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# **Infrastructure Investments in Brazil**

# Limited investment in infrastructure...

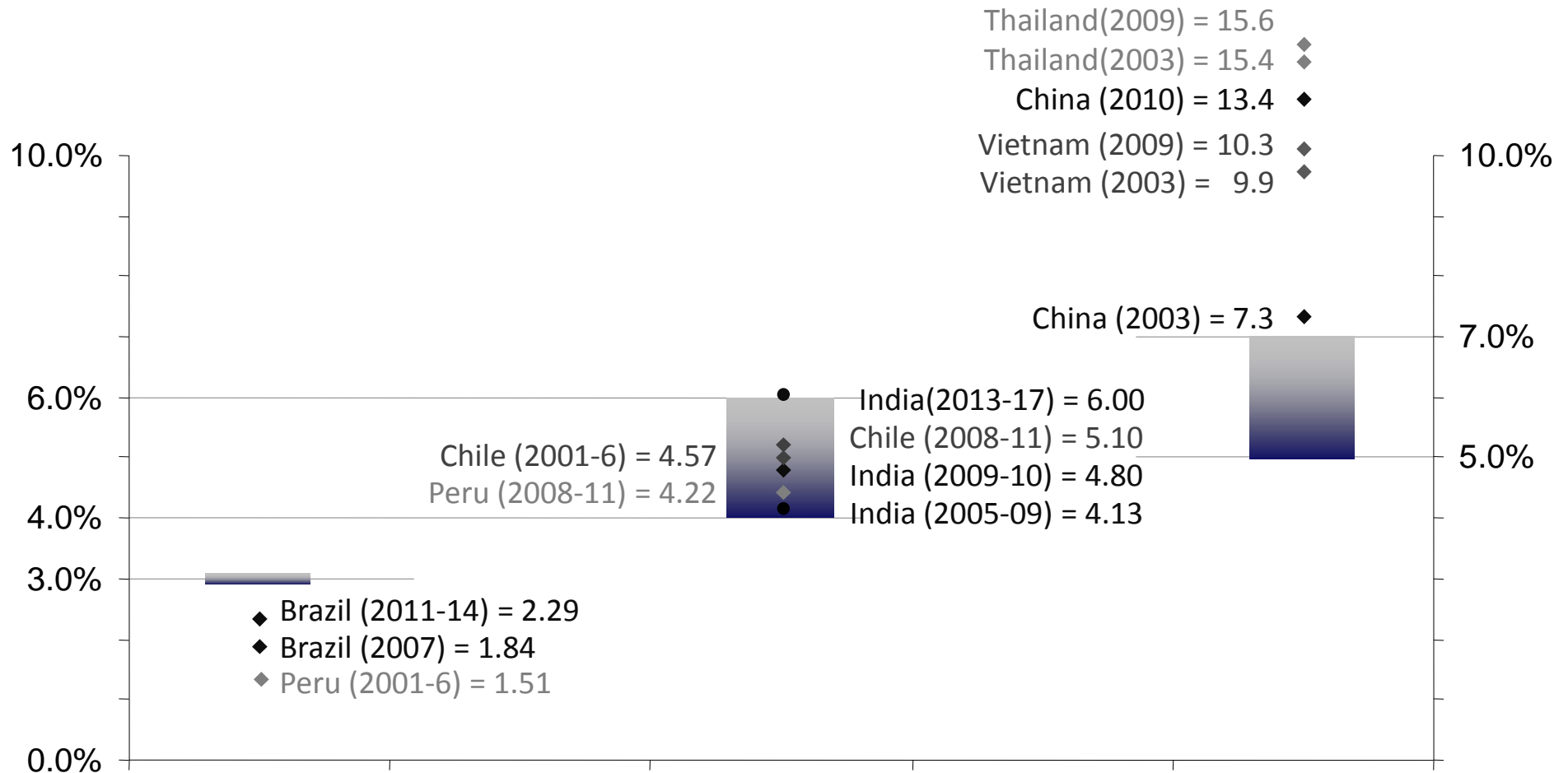
- Infrastructure investments have tended towards 2.1% to 2.3% of GDP in the last two-and-a-half decades.
- Sharp declines in energy and sanitation.

## Infrastructure Investment in Brazil (% of GDP)

Period	1971/80	1981/89	1990/2000	2001/10	2011/14
Total (% GDP)	5.42	3.62	2.29	2.12	2.29
Electricity	2.13	1.47	0.76	0.62	0.70
Telecommunications	0.80	0.43	0.73	0.69	0.49
Transport	2.03	1.48	0.63	0.63	0.90
Water & Sanitation	0.46	0.24	0.15	0.18	0.19

Sources: Castelar Pinheiro (2012) and Frischtak (2011). Inter.B Consultoria

# ...does not offset per capita depreciation



Maintain the existing stock of capital *per capita* while progressively universalizing water/sanitation and electricity services.

Reach the current levels of South Korea and other East Asian industrialized countries.

Drive economic growth and close the gap, in the next 15-20 years, on the advanced emerging economies.

# The collapse in 2015...

- If in 2014 infrastructure investments were R\$ 130.9 Bi (2.37% of GDP), in 2015 it is estimated that they will contract to R\$ 106.4 Bi, a decline of 19% in nominal terms.

## Infrastructure investment by sector (% of GDP)

Sector	2014	% do PIB	2015p	% do PIB	Δ15/14
<b>Electrical Energy</b>	37.5	0.68%	32.6	0.58%	-13%
<b>Telecommunications</b>	29.3	0.53%	19.8	0.34%	-32%
<b>Transport</b>	53.1	0.96%	44.0	0.71%	-17%
<i>Road Transport</i>	26.0	0.47%	23.8	0.32%	-9%
<i>Rail Transport</i>	9.0	0.16%	6.5	0.14%	-27%
<i>Urban Mobility</i>	8.9	0.16%	6.5	0.12%	-27%
<i>Airports</i>	4.7	0.09%	3.9	0.06%	-18%
<i>Ports</i>	3.8	0.07%	2.3	0.06%	-40%
<i>Waterways</i>	0.7	0.01%	1.1	0.02%	58%
<b>Sanitation</b>	11.0	0.20%	10.0	0.17%	-9%
<b>Total Infra. Invest.</b>	130.9	2.37%	106.4	1.80%	-19%

Source: (Public and private) corporations; Siafi, CNI; Ipeadata; Transparency Portal; Central Bank and own calculations and estimates

# ...and the potential recovery 2016-2018

- If the LIP II is successful, there will be a gradual resumption in the period 2016-18.

## Infrastructure investment by sector between 2015-18, in nominal R\$ Billions

Sector	2015	2016	2017	2018
<b>Electrical Energy</b>	<b>32.6</b>	<b>35.2</b>	<b>36.0</b>	<b>30.2</b>
<b>Telecommunications</b>	<b>19.8</b>	<b>16.9</b>	<b>18.2</b>	<b>20.5</b>
<b>Sanitation</b>	<b>10.0</b>	<b>11.1</b>	<b>13.4</b>	<b>13.7</b>
<b>Transport</b>	<b>44.1</b>	<b>50.4</b>	<b>60.3</b>	<b>69.7</b>
Road Transport	23.8	24.7	27.7	31.0
Rail Transport	6.5	6.6	7.5	8.6
Airports	3.9	5.7	6.7	8.0
Ports	2.3	4.7	7.2	9.1
Waterways	1.1	1.2	2.0	2.0
Urban Mobility	6.5	7.5	9.2	11.0
<b>Total</b>	<b>106.4</b>	<b>113.6</b>	<b>128.0</b>	<b>134.2</b>

Source: (Public and private) corporations; Siafi, CNI; Ipeadata; Transparency Portal; Central Bank and own calculations and estimates

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# Urban Infrastructure Investment and Financing

# The sanitation sector

- Investments in sanitation (water and sewage) are mainly undertaken by state companies, although private companies have been more active in recent years.

**Investment in Sanitation**  
**2011-14, in nominal R\$ Bi and % of GDP**

<b>Sanitation</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
Federal Government	1.2	1.6	1.7	1.7
% GDP	0.03	0.03	0.03	0.03
State Companies and Autonomous	6.0	6.7	7.3	7.8
% GDP	0.14	0.14	0.14	0.14
Private Companies	0.1	1.0	1.8	1.5
% GDP	0.00	0.02	0.03	0.03
<b>Total Invest.</b>	<b>7.3</b>	<b>9.2</b>	<b>10.7</b>	<b>11.0</b>
<b>% GDP</b>	<b>0.17</b>	<b>0.20</b>	<b>0.21</b>	<b>0.20</b>

Source: (Public and private) corporations; Siafi, CNI; Ipeadata; Transparency Portal; Central Bank and own calculations and estimates

# Urban mobility

- The urban mobility infrastructure is public; the rolling stock is partly private (and invested within the scope of the PPPs). Although investments have increased ...

## Investment in urban mobility infrastructure 2011-14, in nominal R\$ Bi and % of GDP

Urban Mobility	2011	2012	2013	2014
Federal Government	0.6	0.4	0.4	0.2
% GDP	0.01	0.01	0.01	0.00
State Companies and Autonomous	2.9	4.6	7.7	8.6
% GDP	0.07	0.10	0.15	0.16
<b>Total Invest.</b>	<b>3.5</b>	<b>5.0</b>	<b>8.1</b>	<b>8.9</b>
<b>% GDP</b>	<b>0.08</b>	<b>0.11</b>	<b>0.16</b>	<b>0.16</b>

Source: (Public and private) corporations; Siafi, CNI; Ipeadata; Transparency Portal; Central Bank and own calculations and estimates



# ... Investments are not sufficient...

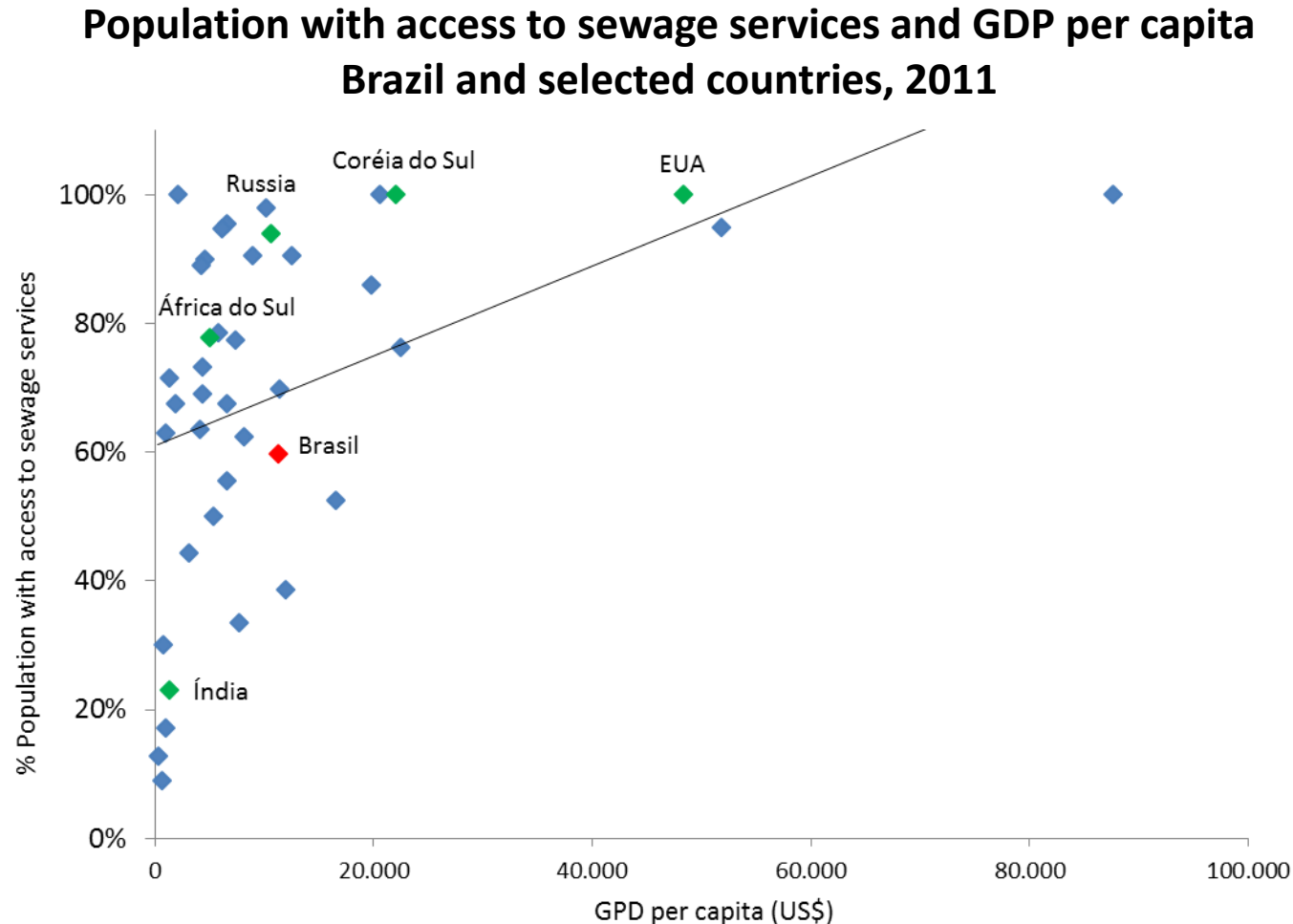
- Of the 10 most congested cities, 3 are Brazilian: Rio de Janeiro, Salvador and Recife.

Ranking	City	Country	Level of Congestion		
			Overall	Morning	Night
1	Istanbul	Turkey	58%	76%	109%
2	Mexico City	Mexico	55%	93%	89%
3	Rio de Janeiro	Brazil	51%	72%	81%
4	Moscow	Russia	50%	77%	103%
5	Salvador	Brazil	46%	62%	75%
6	Recife	Brazil	45%	81%	82%
7	Saint Petersburg	Russia	44%	67%	96%
8	Bucharest	Romania	41%	78%	82%
9	Warsaw	Poland	40%	69%	75%
10	Los Angeles	USA	39%	55%	77%

Fonte: TomTom Traffic Index

# ... whether in mobility or sanitation

- By portion of the population with access to sewage services, Brazil is below the average for the countries.



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# Much More than Government Resources

# How can urban infrastructure be financed?

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- In 2015 we will invest around 1.8% of GDP in infrastructure, of which 0.3%-0.4% in urban environments (excluding housing).
- The need is estimated at around 1% of GDP.

Where would the resources come from?

# The Private Alternative

- The sectors of urban infrastructure – urban mobility and sanitation – are basically financed by the government.
- A potentially long-lasting fiscal crisis means rethinking how to finance the country's infrastructure – and in the process, enhance the quality of the investment, extending pure concessions more frequently to PPPs.

# Long-Term Financing

- Capital Markets:

(Income tax-exempt) incentivized infrastructure debentures -  
R\$ 10,2 Bi in 2011-15

- ✓ They will take off when the business environment improves and interest rates fall.

- Stock Market:

Underutilized, and with reputational problems involving project companies

# And Commercial Banks?

- Important but still limited role, while (asset-liability) tenor mismatches and interest rate differentials prevail. The institutions present in the country:
  - ✓ Play a supplementary role (providing bridge finance and financing concessions etc.); and
  - ✓ As originators, issuers and distributors on the wholesale and retail markets.

# Project Finance

- International experience points to the importance of project finance in infrastructure.
- Significant advantages:
  - ✓ Financing for projects without overloading sponsors' balance sheets (or doing so marginally)
  - ✓ Uses private filters to guarantee the quality – and in this manner, the returns - on the projects, and their timely execution



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# Brazil: the challenges on the journey

# Crowd-In of Private Resources

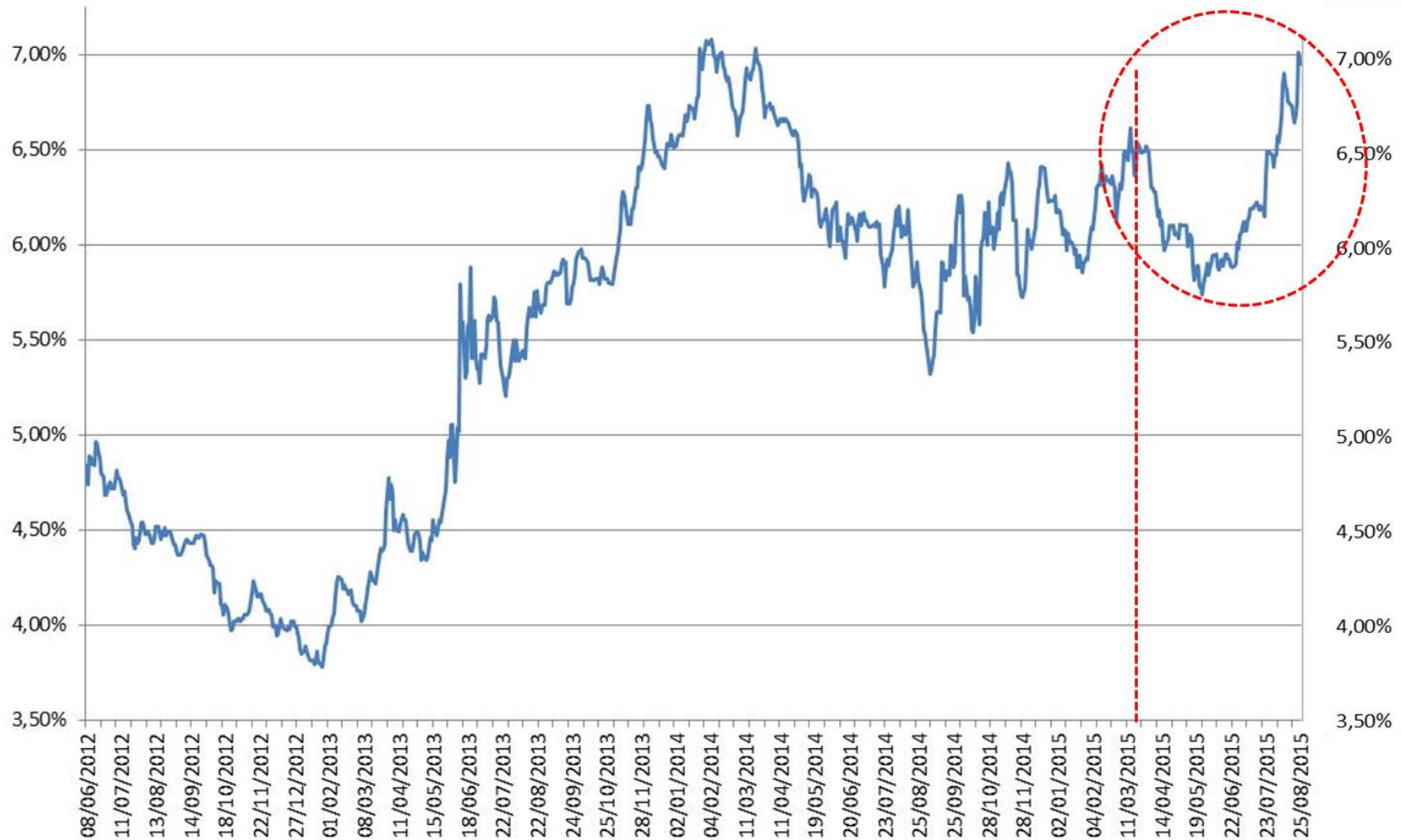
- Attracting private resources implies, firstly, macroeconomic stability that enables:
  - ✓ Lower real interest rates and country risk premiums;
  - ✓ Increased offer of long-term fixed rate securities;
  - ✓ Extending the duration of bank liabilities.

# We're still someway off

- Real long-term interest rates of 6.5% reflecting high risk premiums.
- Changing and very volatile exchange rate that mirrors the political crisis and the economic difficulties – no one knows what the break-even rate is (possibly somewhere around R\$ 3.50)
- Very high nominal deficit (8.12% of GDP in June, 12 months), negative primary surplus and adverse dynamic of the public debt.

# NTN-B 2050 (June/12 – August/15)

- Steep premiums...



Source: Brazilian Treasury

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