and other industrialized countries in East Asia. If we wanted to speed our infrastructure up, investments should be even higher, between 5% and 7%. However, this would mean that Brazil would have to double current investments to near R\$ 125 billion (as the Brazil's GDP is almost R\$ 5 trillion) - which would be an enormous effort for a country that saves little (almost R\$ 700 billion per annum - less than 15% of the GDP).

3 - Argentina, Bolivia, Brazil, Chile, Colombia, Mexico, and Peru.

TABLE I.3: EVOLUTION OF INVESTMENTS IN INFRASTRUCTURE IN BRAZIL BROKEN DOWN BY SECTOR (IN GDP %)

	Energy	Transportation	Telecom	Sanitation	Total
Década de 2000	0,64	0,64	0,70	0,18	2,16
2000s	0,73	0,84	0,50	0,17	2,24
2011	0,73	0,91	0,54	0,21	2,39
2012	0,75	1,04	0,45	0,21	2,45
2013**	0,75	1,19	0,37	0,21	2,52
2014**					

Source: Calderón and Servén, 2010.

TABLE I.4: INVESTMENT IN INFRASTRUCTURE AS PROPORTION OF THE GDP FOR SELECTED COUNTRIES AND PERIODS:

Up to 3% (necessary level to keep existing capital stock per capita and gradually give 100% access to water/sanitation and energy services)	From 4% to 6%. To reach current levels of South Korea and other industrialized countries in East Asia.	From 5% to 7%. Drive economic growth and take 15-20 years to get closer to developed countries.
Brazil (2010 - 13) = 2,36%	Chile (2001 - 06) = 4,57%	China (2003) = 7,3%
Brazil (2007) = 1,84%	Chile (2008 - 11) = 5,10%	China (2010) = 13,4%
Peru (2001 - 06) 1,51%	Peru (2008 - 11) = 4,22%	Vietnam (2003) = 9,9%
	India (2005 - 09) = 4,13%	Vietnam (2009) = 10,3%
	India (2009 - 10) = 4,80%	Thailand (2003) = 15,4%
	India (2013 - 17) = 6,00%	Thailand (2009) = 15,6%

Source: Frishtak and Davies, 2014.

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TABLE I.5: ASSESSMENT OF THE BRAZILIAN INFRASTRUCTURE QUALITY BY THE WORLD ECONOMIC FORUM, 2014/15

Description	Value	Ranking position (144 países)
Overall infrastructure quality	3,1	120
Highway quality	2,8	122
Railroad quality	1,7	95
Port quality	2,7	122
Airport quality	3,4	113
Energy supply quality	4,1	89
Cellphone per 100 inhabitants	135,3	37
Landlines per 100 inhabitants	22,3	51

Note: Quality indicators are expressed in scores ranging from 1 (poor) to 7 (excellent).

Due to small investment levels, it is not strange that our infrastructure is poor, both quantitatively and qualitatively. The World Economic Forum 2014/15 Global Competitiveness Report ranked Brazil's infrastructure in the 120th place out of a list with 144 countries. The table below shows the scores obtained by each assessed item (maximum of 7) as well as the country's ranking. As infrastructure involves several sectors, it is just natural that some have better scores than others.

Other assessments show that Brazil has a poor performance in international comparisons at a varying degree. Donaubauer et al (2014) elaborated an infrastructure quality index where Brazil is ranked 65th, out of 140 countries. In Transportation and Energy sectors, Brazil was ranked 128th and 78th. As well as in the World Economic Forum's ranking, our best performance was in Telecom, where we ranked 48th. According to the authors, there was an important evolution between 1990, 2000 and 2010, when we jumped from 91th to 63th and then to 57th in the ranking. Since then, we fell nine positions.

Calderón and Servén (2010) also show how infrastructure in Brazil is delayed. The authors have elaborated an Infrastructure Quality and Quantity Index covering Telecom, Energy and Highways. Results are found in Table I.6.

As it is possible to see, at the beginning of the 1980s, the quantity of infrastructure in Brazil was not so bad if compared to countries in East Asia, middle-income countries and Latin America. Twenty years later, we are still better than middle-income countries and Latin America, but the gap is becoming shorter. For East Asian countries, we were in a worse situation at the beginning of the 1980s and the gap increased considerably. It is worth to mention that East Asia arrived to the 2000s with the quantity

of infrastructure almost at the same level of developed countries.

In relation to the quality of our infrastructure, results cover Brazil in shame. At the beginning of the 1980s, the quality of our infrastructure was way below those of the industrialized countries, countries in East Asia and middle-income countries. We were above only Latin America. Twenty years later, we would fall behind all these groups.

As infrastructure covers several sectors, it is natural that some differences arise among them. We have seen that, according to components of aggregated indexes presented above, some sectors are better than others, such as Telecom. Table I.7 shows some indicators where Brazil is going well or, at least, acceptably as the country's performance is not way below the average of high-to-middle income countries.

As it can be seen, Telecom indicators (access to broadband and to internet, population with cell phones and landlines) Brazil is doing relatively OK. In the case of broadband, internet and landlines, we are well below the OECD average but closer to the high-to-middle income countries. For cell phones, our density is above the OECD average. We also perform well in access to electricity and treated water, with almost 100% of the population served by these services.

Results above are for infrastructure quantity. For Telecom, the World Bank did not publish data related to the quality of services. Table I.8 was extracted from Frischtak and Davies (2014) and shows a possible deterioration of services as measured by the increase of the number of complaints made to Anatel. Such deterioration would be consequence of a reduction of investments as shown in Table I.3.

TABLE I.6: INFRASTRUCTURE: QUANTITY AND QUALITY INDEXES ESTIMATED BY CALDERÓN AND SERVÉN (2010) FOR BRAZIL AND SELECTED REGIONS, FOR THE FIRST 5 YEARS OF DECADES 1980, 1990, AND 2000.

Infrastructure - Quantity Index					
	Industrialized countries	East Asia	Mid income countries	Latin America	Brazil
1981-5	1,61	0,63	0,10	0,16	0,46
1991-5	1,81	1,20	0,52	0,40	0,59
2001-5	2,09	1,92	1,02	0,88	1,12
Infrastructure - Quality Index					
	Industrialized countries	East Asia	Mid income countries	Latin America	Brazil
1981-5	1,49	0,90	0,16	-1,19	-0,92
1991-5	1,71	1,46	0,59	-1,17	-1,17
2001-5	1,84	1,49	0,97	-0,44	-0,66

Obs: Indicadores de qualidade são expressos em notas que variam de 1 (péssima) a 7 (excelente).

TABLE I.7: INFRASTRUCTURE INDICATORS WHERE BRAZIL'S PERFORMANCE IS AVERAGE OR GOOD.

	Access to broadband (% of population)	Access to internet (% of population)	Cellphones (% of population)	Landlines (% of population)	Access to electricity (% of population)	Access to water (% of population)
Brazil	10,1	51,6	135,3	22,3	98,9	97,5
East Asia	10,2	39,5	95,0	16,4	94,8	90,9
Latin America	8,9	45,8	113,8	17,9	94,7	93,8
OECD	26,7	75,4	108,5	40,6	99,7	99,1
High-to-middle income countries	11,6	44,8	99,7	18,9	98,0	92,7
World	9,5	38,1	92,6	16,2	83,1	89,3

Source: World Bank.

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TABLE I.8: COMPLAINTS FILED TO ANATEL (IN THOUSANDS)

Service	2012	2013	Difference (%)
Cellphone	1.140	1.360	19
Landline	700	989	41
Broadband	300	446	49

Source: Anatel (extracted from Frischtak and Davis, 2014)

Chart I.1, extracted from the same authors, shows that Internet speed in Brazil is slow and below the expectation of our per capita income level.

If the access to the energy grid is almost reaching 100% of the Brazilian population, energy consumption and the quality of the service (measured by losses) are below the average of high-to-middle income countries and way behind of results found in developed economies. As for highways, both quantity and quality (measured by the percentage of paved highways) are poor. The quality of Brazilian ports is also below those of countries with income similar to ours and much behind those found in East Asia and in developed countries. Table I.9 summarizes all results from the World Bank.

The CNT Rodovias 2014 survey (CNT, 2014) assessed the quality of 98.500 kilometers of highways in Brazil - 79.500 km managed by the public sector and 19.000 km managed by the private sector. Only 37.9% of highways are ranked as excellent or good. This figure rises to 74.1% for granted highways and falls to 29.3% for public highways. Equally, 23.9% of highways are in bad or poor conditions, being 38.2% of public highways and only 4.1% for private highways.

Finally, another infrastructure sector in which Brazil needs to improve a lot is sanitation. Although almost 100% of the population has access to water, sanitation is still very poor. According to PNAD, only 58% of houses had access to sanitation in 2014. However, not all sewage is treated, being directly thrown in rivers or in the sea. According to Trata Brasil Institute, treated sewage corresponded to only 38% of

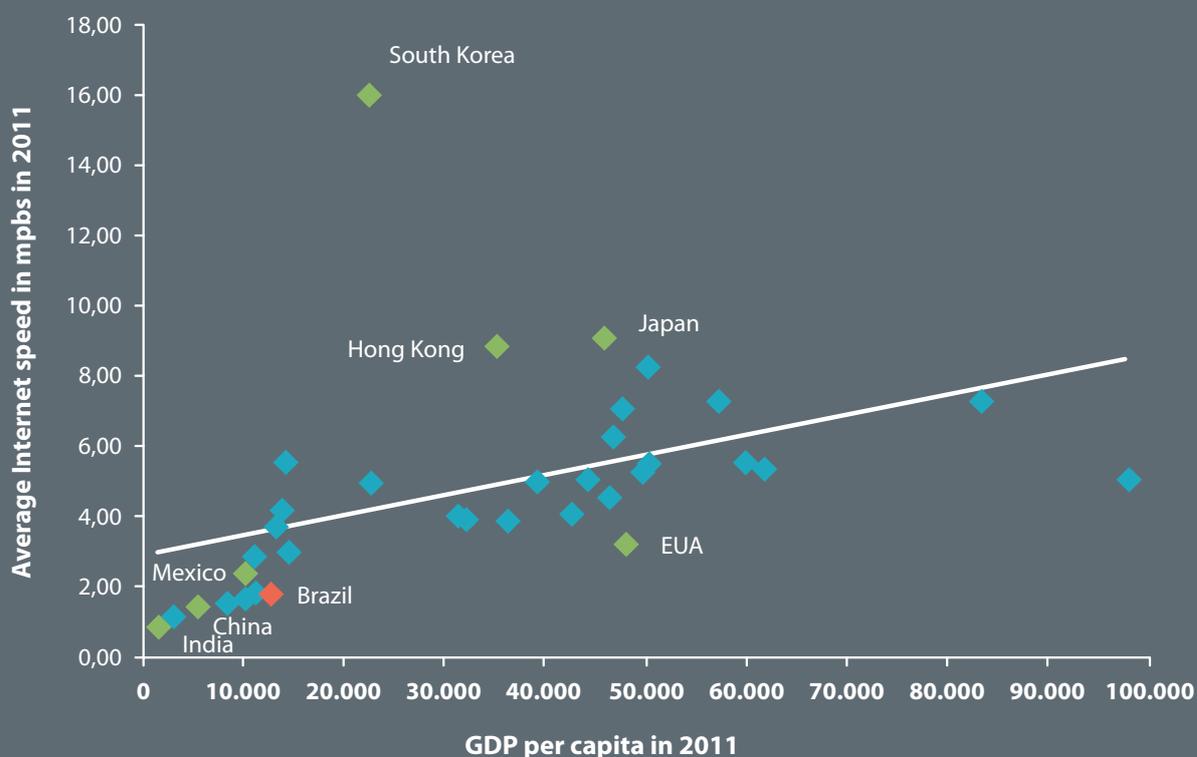
the water consumed⁵. According to a report by Trata Brasil Institute and the Brazilian Business Council for Sustainable Developed (Conselho Empresarial Brasileiro para o Desenvolvimento Sustentável, CEBDS), Brazil is 112th among 200 countries in water and sanitation services. Brazil's performance is poor both at service levels and the recent evolution of indicators.⁶

In short, investment levels are below 3% of the GDP - the level considered as a minimum for maintaining the current infrastructure stock - for 20 years now. Low investments lead to low supply and/or low quality of services. Analysts recommend that investments should be at 5% of the GDP as a minimum. Results, though, are not the homogeneous. Sectors such as telecom, energy and water managed to become almost universal, although quality indicators are still not satisfactory. In other sectors, such as highways, ports and sanitation, the amount of service provided is not enough to meet the population needs.

5 Refer to: <http://www.tratabrasil.org.br/novo-ranking-do-instituto-trata-brasil-mostra-os-avancos-e-desafios-para-a-universalizacao-do-saneamento-basico-nas-100-maiores-cidades-do-pais>

6 Refer to: <http://cebds.org/noticias/estudo-destaca-beneficios-com-expansao-saneamento-brasil/#.VRDfZPzF8Xs>

CHART I.1: INTERNET SPEED IN BRAZIL AND IN SELECTED COUNTRIES

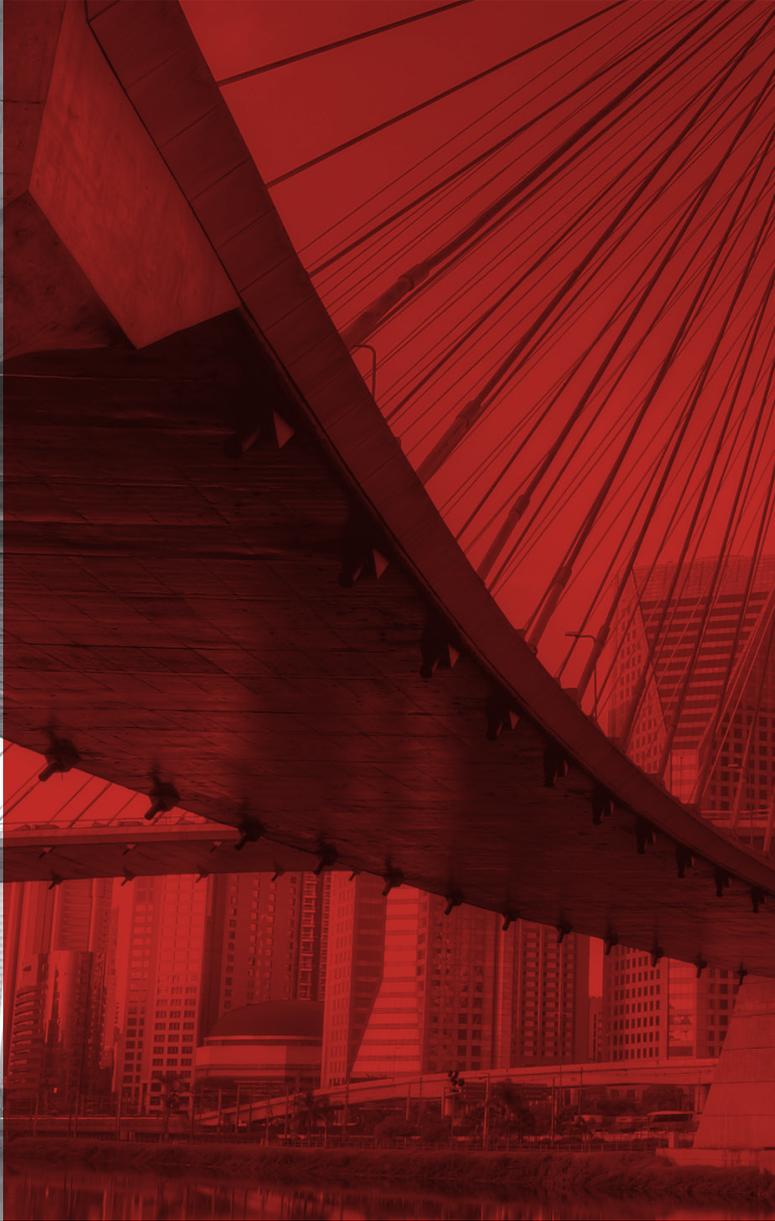


Source: Frischtak and Davis, (2014)

TABLE I.9: INFRASTRUCTURE INDICATORS WHERE BRAZIL'S PERFORMANCE IS POOR.

			Qualidade de infraestrutura	Densidade de rodoviwd	Rodovias pavimentadas (% população)
Brazil	16	2.438	2,7	19	14
East Asia	6	2.582	3,5	38	48
Latin America	15	1.985	3,7	16	26
OECD	6	8.173	5,2	53	79
High-to-middle income	9	2.932	3,9	25	67
World	8	3.045	4,1	33	57

Note: The quality of the port infrastructure ranges from 1 (poor) to 7 (excellent).





#2 [WHY DOES BRAZIL INVEST LITTLE IN INFRASTRUCTURE?]

#2 [WHY DOES BRAZIL INVEST LITTLE IN INFRASTRUCTURE?]

As seen in Chapter One, investments, in general and in infrastructure, are little in Brazil today. Actually, Brazil has always invested little. In the Post-War, investment rates exceeded 20% of the GDP only the 1970s and the 1980s. As will be discussed in Chapter III, low investment rates did not prevented the country from growing in the past. However, this is not true since the 1970s: to invest is a required condition to grow. Even aware of this, the economic policy generates low investment rates.

It is not our purpose to dive into history here. We will focus on events taking place since the 2000s. Some reasons for low investment levels, such as low saving rate, are not new in Brazil. But the recent economic policy, especially the so-called "new macroeconomic matrix", seems to have brought the issues to a new level.

Two things are required for investing: supply of resources and investors. As we shall see, Brazil lacks both. We shall discuss in the next sections these two problems in detail.

#2.1 [LACK OF FUNDS: LOW SAVINGS RATE]

When we mention lack of resources and difficulties for financing investments, we are not referring to operational aspects for getting investments, such as paperwork, lack of expertise in drafting and analyzing projects or lack of financial institutions. These are all issues that certainly help to explain low investment rates in Brazil. But our main concern is the lack of resources to finance investments. Even if we manage to solve all operational issues, investment will not take off if there are no resources available.

These resources have a name: savings. Economic theory teaches us that savings will always equal investments. A country's total savings correspond to the sum of the domestic savings (which is the sum of government's and families savings) and external savings. The latter is equal to the deficit in Current Transactions in the Balance of Payments.

In principle, a country that does not save enough could enjoy high investment rates. For this, absorbing external savings would suffice,

which means to generate deficits in Current Transactions. Although technically viable, in practice is not probable that a country can get sustainable external financing at 4% of the GDP for long periods. In one hand, lenders are not secure to finance an indebted country forever. Eventually, it is possible that external savings are extremely high, such as with Iceland in 2006, when the deficit in current transactions exceeds 25% of the GDP. Deficits of that size usually happen during crises and are followed by some form of adjustment to correct the imbalance. In addition to creditor restriction, local agents also exert pressure to limit the entry of external savings. This happens because large deficits in current account demand strong cambial appreciation, damaging the competitiveness of tradable goods and service producers.

Chart II.1 shows the evolution of consumption of families and government since 2000 as well as its counterpart - the savings rate. As we see, savings rate in Brazil is extremely low, never above 20% of the GDP. Increasing our concerns, this rate is falling in the last years.

Between 2001 and 2004, aggregated consumption (families plus government) fell due firstly to the cambial and fiscal crisis and later, to the adjustment program that followed. Between 2004 and 2007, as growth resumed speed, mainly due to gains in terms of trade, consumption rose again, albeit shyly, and the savings rate remained stable.

In that period, one could see the trend for consumption spending by government, instead of investing. Chart II.2 shows the evolution of the main primary public spending components: social insurance, social programs (Bolsa Família, Benefício de Prestação Continuada, Unemployment Insurance, and Salary Add-ons), employees and investment, all as a proportion to the GDP. As it can be seen, investments increased between 2003 and 2007, but less

than expenditures with social insurance and social programs.

Due to the 2008 crisis, the trend to increase consumption became clearer. Initially, consumption was strongly encouraged by means of an anticyclical policy. Later, the so-called "new economic matrix" was enhanced, and its diagnosis was that investment in Brazil is low because there are no incentives to invest. By encouraging consumption, the increase of aggregated demand would awake the so-called "animal spirit" and investments would naturally flow.

Incentives to consumption were made by means of several policies, such as increases to the minimum wage; more spending on social programs; tax incentives for purchasing automobiles and other durable goods, as furniture and household appliances; usage of state-owned banks to expand credit to consumers; subsidized credit to purchase furniture and household appliances in the My House Improved program.

While Brazil relied in the good weather abroad, in the form of strong demand for our commodities and later, in the shape of external savings incoming, it was possible to increase the proportion of aggregated consumption and investments to the GDP at the same time. But this is a model that tends to end in itself. Without savings generation and with limitations for the entry of external savings, it is impossible to increase investment rates in the economy, thus restricting the potential GDP growth.

CHART II.1: FAMILY AND GOVERNMENT SPENDING AND SAVINGS AS PROPORTION TO THE GDP, 2000:I TO 2014:III

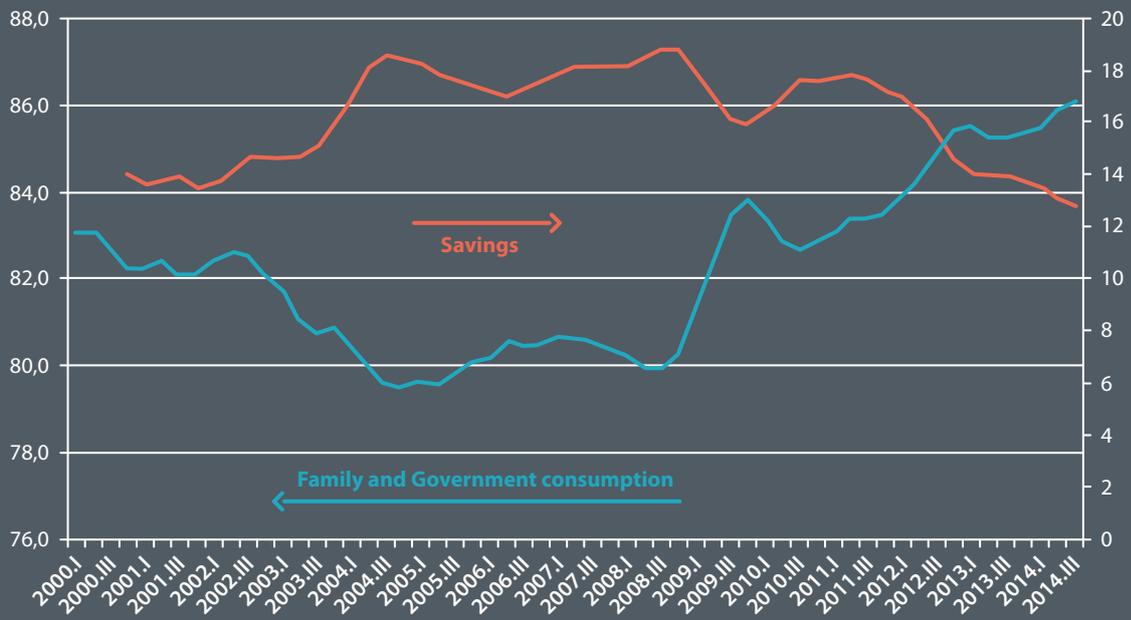
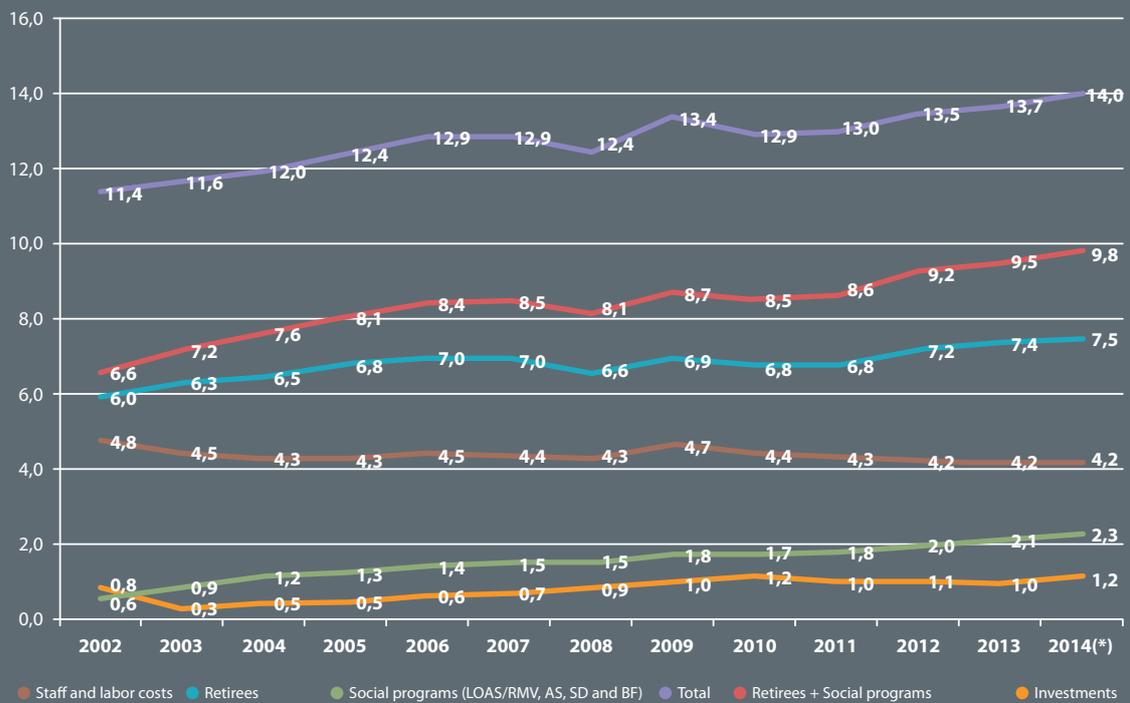


CHART II.2: EVOLUTION OF MAIN PRIMARY SPENDING AS A PROPORTION TO THE GDP.



#2.2 [LACK OF INCENTIVES FOR INVESTING IN INFRASTRUCTURE]

The lack of savings is a constraint to our investments. However, having savings is necessary, but not enough, to increase investments. So it is that even 2003 and 2007, the current transaction balance was positive, indicating that Brazil was exporting savings to the rest of the world. In other words, even saving 18.5% of the GDP maximum on that period, a figure much below the average of high-to-middle income countries (average of 32% of the GDP) and the world (average of 22.5% of the GDP), investments in Brazil were so low that there were resources to finance investments abroad.

There are several reasons for the lack of incentives to invest in Brazil. Table II.1 shows several indicators evidencing the difficulties to make business in the country. Evidently, when there are barriers for a business to grow, there are also barriers to invest.

All indicators but cost to open a business and time to register a property are not favorable to us. The tax

load, tax over profits and paperwork in general are worse in Brazil than in its peers. Our worst indicator is the amount of hours dedicated to tax work: 2,600 hours, almost ten times more than the global average!

The list of barriers to investment is not restricted to the indicators above, as we also have problems with a slow Justice, instability of rules, corruption and more.

Specifically for investing in infrastructure, we arrive at a paradox: government does not have resources to invest and creates difficulties for the private sector to invest at the same time. In the remainder of this section, we will discuss the reasons why public investments decreased and the obstacles to private investment.

[FALL IN PUBLIC INVESTMENTS IN INFRASTRUCTURE]

The public sector has always been an important infrastructure service provider. Even after privatization in the 1990s, the public sector remains relevant in some areas whether by direct operation or by state-owned companies. In total (including the Federal Administration, state governments, direct administration and state-owned companies), in 2007, the public sector was responsible for 55% of investment in energy, 30% of investments in ports, 95% of investments in sanitation, and 54% of all investments in infrastructure⁷. Furthermore, more

than 80% of highways are public (CNT, 2014). Only telecom is totally privatized.

Despite the private sector is potentially able to invest more efficiently, the biggest problem of public sector investment in infrastructure is that it does not invest as much as it should. As we saw in Chapter One, after the 1970s public investment in infrastructure fell to less than 2.5% of the GDP from 5.4% of the GDP. It is due partly to privatization programs that exempted the State from the responsibility to invest. Partly, the public sector capacity to invest also fell due to fewer saving. Estimates from

⁷ Conforme Frischtak, 2008.

TABLE II.1: BUSINESS ENVIRONMENT INDICATORS FOR BRAZIL AND SELECTED REGIONS

	Central government tax burden (GDP %)	Time spent to prepare documents and pay taxes (hours)	Total tax (% of profits)	# of procedures to open a business	Time necessary to open a business (days)	Costs to open a business (% of income per capita)
Brazil	15,4	2.600	69	12	83,6	4,3
World	14,3	268	42,2	7	22,3	27,8
High-to-mid income countries	14	327	41,7	7	26,5	16,7
East Asia and Pacific	11,2	225	36,7	8	35,4	32,3
Latin America and the Caribbean	-	414	49,1	9	34,3	37,3

	# of procedures to register property	Time necessary to register a property (days)	# of procedures to honor a contract	Time necessary to honor a contract (days)	Time necessary for bankruptcy process (years)
Brazil	14	31,7	44	731	4
World	6	49,5	38	625	2,6
High-to-mid income countries	6	38,8	38	624	2,6
East Asia and Pacific	5	76,2	38	585	2,9
Latin America and the Caribbean	7	53,7	39	728	3

the IBMEC Study Center (2013) show that the public sector moved from being a net saver in the 1980s (saving 0.5% of the GDP) to become a spender, spending 2.75% of the GDP in the 2000s and 1.5% of the GDP in the current decade.

It is particularly concerning the anti-investment behavior from the public sector in adjustment periods: when the government decides to cut spending, it focuses first in investment. Actually this behavior that leads to a poor adjustment is not exclusive to Brazil. Easterly and Servén (2003) and Calderón et al (2003) have shown that this standard was seen in adjustment programs in Latin America. During macroeconomic stabilization programs in the region during the 1990s, half of these adjustment programs in five out of eight countries that performed fiscal adjustments in the period reduced spending with investments by 50%⁸.

Blanchard and Giavazzi (2004) have shown a similar behavior in European countries. In Western Europe, limits to public deficit for countries member of the Euro zone, as determined by the Growth Stability Pact⁹ led to a reduction in public investment in these countries, with negative effects to their long term growth.

The option for adjustments through cuts in investments, as opposed to operational costs, has several explanations. First, there is a political economy issue as pointed by the IMF (2004). Program cutting impacts specific interest groups (such as public employees, agriculture sector) or significant portions of voters (retirement, social programs). Reducing investment programs leads only to less services in the future, which generates less satisfaction than stop providing an existing service. By the end of the adjustment, when it is possible to raise

public expenditure, the same political motivations benefit groups that were preserved during the adjustment, quitting room for raising investments.

In addition the political convenience, there is institutional rigidity, such as the impossibility of layoffs and/or reducing nominal wages of public employees and the mandatory transfers to state governments. Thus, it is easier (but not less expensive in the long term) to interrupt works and then resume them when there are funds available.

Another reason for cutting investments during macroeconomic adjustment programs is the fact that larger works demand more resources. Thus, the saving goal becomes easier to be achieved by cutting a handful investment projects. Finally, as shown by Blanchard and Giavazzi (2004), the accounting method for the fiscal result also damages investment, as all expenses are recorded in the same fiscal year, generating deficits that are incompatible to a government pursuing fiscal balance. The proper accounting method would be to register expenses with public capital maintenance and depreciation only, such as in the private sector.

In addition to the low financing capacity and the anti-investment behavior, there are operational issues. In a previous paper, we have discussed some issues that damage public investment. The main one is the lack of a system to assess the cost/benefit of projects. In general, these are assessed one by one, without a ranking in terms of priority and return. The result is a poor selection of projects, including "white elephants", delays in elaboration and conclusion of projects, unfinished works, cost reviews, and corruption.

⁸ These countries were Argentina, Brazil, Ecuador, Mexico, and Peru.

⁹ The Growth Stability Pact is a mechanism adopted voluntarily by Eurozone members that poses limits to public deficits in these countries.

¹⁰ Velloso et al.(2012).

The government's main tool to incentive growth (the Growth Acceleration Program) is right in the diagnosis that it is required to invest more in infrastructure, both public and private, to make Brazil achieve higher, sustained growth rates. However, the program implementation was poor. Instead of selecting few projects according to feasibility and convenience, PAC simply gathered several investment projects in a single bundle, trying

to execute them all at once. The result was delayed works, cost reviews, and losses to society. A CNI study¹¹ shows that delays in execution of six works (transposition of the São Francisco River, Vitória airport, Fortaleza's main sanitation project, East-West Integration Railroad, BR-101 highway duplication, and energy lines from the Madeira River plants) caused losses of R\$ 28 billion to society.

[LACK OF INVESTMENT OPPORTUNITIES FOR THE PRIVATE SECTOR]

Infrastructure services are usually government regulated and granted to the private sector by means of a contract. This is because infrastructure activities usually involve natural monopolies or duopolies (such as highways, airports, water and energy distribution network, transmission lines), rights of use of a public asset (as exploration of water resources, rights to use a given frequency in telecom) or that require coordination between different activities (for instance, a port shall be connected to other transportation mode, there may be conflicts on the use of water for supply cities or to generate energy). The strong (and required) presence of the State as the regulator of infrastructure services implies that the private sector will only join an activity if the State creates a favorable environment for such.

In previous studies on granting highways and energy plants¹², it is possible to find that one of the main problems - if not the key one - for the private sector to invest in infrastructure is an excessive low fee policy. We define excessive low fee policy as the intention to reduce the fee for public services to a maximum, even without an equivalent reduction in costs. The result is delays or works not done.

On highway grants, negative impacts of the excessive low fee policy at any cost become evident on the bids for the 2nd Stage of the Federal Government Highway Grant Program (PCRGF) in 2007. At that time, impressive discounts in relation to the limit price, that reached more than 60% in the case of Fernão Dias Highway, were trumpeted as the success of the new grant policy. What happened instead was the so-called opportunistic behavior by the regulated entity. In short, a bidder submits unrealistic low prices in the auction in order to pressure the government to renegotiate the contract after winning the bid. Under pressure of not delivering the work to the population, the government yields and what seemed to be cheap ends up quite expensive. A survey carried out by the "O Estado de São Paulo" newspaper in 2011 shown that seven highways privatized in 2007 had invested only 55% of the expected investment in the three first years of the grant.

The auctions in the third PCRGF stage took place in 2013, after a three-year delay. In other words, the governmental incompetence generates a seven-year gap between one stage and the next one in the grant program. There were again attempts to

11 See <http://economia.estadao.com.br/noticias/geral,atraso-em-seis-obras-do-pac-provoca-perda-de-r-28-bilhoes,185889e>.

12 Velloso *et al.* (2012), Velloso *et al.* (2014).

force excessively low fees, with the result of empty auctions such as the one for the BR-262 highway in September 2013. Perhaps to avoid a repetition of that flop, the government postponed the BR-040 highway auction and increased the limit price to R\$ 9.74 from R\$ 4.95 for every 100 kilometers. Higher limit prices incentive competition and curiously, the discount was so high that the auction-determined price of R\$ 3.70 was below the original limit price. Recent highway auctions did not attract inexperienced companies as in 2007, perhaps because technical and financial requirements to join the auction were stricter.

The excessive low fee policy was also applied in the energy sector. As it happened with highways, this policy attracted inexperienced companies, such as the Grupo Bertin. A meat processing company, the group had in portfolio thermal energy plants construction projects totaling 6,000 MW, almost half of Itaipu's capacity, demanding R\$ 7 billion in investments. Due to the difficulties in obtaining credit, the Group's 21 grants did not take off and had to be sold or revoked by Aneel.

Other consequence of the excessive low fee policy in the energy sector was an increase of Eletrobras and its subsidiaries role in grants, since they do not aim profits, they could provide financially not viable fees. The consequence was the deterioration of Eletrobras financial conditions, as well as delays in work delivery. A highlight is Chesf, which won almost all transmission lines in the Northeast region. Delays followed in a row, as the company did not have financial conditions to execute all projects. According to an Aneel survey, 96 transmission works of Chesf were delayed with average delay of 495 days. Some lines were 2,294 days delayed!

Frischtak e Davies (2014) also showed that delays in works and cost reviews are commonplace infrastructure investments in Brazil. Considering a sample of four plants, including Jirau and Belo Monte - two of key plants in construction - average cost increase was of 49% and the average deadline increase was 90%, which corresponds to delays between 12 and 91 months! A sample of five projects in sanitation shows no cost increases,

PLANNING AND OPERATION GAPS ARE PROBABLY THE BEST EXPLANATION FOR DELAYS IN BIDS.

but the execution period increased by 81% with delays ranging from 26 to 43 months.

Such delays show planning gaps and difficulties for executing projects in Brazil. Projects are many times bid without the required details for execution, there are delays in environmental permits, low or inefficient overseeing and incapacity by the regulating entity to fix eventual schedule deviations. The result is a low infrastructure supply with losses to the whole country.

Planning and operation gaps are probably the best explanation for delays in bids. Airports are an example of this. Since Brazil was confirmed as the 2014 World Cup host, in 2007, it was known that it would be necessary to renovate airports. Airports of Guarulhos, Brasília, and Viracopos were bid only in the beginning of 2012, only two years from the event. And the airports of Confins and Galeão were bid at the end of 2013, due to a delay in grant, and both were not ready in time for the World Cup.

Another factor to damage private investments in infrastructure is the so-called regulator risk. An investment in infrastructure usually requires high initial financial inputs to set up the service foundation. In hydroelectric plants, for instance, expenditure with O&M (Operation & Maintenance) did not total 30% of total costs. Similarly, for a highway grantee, the main cost is delivering the highway itself. The same is valid for sanitation and energy transmission and distribution, railroads, and ports.

Once the infrastructure is built, the grantee is in the hands of the grantor. If the rules are changed, imposing fees below what is determined by contract, grantees will not have many options. If the new fixed fees are suffi-

cient to cover O&M costs (that are usually low), grantees will keep the contract even aware that they will not be able to recover high costs incurred with the investment. This policy is successful in the short term, as the politician shows to the population that managed to impose lower fees, but it disastrous in the long term. Grantees, being aware beforehand that the grantor is not reliable, will require a high premium risk in order to join the auction, increasing the service price in future grants. Opportunistic policies from the government cause a reduction in the future infrastructure stock, as well as increasing fees.

An example of this risk carried by the regulator can be seen in the current highway grant contracts. It is not allowed to disclose the project's internal return rate when submitting proposals. Thus, eventual changes to the original project (such as building a new access road) will be remunerated by a fee to be determined by the regulator, without any certainty that such fee will be enough to remunerate investments. Equally, there are several imprecision in the fee adjustment rules, as in the definition of the so-called X Factor, that transfers to the consumer part of productivity gains obtained during the grant by means of lower fees.

As well as for highway grantees, energy carriers are also subject to regulatory and government decisions, which may cause high losses to energy carriers. For example, at periodical fee reviews that take place every four or five years, there is always an intense debate on capital's fair remuneration. Another example was the Provisory Measure # 579 of 2012 that deeply changed some energy generation and transmission rules. Companies were given the short timeframe of 30 days to decide whether they accepted the new rules or not. Two years after the passing of the new rules, there is not a consensus yet on the amount related to assets not fully depreciated to be reimbursed.

In short, private investments in infrastructure depend a lot on the government. Firstly, it is the responsibility of the public sector to select projects with care. Auctions (or any other bid

method) shall be designed so to prevent inexperienced companies to win. Technical and financial qualification requirements and a well drafted work plan are critical tools to attract well intentioned and resourceful companies. Regulation and overseeing entities shall be able to oversee works and be empowered to correct eventual schedule deviations. Finally, the grantee shall prevent to any extent to operate in opportunistic behavior, attempting to reduce the company's remuneration below to what the contract established. The higher legal insecurity is, more will be the demand from grantees in future contracts to offset higher risks involved. Artificially low fees today will bring higher fees tomorrow, with low infrastructure service supply.





#3 [WHY IS IMPORTANT TO INVEST, AND TO INVEST IN INFRASTRUCTURE?]



#3 [WHY IS IMPORTANT TO INVEST, AND TO INVEST IN INFRASTRUCTURE?]

The goal of previous chapters was to show that Brazil invests little in infrastructure and explain why this is so. But why investing little in infrastructure is a problem? As we shall see, general investments, and particularly in infrastructure, have two effects upon economy: the first arises from the definition of investment itself that is the increase in capital stock and thus, of the economy's productive capacity; the second impact is indirect, caused by productivity gains. Empirical evidences support potential gains arising from investment.

We will show in this Chapter how Brazil's economy is almost stagnated. We do not mention here the low economic growth forecasts for 2015, but to the fact the perspectives for mid- and long-term growth are also bleak.

Curiously, Brazil was able to grow intensely even with poor infrastructure. Unfortunately, historical series for investing in infrastructure are not long, starting by the 1970s. However, there are longer series for the aggregated investment in the economy. If we assume that investments in infrastructure were a relatively constant proportion on aggregated investment, we could use the longer series to infer the importance of investing in infrastructure for the country.

According to IBGE, the average investment rate between 1946 and 1970 was of 15% of the GDP, close to lower levels seen recently. In this period, the GDP expanded at an impressive average of 6.9% per year. Part of such gro-

wth was due to high population growth. As population grew 3% per year, GDP *per capita* expanded at 3.9% per year, which remains a great result.

By that time, Brazil presented characteristics allowing for a strong GDP growth despite the small capital formation. We started with an economy that was basically agrarian. It was a period when productivity gains were obtained by simple population reallocation, migrating from rural areas where productivity was almost zero (except for exportation areas) to cities, where work productivity was higher. Additionally, despite a 3% growth on population, urban workforce grew at faster rates, around 4.4% per year between 1950 and 1970.

The current situation has no similarity with that period. Our current investment rates are as low as the old ones, but the potential GDP growth rate¹³ is substantially smaller. As potential GDP is a non-observable variable, there is no consensus of its value, but estimative between 2% and 3% seem reasonable.

In a previous paper (Velloso et al, 2013), I calculated that the potential GDP growth rate for 2011 was around 3% per year, down from 5.8% in 2006. Barbosa Filho estimative (2011) also shows a reduction of potential GDP growth rates from an average figure of up to 4.4% per year between 2007 and 2010 to figures near 3%.

¹³ O PIB potencial corresponde ao nível de produção compatível com o equilíbrio macroeconômico, em particular, com estabilidade de preços. Por ser uma variável não observável, sua mensuração depende de hipóteses e, por isso, suas estimativas variam de autor para autor.

Recent projections point to a result even worse for Brazil's potential GDP growth. The market does not release growth projections for the potential GDP on a regular basis, perhaps it does not even research this variable directly. However, when the Central Bank's Focus Survey asks what is the growth rate expected for the next three or four years, it is actually asking something very similar to the potential GDP growth rate. We understand that for the short term, up to two years from now, circumstantial factors impact growth projections. But these shocks go away probably in three or four years. As a result, projected growth for longer periods shall reflect potential GDP growth estimative.

Table III.1 shows the median for GDP growth projections four years from now, according to Central Bank's Focus Survey collected every year in March.

The table shows that the potential GDP growth rate estimative remained around 4% from the beginning of the 2000s up to 2012. Projections made in March 2012 deserve more detail. As it was the beginning of the year, only the weak GDP result for 2011 was known at the time (a 2.7% growth), but there were expectations that the economy would recover. It was widely believed that 2011 would be just cooling down after an exceptional growth of 7.5% in 2010. After a disappointing growth rate of 0.9% in 2012, economy agents became aware that Brazil had entered a new low growth cycle. We arrived thus to the current situation, with perspective for mid-term growth below 2.5%.

The potential GDP growth depends basically on two causes. First is the accumulation of production factors, namely capital and labor. Second are productivity gains.

In relation to production factors, the labor supply growth rate fell significantly over the last ten years. In 2004, the yearly growth rate for the Economically Active Population was 1.8%. It is currently around 1.2%. It is true that the workforce is relevant, as is the human capital incorporated to it. According to Barbosa Filho (2011), the human capital growth rate between 2007 and 2010 was around 1% per year. Thus, the workforce, corrected by the variation in human capital, would grow around 2% and 2.5% per year.

In relation to the capital stock, its growth is determined by the economy's investment rate. As we have discussed in Chapter Two, Brazil opted for a consumption-based model as opposed to an investment-based model. It is true that investment rate expanded in Brazil between 2003 and the third quarter of 2014, going to 19.5% of the GDP from 15.6%. But overall consumption, both by families and government, increased even more in the same period, to 85.8% of the GDP from 81.1%. It would not be concerning if the investment ratio to the GDP would grow slower, but from higher levels. However, investment rate in Brazil is very low. According to the World Bank, we have invested in 2013 less than 18% of the GDP, as the global average was 22.3%; high-to-middle income countries, like us, invested 32.6% of the GDP; and East Asia countries invested 44.2% of the GDP.

Due to low workforce growth rates and small capital stock, the only way to make our GDP grow is by means of productivity gains. But here, our performance was mediocre as well. Graph III.1 shows the evolution of worker productivity measured by GDP in PPP dollar¹⁴ per employee.

13 O PIB potencial corresponde ao nível de produção compatível com o equilíbrio macroeconômico, em particular, com estabilidade de preços. Por ser uma variável não observável, sua mensuração depende de hipóteses e, por isso, suas estimativas variam de autor para autor.

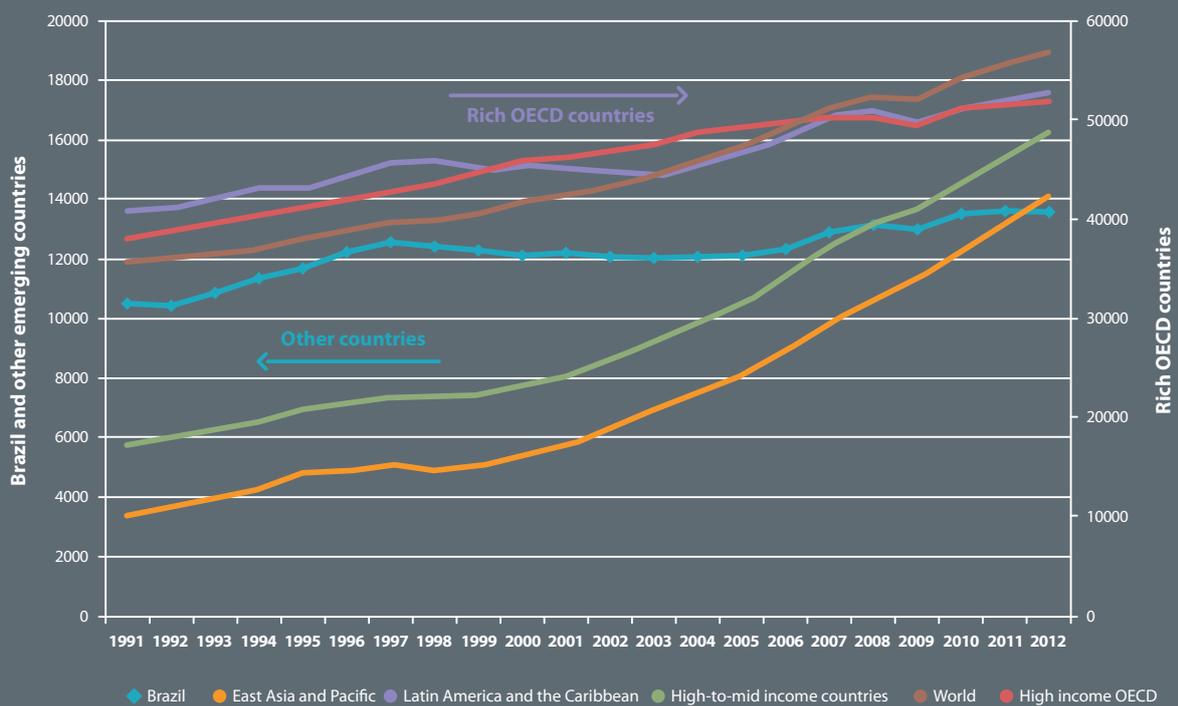
14 Dólar PPP é o dólar medido em paridade de poder de compra. Trata-se de uma medida que busca incorporar a diferença de custo de vida entre os países no cálculo dos rendimentos.

TABLE III.1: PROJECTIONS FOR GDP GROWTH RATE FOUR YEARS FROM NOW.

Projection made in:	Δ PIB (t+4)
mar/03	4,0
mar/08	4,0
mar/12	4,0
mar/13	3,5
mar/14	2,8
mar/15	2,4

Source: Focus Survey, Central Bank.
 Note: March 2015 considers a projection made to 2018, three years from now.

GRAPH III.1: EVOLUTION OF WORKER PRODUCTIVITY FROM 1990 IN BRAZIL AND SELECTED REGIONS.



As it can be seen, productivity did not progress well in Brazil from the 1990s up to now. In the beginning of the 1990s, we were well above the average in high-to-middle income countries and East Asia countries but in 2012 (last year of the series) we were below both groups. Our productivity grew below the global average and even below the average from rich OECD countries that started from higher levels.

We arrived in 2015 in a troublesome situation. The economy is almost stagnated, with low perspectives for growth and low labor productivity.

To improve the situation, it is necessary to increase the workforce, the human capital stock, physical capital stock or productivity.

It is quite hard to adopt public policies that increase the workforce, at least on short- and mid-term, mainly in Brazil, where there are no significant barriers for entry in the job market¹⁵. Nor it is easy to imagine public policies focusing population increases, since if such policy were feasible and effective, it would only increase the product but would leave per capita product unchanged or even smaller, due to decreasing wages.

It is feasible and desirable to increase the human capital stock, considering Brazil's gaps in this area. An important indicator of our educational gap is the performance of Brazilian students in the Student Assessment International Program (SAIP). The latest edition in 2012, Brazi-

lian students were ranked 55th in Reading, 59th in Sciences, and 58th in Mathematics, among 65 countries.¹⁶

Even facing the need to increase the human capital stock, eventual public policies in this regard will be effective in the long term. Eleven years are required for a child to leave Basic Education and more four years on College. Furthermore, an important part of human capital is acquired over the years, through formal and informal training at work. Thus, human capital formation policies would hardly be able to turn around the almost stagnated condition in the mid-term.

Challenges to increase physical capital stock are also daunting. It is necessary to increase the domestic savings rate and create more incentives for private investment. Some ad-hoc reforms in this regard are possible, both aiming to increase public savings as to eliminate some barriers to private investment, such as paperwork and the complexity of the tax system.

In this context of low investment rates and low productivity growth, to invest in infrastructure becomes more important as it is the foundation to all other activities in the economy, and for allowing an overarching productivity gain.

A better transportation network allows for a country to best allocate its resources geographically, benefiting from comparative advantages. Many times, a good is not produced in places with lower production cost because transportation and logistics costs can offset the differentials. It is true that the Mid-South presents comparative advantages that make most of Brazilian industrial production to be located in this region, but certainly the spatial concentration of our production could be much smaller if there was a better overall transportation and logistics infrastructure.

Poor highways also damage our international competitiveness. A CNT study carried out in 2009 (CNT, 2009) estimates that freight costs are expensive due to the poor quality of highways,

DUE TO LOW WORKFORCE GROWTH RATES AND SMALL CAPITAL STOCK, THE ONLY WAY TO MAKE OUR GDP GROW IS BY MEANS OF PRODUCTIVITY GAINS

¹⁵ Compare against countries with strong cultural or legal restrictions for women to work. Removing these barriers could broaden the workforce significantly. Some policies may positively impact the job market, such as an increase in daycare facilities that would unlock mothers (or fathers) to get a job. Even admitting this impact, such policies shall not be designed to reach this goal but to improve children education.

¹⁶ See <http://exame.abril.com.br/brasil/noticias/brasil-fica-em-38o-de-44o-paises-em-teste-de-raciocini>

that ranges from 19.3% in the South to 40% in the Northeast. Considering only higher fuel consumption, transportation costs can increase 5%.

Similar arguments can be developed for other infrastructure modes. Plenty, cheap energy is critical to make some production sectors viable. Thus, it is not enough to be a mineral-rich country. Without cheap energy, bauxite and iron ore are exported instead of internally processed to generate aluminum and steel. Irrigation projects, that also require energy, allow for agricultural activity in arid regions with fertile soil, such as the São Francisco River Valley.

The US experience illustrates well how important cheap and plenty energy is for the economic development. Due to shale gas increased usage in this decade, electricity costs fell significantly, allowing for a comeback of electricity-intensive industries in the US, such as steelmakers.

On a daily basis, access to energy allow for saving time (using washing machines, electric shower etc.), obtain information by TV or computer, and use devices that overall allow for more comfort and productivity gains.

In the line of increasing comfort and productivity, we can mention the development of telecommunications, that by speeding and making more precise data flows, allows for the optimization of production processes and inventory controls. Furthermore, by increasing information flows, decisions can be made with better context.

Similar conclusions apply to ports and airports. Reducing costs for transporting goods and people allows for a more efficient spatial allocation for economic activities.

Investments in sanitation also bring important impacts over the population well-being and productivity. A study by Fundação Getúlio Vargas (2010) shows that universal access to sanitation would allow, among other things: 25% less hospitalizations and 65% less mortality caused by gastrointestinal infections; 30% improvement in

INVESTMENTS IN SANITATION ALSO BRING IMPORTANT IMPACTS OVER THE POPULATION WELL-BEING AND PRODUCTIVITY.

school; 19% less chances of a employee to leave work due to gastrointestinal infections; and average increase of productivity per worker of 13.3%.

Calderón and Servén (2004) elaborated an infrastructure index, gathering telecommunications, transportation and energy, to assess their impacts on economic growth and income distribution. In both cases, they found a positive and significant impact. An increase on an index standard deviation, which would equal to transform the infrastructure of nations like Ecuador and Colombia into the infrastructure of Korea and New Zealand, would increase 3 percentage points in the GDP growth rate. By assessing each index component - telecommunications, transportation and energy - the authors found that also individually, these components have significant impact for economic development.

The authors also found a negative correlation between infrastructure and the Gini Index , which means that more infrastructures is associated to better income distribution. This is an expected result. First, as some public services expand, such as electricity and sanitation, it is likely that more poor people is served, directly improving their productivity and well being. Access to cell phones allows for freelancers, such as janitors and service providers in general, better organizing their schedule and being ready to meet demands, increasing their income. A better road/rail system reduces migration costs, allowing for low income population to move to cities with more job offerings. Furthermore, better infrastructure reduces the price of goods and services in general, causing an increase of real wages. If poor people's propensity to consume is higher than rich people's, an overall fall of prices would strongly benefit the poorest.

According to the authors' estimation, if the Brazilian infrastructure would come closer to

17 The Gini Index measures the income concentration degree in an economy, from 0 (absolute equality) to 1 (absolute inequality, where only one individual has all the income in a country).

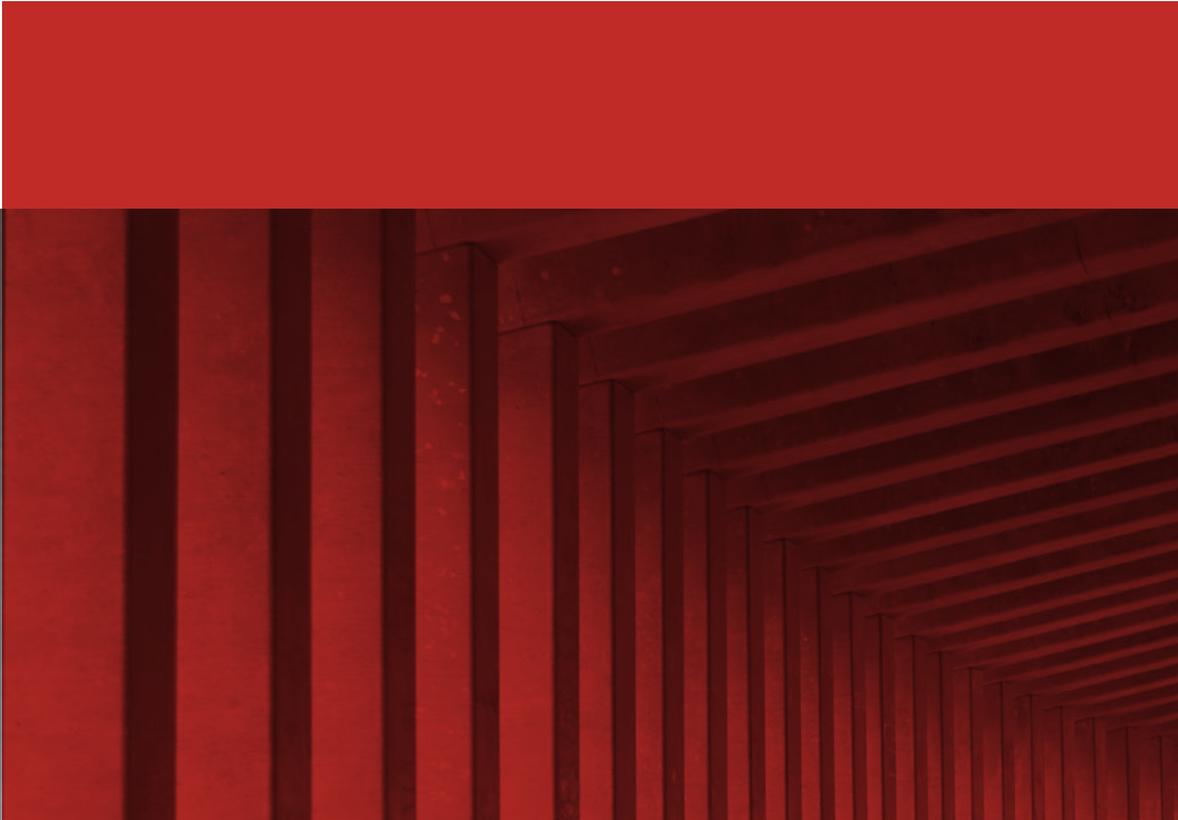
Costa Rica's, which has the best infrastructure in Latin America, our yearly growth rate could increase 2.9%. If such improvement was enough to reach the median level of East Asia and Pacific, potential gains would be of 4.4% in the yearly growth rate. The same exercise would allow reducing Gini Index in 6 and 9 percentage points, respectively. For comparison, the period between 2002 and 2012, when it is considered that a strong reduction in inequality have taken place in Brazil, the Gini Index fell six percentage points to 52.6% from 58.1%.

IMF's "2014 Global Economic Perspective Report" shows that for developed countries, an one percentage point increase in public investments causes a 0.4 percentage point increase in the GDP in the same year, and 1.5 percentage point four years later. The report highlights that emerging markets, including Brazil, India, Russia, and South Africa, infrastructure bottlenecks have restricted growth both at mid- and short-term.

Mody e Walton (1998) point that while an average emerging country would invest 4% of the GDP in infrastructure, East Asia countries would invest between 6% and 8%. For the authors, such high investment rate is the basis for the strong economic growth seen in the region.

Changing the approach for Brazil, Ferreira and Araújo (2005) investigated the impact of investments in infrastructure over public finance. Their goal was to check whether the present value of the increase in taxes caused by services provided by infrastructure would be enough to pay for it. According to the authors, the answer is yes. In their simulations, a 1% of the GDP increase in public investment would generate, depending on the model specification and the sampled period, a wealth creation that varied between 3.1% and 7.1% of the GDP over 20 years.

In short, we have seen that Brazil finds itself in an almost stagnation scenario. We are not mentioning here to the probable poor economic performance in 2015. What concerns us most is the long-term perspective. Labor productivity is almost stagnated and the estimative for potential GDP growth rate fell in the last years to around 2% and 3% per year, which is very low for an emerging economy. To increase our productivity and consequently, our growth potential, it is required to expand our human and physical capital supply, namely in infrastructure. As the impact over economy of improvements in education takes some time to materialize, the best strategy for short- and mid-term is to invest more in infrastructure.





**#4 [INVESTMENTS IN INFRASTRUCTURE
IN A FISCAL ADJUSTMENT PROGRAM]**

#4 [INVESTMENTS IN INFRASTRUCTURE IN A FISCAL ADJUSTMENT PROGRAM]

We shall discuss in this Chapter what can be done within the current economy slowdown and the fiscal adjustment program. The discussion will be divided into three parts. In the first part, we will describe Brazil's current macroeconomic environment, showing that there are serious imbalances that demand corrective actions by the economic policy.

In the second part, we will highlight the particularities of the current economic crisis

by comparing it against recent crises of 1999, 2003, and 2008. The third part explains that due to the particularities of the current crisis, a recommended economic policy would be not to cut investments in infrastructure. Finally, the Chapter ends with a discussion on the My House, My Live housing program, showing the positive aspects of investing in popular housing.

50

#4.1 [ON THE NEED FOR A MACROECONOMIC ADJUSTMENT]

Economy management in the last four years led to a deterioration in macroeconomic fundamentals, requiring the implementation of a fiscal adjustment policy. In this section, we will focus in presenting the deterioration of some indicators and not build a narrative of how we arrived at the current situation. Overall, macroeconomic indicators have worsened in the period. The main exception is the unemployment rate, which managed to remain at record low levels.

Firstly, there is a solid 10 percentage point increase in the gross debt/GDP ratio since 2011. At the same time, there is a relative stability in the net debt/GDP ratio for most of the period, although since the beginning of 2014, net debt is also increasing as a proportion of GDP. The increasing gap between both series in the last

four years is basically due to loans granted to BNDES. Chart III.1 shows the evolution of both indicators since December 2006, when the series on overall government gross debt begins.

It is necessary to see both indicators to assess the country's fiscal situation. Low net debt levels may not mean a comfortable fiscal situation if gross debt is at high levels. This situation reflects the case in which a government owes a lot to the market but at the same time, also have a lot of credits to receive. The problem is that those credits may not materialize whereas the public sector would still be forced to honor its debt with the market.

In our case, the exiting gap between gross and net debts is mainly caused by BNDES credits owned by Treasury. By its turn, BNDES lends the resources received from Treasury to their

18 Até 2008 também houve um aumento da diferença entre as duas séries, mas a causa subjacente no período foi a acumulação de reservas internacionais.

clients. If they default on these loans, BNDES may face difficulties to pay its debts.

In addition to credit risks, the interest rates the government applies to its debt (usually, the Selic rate) is higher than the interests it gets for its loans (for BNDES, the TJLP). In the short term, the remuneration gap between assets and liabilities do not pressure the Treasury, as there is no immediate interest payment. Even if it was, the disbursement would be relatively low. However, in the short term, by adding the interest rates gap paid over the years, we would realize that these financial strategies poses a lot of pressure into public accounts. It is enough to see the implicit interest rates behavior upon net debt²⁰. It went from an average of 14.5% in 2010 to 17.2% in 2014 and currently sits above 18%. The gap between the implicit interest rates and Selic rate (currently at 12.75%) is due exactly to the remuneration gap between Treasury's liabilities and assets. The higher this gap is, higher the implicit interest rate of public debt will be in relation to Selic rate.

The deterioration of debt (variable in stock) reflects deterioration of flows (deficits). Chart IV.2 shows the evolution of primary and nominal results since 2005. Brazil (as well as the majority of governments) traditionally presents nominal deficits (which means negative nominal results), causing public debt growth over time. This is not a problem per se, since the nominal deficit is not high enough to cause the public debt to grow above the public sector ability to pay. A good proxy for such ability is the GDP of a country. Hence the concern on the public debt growing faster than the GDP. When it happens, we usually say that deficits generated are sustainable. Since 2005, we can see two periods when a strong deterioration of deficits took place: 2008 and mid-2014. In 2008, the increase of deficits was justified by the need of implementing an anticyclical policy to face an international financial crisis. Such deterioration was perceived as temporary and not to compromise public sector fiscal situation in the long term.

The fiscal policy in 2014 differs in nature from the one in 2008. First of all, we are not experiencing an international crisis requiring anticyclical policies. As we shall discuss further in this document, the problem in Brazil today (or at least in 2014) is more related to supply than aggregated demand. In this context, expansionary fiscal policies can have null effects or even make the economic activity worse. Secondly, it is due because the increase in nominal deficit was way more intense now than in 2008 crisis. Third, deterioration began at a more fragile fiscal situation. This is particularly important for the primary result, which became negative in the last months.

Primary deficits indicate inability to pay even debt's interests and if maintained for long, they would drive debt to an explosive path. As we have said before, the sustainability problem of debt is not that debts grow, but if debts grow faster than the economy. In normal situations, where the real interest rate is higher than GDP growth rate, negative primary results generate an unbearable dynamics for debt in the long term²¹.

The external scenario has also deteriorated in the last years. Chart IV.3 shows the evolution of the current transaction balance. As theory has it, high deficits in current account correspond to a solid entry of external savings into an economy and are possible by appreciation of real exchange rates. Deficits in current account are beyond 4% of the GDP in the last few months. As Brazil relies on a high volume of reserves, we do not expect an exchange rate crisis in the short term, but history teaches us that few countries can keep current account deficits above 4% of the GDP for longer periods.

High current account deficits are made possible by an appreciated exchange rate, as we have said before. High deficits are, thus, an indication of unbalance in exchange rates. Due to the recent risk-aversion increase to Brazilian assets, it is natural that the supply of dollars to Brazil falls, depreciating the Real. Also, the deterioration of risk perception may encourage multinationals to send profits to headquarters, wor-

20 The implicit interest rate impacting on the net debt corresponds to the gap between the total of paid interests (due to the gross debt) and the total of interest received as income (due to government's credits) in relation to the stock of net debt.

21 Positive primary results also can generate unbearable paths for debt. Our simulation shows that primary results below 2.1% of the GDP generate unbearable paths for public gross debt, if maintained for a long time.

sening the current account balance even more. In the other hand, exchange rate depreciation can help to improve the external accounts by increasing net exports of goods and services. For this, however, it is required that the nominal exchange rate depreciation also brings depreciation on real exchange rates. For its turn, real exchange rate depreciation requires control of public spending to prevent that non-tradable asset prices do go higher than tradable asset prices²².

The monetary sector is also unbalanced, in addition to public accounts and the external sector. In the last four years, inflation was always above the target, coming dangerously closer to the upper limit of the tolerance interval of 6.5%. Inflation is not only high (albeit not explosive) as expectation for inflation in the long run (three or four years ahead) are high, almost one

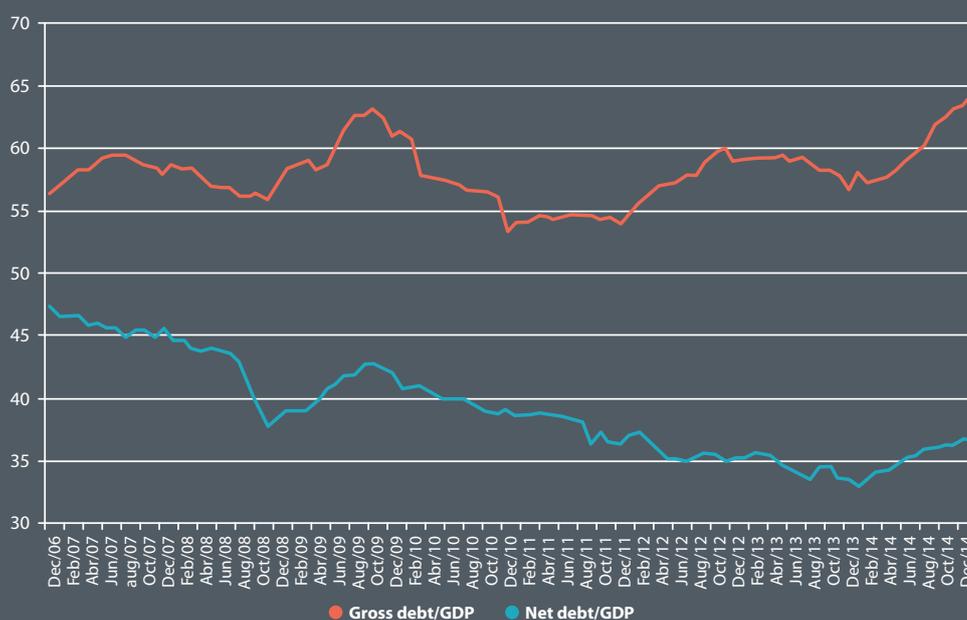
percentage point above the 4.5% inflation target, indicating lack of credibility on the monetary policy. In 2015, due to realignment shocks of controlled prices and exchange rate, it is possible that inflation grows above the target.

Thus, we arrived at the end of 2014/beginning of 2015 with unbalances in the fiscal area, external sector and inflation. In all cases, it is required more control of public spending (although not enough) to restore balance to the economy and resume its growth.

It should be noted, though, that despite the worsening of fundamentals, the situation of our economy is still comfortable if compared against the 1999 and 2003 crises. First of all, fiscal unbalance is not followed by an exchange rate crisis. Se-

22 Literature shows that real exchange rates can be defined as the relation between non-tradeable assets (those items that are not usually exported or imported, mainly services) and tradeable ones (those which can be easily exported or imported, such as commodities). When the former rises, there is an exchange rate appreciation, damaging our competitiveness. Theory shows that excessive spending causes real exchange rate appreciation.

CHART IV.1. EVOLUTION OF NET DEBT/GDP AND GROSS DEBT/GDP RATIOS FROM DECEMBER 2006 TO JANUARY 2015.



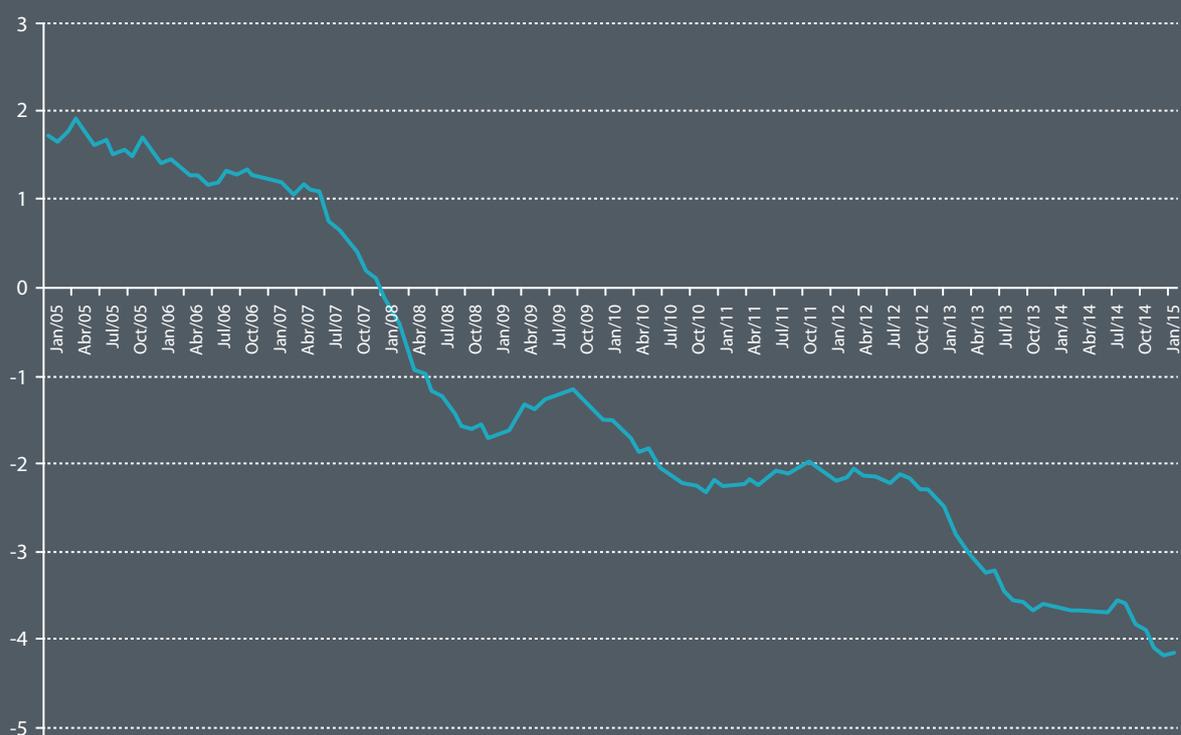
Source: Central Bank

CHART IV.2. PRIMARY AND NOMINAL RESULT ACCRUED IN 12 MONTHS AS A PROPORTION TO THE GDP (JANUARY 2005 TO JANUARY 2015)



Source: Central Bank

CHART IV.3. EVOLUTION OF CURRENT TRANSACTION BALANCE AS A PROPORTION OF GDP FOR BRAZIL, FROM JANUARY 2005 TO JANUARY 2015.



Source: Central Bank.

condly, Brazil is still ranked as investment grade by all main risk agencies. This indicates that the Brazilian government still is capable to pay its debt. Until 2003, our sovereign debt was ranked as speculative.

The need for adjustment now is caused more by the deterioration of indicators than by the level these indicators are in. It is obviously to adjust when indicators are at reasonable levels, as opposed to perform an adjustment when they are deteriorated. Table IV.1 shows that Brazil is reasonably well when compared against countries with the same credit risk, although it is necessary to be careful with some indicators.

In relation with countries with BBB grade²³, we shall be concerned with our gross debt/GDP ratio, current transaction balance, GDP growth, investment and saving levels (that

show our future growth potential), public spending, and nominal deficit. In the other hand, we enjoy a comfortable net debt/GDP ratio, low unemployment levels and high tax collection by the public sector (which expands the government ability to pay debts). As we know, the primary result for 2014 was -0.6% of the GDP, well below IMF projections. If all other IMF projects are correct, our primary result for 2014 will be worse than the average of BBB-grade countries.

In short, it is necessary to adjust the economy, mainly in the fiscal area, with the main goal to revert the deterioration trend that is being configured. Specifically on what concerns gross debt, more important is to signal that it is going to stop growing or, at least, that it will stabilize in the long run. Our biggest concern is not to the indicator value per se, but with their recent evolution.

²³ Countries with BBB grade as per Standard & Poor's and Fitch To join the list below, it was enough for the country to be included to the list of one of the agencies. The countries are as follow: Azerbaijan, Bahamas, Colombia, Slovenia, Spain, The Philippines, Iceland, India, Italy, Kazakhstan, Malta, Mexico, Morocco, Panama, Peru, Romania, San Marino, Thailand, and Uruguay.

TABLE IV.1: MACROECONOMIC INDICATORS FOR BRAZIL AND OTHER BBB-RISK NATIONS, 2013 AND 2014.

		2013	2014
Gross debt (GDP %)	Brazil	66,2	65,8
	BBB average	58,3	59,5
Net debt (GDP %)	Brazil	33,6	33,7
	BBB average	42,1	42,5
GDP per capita	Brazil	14.987	15.153
	BBB average	20.014	20.776
Inflation (year %)	Brazil	6,2	6,3
	BBB average	3,4	3,1
Current Transactions Balance (GDP %)	Brazil	-3,6	-3,5
	BBB average	-2,5	-2,4
Investment rate (GDP %)	Brazil	18,1	17,0
	BBB average	23,1	22,9
Savings rate (GDP %)	Brazil	14,5	13,5
	BBB average	20,6	20,6
GDP variation	Brazil	2,5	0,3
	BBB average	2,9	2,8
Unemployment rate	Brazil	5,4	5,5
	BBB average	8,4	8,2
Public sector revenue (GDP %)	Brazil	37,9	38,2
	BBB average	29,8	30,1
Public expenditure (GDP %)	Brazil	41,1	42,1
	BBB average	33,0	32,8
Nominal result (GDP %)	Brazil	-3,3	-3,9
	BBB average	-3,2	-2,7
Primary result (GDP %)	Brazil	1,9	1,3
	BBB average	-0,7	-0,1

Fonte: World Economic Outlook, 2014, FMI.
Obs: Até 2013, dados observados. Para 2014, projeções.

#4.2 [PARTICULARITIES OF THE CURRENT CRISIS]

Despite official results are not known yet, all evidences point to the fact that the GDP did not grow in 2014 or, best case scenario, it grew a little. Expectations for 2015 are not good either. According to the Focus Survey²⁴ that is conducted by the Central Bank with more than 100 financial institutions and consulting firms, the median for expectations by March 05 was the GDP retracting by 0.6% and inflation measured by IPCA of 7.5% for 2015. So we may consider that Brazil is experiencing a crisis. We know that a crisis is never the same as any other. As we shall discuss throughout this section, the current crisis has particularities that strongly recommend keeping investing.

i. There is a restriction on aggregated supply, instead of previous crises where there were an increase on idle capacity;

ii. There is no liquidity issue. We are not experiencing an exchange rate crisis or the public sector inability to finance itself;

iii. The adjustment proposed aims to restore the public account balance. Even admitting a recent jump of inflation, this is not the main factor upsetting the economy balance.

iv. Despite the fiscal adjustment is based in a situation with little idle capacity, if any, restricting government spending shall negatively affect aggregated demand as in any other adjustment program. This time, however, perspectives for aggregated demand recovery shall be limited, especially, to the recovery by resuming net exports or investments.

#4.2.1 [LIMITATIONS OF AGGREGATED SUPPLY]

Brazil's low growth potential is directly linked to aggregated supply. As explained in other papers and in line with estimations from other analysts²⁵, potential GDP's yearly growth rate fell from around 3.5% to 4% in the last ten years to less than 3% in this decade. More recent estimations point to even lower rates around 2%²⁶. Thus, a scenario is built where low growth is not caused by ad-hoc factors but by the economic structure itself.

This means that GDP stagnation is not followed by unemployment increase or excess of idle capacity, which is certainly unseen for Brazil and most

countries. Chart IV.4 shows the evolution of the idle capacity utilization degree as measured by FGV since 1970.

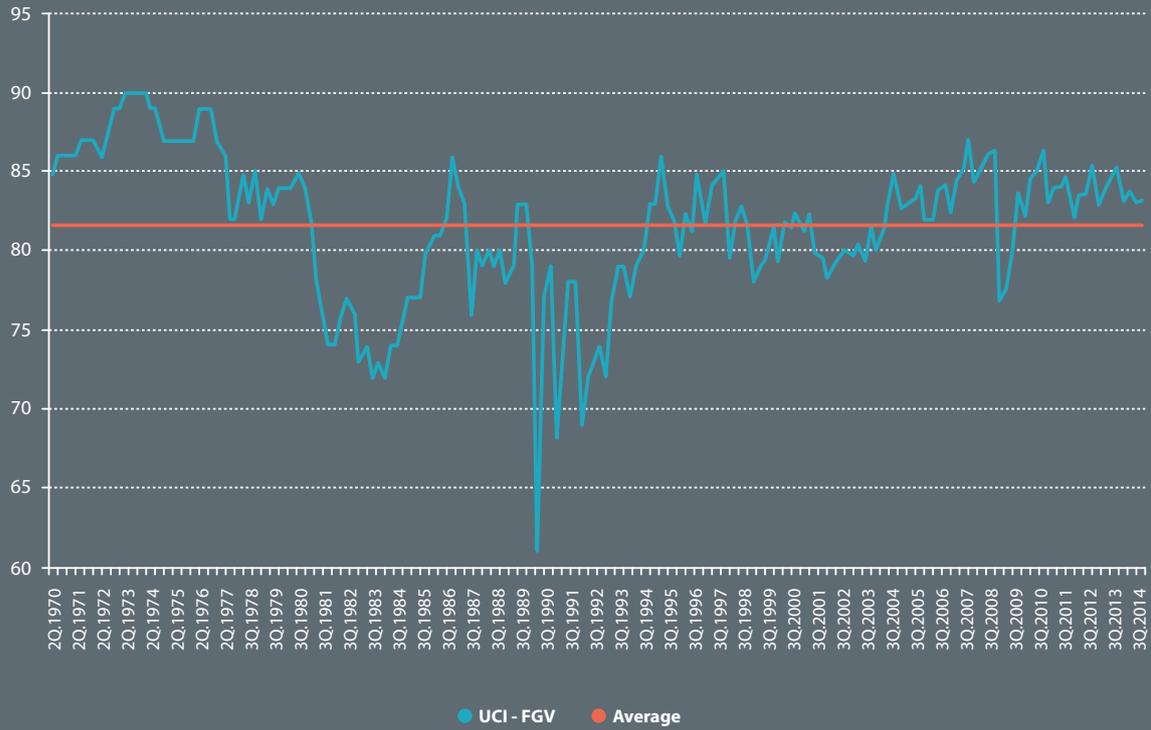
The chart shows that in previous crises, such as the debt crisis in the beginning of the 1980s, during the Collor administration's recession, in the beginning of the 1990s, the exchange rate crises in 1999, 2003 and 2008, the usage of installed capacity fell. But this time is different as we are using installed capacity above historical levels for 4 years. This data becomes more intriguing when one remembers that installed capacity is mainly linked to the industrial

24 This survey is conducted with 100 financial institutions and consulting firms on a weekly basis.

25 See Barbosa Filho (2011) and Velloso et al (2013) among others.

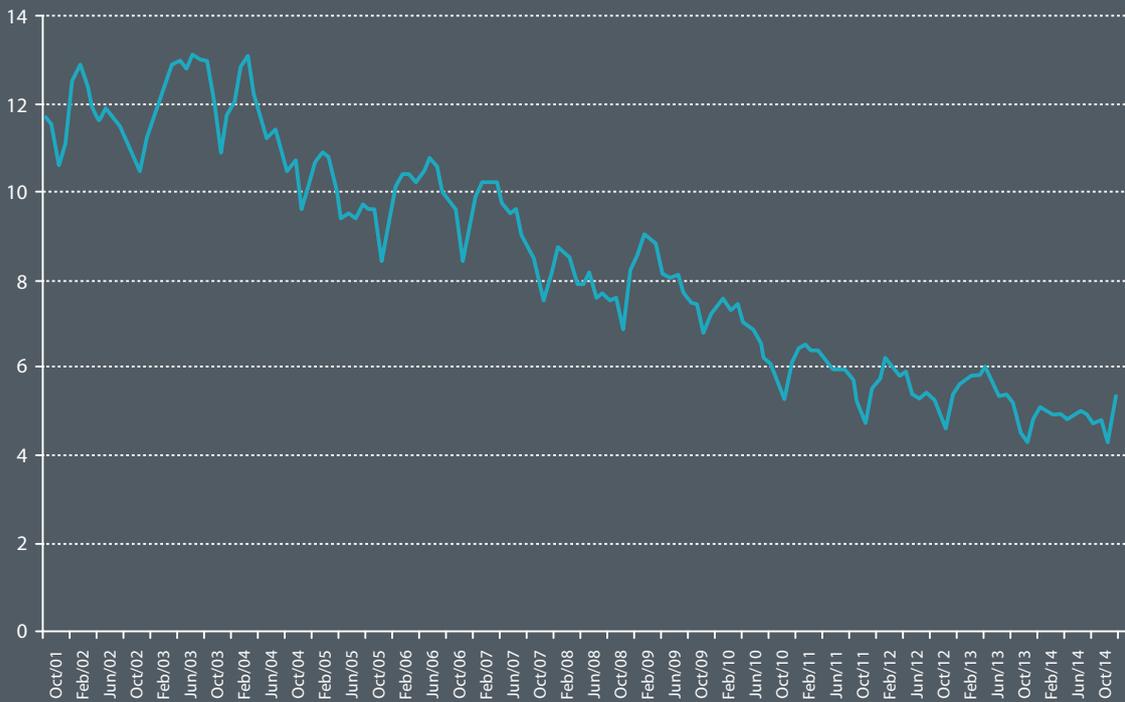
26 Central Bank's Focus Survey reveals expectation for GDP growth to the next three years. The expectation median for growth in 2017 is steadily being reduced to 2%, which is a good proxy for what the market believes Brazil's potential GDP to be. This is because eventual ad-hoc shocks that may affect our growth in the short term tend to dissipate within two or three years

CHART IV.4. UTILIZATION OF INSTALLED CAPACITY FROM 1970 TO 2014.



Source: Fundação Getúlio Vargas.

CHART IV.5. UNEMPLOYMENT RATE IN METROPOLITAN AREAS PER WEEK (IN %)



Source: PME, IBGE.

sector, which is the sector less performing in the last years not only in relation to the GDP but also in absolute terms. In other words, despite the industrial sector is stagnated in the last four years, the sector's capital stock is following up such stagnation.

There is no idle capacity either in another production input - labor. Unemployment rates are steadily falling since 2001, as Chart IV.5. shows. It is interesting that employment levels are basically stagnated, so the reason why unemployment levels fall is the reduction in the workforce, i.e., there are more individuals at working age that are not working or looking for employment.

The lack of idle capacity shows that economy recovery will be harder than in previous crises. Until then, policies to maintain supply would help to recover economic activity. In a typical adjustment, relying on support from the IMF, exchange rate depreciation would encourage net exports, allowing

for a recovery of production by using idle capacity first. Thus, a new cycle could be launched without inflationary pressures and as trust was regained, investment levels could also be recovered.

In the current situation, the possibility of recovery by stimulating demand is much more limited. It is possible to expand employment by attracting people outside the workforce, which probably will be followed by salary pressures. It is possible to increase the usage of capacity, currently at 83%, as we are below the 90% maximum as seen in the historical series. However, such expansion would bring growing cost for businesses. Also, 83% is an average. There are certainly sectors close to their capacity limits, where expansion is quite limited. In keeping the current situation, we would hardly maintain moderate growth rates - say, 2% to 3% per year - without inflationary pressures and industry imbalances.

#4.2.2 [CURRENT CRISIS CONTEXTUAL ASPECTS]

[BETTER LIQUIDITY CONDITIONS THAN IN CRISES PAST]

The current crisis is different from previous crises in the sense that there is no apparent liquidity crisis in relation to public sector financing ability and external accounts. There were a strong exchange rate crisis in the 1980s, 1998 (before the inflation target regime) and 2002/2003. To a certain extent, it is correct to say that such crises were caused by a reduction in the incoming flow of cash to the country. In all cases, agreements with IMF were necessary to ensure solvency in our balance of payments. As part of such agreements, it was necessary to strongly reduce domestic absorption²⁷ to restore balance to external accounts.

In 2009, due to the international financial crisis, we were better positioned since Brazil had accumulated some US\$ 200 billion in international reserves. In other hand, as the name suggests, that crisis was characterized by

a strong credit clinch due to overall insecurity spread over financial markets.

In current crisis, there are no serious liquidity issues. From an international liquidity standpoint, it is true that upon the recovery of the US economy we shall see some capital flight (as other economies will see too). But a better economic outlook in the US and consequently around the world tend to benefit capital flows in the midterm. The Euro zone, by its turn, recently announced that will keep the monetary expansion policy in effect for the last years. Finally, Brazil has a solid international reserve stock of US\$ 363 billion by the end of February 2015, which allows for endure with some tranquility eventual period (not long ones) with difficulties on financing the balance of payments.

As in all crises, it is obvious that may have very short periods, during few weeks, in which

²⁷ Domestic absorption corresponds to the total of family consumption, government spending and investment. It is different from aggregated demand by not including net exports.

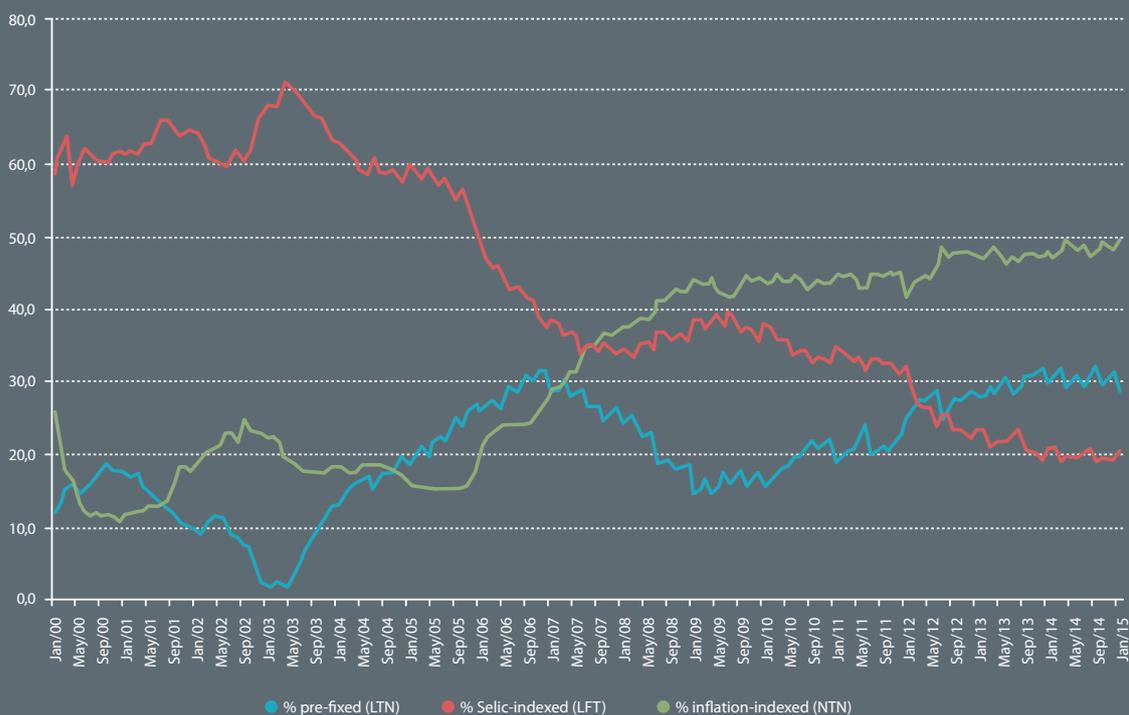
Treasury finds trouble selling pre-fixed bonds or bonds with longer terms or length. The current situation, though, is stable on liquidity conditions.

É claro que, como em toda crise, pode haver períodos de curtíssimo prazo, com duração de poucas semanas, em que o Tesouro encontra dificuldades de colocar títulos pré-fixados ou de maior prazo ou duração. Mas o quadro atual, de forma geral, é de estabilidade nas condições de liquidez.

A crisis without severe liquidity restrictions allows the use of more instruments

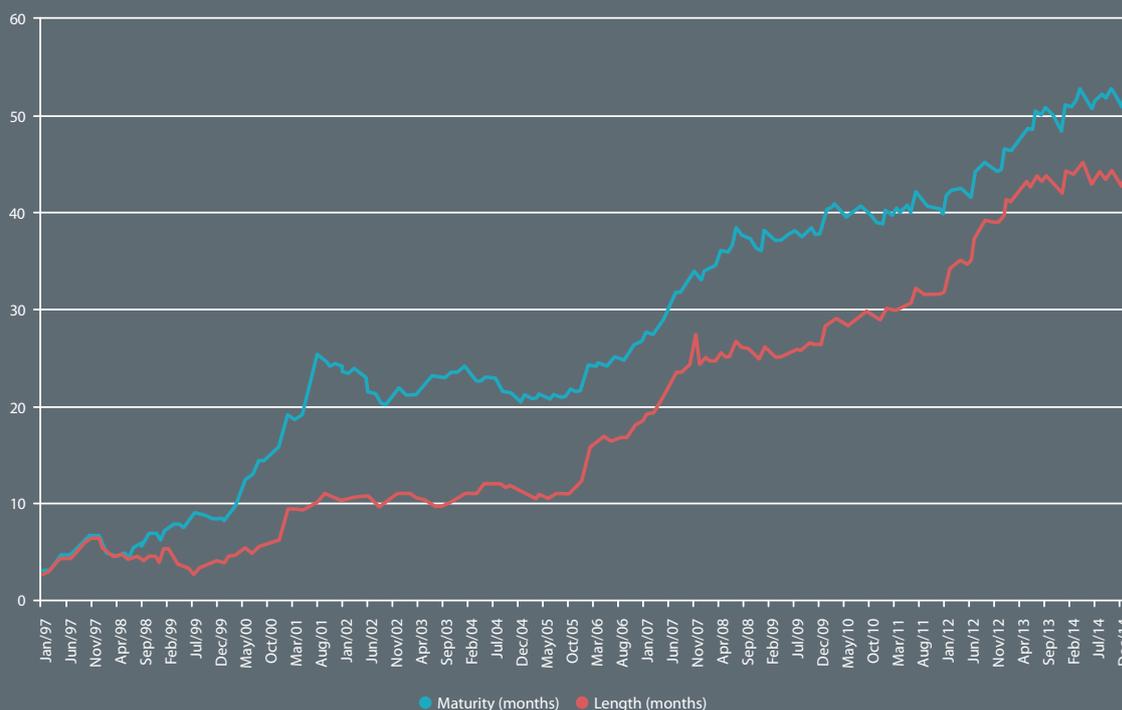
by the economic policy-makers. In 2008, for instance, the government used state-owned banks and international reserves to ensure liquidity to private sector, in addition of executing an expansionary policy aiming to sustain aggregated demand. But on crises at the beginning of 2000s and in the 1980s, liquidity restrictions forced a strong fiscal adjustment to the government, requiring cash control.

CHART IV.6. EVOLUTION OF FEDERAL BOND DEBT COMPOSITION ACCORDING TO MAIN INDEXES: SELIC, PRE-FIXED AND INFLATION FROM JANUARY 2000 TO JANUARY 2015.



Source: Central Bank.

CHART IV.7. EVOLUTION OF THE AVERAGE TERM AND DURATION OF FEDERAL BONDS FROM JANUARY 2000 TO JANUARY 2015 IN MONTHS.



Fonte: Banco Central.

[MORE ROOM TO ACCOMMODATE INFLATION SPIKES]

There is no doubt that the monetary policy has lost credibility in the last years. Even before a strong demand expansion, as seen in 2010 and the beginning of 2011, the Central Bank refused to raise interest rates as it should. Between June 2011 and August 2012, the Selic rate fell 525 basis points, which was seen by the market as unsustainable and caused by the institution's lack of the autonomy. Currently, few economic players believe that the Monetary Policy Committee (Comitê de Política Monetária, Copom) aims for the center of the target. Even worse, the expectation for inflation within four

years remains above the 4.5% target. As eventual shocks that currently storm the economy will be dissipated by then, only the lack of trust towards the Central Bank can explain why there are expectations of not meeting the target.

The monetary policy of the last four years, by generating inflation rates around 6% even under good conditions will hardly be able to maintain inflation below the upper limit of the tolerance interval (6.5%) due to price realignment, mainly energy and oil, and exchange rate depreciation. That's the reason why the market

²⁹ But this statement is not precise as the inflation target is defined only until 2016. Considering decisions by the National Monetary Council (Conselho Monetário Nacional), however, it is reasonable to expect that inflation target will remain at 4.5% for the coming years.

expects inflation to go over 7.5% in 2015, according to Central Bank's Focus Survey released this March.

Even with all these problems, distrust towards inflation is much smaller than it was during the 1999 and 2002 crises. In 1999, we had just implemented the inflation target regime that was by then implemented successfully in advanced economies such as England, Canada, Sweden, and New Zealand. There were not even reliable historical series and expertise to project inflation and the monetary policy transmission mechanism, basic instruments for Copom's decision making. Within that context, the Central Bank could not let inflation loose under the risk of losing all credibility.

In 2002, due to the first Worker's Party administration, distrust over the future conduction of the overall economic policy (and the monetary policy in particular) led to a strong increase in inflation and cambial depreciation. Again, the new Central Bank president could not signal any kind of benevolence towards inflation.

In those times, any pressure for increasing demand, whether by consumption, investment or government spending, would lead to a Central Bank reaction signaling to the market its in-

tolerance against inflation deviations from the goal.

Currently, despite the aforementioned credibility loss, the market realizes that inflation will not spiral out of control. Furthermore, if required, the private sector understands that a simple change of direction by the Central Bank board suffices to make inflation return to the goal, as there is an already successful experience with the target regime and expertise has been created.

Additionally, the monetary theory³⁰ determines that face to cost shocks, as those we experience now (fee increases and exchange rate depreciation), the optional response from the monetary policy is to let inflation go up and then gradually get back to the target.

Thus, inflation is a secondary concern at the moment. Cost shocks will exert the largest pressures on inflation which, certainly, the Central Bank will not (nor should) fully neutralize. And an eventual accommodation to demand pressures will not damage the monetary authority's credibility more than it has been in the last years.

[MORE DIFFICULTIES FOR A FAST RECOVERY]

If we look to the pattern of the three last crises (1999, 2003, and 2008), the economy has recovered relatively fast. Table IV.2 shows the variation of the GDP in years of crises. In 1999 and 2003, crises were more intense in the first quarter of those years. Thus, the economy performance in those years reflected the impact of adopted stabilization policies. In the case of 2008 international financial

crisis, the turning point was the bankruptcy of Lehman Brothers, in September. Due to delays, the Brazilian GDP (considering the accrued value during four quarters) fell only at the first quarter of 2009 and only shown a positive growth in the first quarter of 2010. For this reason, we use this quarter as reference for Table IV.2.

³⁰ See Clarida et al (1999).

³¹ Or the last quarter of the previous year.

TABLE IV.2: VARIATION OF GDP AND ITS COMPONENTS IN THE FOURTH QUARTER AFTER THE START OF CRISIS

	GDP	Family consumption	Government consumption	Gross Formation of Fixed Capital	Net Exports
Absolute variation (in R\$ million of 2005)					
1999:IV	1.894	1.760	2.571	11.656	14.692
2003:IV	9.296	3.875	1.921	5.996	9.730
2010:I	26.018	37.946	6.106	4.765	8.200
Contribution in % for GDP variation					
1999:IV	-	93	136	615	776
2003:IV	-	42	21	65	105
2010:I	-	146	23	18	32
Industry share in the GDP					
1999:IV	-	63	21	17	0
2003:IV	-	60	21	15	4
2010:I	-	62	20	19	1

Source: SCN quarterly, IBGE

Table IV.2 shows that in the 1999 and 2003 crises, where a strong cambial restriction occurred, and the recovery were largely due to an increase in net exports. Despite being equivalent to less than 5% of the GDP, the growth of net exports was higher than the GDP growth in those years, being almost 8 times higher in 1999. Government consumption also played an important role for solving the crisis in 1999, but it was approximately neutral in 2003 and in 2010³². However, investments made a strongly negative contribution.

The recovery from 2008 crisis was very different from the previous ones. Net exports made a negative contribution, mainly because global trade fell strongly in that year. The greatest drive for GDP came from consumption. Investments were neutral, which is a good thing as usually investments fall sharply in recessions. The consumption-based recovery in 2008 was largely

due to the fact that the crisis hit Brazil while the country was enjoying comfortable exchange rates, as there were US\$ 200 billion in reserves and public accounts were controlled. This allowed the fiscal authority to execute a conventional anti-cyclical policy, preserving to a maximum extent aggregated demand and investments.

We know that currently, Brazil has little, if any, idle capacity. However, a rigorous fiscal adjustment program will tend to reduce aggregated demand, generating idle capacity. Under a mid- and long-term perspective, we will be condemned to mediocre growth rates if we do not expand the aggregated demand. However, due to the adjustment policy - and depending on its intensity - it will be necessary to recover aggregated demand in the short term as well. It is common for stabilization programs to create themselves the conditions for future economy growth.

32 An aggregated demand component is neutral to GDP expansion if its contribution for such expansion is similar to its share in the economy.

Increasing public savings tends to depreciate the exchange rate, encouraging net exports. Furthermore, enhancing the perception on the public sector solvency may encourage consumption and investment as trust in the economy grows.

This begs the question: can we say that, given the current context, the macroeconomic adjustment is enough to activate the recovery mechanisms for the economy's aggregated demand in a reasonable timeframe?

In relation to consumption, it is hard to repeat the experience in 2008 when before the crisis (in 2008:III), consumption was expanding at an accumulated rate of 6.7% in 12 months. This rate fell due to the crisis, but by reaching a low of 3.25% in 2009:III, it was a reasonable figure for times of crisis. Currently, consumption is expanding much more slowly. In 2014 (last data available), consumption growth rate accumulated in 12 months fell gradually from 1.8% to 1.5% and 0.9% on quarters 1, 2, and 3, respectively. It is not probable that the population feels encouraged to consume more due to the deterioration of economic growth expectation, inflation increase (which might decrease real wages) and job market stagnation³³.

It is highly improbable the reedding of incentives such as those provided in 2008 and 2009, as tax exemption for vehicles and other durable goods, considering fiscal restrictions. Credit also tends to become limited, because the financial system feels less comfortable to loan during recessions. Additionally, the next steps of the Car Wash Operation may affect bank's balances and thus, the credit supply.

In relation to government's consumption, the current fiscal adjustment will leave almost no room for economy stimulus. The primary surplus

target for 2015 is 1.2%, which means a gigantic effort if one considers that the primary result in 2014 was negative in 0.6% of the GDP. In other words, the fiscal effort measured as the difference between the consecutive primary results for two years shall be of 1.8% of the GDP. If it succeeds, it would have been the largest fiscal effort obtained since 1999, when it reached 3.2% of the GDP. Since then, no fiscal effort went above 1% of the GDP.

The perspectives for investment are not good either. Table IV.2 has shown that investment fell sharply in Brazil in 1999 and 2003. However, as trust was recovered, investments grew in the following years: 5% in 2000 and 9.1% in 2004. In the 2008 crisis, the investment growth rate also fell, but similarly to what happened to consumption, the fall was from the heights: 16.7% in 2008:III. The minimum was a growth rate of 2.5%, which is satisfactory for a period of crisis.

But the current situation is well less promising. Investments are in free fall: reduction of 0.7% in the second quarter of 2014, and more 4.6% in the third quarter of the same year. The fiscal adjustment may limit Treasury loans to BNDES, main long-term lender in our economy. Exchange rate depreciation might upset the balance of companies with foreign debt, reducing funds available for investment. Petrobras, which accounts for some 10% of investments in Brazil, shall revise its plan downward due to corruption charges in the company, its high debt levels and the recent downgrade of its debt. Another barrier for investments will be the probable water and energy rationing.

Finally, net exports hardly can perform the same role they did on the 1999 and 2003 crises recovery. Such as happened in those years, there has been a significant depreciation of the

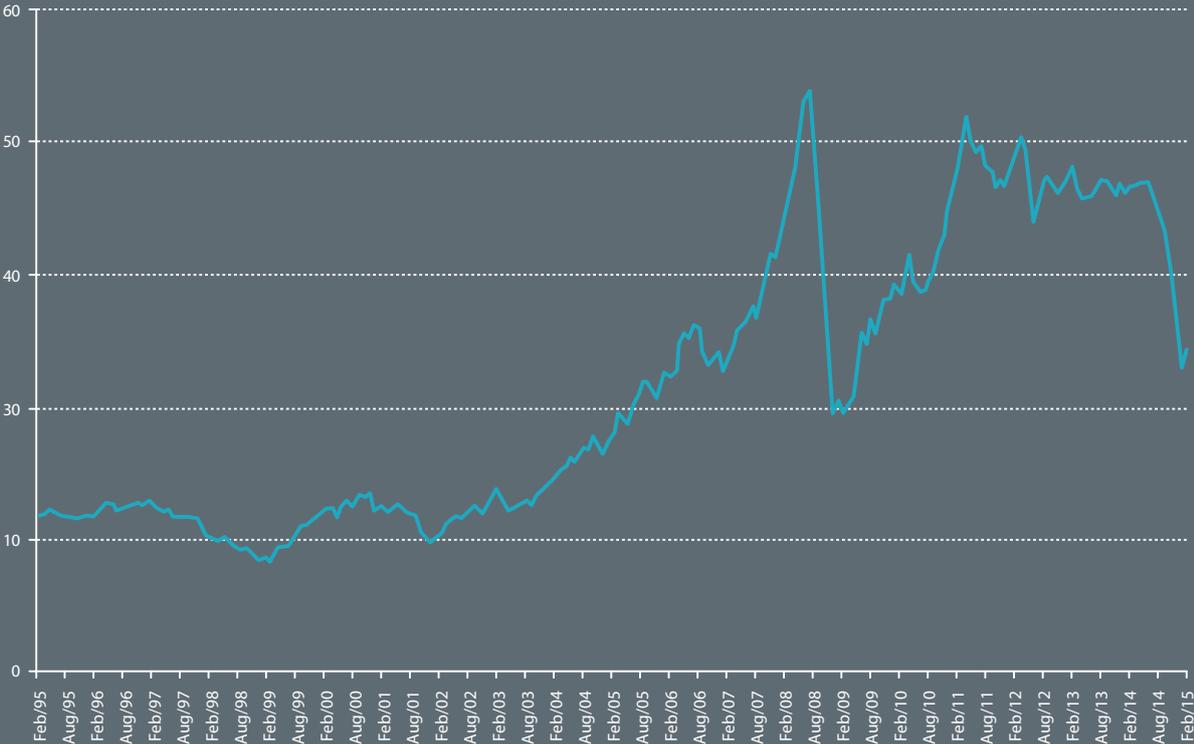
33 As explained above, the low unemployment rate is more due to a slow expansion of the Economically Active Population than to job generation. Considering the metropolitan areas surveyed by the Monthly Job Survey (Porto Alegre, São Paulo, Rio de Janeiro, Belo Horizonte, Salvador, and Recife), the total number of employment reach a peak in October 2012 with 23.5 million employed people. The General Record of Employed and Unemployed People (Cadastro Geral de Empregados e Desempregados, Caged) maintained by the Ministry of Labor shows that in 12 months ended in February 2015, the formal sector lost 48,000 jobs, or 0.11% of all job posts.

Real, which helps to expand exports. However, there are two factors that remove incentives to our exports. First, global trade is growing slower. Both in 1999 and in 2003, global trade was expanding above 10% per year at dollar value. Since 2011, global trade is growing below 5% per year, presenting even negative results in some periods. Second, there has been a strong fall in commodities international prices. Graph IV.8 shows the Commodity Price Index evolution since 1995. As it can be seen, commodities prices in 1999 and 2003 were up. But they fell around 35% in 2014. Even if prices gain some

field in 2015, hardly average prices for this year will be above last year's prices.

Thus we see that perspectives for the economic recovery in 2015 are very limited. No component in the aggregated demand has positive outlooks for the next years.

TABLE IV.2: VARIATION OF GDP AND ITS COMPONENTS IN THE FOURTH QUARTER AFTER THE START OF CRISIS



Source: IMF.

#4.3 [IT IS CRITICAL TO MAINTAIN PUBLIC SECTOR INVESTMENTS IN INFRASTRUCTURE AND EXPAND THE GRANT PROGRAM]

This section aims to show that despite the need for a fiscal adjustment, government shall maintain investments. We shall argue at first that cutting investments do not change the payment ability of the public sector. Later on, we shall complete the argument by showing that the particularities of this crisis recommend to keep investing and to resume the grant program.

[INVESTMENTS DO NOT DAMAGE PUBLIC SECTOR'S FINANCIAL HEALTH]

Fiscal statistics, such as primary result, nominal deficit, gross or net debt, are frequently released and usually used by financial analysts as benchmark to assess a government's financial situation. These are actually important and critical data to assess a macroeconomic situation of a country.

However, any strict assessment has to analyze other indicators. If the analysis targets only the short term situation of a country, it does not matter whether public spending is for operational costs or investment. But for the long run, it is critical to distinguish the nature of spending.

It is true that situations characterized by a strong liquidity restriction, such as the ones we experienced in 1999 and 2003, the planning perspective is short. Therefore, if a government reached a level of distrust to a point where it is not able to finance itself, it is necessary first to save money by cutting expenses deeply (whether they are operational or investment) to later recover the economy's trust (or trust from multilateral entities such as the IMF) and get financing again.

But if there is no liquidity issue, the quality of spending affects dramatically the eco-

nomy's mid- and long-term results. Investments, if well carried out, increase the economy's production capacity, allowing for income generation and consequently, more taxes.

For instance, building a highway can reduce freight costs and increase efficiency on allocation production factors in the economy. Even if there are no toll fees, the possibility of allocating economy resources more efficiently would positively impact the activity level, and thus increasing future tax collection. Investment in sanitation allow for less diseases, saving money from health treatments and reducing job leaves due to poor health. Similarly, we can prove that investments in urban mobility, energy, telecom - investments in infrastructure in general - can bring financial returns for the government, whether by increasing tax collection or by reducing costs. Depending on such returns, investments are financially self-sustainable.

When an entity's financial ability is analyzed (whether public or private), such analysis shall be performed under a long-term perspective. If high spending today will imply less expenses or more

revenue tomorrow, then such spending shall be made even if they create deficits in the short term.

One can demonstrate that, once the internal return rate of an investment is higher or equal to the interest rate applied to public debt, it is worth for the government to increase debt levels to finance a given project. In other words, if the current value of benefits brought by the investment is at least equal to their cost, the optimal decision by the administrator is to perform such investment.

Finally, it is worth remembering that public spending increase by investment does not conflict with the goal to increase public saving. Despite savings and fiscal result are interconnected concepts, they are synonyms. Fiscal result is the difference between total tax collection and spending. Public saving is the difference between tax collection and current expenses. Thus, a public sector of a country can spend much, experiencing deficits (nominal or primary) and save money at the same time.

[THE CURRENT CRISIS JUSTIFIES THE MAINTENANCE OF PUBLIC SPENDING WITH INVESTMENTS]

We have seen that investments can be sustainable under a financial standpoint. Furthermore, on Section IV.2, we have shown several particularities of the current crisis. As we shall see next, today's specificities recommend that the fiscal adjustment is carried out as to preserve to a maximum extent spending with investments.

The first question posed by this is if the government has financial conditions to keep investments in infrastructure. The answer is yes. In this current crisis, the public sector does not face liquidity problems and can finance itself. It is true that by spending, the public sector competes against the private sector for funds avail-

able in the economy. But this is not a different competition that one can see in situations of less macroeconomic imbalance. Furthermore, as discussed in Velloso et al (2013), the Brazilian public sector problem is the trend to overspend in operational costs, with employees, social insurance and social programs, not investments.

The monetary policy shall also not pose restrictions to policies that maintain public investments in infrastructure. Such investments correspond to a small GDP percentage below 2%. So they do not overpressure the aggregated demand and thus, the level of prices. But even if they do, controlling inflation, despite its importance, is not as required as it was in pre-

vious adjustment programs in 1999 and 2003. At those times, it was critical that the monetary authority signal with conviction to the market that any inflationary spike would not be tolerated. Despite the monetary policy's loss of credibility in the last years, currently there is more room for the Central Bank to adopt an accommodating policy. This means that an eventual demand increase caused by public investments would not bring an interest rates increase, negatively affecting the whole economy.

Thus, we find that government **is able** to keep investing in infrastructure. The second question is if the government **must** keep these investments. And the answer is also yes.

Firstly, because this is a crisis marked by a limitation on aggregated supply. Cutting investments would limit our future growth capacity even further.

Secondly, because private investments shall not recover as fast as they did in previous crises: there is a high degree of uncertainty; a water and energy rationing looms in the horizon; Petrobras, responsible for 10% of Brazil's investments, shall revise its business plan; and the credit market shall become more strict. This way, without public investment, there is a trend that the economy's aggregated investment will fall.

Third, when we look to the components of aggregated demand, all we can see is poor perspectives: family consumption, government consumption, net exports and, of course,

investment itself - all configuring barriers for private investment.

It is worth to remember that selecting financially sound investments was already part of previous macroeconomic adjustment programs. In 2005, still under the IMF adjustment program, it was created the Investment Pilot Program (Programa Piloto de Investimento, PPI) with the blessing from the fund. It was a never-seen-before program back then, in which it was allowed to discount from the primary result goal (in that case, 0.1% of the GDP) to investments. Justification for PPI is similar to the one discussed above: self-sustainable investments do not damage public sector's financial health, when all impacts are considered over time.

Curiously, PPI-allowed discount was not used. Partly because tax collection increased quickly (there was a commodity boom with strong gains on exchange terms), rendering the discount unnecessary. It also shall be considered that even with IMF support, the economic team need and wanted to show strong commitment to public finances, in order to gain trust.

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#4.4 [THE MY HOUSE MY LIFE HOUSING PROGRAM]

The My House My Life housing program (MCMV) was created in 2009 aiming to finance 1 million houses initially. The goal for the second phase, launched in 2011, was to build 2 million houses. Currently, MCMV is in its third phase, aiming to build 3 million houses. It serves the population with household income up to R\$ 5,000 - those with income up to 1,600 can pay in 120 months, with installments limited to 5% of the monthly household income and the subsidy may reach to 96% of the house value.

Due to changes in the accounting method, MCMV, accounted as operational expense before in the form of transfer from Treasury to the Housing Fund, it is now accounted as public investment. This procedure changed government statistics dramatically, raising public investment to 1.48% of the GDP in 2014 from 1.19% (as per Almeida, 2015).

Irrespective of the controversy if it is public investment or not, as it is a subsidy targeted for new housing, MCMV directly impacts the aggregated investment rate (public and private) of the economy. In numbers, the program consumed R\$ 14.8 billion or 0.3% of the GDP in 2014.

This is a program absorbing many public resources. For comparison purposes, spending with Continuous Subsidy Benefit (Benefício de Prestação Continuada, BPC) reached R\$ 31.4 billion; Bolsa Família, R\$ 27 billion; Unemployment Benefit, R\$ 36 billion; Salary Bonus, R\$ 16 billion. Thus, MCMV is a program similar to the main social assistance programs in Brazil. Changes to any of these programs bring considerable fiscal impacts. The issue, thus, is to analyze the need of spending with each one of them.

For instance, BPC and Bolsa Família aims to ensure minimum income for a given social group: for the former, old and disable people and the latter, poor families in general. Thus, there is a large interface between them, which may be used to reduce costs. The Wage Bonus focuses on the formal sector worker earning up to two minimum wages. This is the program less focused on poverty elimination from all programs, as its target audience is not the poorest of the poorest. Unemployment insurance aims to protect unemployed workers but it juxtaposes to FGTS in a certain measure.

In the other hand, MCMV focuses civil construction. Contrary to other social programs, this is the only program directly impacting the economy's investment rate. It is true that, from the public accounting standpoint, MCMV is more similar to a current expenditure as hardly the government will fully recover the amounts spent as taxes. As we will see later, however, even if the public sector cannot recover the amount invested in full, the public sector obtains some financial return.

From the society standpoint, though, expenditure with housing construction is just like any investment. Housing built through MCMV will generate housing services and thus, rent. The difference is that the tenant and the owner are the same person, so that there is no financial transaction associated to such rent. From a national account perspective, however, the rent paid by the owner to himself is accounted. This makes sense because the goal to measure the wealth of a country is to assess the well-being of its population, and better housing certainly help to well-being, even if there is no financial flow related to the service.

Thus, MCMV can lead to a sustained GDP expansion even if it do not expand income tax collection, as financial transactions related to renting the house will not take place. But the public sector can obtain other financial gains. Better housing positively impacts the worker productivity, as he/she can rest better and is less exposed to diseases caused by increased agglomeration of people. Children can also benefit from better health and environment for studies. Cities can benefit from larger housing-related tax collection. Furthermore, studies show³⁴ that housing programs can positively impact the price of properties adjacent to the area of the program, raising rents and the potential of housing-related taxes and income tax. Finally, as there will be an increase in the GDP, MCMV improves macroeconomic indicators such as the debt/GDP ratio, which helps to improve the risk-country perception.

Thus, despite MCMV implies in government spending without financial returns in the same size, one can say that such return is not null, at least. As it is a program with a strong social appeal, two questions beg to be made: first, is it necessary for the government to offer subsidies? Secondly, is it necessary to invest in housing? The answer for both questions is affirmative.

On the need for subsidies, as it is low income target audience, housing would not be built. Here we can make a relevant point. As it is an essential good, hardly someone would relinquish a decent house if were able to purchase or rent it. Families live under precarious conditions because they cannot afford better housing. A house valued at R\$ 100,000 would imply in a rent around R\$ 500 per month. If it is purchased, only monthly interests would require payment of the same R\$ 500 (assuming subsidized interests of 6% per annum), not considering amortization, which would make the payment unaffordable for low income families.

As for the second question, there are no doubts on the need for a housing program. According to the IBGE, the housing gap in Brazil was almost 6 million houses in 2012.

An IMF study (2012) points to the same direction by showing that Brazil needs to expand access to housing. Chart IV.9 shows housing credit as a proportion of the GDP. Data from 2010 and 2011 when the housing credit in Brazil was below 5% of the GDP. It is true that a strong credit expansion took place since then. It is estimated that Brazil has ended 2014 with a stock corresponding to 8.4% of the GDP. It is still a figure way below the global average that is around 12% of the GDP. Considering data from 2010/11, we were worse than emerging countries like Chile, Thailand, Mexico, Panama, and Peru - and much behind the list toppers as Hong Kong, Malaysia and South Korea.

When investment is broken down in purchase of machines and equipment and construction, one can see that our largest gap is in construction spending. According to Chart IV.10, Brazil was spending in 2006 8.5% of the GDP in purchasing machines and equipments, which was almost 1 percentage point above the global average. Even intensive investing and growing countries, such as China and South Korea, were investing more than Brazil: 9.9% and 9.1% of their respective GDPs. A large gap is found in construction investment. While Brazil spent 6.6% of the GDP in that year, the global average was 11.9%. In China, no less than 26% of the GDP was invested in housing.

It is true that spending in construction is not limited to housing. It also involves road infrastructure, dams and others. Anyway, along with evidences presented above, we can conclude that Brazil still invests little in housing.

Finally, one shall consider the importance of investing in housing for the economy recovery and job creation. Furman (2014) shows the economy recovery in the US is usually boosted by the recovery in house building. On job creation, the Brazilian construction sector has been expanding its role in job generation since 2011, according to PNAD. The sector employed some 7% of all employees during 2002 and 2009. In 2013, more than 9% of employees were working in the civil construction (most recent data)³⁵. It should be mentioned as well that the sector is important by em-

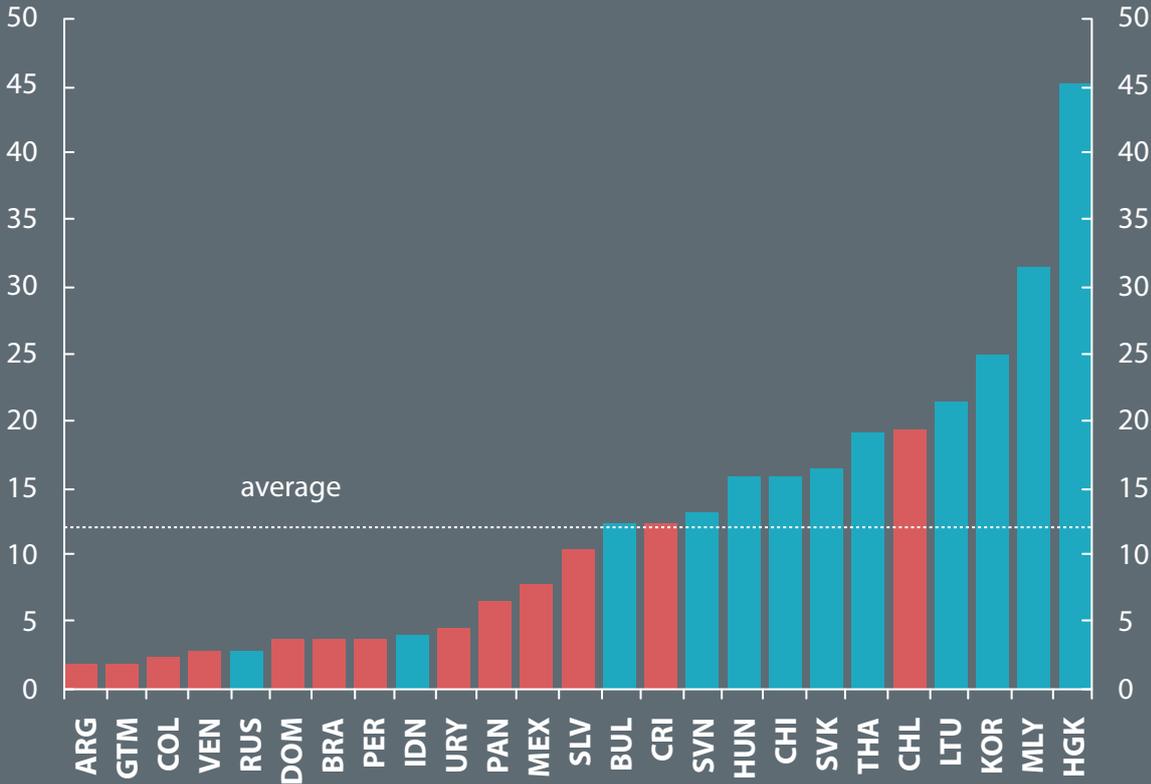
34 See ROSSI-HANSBERG et al (2010).

35 PNAD does not detail civil construction from its several components, such as construction of houses, highways and others.

ploying less qualified personnel. In 2013, 65% of employees in the construction sector earned less than 2 minimum wages, against 60% of employees in general.

Thus, we have seen that the government has the means to keep financing the My House, My Life housing program. Considering the existing housing gap, the inability of poor families to have access to decent houses and the positive impacts of civil construction on the economy and job creation, even through a fiscal adjustment program, expenses with MM shall be preserved as best as possible.

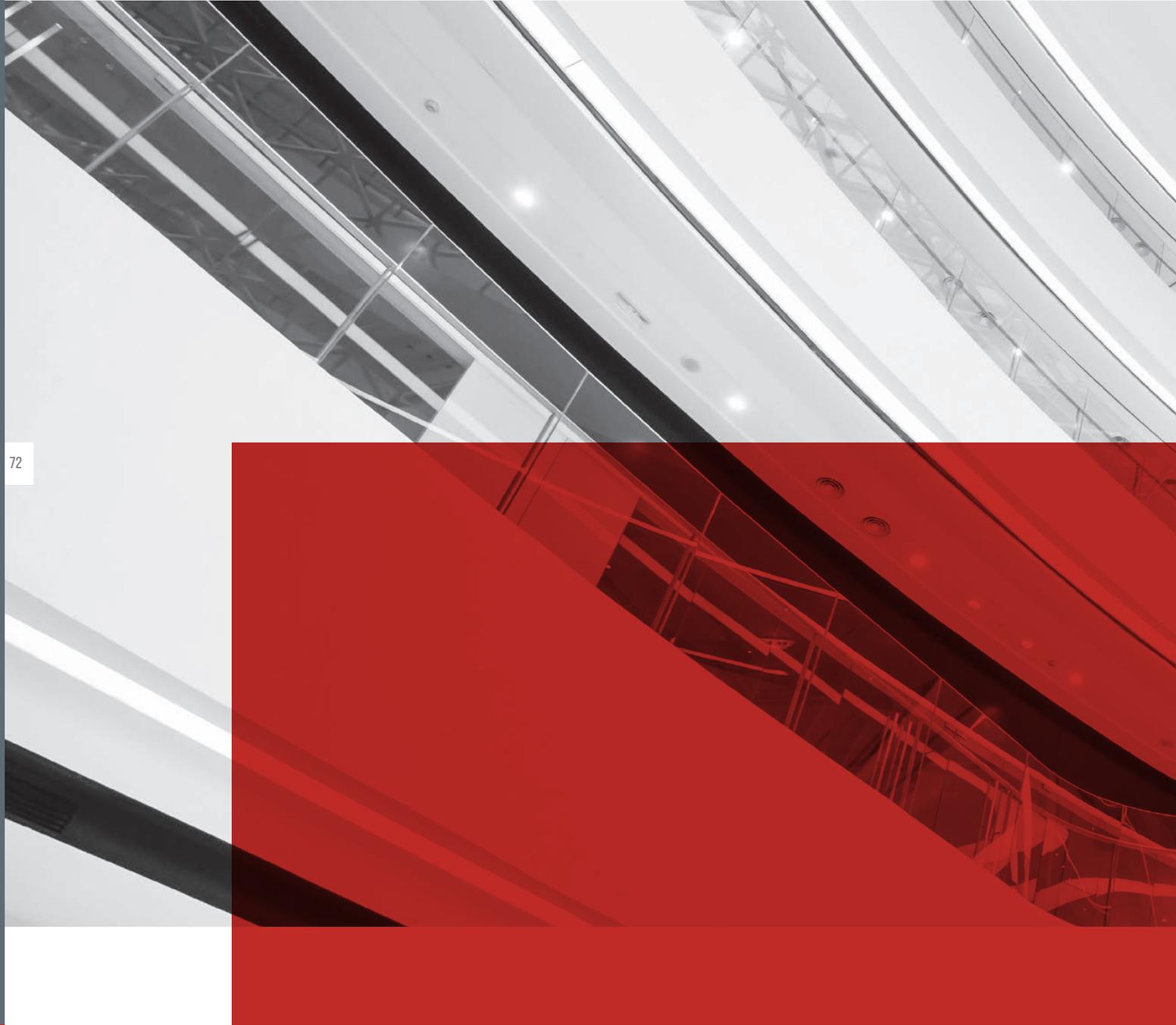
GRÁFICO IV.9. RELAÇÃO CRÉDITO HABITACIONAL/PIB, PAÍSES EMERGENTES, MÉDIA 2010-11.



Source: Haver Analytics, local authorities and IMF staff calculation.
 Note: Graph copied from the IMF (2012).

GRÁFICO IV.9. RELAÇÃO CRÉDITO HABITACIONAL/PIB, PAÍSES EMERGENTES, MÉDIA 2010-11.







#CONCLUSION



#CONCLUSION

Under any perspective, Brazil invests too little in infrastructure. In relation to our own past, there has been a reduction from the 1970s on, when we used to invest an average of 5.4% of the GDP to between 2.0% and 2.5% of the GDP. Compared against other countries, we also invest little in infrastructure. Especially, countries from East Asia are consistently investing more than 5% of the GDP in infrastructure. Finally, we also invest little in our needs. There is a rule of thumb that determines 3% of the GDP as the minimum threshold required to keep the existing infrastructure stock. Considering our gaps, we should invest at least 5% of the GDP during several years in order to close these gaps.

The reduction of investment in infrastructure in Brazil can be credited to two key factors:

I) Economic adjustment programs. Since the 1980s, Brazil has been experiencing several economic crises, being forced in many of them (such as in 1982, 1990, 1999, and 2003) to make fiscal adjustments. Traditionally fiscal adjustments focus on slashing investments as opposed to operational expenditure.

II) Non-substitution of public investment for private investment. When the privatization program was launched, the State expected to perform the role of regulator, transferring to the private sector the job of investing. Improper regulatory benchmark, lack of autonomy for the regulating entities, high capital cost, legal insecurity, and an excessive policy focus on low fees made difficult for the private sector to entry.

Investments in infrastructure, after reaching the bottom in the 2000s, resumed growth after the launch of PAC, achieving 2.45% of the GDP in 2013. There is no data for 2014, but facing the perspectives of overall investment rate reduction, it is expected that the investment in infrastructure have also been reduced. It is feared now that due to another fiscal adjustment,

once more the government cuts investments more intensely than current expenses.

We understand that this policy is risky and unnecessary. It is risky because the lack of infrastructure is huge, both quantitative and qualitative. Even admitting that some infrastructure sectors are performing well, such as telecom, the overall situation is quite poor. The most recent World Economic Forum report for 2014/15, for instance, ranked Brazil's infrastructure in 120th place out of 144 countries, with a negative highlight on highways and ports.

It is critical to develop our infrastructure to ensure higher GDP growth rates in a sustainable fashion. Literature shows how investing in infrastructure supports strong economic growth. For Latin America, there are evidences that these investments lead not only to the GDP growth but also to improving income distribution. For Brazil, particularly, to improve and expand infrastructure is even more important face to the low productivity growth.

As a long term strategy to increase investments in infrastructure, it is necessary: i) to increase the local savings rate to generate the funds required to finance expenditures; ii) to make investing more attractive to the private sector, which requires to build a business environment more favorable and a behavior more inclined to privatizations by the public sector; iii) better planning to avoid waste.

2015 started with the implementation of a macroeconomic adjustment that is required due to the deterioration of several indicators. Particularly, there has been a worsening of the public accounts situation, as well as for inflation perspectives and for the external accounts. Still, the current situation allows - and recommends for - that the adjustment is carried out so to preserve to the maximum extent possible

the investments from the public sector, particularly those in infrastructure.

The current situation **allows** for continuing investments in infrastructure because, instead of past crises, there are no exchange rate crisis or liquidity issues. For this reason, there is no barrier preventing those financially sound projects, i.e., those in which the internal return rate is equal or higher than debt cost, should prosper. As there are no liquidity constraints, the public sector manages to get the necessary resources to bear initial costs incurred by implementing the project.

The current situation **recommends** to continue to investing in infrastructure by two key reasons. First, the current crisis is mainly a demand crisis. Both the installed capacity utilization rate as unemployment rates indicate that there is no idle capacity in the economy, albeit we are undergoing a stagnation period. In this context, it is critical to increase productivity. In the long term, this is achievable by investing heavily in human capital. But, in the short term, the best strategy is to expand the aggregated supply with investments. Investments in infrastructure are particularly desirable in the current environment, as they positively impact economy's productivity across the board.

Secondly, we understand that despite there is no idle capacity, a macroeconomic adjustment program should lead to more unemployment and reduction of the installed capacity utilization. In normal crises, a well executed adjustment program restores economic agent trust, that resume purchasing and investing. The problem is that in the current crisis, the prognostics are not favorable to recover the aggregated demand components, especially for investing. Adding to the current uncertain environment, which is common in times of crisis, the consequences of the so-called "Carwash Operation", high debt levels and the worsening of risk perceptions shall force Petrobras, the state-owned oil company in charge of some 10 of investments made in Brazil, to review its expenditure plans. A looming rationing of water and energy shall cause private sector investments to reduce even further. If the private sector

is not investing, the public sector shall keep investing in activities it was investing before, as a minimum.

According to accounting criteria recently adopted by Treasury, near 20% of public investment is directed to the My House, My Life housing program (MCMV). Although it is not an infrastructure investment, it is important to consider it as it is one of the most investment programs (if not the most important) with a broad social reach, in terms of expenditure and the number of beneficiaries. Despite it does not bring any future tax revenue for the government, as other investments do, MCMV directly impacts the country investment rate and causes the GDP to increase due to rents saved.

MCMV has high costs, but its social reach is also of relevance. Low income families cannot afford to rent or buy a house. Poorer families will not be able to live in decent houses if some subsidy is offered to them. Despite MCMV exists since 2009, the country's housing gap remains high. Credit is still low at approximately 8%, below the emerging economies average that is near 12%. Thus, it is necessary to expand the housing market in Brazil. Finally, considering that civil construction requires intensive workforce, incentives to this sector can contribute to keep employment levels high, which is important in periods of economic stagnation as the one we are in now.

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