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FLACSO BRASIL

THE CASE OF FDI FOR BRAZIL
ONE FOREIGN OBSERVER'S VIEW

Mazen Arafat Nomura

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Contents

ANBIMA	Associação Brasileira das Entidades dos Mercados Financeiro e de Capitais
BCB	Central Bank of Brazil
BIS	Bank of International Settlements
BNDES	Banco Nacional de Desenvolvimento Econômico e Social
BRL	Brazilian Real
CEF	Caixa Econômica Federal
CNY	Chinese Yuan
COPOM	Comitê de Política Monetária
CVM	Comissão de Valores Mobiliários
ECB	European Central Bank
EM	Emerging Markets
FAT	Fundo de Amparo ao Trabalhador
FDI	Foreign Direct Investment
FPI	Foreign Portfolio Investment
G3	US, Europe, Japan
GFC	Great Financial Crisis
GFCF	Gross Fixed Capital Formation
GVC	Global Value Chain
ICL	Intercompany Loan
IMF	International Monetary Fund
IS	Import Substitution
IT	Inflation Targeting
MNC	Multinational Corporation
MNE	Multinational Enterprises
OECD	Organisation of Economic Co
OFDI	Outward FDI
PAC	Programa de Aceleracao do Crescimento
PBM	Plano Brasil Maior
PPA	Plano Pluriannual
PPI	Projeto Piloto de Investimento
PPP	Public Private Partnership
PSDB	Partido da Social Democracia Brasileira
PT	Partido dos Trabalhadores
R&D	Research and Development
REER	Real Effective Exchange Rate
RUB	Russian Ruble
SDG	Sustainable Development Goals
SELIC	Sistema Especial de Liquidação e de Custódia
SME	Small and Medium Enterprises
TFP	Total Factor Productivity
UNCTAD	UN Conference for Trade and Development
WB	World Bank

Acknowledgements

My brief was to present a non-academic, 'conversational' report on how FDI may help Brazil accomplish sustainable and inclusive growth in the country. It is meant to be a pragmatic survey and synthesis of interviews and readings conducted during a short visit to Brazil in January 2018, rather than a work that seeks to test economic theories or policy dogma or break new ground. Nevertheless, I hope it benefits from a beginner's proclivity to ignore borders, common assumptions, inherited knowledge, whilst equally, with a bit of luck, managing to form a plausible narrative.

The result of this investigation is substantially more diffuse, and ultimately quite a bit more unwieldly than the original question of how to promote SDG 17's goal of crowding-in more private investors (in our case, foreign ones). Indeed, my initial bias was along the lines of promoting FDI in Brazil by setting up a few representative offices, organising investor conferences, and promoting some targeted financial products. All that is necessary, but the sheer scale and consistency of FDI into Brazil over a quarter century and its failure to coincide with transformational, inclusive growth suggests that asking more basic questions is necessary. I found it necessary to ask why FDI seems to have disappointed, and what needs to be done to make it work for Brazil in the future. That led me, for better or worse, to tackle the larger question of why Brazil failed to experience a productivity transformation. For better because I learned much in the process, for worse as I am not particularly qualified for such an undertaking.

ENAP kindly arranged for a week in Brasilia and Rio de Janeiro where I had the privilege to interview an extraordinary group of academics, researchers and officials, all of whom were very generous with their time and insights. I benefitted from many, but I would like to highlight those who patiently educated me on the salient issues, listed here in the order of my meetings with them: Carlos Mussi, Ian Ramalho Guerriero, João Paulo de Resende, Martin Raiser, Mauro Borges, Marcos Vinicius de Souza, João Alberto De Negri, Manoel Pires, Renato Coelho Baumann das Neves, Jorge Saba Arbache Filho, Joaquim Pedro Andrés Ribeiro, and Esther Dweck. I also thank Sophie Trémolet for her efforts to professionalise the output from an essay to a report. In the end all I can hope is that they do not mind being acknowledged here, as they would know that all the errors and shortcomings are mine.

Finally, I owe a special thanks to Francisco Gaetani, the President of ENAP for inviting me to study this complex subject at a very sensitive time in Brazil, and to his Chief of Cabinet, Roberta Tiemi Saita, for helping to arrange the visits and enriching it with patient guidance about how Brazil and Brasilia work. They, however, did not tell me that 'Brazil is not for beginners,' something one of the interviewees did warn me about, alas, after I was committed.

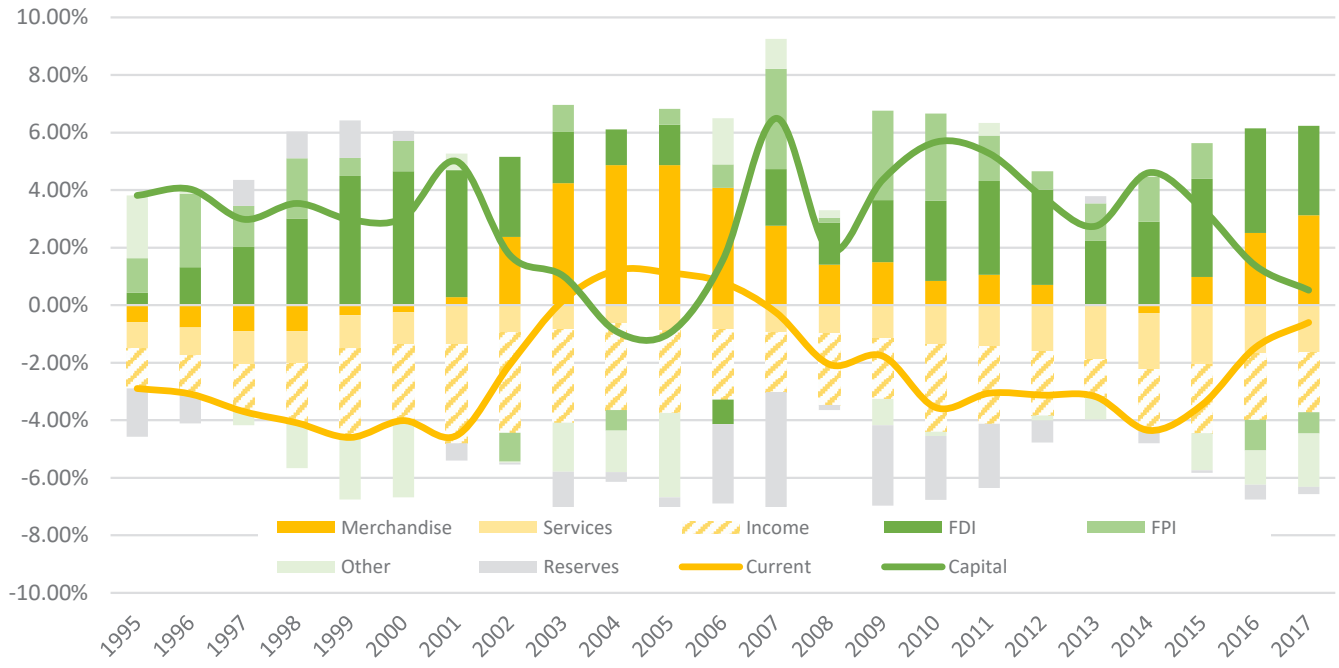
1. Executive Summary

Foreign direct investment (FDI) is an important pillar of the Sustainable Development Goals (SDG). Embedded in the 17th SDG, it is integral to the strategy of 'crowding-in' private sector savings into projects needed to achieve the ambitious SDGs, particularly in infrastructure.

In FDI, Brazil is a veteran. Its 'FDI performance' has been very impressive, consistently one of the biggest Emerging Market recipients over the past 20 years and attracting about $1 trillion in the period – a substantial number even for the 8th largest economy in the world. Based on these numbers, one could say that Brazil has been a poster-child of FDI. It has played an important role in Brazil's economy for decades and will remain important for the foreseeable future.

Its importance is most evident in stabilising the external financial position of Brazil, where it is the largest and most reliable source of external financing. This report argues, however, that without major macro- and micro-economic changes, this FDI flow will prove to be a double-edged sword, not only because inward FDI is per definition an external liability where economically rational investors require profits to be remitted, but also because in its current form FDI is not contributing to a productivity renaissance in Brazil.

Current and Capital Account, %GDP (BCB)

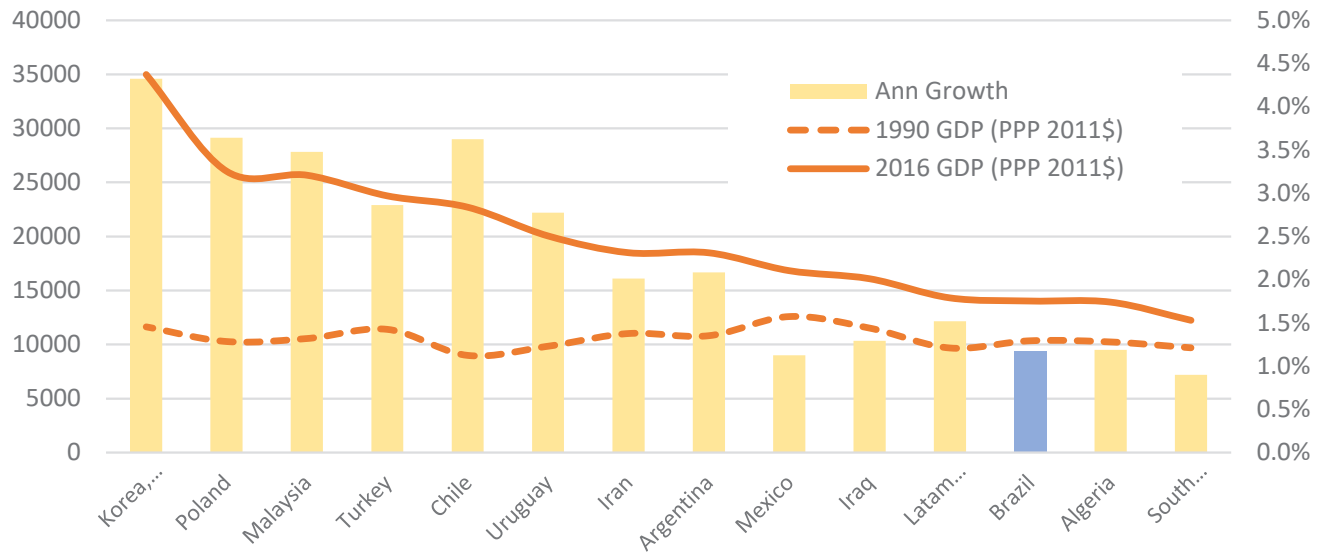


The extent to which this renaissance is needed is evident from the country's lacklustre economic performance over the same period of massive FDI inflows. Real per capita growth (PPP-adjusted) over the past 25 years has been only about 1.1% per annum.[1] Only Mexico exhibits a comparable performance, while others that were as anaemic in growth experienced major civil wars, invasion or regime change.[2] In short, this is not good company. The 'middle-income curse' is clearly not a threat, but a quarter century-old reality for Brazil. This curse also risks eroding one of the important achievements of the past quarter century, especially under the Lula and Rousseff administrations, of having improved economic inclusion by nearly 10 GINI-points. Needless to say, without productivity gains, sustainable improvements in inclusiveness are not possible given Brazil's political economy.

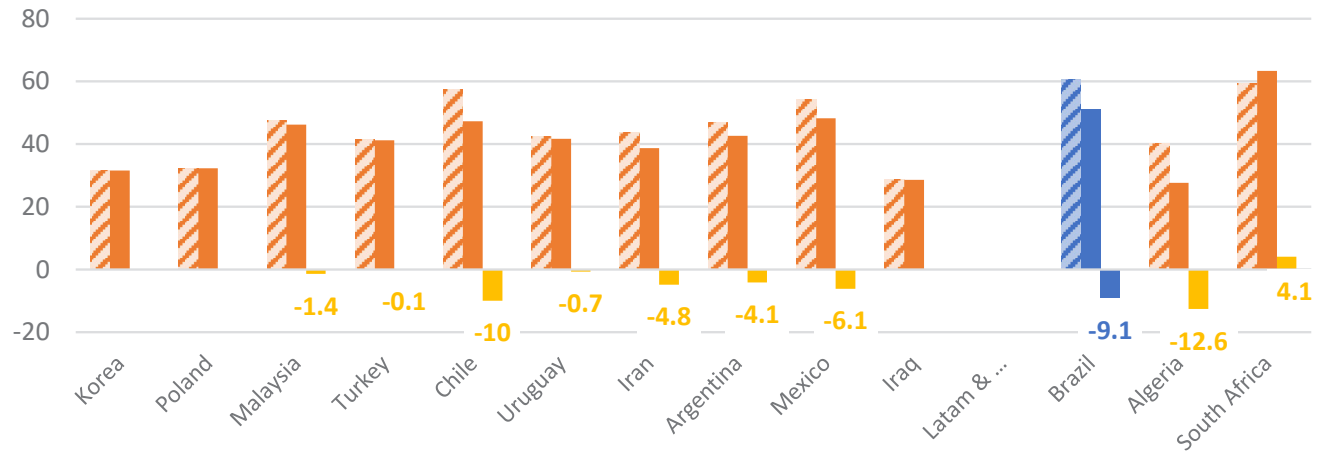
[1] BCB data. Using CAGR for the aggregate calculation.

[2] Here we take a selection of 'middle-income' countries which do not refer to a World Bank or other list. These countries were selected as they had PPP GDP per capita of around $10,000 in 1990 (at 2011 constant USD).

GDP per capita (PPP constant 2011$) growth rates and levels 1990 and 2016 (WB)



GINI 1990 vs 2016 (PovcalNet WB)



This report is deeply concerned with the contrasting performance between FDI and GDP per capita and offers suggestions on how to reverse this tendency. It may not be the case that FDI reduces productivity growth, but that unpragmatic policy and legacy political economic factors steer FDI to become part of the vicious cycles that hinder productivity growth. That is to say, FDI has been distorted to flow in such a manner that it does not contribute transformationally to productivity growth.

The report's most salient points could be summarised as follows:

- First, we must acknowledge that, generically, FDI has failed to make a sufficiently positive impact to pull Brazil out of its middle-income stagnation. The extent of the productivity failure and the corresponding failure to raise investment and savings rates are discussed in Section 2, "Brazil's productivity stagnation."
- Second, in the policy discourse, FDI needs to be discussed with precise specification and categorisation rather than merely aggregate figures that do not capture the complexity of the phenomenon. Section 3, provides a descriptive review of Brazil's inward FDI – its components, modalities, sectoral distribution, and other descriptive characteristics in order to get beyond the aggregate figures.
- Third, policy discussions need to consider more explicitly the 'costs' of FDI. These costs occur at multiple levels:

  (a) FDI are long-term foreign liabilities and not grants, and we already see how past FDI affects the external accounts of the country. FDI investors expect to repatriate earnings over time and, with about 2/3 of a trillion dollars invested in Brazil, the annual remittances outwards have already become significant.

  (b) FDI by definition entails relinquishing entrepreneurial initiative to headquarters outside Brazil. Decisions to attempt exporting from domestic plants are no longer entrepreneurial risk-taking decisions taken in Brazil but are optimised for all the production plants available to any particular MNC. While on the whole MNC's may be more rational and efficient actors, that probably means that entrepreneurial opportunities for Brazil-based businesses to learn from risk-taking are lost.

  (c) FDI, in its current configuration and given the macro policies at work, may come with a 'domestic savings substitution effect' as it contributes to consumption, discourages investment, and therefore leads to little additional savings.

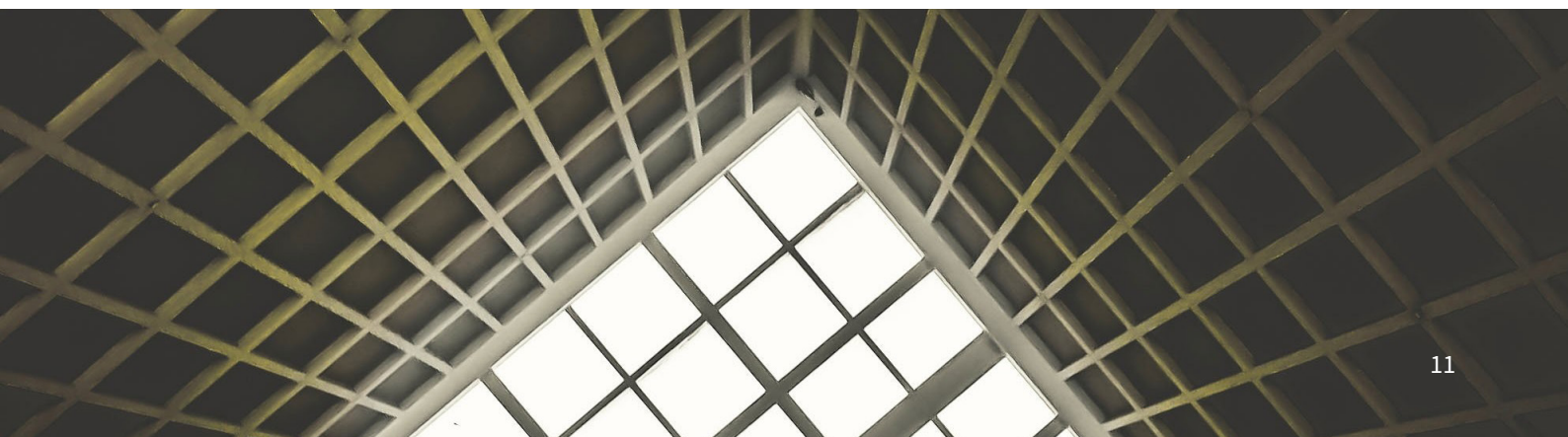
  - The key implication of this is that Brazilian policy makers need to make sure that FDI liabilities alleviate the accumulation of external liabilities by promoting exports rather than aggravating it. This is a recurrent point in the report, and the subject of a subsection entitled "Remittance of earnings" within Section 3.

- Fourth, a meaningful discussion of FDI cannot occur outside an explicit economic framework of how to repair the productivity malaise. This report suggests that the Brazilian economy is afflicted by several macro- and micro-economic processes that converge towards rent-seeking, low global integration, low savings, low investment, and therefore low productivity. 'Supply--side' failures are discussed in Section 4 entitled "Competition, exports, linkages and innovation" while more macroeconomic ones are discussed in Section 5 entitled "Savings and domestic finance."

  - 'Supply side' arguments are well-known and widely discussed by economists, policy makers and amply documented. This report is generally sympathetic with these arguments in so far as the author is convinced there is oligopolistic behaviour in various economic sectors, with FDI investors participating in this 'rent-seeking' at the top levels, while the long tail of small and inefficient domestic firms is unable to challenge these cosy arrangements.

  - Macroeconomic arguments are also well-known, where the mix of monetary tightness and fiscal rigidity has meant that vicious cycles deliver uncompetitive exchange rates, low savings, low investments, exorbitant real rates and twin deficits. Probably a proper understanding of these phenomena requires a political economy approach than merely applied economics, and is certainly beyond the scope of this report. Nevertheless, this report gives as much weight to these as it does to the microeconomic arguments. A schematic summary can be found in "Appendix: Schematic of the current context for FDI."

- Fifth, with respect to FDI, these themes converge into the distinction that is central to this report, viz. that of 'market-seeking' vs. 'efficiency-seeking' FDI. The former seeks to benefit from the size of the market and when faced with the 'custo Brasil' tends to "go native" and in fact benefit from the inefficiency of the market. By contrast, 'efficiency-seeking FDI' wishes to use Brazil as a platform from which to export to other markets and implies that there would be efficiency benefits from producing in Brazil (in other words, cheap inputs, including labour). The latter demands and drives productivity, greater domestic linkages, and therefore implies positive externalities as well as repairing current account trends. Efficiency-seeking FDI is more difficult to attract,



and of course is politically controversial as no one wants to become a host country for maquiladora. However, 'efficiency-seeking' investments are not (or no longer) synonymous with sweatshops and a more realistic assessment and strategic engagement of this type of FDI could result in transformational improvements in Brazilian productivity. Although this author could not find direct research data on Brazil's market vs efficiency seeking FDI, surrounding data strongly suggests that FDI has been market seeking. To attract export-seeking FDI and to maximise its positive externalities, policy makers need to orchestrate a coordinated shift in macro- and micro-economic policies rather than attempt it via a few changes in incentives (tax, regulatory, finance, etc.).

- Sixth, that coordinated shift implies that (secondary and tertiary sector) export growth needs to be the key policy anchor to create a virtuous cycle of competitiveness, global integration, higher investment, and higher productivity. Indeed, efficiency-seeking FDI is synonymous with exports. Export growth is not only desirable for external accounts purposes, but also for increasing savings and investments, and for attracting the more productive kind of FDI. A specific section has not been dedicated to why exports ought to play this anchoring role, however, significant portions of the 'supply-side' arguments of Section 4 as well as the macroeconomic ones of Section 5 clearly imply that reorienting the economy to exports will force, or catalyse, the changes in competitiveness, linkages, consumption, savings, and investments to increase the productivity of the Brazilian economy. Export-growth may not be a panacea, but it comes with economic characteristics that produce positive externalities that Brazil needs. Today, Brazil seems to be running the opposite strategy: in macroeconomics, a monetary and fiscal policy that encourages high REER, in microeconomic a host of policies that seem like distorted residues of import substitution culture.
- Seventh, the automotive industry is a high-profile case of the perfect marriage of multiple shortcomings: an anachronistic industrial policy that emphasises the domestic market, an outdated view of the global auto industry, a near-total domination of the sector by market-seeking FDI, and a macro-economic policy that delivers uncompetitive REER for Brazil-based producers. Notwithstanding the recent recovery (and export performance),[3] these failures mean that one of Brazil's most successful FDI sectors is also a global laggard, with low productivity, low innovation, low exports and high rent-seeking properties. The future is more interesting: what is obvious is that the sector globally is experiencing an earthquake of technological and business model changes. This means two things: firstly, that Brazil is very vulnerable to these changes and will be the last to know (as it is not in the driver's seat on any of the major issues), and secondly, that Brazil may in fact have a once in a century opportunity to strategically enter the global value chain with a modest but imaginative industrial policy that embraces EV, AV, and mobility services. This topic is briefly discussed in **Box 8: Brazil's Automotive Sector**. The evidence from past policy making is that policy will be driven by negotiating between various factor interests rather than a vision that embraces where global trends are heading.
- Eighth, the special case of infrastructure FDI requires policy attention and greater bureaucratic resources, as infrastructure is a key area of Brazilian productivity underperformance, as well as one of the greatest areas of FDI interest today (especially from Chinese investors). Getting this FDI right with good comprehensive planning, competent regulatory and execution management, prudential measures to manage risks of an abrupt Chinese slowdown, and measures to promote long-term financing – combined could prove transformational to domestic productivity, international competitiveness and export growth. This, in turn, would help attract efficiency-seeking FDI. Infrastructure management is perhaps the area of where public administration could have the greatest impact without major politico-economic realignments or national consensus building. Section 7 "The promise of infrastructure FDI" tackles this subject.
- Finally, for FDI to be properly monitored and assessed in public policy discourse, its performance should be framed in terms of how it contributes to exports and infrastructure development, stripping out transactions that do not substantially help productivity growth, such as market-seeking FDI, especially those that occur via acquisitions.

FDI for an economy of the size and complexity of Brazil is not a deus ex machina. It is more of a window into the symptoms of the problems afflicting the country. Far from being a panacea, it is merely another economic activity that reflects economic realities of Brazil and sometimes exacerbates problems and sometimes helps solve them. The role of policy makers is to make sure that the opportunities Brazil presents to foreign investors, like those it presents to domestic investors, are ones that serve the national goal of raising productivity that are consistent with the needs of inclusive and sustainable growth.

[3] Following a market induced and traumatic crash in the value of the BRL from 2014.

2. Brazil's productivity stagnation

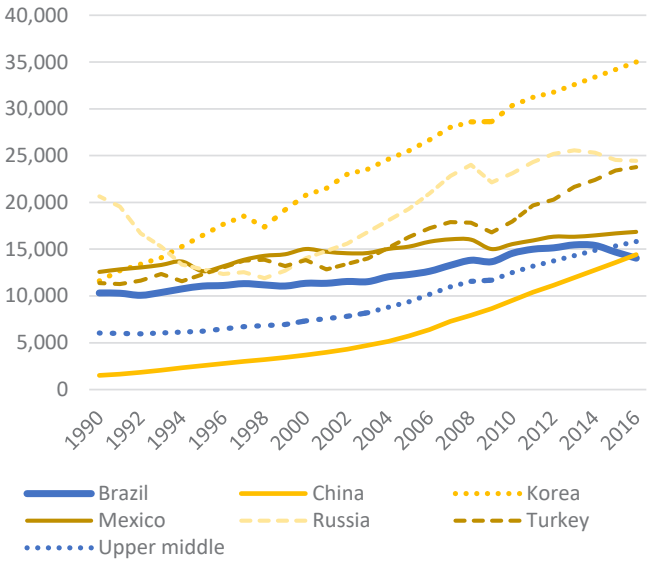
Low GDP per capita growth

As we already saw, versus a proxy group of middle income countries in 1990, Brazil has underperformed in the last 3 decades. The figure below shows how much Brazil has failed to progress on a per capita basis compared to large EM peers. GDP per capita grows with factor inputs or total factor productivity (TFP) increases (or both). In Brazil, only labour factor increases were significant during this period, and mostly in the form of formalisation of the labour force during the 'golden years' of the previous two administrations.

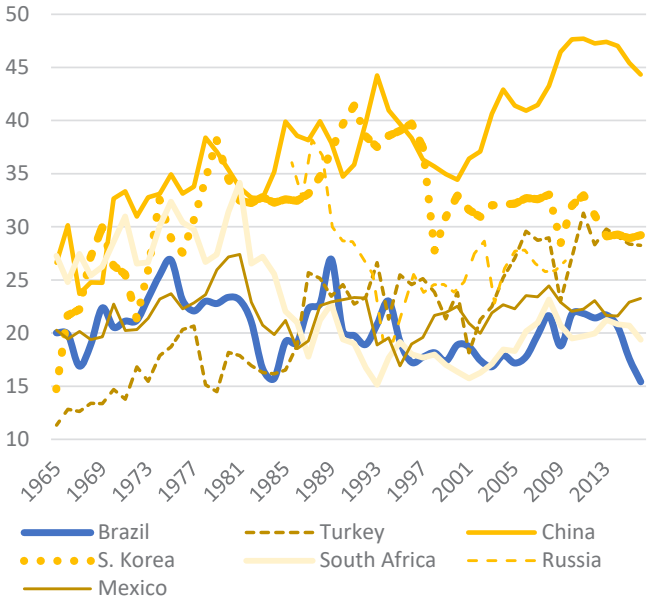
Capital investment has not been as impressive, nor has TFP, and it is pretty clear that FDI has not made any meaningful impact on these figures.

Looking at some comparative Gross Fixed Capital Formation (GFCF) figures, two important points arise. Firstly, the successful East Asian economies (here, China and South Korea) have over nearly 50 years had GFCF twice that of Brazil's. In 2016, Brazil's ratio was 15% while its peer group (upper middle income) had 32%.[4] Indeed Brazil's are even lower than other underperformers.[5] Clearly without capital investment it is impossible to raise productivity in the country.[6] This is more urgent when others are frantically investing in their productive capacities. Indeed, it has been estimated that the average age of capital goods in Brazil is 17 years, which is similar to the US's famously aging aggregate capital stock.

GDP per capita, PPP 2011$ (WB)



GFCF %GDP (WB)



[4] World Bank database.

[5] Note how Mexico, Russia and South Africa have very low GFCF levels, and these three are characterised by big, natural resource sectors like Brazil, while Turkey seems to be on an uptrend of GFCF. This may be coincidental, or the relationship between the 'natural resource curse' and low GFCF may be complex or may be referring to other common causes. See the discussion in "Savings, the external sector, and domestic financial conditions" and (de la Torre, Didier, Ize, Lederman, & Schmukler, 2015, pp. 1-40)) The huge GFCF of China and Korea are obvious features of the East Asian development.

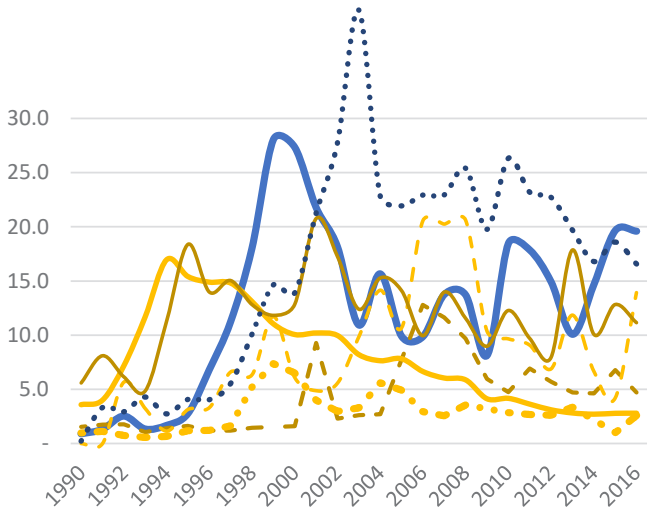
[6] A recent IMF background report identifies variables with correlations (and for more recent years, regressions) including real interest rate, terms of trade, policy uncertainty, and corporate leverage. (Barbosa, et al., 2017)

Secondly, the ratio of FDI to GFCF of Brazil has been persistently higher than most of its peers and virtually every other category except for the poorest countries (the LDC). Indeed, Brazil has had a higher ratio of FDI/GFCF in every decade, and by this measure, FDI's importance to national gross capital formation has increased in each of these decades. This observation is a trivial consequence of the fact of FDI outperformance and GFCF underperformance we discussed above. As our previous analysis of the components of FDI suggests, this is metric may overstate the ratio, as acquisition FDI may not in fact be increasing GFCF unless the Brazilian seller's proceeds are reinvested in productive assets.

Low Savings ≈ Low Investment

From an economic policy perspective, the more salient point is the well-recognised problem of very low GFCF. This is tautologically related to the low savings rate that characterises Brazil. Indeed, Brazilian officials and both orthodox and even heterodox economists uniformly commented that the persistently low savings rate necessitated FDI in the past and continue to do so in the present. Practically none of the dozen officials nor economists interviewed by this author resorted to "industrial policy" catalogue of reasons to encourage FDI: technology transfer, raising competition, export encouragement, linkages, etc. At the same time, when discussing economic competitiveness of Brazil, most emphasised the inadequate global linkages, lack of domestic competition, rent-seeking behaviour, and low productivity, and any number of associated problems. In short, FDI is widely seen as the permanent 'temporary solution' for very low savings rate but not for global integration and improved competitiveness. Throughout, this report argues against this tendency on both counts: (i)it is the 'industrial policy' aspect of FDI that requires attention and design, and (ii)FDI cannot effectively substitute for low savings and investment rates.

FDI/GFCF (UNCTAD)



Gross Savings Rate %GDP (WB)

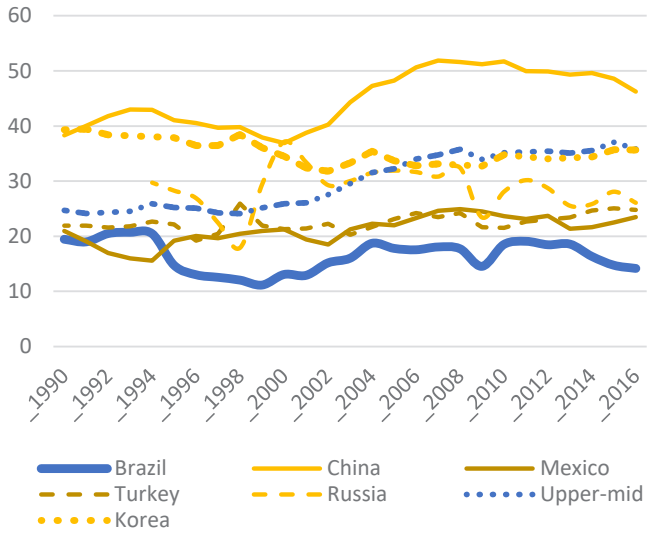
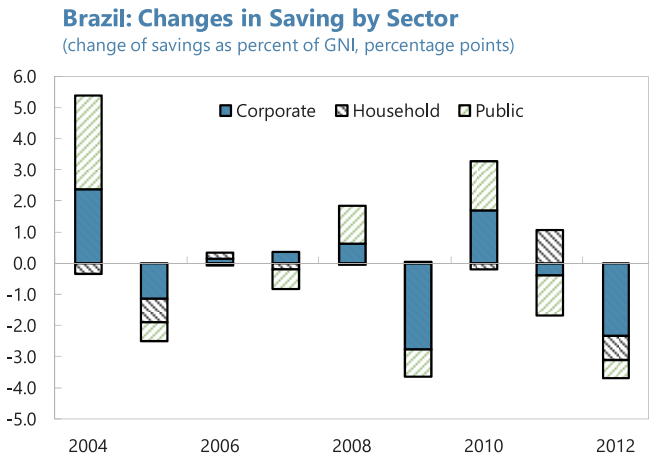


Figure 1: IMF estimates of savings components, 2004-12

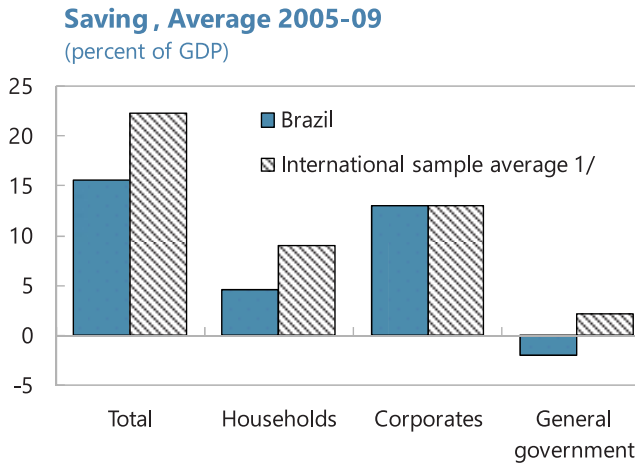


Sources: United Nations, IBGE, and staff estimates.

To address the second point first, we need a schematic picture of the low savings problem. According to an IMF report, of the three components of savings, household savings is the most consistent but the least significant.[7] *As Figure 1 shows, public and corporate sector savings are very cyclical (in fact, volatile) responding most to income changes and correlated to external balances (given the oversized importance of commodity exporters). Corporate savings, which are the most consistent with global standards correlates to the current account.*[8] *As we can see from*

Figure 2, the savings shortfall is coming mostly from households and the public sector. The former is attributable to the general poverty of much of the population, the disincentives of a generous pension system and the recent availability of consumer finances to a broad section of the population. (Roache & Ter-Martirosyan, 2013) The latter is well-known, involving too many spending commitments with a high level of rigidity and vicious debt service costs. (See in the Appendix, "Debilitating and abnormal interest rates") The sectoral distribution of savings described by the IMF reinforces the suspicion that, in the first instance, seems to not be the lack of demand for investment but the lack of supply of savings as evinced by the high interest rate.[9]

Figure 2: Brazilian savings sectors vs. OECD selection (IMF)



Sources: United Nations.
1/ Includes Chile, China, Colombia, France, Germany, Italy, Japan, Korea, Mexico, South Africa, United Kingdom, and the United States.

How FDI relates to the question of low savings is more complex, and something we will explore in a subsequent section "Savings, the external sector, and domestic financial conditions". Clearly, FDI has helped to cover the savings shortfall as represented by the current account deficit, and in recent years it has been the only source of savings. (See Figure 7).

We will try to answer why FDI has been inadequate to raise productivity, but before continuing we need to survey just how bad the productivity stagnation has been.

[7] Data globally on savings is poor, and on Brazil it is difficult to get English-language summary data.

[8] I thank Professor Manoel Carlos de Castro for this point.

[9] Evidence, so to speak, for low savings causing low investment—rather than the Kaleckian inverse where it is the lack of investment demand—is the very high interest rate prevailing in Brazil. The elevated 'risk-free rate,' real rate and domestic credit spreads are a function of 'pricing power,' which at least suggests that demand is outstripping supply. This is exacerbated by oligopolistic conditions, policy biases, etc. See (Hausmann, 2008).

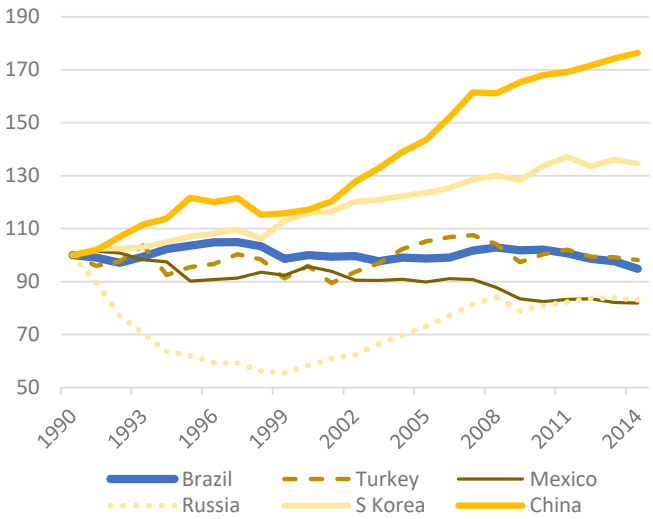
≈ Low Productivity Growth[10]

Looking back almost 4 decades, Brazil's per capita growth rate peaked in 1980 (Hausmann, 2008):[11] while it grew 4.4% from 1947 to 1980, it grew at 0.7% since. (Barbosa Filho, Productivity in Brazil, 2016) The past 25 years has indeed been something of a lost quarter century.

The urgency of raising productivity is well captured by the dismal chart plotting Total Factor Productivity (TFP)[12], the continuation of which does not bode well for Brazil's future prosperity[13] and, more urgently, its ability to deal with the impending demographic threats of the coming decades.[14]

Economists attribute whatever per capita GDP gains that has been achieved in the past 25 years to increased factor inputs. Indeed, almost 90% of the GDP growth of this period is attributed to factor inputs, with capital used and labour hours worked splitting roughly equally.[15] The TFP gains seen between 2002/3 and 2012/13 – the only decade of reasonable TFP growth – is 60% attributed to labour productivity gains (Barbosa Filho, Productivity in Brazil, 2016, p. 15), which itself is attributed largely to the reallocation of workers from the informal to the formal sector. (Barbosa Filho, Institutions and Productivity in Brazil, 2016, p. 13)

Total Factor Productivity, 1990 = 100 (FRED)



Annual GDP Growth Decomposition (Barbosa Filho)

	GDP	TFP	L	K
1982-2016	**2.4**	0.4	0.9	1.1
1982-94	**2.5**	0	1.1	1.4
1994-02	**2.3**	0.3	1.1	0.9
2002-10	**3.9**	1.6	1.1	1.2
2010-14	**2.2**	0.5	0	1.7
2014-16	**-3.7**	-1.9	-0.7	-1.1

[10] After this report was substantially completed, the World Bank published an excellent summary on the subject. (Qian, Araújo, & Nucifora, February 2018)

[11] Even on a PPP GDP per capita basis, it has averaged around 1% since 1990. See the chart in the introductory section "GDP per capita (PPP constant 2011$) growth rates and levels 1990 and 2016 (WB)"

[12] Productivity and TFP are some of the most important concepts in economics and economic life, but not necessarily the most well-understood. Paul Krugman describes TFP as "an indirect measure of technological progress, calculated as the residual – the difference between the rates of growth of an index of input and an index of output." Generally, what constitutes meaningful productivity gain is not as clear as we would like. Indeed, Krugman cites Robert Solow who described TFP as "the measure of our ignorance." (Krugman, 1999, p. 29) The central thesis of Krugman and most economists nevertheless is that instances of successful, sustainable growth require sustained TFP growth. This is indeed as well the underlying theme of the Ministry of Finance's de Mello. (de Mello, 2017). See below.

[13] See (Krugman, The Age of Diminished Expectations, US Economic Policy in the 1990s, 1990, pp. 9-17) for a very accessible discussion of the importance of productivity gains in general, and not only for achieving international competitiveness.

[14] The demographic shock (as estimated by the number of years for 65 years-old to double from 7% of the population to 14% is 21 years) is more severe than the transformation that most OECD countries experienced. Scheduled to arrive in 2032, this ominous figure is consistent with other developing countries. (Barbosa Filho, Institutions and Productivity in Brazil, 2016, p. 6)

[15] During the period from 1990 to 2012, McKinsey attributes 60% of Brazil's growth to increased labour input, i.e. increased labour population, participation, and employment. That is, only 40% of growth is attributable to gain in labour productivity. This is a huge underperformance compared to China, India and Chile which achieved much higher growth with labour productivity growth accounting for 49%, 67% and 90% respectively. (Elstrodt, Manyika, Remes, & Ellen, 2014, p. 28)

Box 1: Brazil's Low Productivity

The Ministry of Finance in 2017 produced a well-circulated presentation that tries to explain the failure of the Brazilian economy to converge to US productivity levels over the past quarter of a century.[16] The document argues that the problem is overwhelmingly one of Total Factor Productivity (TFP), and that TFP is mainly a problem of accumulated regulatory and state-interventionist distortions, and that the current administration is rapidly addressing via wide deregulation. (de Mello, 2017) I have reservations on two economic points: first, the starting assumption that capital stock has been growing – and by implication, adequately – seems unconvincing. The comparator used was the US which has PPP GDP per capita that is 4 times that of Brazil, and whose capital stock is famously stagnant for decades in critical areas such as infrastructure. Secondly, although the official has in other contexts emphasized this strongly, in the presentation infrastructure is neglected in the discussion on TFP.

TFP Decomposed as L- and K-Productivity (Barbosa Filho)

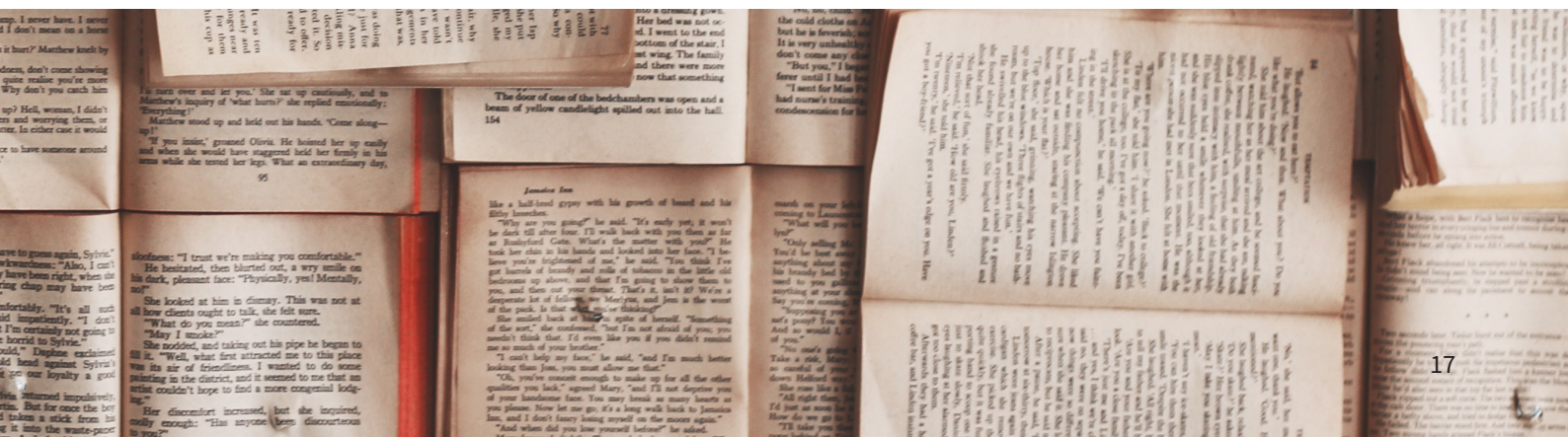
	TFP	L prod	K prod
1982-2016	**0.4**	0.6	-0.2
1982-94	**0**	0.4	-0.4
1994-02	**0.3**	0.3	0
2002-10	**1.6**	1.3	0.4
2010-14	**0.5**	1.3	-0.8
2014-16	**-1.9**	-1.5	-0.4

Barbosa Filho decomposes TFP into labour and capital productivity, leading him to conclude that "capital productivity seems the real problem." (Barbosa Filho, Productivity in Brazil, 2016, p. 7) Not only is capital sparsely deployed in Brazil (low GFCF), whatever is invested is not yielding GDP growth. It suggests that a "capital misallocation" may account for this: unproductive investments persist because of bad incentives.

The particular emphasis here is on the large tail of small, largely service sector, businesses that employ both labour and capital unproductively but are able to continue to survive because of badly designed tax and regulatory policies. (Barbosa Filho, Institutions and Productivity in Brazil, 2016, p. 15) In short, across sectors, Brazil has too high a dispersion of inefficient firms that are failing to fail and exit, while too few are actually growing. Simply put, capitalism's mechanism of delivering progress --- intra-firm competition --- is weak in Brazil. (Barbosa Filho, Labor Productivity in Brazil, 2017)

As for the labour productivity improvements of the 2000's, these were not on par with Brazil's peer group. (Elstrodt, Manyika, Remes, & Ellen, 2014, p. 28). Moreover, Barbosa Filho believes that 87% of the gain is attributable to absorption of informal labour into formal employment. (Barbosa Filho, Productivity in Brazil, 2016, p. 18). As for the structural causes of persistent productivity malaise, he cites shortcomings of education, high turnover which reduces learning (attributed to employers wanting to avoid welfare-related costs), unusually high proportion of small firm employers which are about one-third as efficient as larger firms [cite], large informal employment, and very high concentration in service sector jobs. (Barbosa Filho, Labor Productivity in Brazil, 2017)

[16] This important document essentially argues that in the past 25 years Brazil has 1)failed to achieve and hold onto any convergence gains in terms of overall productivity (measured as PPP GDP per capita, remaining at 25%, with only a substantial improvement from 2003 to 2013 which were rapidly lost in 2014-17), 2)that capital, labour, and human capital inputs have risen, while Total Factor Productivity (TFP) – the residual, or the 'mix' of the rest—has declined, 3)and the TFP deficit is intra-sectoral, i.e. within firms and between them in a sector, rather than macroeconomic, and that 4)the key to improving the 'mix' is increasing efficiency, reducing judicial risk, credit market reform, increasing openness to competition and business environment improvements.



Services Sector as a Drag on Productivity

Brazil's services sector is important to our analysis in many ways, not least because it plays a dominant role in Brazil's economy and FDI. It is also the sector that is the least productive, and the sector that persistently generates external deficits. Compared to a selection of OECD countries and peers based on 2009 PPP calculations, Brazil does not win trophies: it is worse in all three sectors compared to Mexico; it is ahead of China only in agriculture, and ahead of India only in industry. Brazil is, however, behind all in the services. (Veloso, Matos, Ferreira, & Coelho, 2016, p. 11)

Sectoral Productivity, 2009 PPP (Veloso, Matos, et al 2016)

	Total	Agriculture	Industry	Services
Brazil	14.7	4.8	19.4	15.8
US	89.3	66.3	109.9	85.6
Ireland	84.9	28.0	114.9	80.4
Australia	67.6	65.5	88.4	61.6
France	66.5	50.0	64.1	69.2
Japan	65.0	18.1	70.6	65.4
UK	56.7	25.2	70.9	54.6
South Korea	52.5	24.3	74.8	44.4
Mexico	25.3	6.1	31.4	27.8
China	14.8	3.6	25.7	18.5
India	8.4	2.2	12.0	17.3
Average of sample	47.0	25.3	52.8	48.2
Sample Average / Brazil	3.2	5.3	2.7	3.0

Not only is services productivity low, it has stagnated. In fact, in terms of productivity growth, labour productivity in the sector dropped slightly. In contrast, mining and agriculture have doubled labour productivity since 1990. (Arbache et al, 2016, p. 21)

The services sector is of course extremely diverse, encompassing tourism, retail, infrastructure, transport, investment banking, shopkeepers, maids, etc. With the exception of infrastructure, tourism, and perhaps financial services (all of which we will tackle below), the role of FDI in enhancing services productivity in the near future may be very secondary, despite the fact that it is the prime destination for these flows.

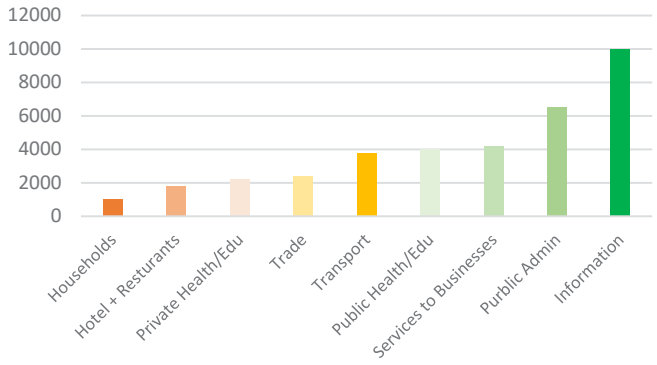
One invariable conclusion from this is that any productivity gain at the national economic level requires a transformation in the services sector by virtue of its weight in the economy. Ideally, some of the recent gains in its economic weight is redistributed back to manufacturing, but improvements in services cannot be avoided if aggregate gains are sought.[17] Moreover, the services sector also directly impacts the competitiveness of manufacturing and its export performance. (Arbache et al, 2016, pp. 25-27)

The services sector is by far the largest employer in Brazil with 65% share of employment in 2013, and more than 80% of incremental job creation or about 23 million jobs between 2000 and 2013. (World Bank, 2016, p. 73) It is also the one which shed the most jobs during the recent recession. (Arbache et al, 2016, p. 9) Worse still, low productivity jobs have the lion's share of this sector. E.g., household jobs (childcare and cleaning) constituted a fifth of jobs but a sixteenth of value added. That job creation is occurring in the least productive sectors is problematic but not entirely unique to Brazil. It would not be as troublesome if the country was on a trajectory of building other more productive sectors that are growing and forecast to absorb this workforce in the future.[18]

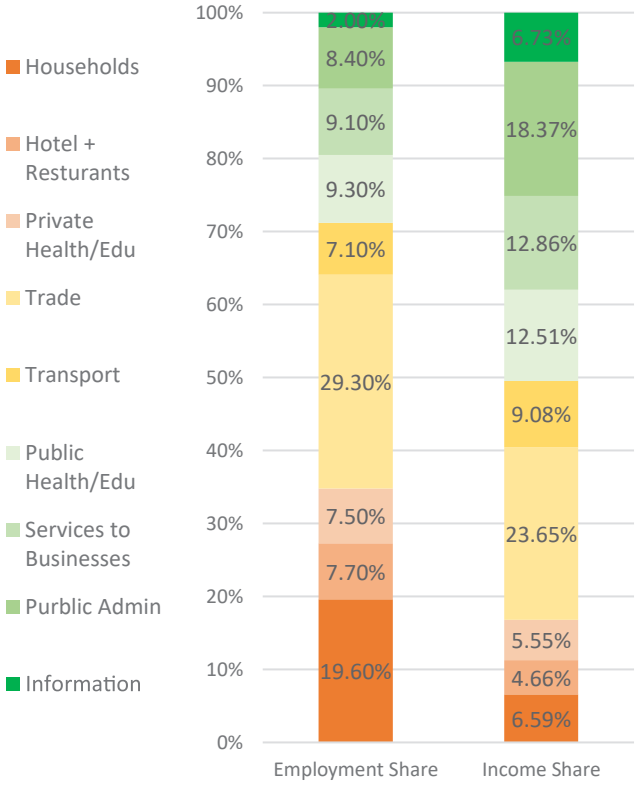
[17] For a recent and invaluable study on the services sector, as well as its interaction with FDI, consult (Arbache et al, 2016). Among the points raised, is the small average size of firms, the one-off effect of the introduction of minimum wages which impacted this low-wage sector more than others, the high turnover in this sector (4 times the rest of the economy) that discourages capital investment and on-the-job learning. (Arbache et al, 2016, p. 13)

[18] Huge portions of the services sector seem to act as 'parking lots' for the workforce as it has the lowest productivity and the highest turnover. In the long-run, the social costs of unstable jobs which do not open paths to social mobility are of course borne by the state and therefore socialised fiscally rather than as economic production. By itself, the existence of 'parking lots' is not problematic, or even may be necessary, so long as there are paths to leave it. The East Asian model in the post-war period was to use the agricultural sector as precisely such a space to absorb the unemployed, following on massive land reform that allowed land productivity to grow at the expense of labour productivity. The model worked because savings and capital were diverted to industrialisation that led to the well-known story of industrialisation. Unlike the case of Brazil's services sector, agricultural workers in Asia could be more self-sufficient, the Asian state did not feel the political need to take on as large a redistributive role given starting points of greater equality and generalised poverty, and the different expectations of post-war conditions. Also, by contrast, the Brazilian services sector constituted 62% of household consumption in 2009, which is a about 10 percentage-points above peers [and therefore a drag on savings]. (Arbache et al, 2016, p. 11)

Monthly Value-Added per Worker (WB, IBGE)



Services Subsectors, Employment and Income Shares 2009 (WB, IBGE)



3. Descriptive review of Brazilian FDI

Huge in Brazil

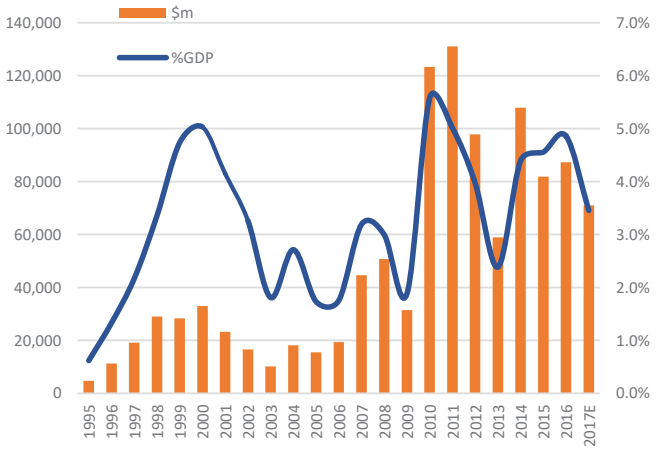
Headline FDI figures for Brazil are strong,[19] and it continues to be an EM leader in this regard, coming after China and Singapore as the 3rd largest share of FDI to EM countries. At above [$75b of inward FDI], Brazil attracts 10% of all FDI to EM countries, down from 13%. Remarkably, inward FDI was robust even in 2015/16.

The aggregate FDI inflows today are so large that they effortlessly finance the current account deficits of the past 10 years and are expected to continue at a healthy pace over the next several years. The external liquidity of Brazil is therefore very solid, with reserves stable at $380b.

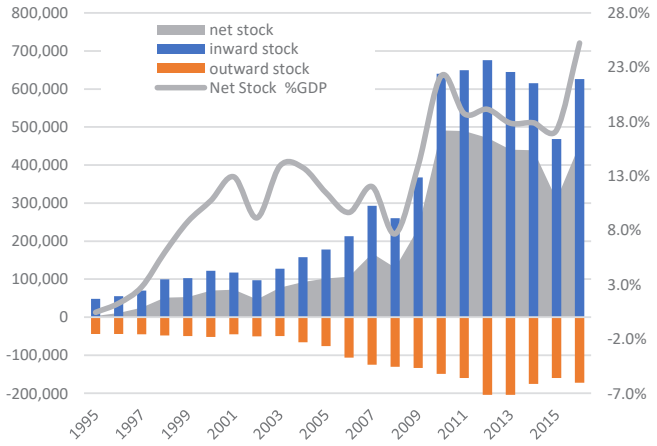
The accumulation of FDI is impressive. The sum of inward FDI over 20 years is about $1tr, but between depreciation, composition of FDI, and other factors, the actual stock seems to have flatlined at around $600b for the past decade.[20] We will investigate this further below.

It is important to remind oneself of an obvious but highly consequential point, viz. that today's FDI is tomorrow's pressure on the current account: that is, FDI investors expect to make a profit, and then repatriate some of these and will show up in the Primary Income line as debits. In the long run, therefore, it is desirable for these investments to directly or indirectly generate enough net exports to at least compensate for the repatriated dividends and interest payments of the FDI account, otherwise the inflows of today will be tomorrow's continuous outflows.

Inward FDI %GDP (BCB)

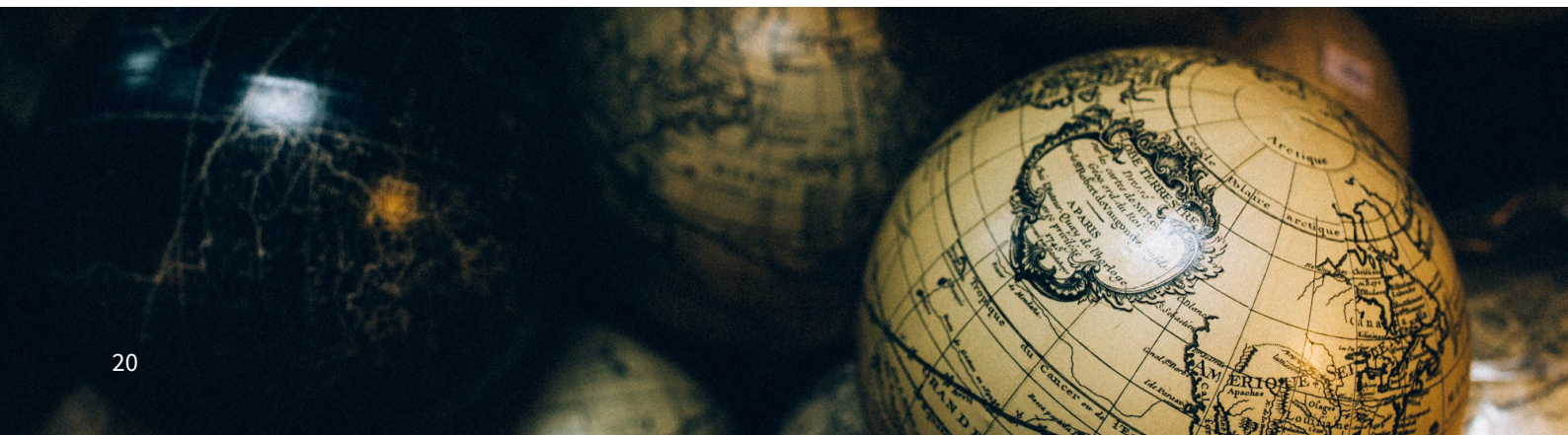


FDI Stock, $m (BCB)



[19] The chart shows inward FDI figures (i.e. not netted against outward FDI) and the 2017 numbers are only to November. Outward FDI (Brazilian firms investing abroad) is in itself interesting, and in what it may also tell us about inward FDI. Outward FDI seems to be pretty consistently about 10% of inward FDI).

[20] This figure is partially offset by about $150b of outward FDI accumulated over the years. Brazil is also a substantial FDI investor in other countries. See BCB's summary reports for a quick glance. (BCB, Department of Statistics, 2017). This report will not study outward FDI, although they are interesting and worthy of investigation not only for external balance reasons, but also for how they relate to the phenomenon of the "Translatins". See Section II of the ECLAC periodical for a useful introduction to the subject. (ECLAC, 2013, pp. 80-84)



Compared to Other EM Countries

As mentioned above, Brazil is one of the biggest EM destinations for FDI. What is even more impressive is how large these inward flows are as a percentage of GDP. Compared to other EM countries, we notice two trends: (i) FDI has constituted a mildly higher percentage of GDP for at least 10 of the past 20 years; and (ii) the ratio has been rising, to nearly 4%. Since 2009 this has significantly diverged from upper middle-income trends. In fact, it is closer to low income countries where it is easier to understand the oversized role of FDI in very poor and small economies. Very simply, the role of FDI in the Brazilian economy in purely quantitative terms is very large, especially given its size.

Sectors

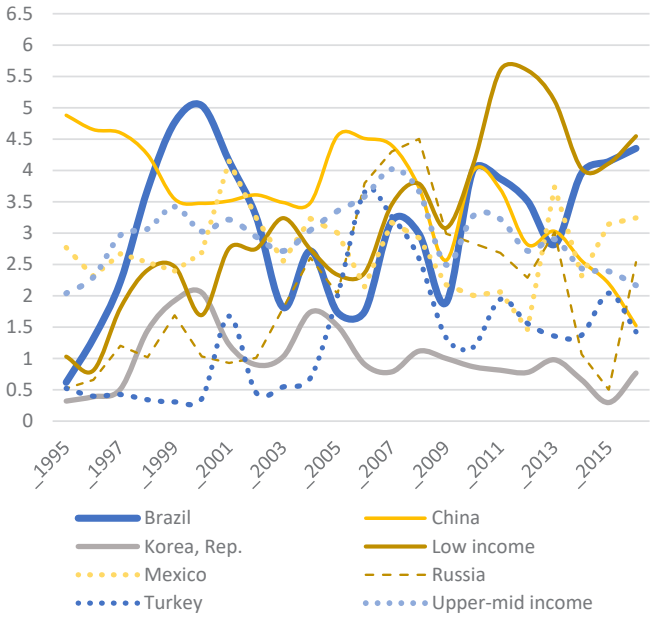
The BCB provides a breakdown of FDI inflows by sector and sub-sector. Looking at the distribution at the level of the three basic sectors, we notice that over the 3 dozen years, FDI has radically shifted from the industrial sector to services, and to a much lesser extent the primary sector.

The decline of FDI into the manufacturing sector persisted into the late 1990's and seems to have bottomed out with the Asian and Russian Crises. Nevertheless, large investments into the Brazilian services sector occurred during this period mostly involving mobile telecoms creating an outsized impact on the chart.

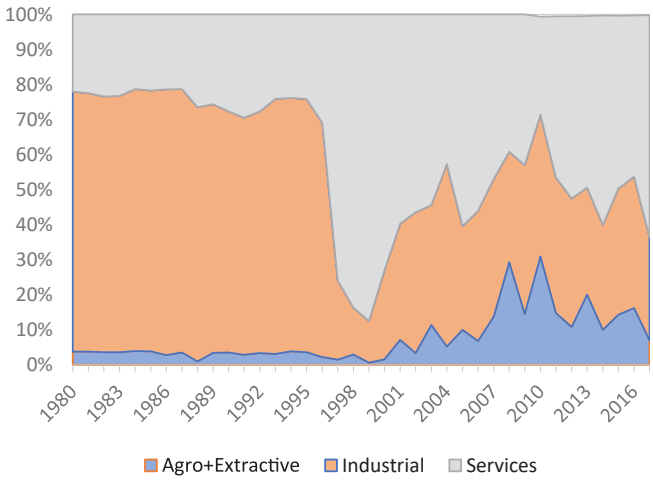
In the decade, the manufacturing sector attracted about 20 to 30% of FDI fairly consistently, though it seems to be on a downward trend. During the same period, there is a fairly clear shift of investment flows from the primary sectors to the tertiary, largely attributed to Chinese investments pivoting from strategic commodity acquisition during the boom years into infrastructure plays more recently. As a result, the tertiary sector (services) has regained its importance up to above 60% with 2017.21

Intra-sectoral distribution of FDI flows are volatile as 'lumpy' transactions can shift the proportions. Nevertheless, we can discern trends that are broadly consistent with the very dramatic changes in GDP contribution that occurred in the mid-90s from the primary and secondary sectors to the tertiary, coinciding it seems with the Tequila Crisis. There is a dramatic 15-point shift of value towards services, where probably the financial sector began to rise in prominence in the Brazilian economy.[22] The result is that the services sector has an outsized importance in the economy[23] and in FDI, both of which may effect a pre-mature 'de-industrialisation,' something which should worry politicians and policymakers.[24]

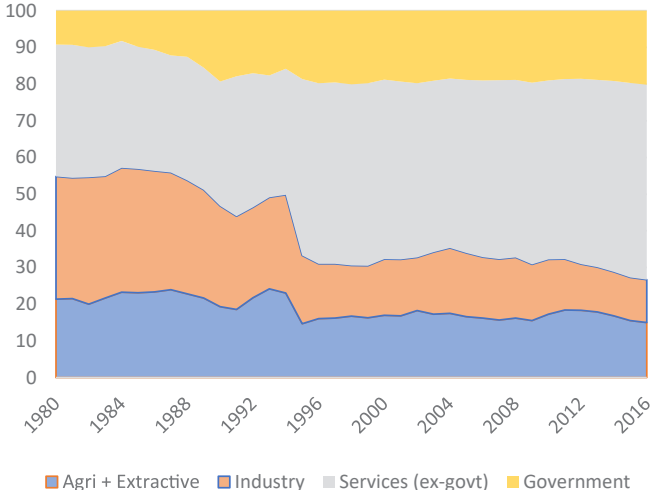
Inward FDI %GDP, Brazil vs other EM (WB)



Sectors %FDI (BCB)



Sectors %GDP (WB)



[21] N.B. These figures include only 11 months of 2017

[22] One economist interviewed by the author suggested that the 'petro--dollar crisis' of the late 1980s was the defining moment when politico--economic power in Brazil shifted from the industrial and even extractive sector to the financial sector.

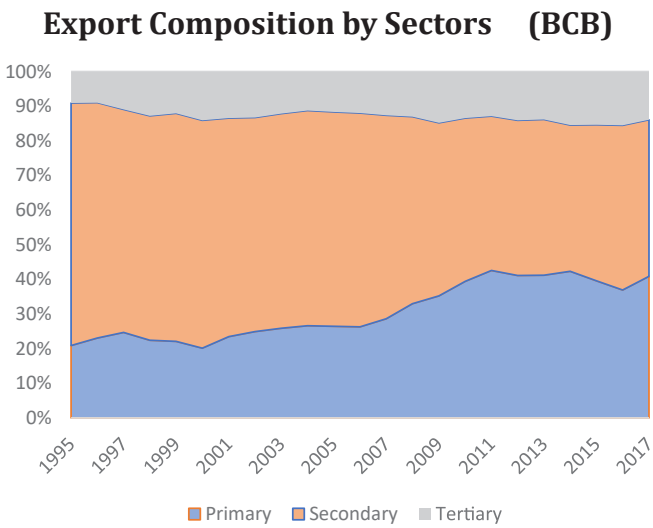
[23] See (Arbache, Rouzet, & Spinelli, 2016, p. 8), although they use slightly different data for GDP contributions.

[24] See Dani Rodrick's work on the subject.

Sectors and Exports

There is a 'disappointing' incongruence between the sectoral composition of FDI into Brazil and the export contribution of the sectors. As we can see, Brazil's exports are mainly primary and secondary sectors, with services not constituting more than 15% of export value.[25] However, it is services that is attracting a rising proportion of FDI, between 50 to 60% in recent years. Manufacturing receives 20 to 30% of FDI and yet constitute about 50% of exports.

This is a topic we will return to in more detail in sections further below.



[25] [Even this figure may be overstating the services exports, as there have been large leasing items since 2004 related to the Presalts investments under the services line in both export and imports, which cancel out. These figures are about $16b which would reduce the Tertiary exports to 10% of total exports.]

Box 2: Limitations and Potentialities of Some Services FDI

The tertiary sector is a broad category that includes such diverse industries as financial services, retail, infrastructure, utilities, logistics, etc. *Nevertheless, they share a few unflattering characteristics:* (i) firstly, services is not where Brazil is particularly globally competitive to start off with, and therefore productive linkages are less likely[26]; (ii) secondly, according to the OECD, services FDI is associated with higher propensity to import and less to export.[27] That is to say, these investments probably do not directly help Brazil increase productivity, international competitiveness and supply chain integration.

As we will see, Brazil's aggregate services productivity is the worst among peers. Indeed, Brazil runs a deficit in its services line of over -1.5% of GDP and projected to remain that way. While both growth in imports and exports of services has outstripped Latin American peers, they have lagged those of the remaining BRIC nations.

While financial services received some of the largest FDI, in the form of acquisitions, in the late 1990's and mid-2000's, this has not translated into large exports. It is difficult to imagine that Brazil could become a real international financial powerhouse with its low savings rate and some of the world's highest cost of capital, as encapsulated in the legendarily high risk-free real interest rates and spreads. The motivation for FDI investors into this sector is surely to participate in the lucrative domestic market more than to use it as a launchpad into the rest of Latin America. Interestingly, however, financial services are equal to about a third of the stock of Brazilian outward FDI, standing at over $100b in 2013. (Arbache et al, 2016, p. 24)

Nevertheless, services have huge impact on the productivity of the other sectors via the quality and cost of services sold, as well as externalities. Infrastructure, transport and logistics investments are classified as services, and these are areas where Brazil consistently ranks badly compared to other middle-income countries. See a more detailed discussion below. Moreover, IT, business services, engineering, construction, research, marketing, etc. are all inputs into manufacturing and extractive / agricultural sectors. See (Arbache, Rouzet, & Spinelli, 2016, pp. 25-27)

Box 3: FDI Definitions and Compositions

The primary distinguishing definitional characteristic of FDI is *control*, with other characteristics generally deriving from it. The OECD definition of FDI includes more than just direct equity investments. (OECD, 2008) The emphasis of the definitions is on control and longevity or strength of commitment the investment represents.

We are concerned here with the composition of FDI. To simplify, they include:

- Direct equity
- Inter-company loans (ICL)
- Re-investment of earnings

Furthermore, a distinction between *'greenfield' and 'brownfield'* investments can be made, the latter being an acquisition transaction of a private or public (listed) entity.

FDI can also coincide with a government *privatisation*, as has happened frequently in the 1990s or *infrastructure concessions*, as is occurring today.

[26] See further below on the relationship between proximity of technological accomplishment between FDI investor and host country for the increase in "backward linkages."

[27] "In the services sector, all affiliates under foreign control have significantly greater propensities to import than to export… Export propensities in services are significantly smaller than in manufacturing industries. This seems to suggest that the local market is more important for services activities. Services are typically more difficult to export than goods, although the international transferability of services has increased lasting recent years." (OECD, 2010, p. 180)

Acquisitions versus Greenfield

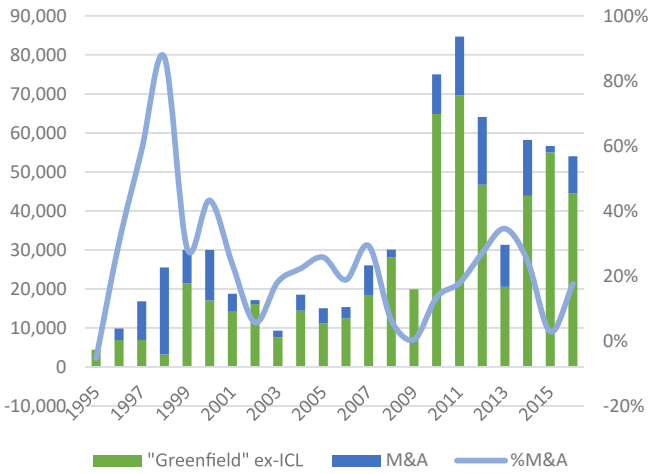
Whether investments are M&A or greenfield may have important implications on the external account, Gross Fixed Capital Formation (GFCF) levels, sectorally, and fiscally (if the acquisition is a privatisation or concession – a big theme of recent years).

With M&A sales, Brazilian businesses are partially or wholly selling to foreign investors. The motivations for such intricate deals as cross-border acquisition are of course complex, ranging from sellers required to dispose by anti-trust regulation, to strategic decisions at corporate levels to enter a market, to family businesses 'giving up' at points of succession, to entrepreneurs 'cashing out,' and so on. What is salient for us however is that an FDI inflow via acquisition translates into GFCF only if the sellers redeploy the funds within the same year into productive sectors in Brazil. There is no way to rigorously compile this type of data and arrive at scientific conclusions. Nevertheless, it is clear that acquisitions necessarily imply a lower chance that FDI inflows are fully redeployed as GFCF. On the other hand, the foreign investor could simultaneously enter into substantial commitments to invest more capital in the business via earnings reinvestments or intercompany loans.[28]

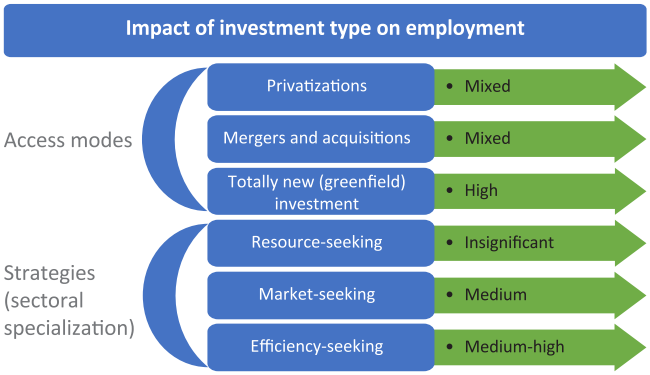
Moreover, the preference for greenfield over acquisitions is also evident in terms of impact on employment. Based on research on FDI in the period 1990-2004 by Ernst et al (Ernst, 2007, p. 102), an ECLAC study has produced the following table of how different types of FDI (by sectoral specialisations and access modes) affect employment in FDI receiving countries. (ECLAC, 2013, p. 108)

While no specific study in English was found on the Brazilian experience, the UN Economic Commission for Latin America and the Caribbean (ECLAC) has done some work on Latin America generally, and given Brazil's weight in the region, the results should amply reflect the Brazilian experience. (ECLAC, 2013)

"Greenfield" vs. M&A FDI, m$ (UNCTAD)



Latin America and the Caribbean: types of inward foreign direct investment and effects on employment, 1990-2004



Using UNCTAD figures, the percent of M&A transactions to gross inward FDI is between 0 and well over 50%, with 2016 registering about 16%. (UNCTAD, 1990-2016)[29] The fluctuations are huge, reflecting how complex and unstandardized an FDI investment decision is, changing as dominant themes evolve with opportunities. In the 1990s, the theme in Brazil was privatisation as in the rest of Latin America along with acquisitions of private companies in the resources sector. In the 2000s, greenfield investments seem to have returned to centre-stage. Today, the theme has again returned to privatisations, but this time with a strong emphasis on infrastructure concessions and concomitant investment commitments.

[28] To aggregate meaningfully this information is not a small task. Furthermore, there is no easy and reliable way of assessing how Brazilian sellers have redeployed the funds they received upon sales, a major lacuna for a proper assessment of the importance of FDI on the Brazilian economy. E.g., we know that about $1 trillion of FDI were received in the past 20 years. If, for illustrative purposes, we assume that 25% were ultimately received as payments for M&A disposals, it would be interesting to ask how $250b were redeployed. Were they re-invested in productive investments? Were they placed in bank accounts or SELIC-tracking investments? Were they even kept in the country?

[29] These figures conflict with some headline figures citing Dealogic. [Cite] They also conflict with an analyst from Capital Economics, a London-based research firm, who believes that about 75 to 80% of FDI into Brazil is M&A. [Cite] Although the author has not been able to ascertain how UNCTAD compiles the M&A data, it is interesting that economists tend to cite higher figures based on previous experiences from the 1990s.

Box 4: The Politics of Privatisations

Privatisations --- and more generally regulations around strategic sector and infrastructure FDI – are deeply intertwined with the ideological agendas and political discourses of all the governments since FDI became such a prominent feature of the Brazilian economy.

Brazil was a leader in privatisations in the 1990s, which fuelled the enormous FDI surge in Brazil. It also fuelled a lot of debate and negative sentiment about FDI in Brazil, where the perception has been that privatisations occurred "when the country was on its knees," and therefore sold prize assets at dirt cheap prices.[30] It also is associated with layoffs to improve efficiency.[31] In terms of ownership and control, however, the reality seems to be more complicated, with large domestic participation (especially the nascent pensions funds), included old recycled money (e.g., GE Brazil), and the government ended up retaining 'golden shares'.[32] Moreover, some of the privatisations were generally well executed, such as the electricity sector and oil and gas sectors. At the same time, it is recognised by many, as this report will assert, that FDI did not lead to growth, productivity gains, competition, GFCF, or exports.

However, the debate was highly politicised with the PSDB defending the privatisations and the PT vehemently leading the popular campaign against it. In the 2000s, in power, the PT (especially under Dilma Rousseff) tried privatisations with conditional policies such as controls on profit, employment quotas, environmental restrictions, and local content requirements that were in turn sweetened by BNDES financings. These policies have been actively and prominently unwound by the present government, in a return to the model of the 1990s.

What is clear is that there is a pattern in Brazil where political and macroeconomic crises lead to new governments and massive swings in policy, with a rushed, 'shock-therapy' style of implementation. Not all unjustified, but complex and politically charged manoeuvres such as privatisation and concessions require precision and cool-headed thinking that accumulates over years. A theme we pursue below with respect to the infrastructure FDI 'bonanza' is that stronger performance from government agents in planning, execution and regulatory. (See the section "The promise of infrastructure FDI.")

[30] A useful summary in English of the privatisations of the 1990s, the investment policy liberalisations and the debates surrounding them, can be found in a short report from 2004 by Pedro da Motta Veiga. (Veiga, 2004)

[31] For a survey on FDI and employment, see Chapter III of (ECLAC, 2013)

[32] [Mauro, Manoel]

Understandably, there is strong preference in Brazil for greenfield, but as one economist interviewed said, "the problem is not FDI, but that government and institutions made it easier to acquire than to go greenfield… We need to design incentives better, not resist FDI."[33] As we shall see, the extreme complexity of the Brazilian business environment combined with the attractive size of its market invariably bias investors to purchase existing firms, and perhaps add to those investments or embark on new greenfield investments once local knowledge has been acquired, as the Chinese are expected to do.[34]

[33] Mauro Borges

[34] See (Abdenur, 2017) for an elaboration of Chinese FDI strategy in Latin America. The author identifies multiple reasons for Chinese investors to prefer acquisition modalities, among them: learning, familiarisation, reduction of political risks, conforming to local regulations, and the 'custo Brasil.'

Intercompany loans

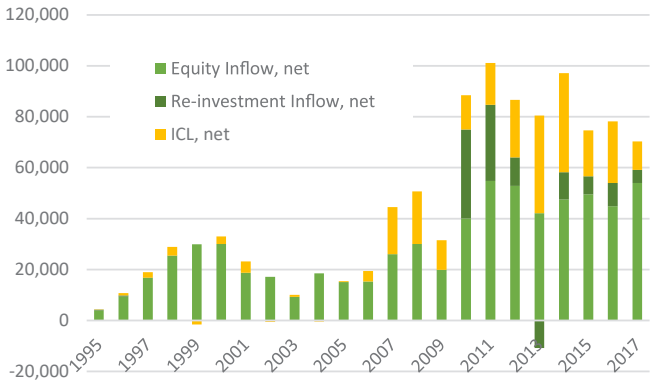
As the chart shows, a significant portion of FDI comes in the form of intercompany loans typically from head office to the Brazilian business. Intercompany loans are classified as FDI in view of the controlling relationship and the fact that the lender is not a financial institution rednering it a more committed, longer-term form of capital, even if it may not be as permanent as an equity commitment. It is less favourable than direct equity investment, but better than foreign portfolio investment (FPI).

However, the BIS estimates that in fact some of what is reported (strictly speaking, correctly) as ICL is often, in fact, FPI. 'Reverse investments' occur when a foreign subsidiary of a Brazilian company borrows funds (usually in the form of bond issuance in hard currency) and then on-lends them to the Brazilian parent. Although it registers as an ICL, it is economically indistinguishable from a simple foreign bond issuance. The BIS has identified this as a significant and growing trend in major Emerging Market economies since 2010.[35] (Avdjiev, Chui, & Shin, 2014)

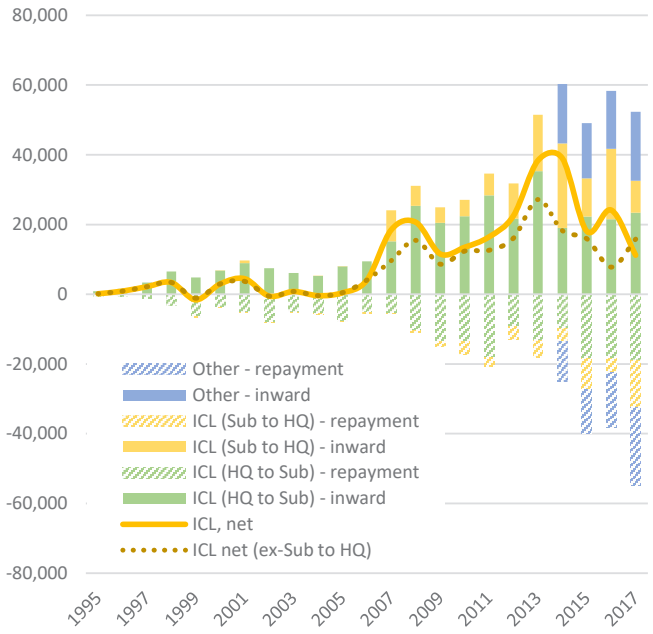
BCB data shows the net flows during 2014-17 under this line ('reverse investment') amounted to about $65b, which will be repayable at maturity of the debt instruments, although of course they have a high chance of being rolled over via refinancings. Nevertheless, they do not imply the degree of stability of a headquarter-to-subsidiary ICL. According to the IMF, the jump in ICL in 2013 and 2014 was driven by a Petrobras subsidiary abroad lending to its parent on the back of such debt issuance. (IMF, 2016, pp. 59,60)

Removing the 'reverse investment' ICL, we obtain a more modest ICL figure, but still hovering around $15b per annum. A noticeable increase seems to have occurred starting from 2007 onwards along with direct equity flows; and as we can see, the flows around repayments, rollovers and new lending constitute large movements within the external balance of Brazil today.

FDI Components, $m (BCB)



Intercompany Loans Flows (BCB)



[35] Indeed, the author recalls during the period there was an explosion of private sector eurobond issuance from China, Brazil and Russia.

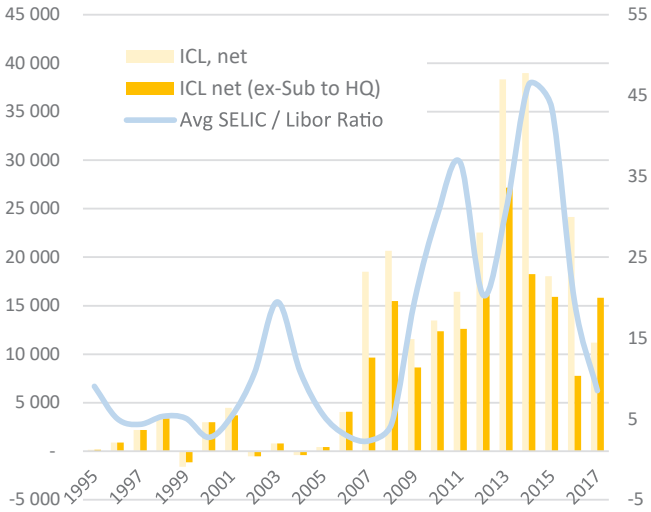
Whether a single driver can explain the fluctuations is not certain. The circumstances that lead to intercompany loans, are probably complex, determined by risk management, treasury revenue, tax, regulatory, and any number of commercial reasons for doing this.[36]

One persistent and plausible explanation is that interest rate differentials between BRL and USD rates have driven the rise in the use of ICL that several economists cited. Plotting the ratio of SELIC to Libor over time and comparing that timeseries visually to that of the ratio of ICL to total FDI suggests a relationship may exist. It is not surprising, also, that ICL dependency seems to have dramatically increased as the credit crunch started to affect EM economies from 2007 and of course during the global financial crisis of 2008/9.

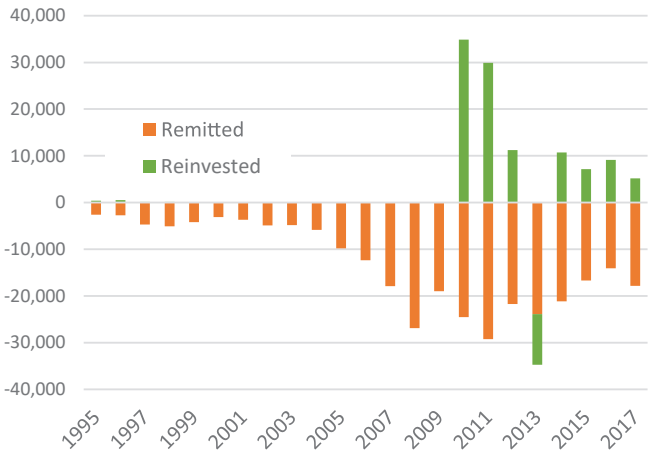
Reinvestment of earnings[37]

Reinvestment inflows also are significant contributors to FDI figures. Much like ICLs, it is difficult to determine a single driver of why a decision to reinvest occurs versus one to remit. Local CFO decisions are taken with a lot more inputs than a few aggregate variables, but it is considered a regional practice to re-invest 50% of earnings. (ECLAC, 2015, p. 21) It is both plausible and fairly discernible that FX rates influence levels of repatriation,[38] and to the extent that remittance and reinvestment are tied at the hip, one can surmise that a strong BRL discourages reinvestment (and encourages remittance) and vice versa.[39]

ICL, interest rate differentials (BCB)



Reinvested and Remitted Earnings on Inward FDI only, $m (BCB)



[36] With the globalisation of corporate treasury functions, and a tendency of trying to make it a profit centre, it is possible that some of the intercompany loans may end up as domestic deposits. There is literature on the increasing use of 'carry trades' by MNCs. See (Bruno & Shin, 2015) and (Caballero, Panizza, & Powell, 2015).

[37] For a good review of the subject of earnings, repatriation, and reinvestment from a regional angle, see (ECLAC, 2012, pp. 59-89)

[38] See the section on FX as a determinant of FDI in Brazil.

[39] Unfortunately, in the BCB data, there is a 10-year gap of reporting on reinvested earnings from 1999. Note that in the rest of the region since 2000, reinvested earnings grew in importance of total FDI to about 40% within 10 years, and remaining at that level until 2014 (the last available data series for this author). (ECLAC, 2015, p. 21)

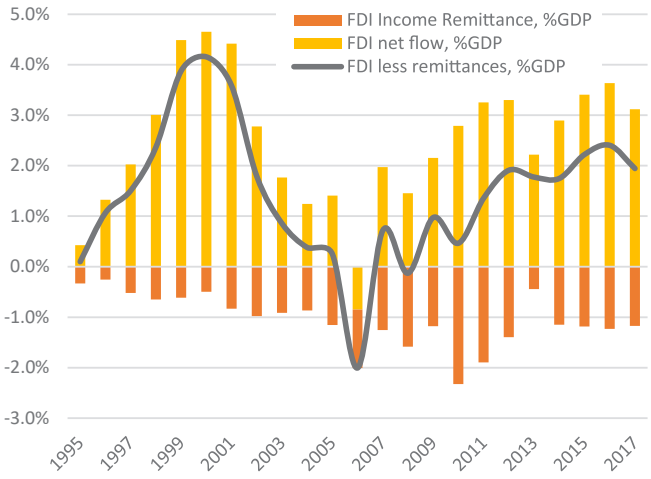
Remittance of earnings

Today's FDI inflow is tomorrow's dividend remittance, which translates into a Primary Income deficit in the balance of payments. Concomitantly, remitted earnings from the accumulated stock of FDI are huge, and are the biggest deficit item in the Primary Income line of the external account,40 and the biggest deficit item overall from 2002 to 2011.41 The net "FDI balance" (FDI flow less FDI remittances) results in a less flattering picture, with all FDI flows stabilising around 2% of GDP.42

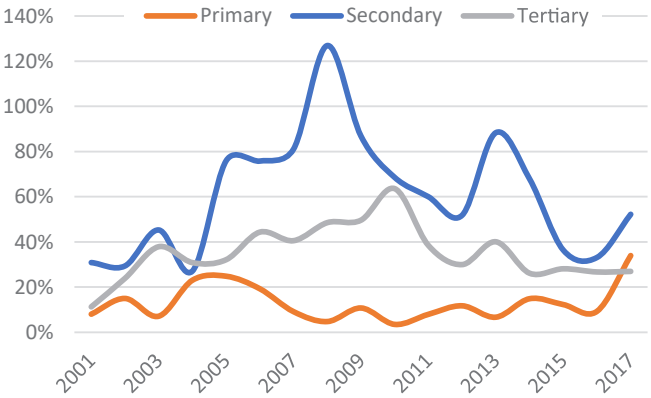
The accumulating pressure on the current account is in the short term relieved by the fact that remitted earnings require earnings, and these have fallen with lower commodity prices and bad FX entry points between the periods of 2007 and 2014.43 According to CEPAL research, average profitability dropped some 30% in 2016 compared to the previous 5 years, from about 6% to under 4%. (OECD, 2008, p. 46). This is consistent with other EM corporate profitability, and certainly Latin American corporates. Profitability seems to have been dropping continuously in earlier periods as well, in Brazil and across the region. (ECLAC, 2015, p. 22)

Remittances of earnings differ amongst the major sectors. The charts below do not include ICL, as that data is not available by sector. Nevertheless, it is evident that the manufacturing sector remits a higher share of FDI inflows than the other two sectors.

FDI flows and remittances, %GDP (BCB)



Remittances / Equity FDI flows (BCB)



40 This is consistent with Latin American trends. (ECLAC, 2017) p.45

41 See the [section / appendix] on balance of payments to see how FDI sits in the overall external balance.

42 Note the very large negative net outflow of FDI and remittances in 2006, when CVRD (Vale) acquired a Canadian nickel mining company for nearly $20b in a landmark transaction.

43 It is practically impossible from aggregate data and secondary sources to accurately estimate how many of the transactions in the exuberant years were hedged or financed in BRL, etc. Nevertheless, given the rate differential prevailing at the period, it would be reasonably safe to assume that most transactions were paid for in hard currency.

These figures do not represent returns as we are not comparing remittances versus stocks, but they represent how much net 'new money' is entering the sector and the sectoral contribution of remittances to the balance of payments. Perhaps because of accumulated investments from the past[44] in manufacturing, there is a higher rate of 'reverse flow.'

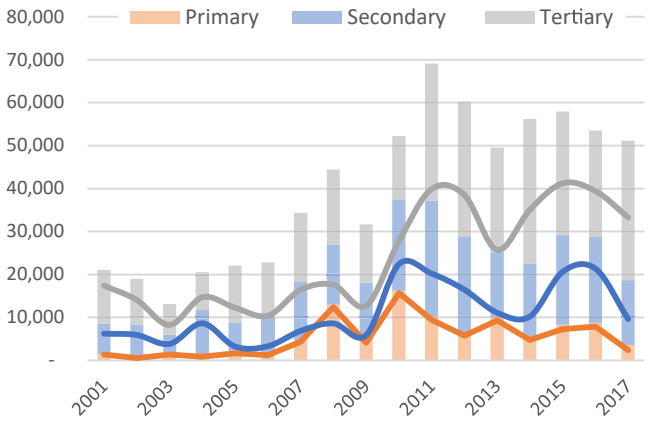
The impact of these is substantial: between a third and half the aggregate FDI that is received in the secondary and tertiary sectors flow out each year versus equity FDI. The primary sector seems to be less affected. Why certain sectors have a higher remittance rate compared to others is determined by a number of factors that is beyond the scope in this study.

FX Levels and Remittances/FDI

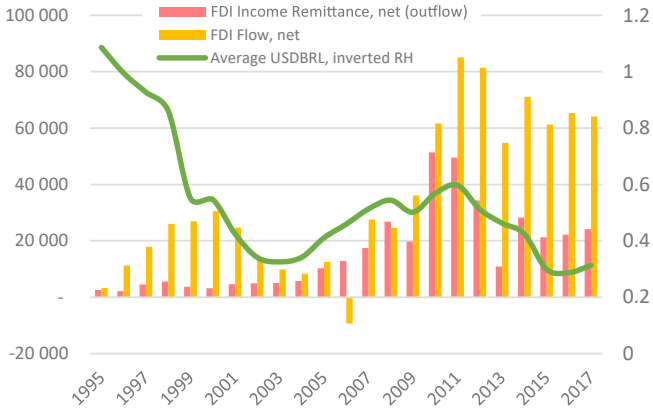
As the chart illustrates,[45] FDI remittances seem to rise when the BRL is strong and drop when the BRL is weak, thus mitigating its generally negative impact on the current account.[46] This is attributed to the influence of local managers and CFOs having a keener sense of FX valuation.

What is interesting to note is that FDI net flows seem to behave in the opposite manner, if slightly less pronounced. Namely, FDI inflows seem to increase with BRL strength, as if driven by general exuberance – and indeed to drive it on.[47]

Equity FDI flows, less remittances, $m stacked (BCB)



FX vs. FDI and Remittances, $m (BCB)



[44] I could not find sectoral breakdowns of the stock of FDI nor of ICL. An interesting further study, if this does not exist already in Portuguese, is to look at sectoral trends in the composition of FDI flows and stocks. Such a study will allow us to better understand how MNC's in various sectors are managing their acquisitions, their capex, opex, and treasury operations.

[45] We are using net FDI figures, i.e. inward and outwards, in this discussion as it relates to macro-price determinants such as interest rate differentials and FX rates.

[46] I am grateful to Professor Manoel Carlos de Castro Pires of the Brazilian Institute of Economics for insisting on this point.

[47] As a note of caution, it should be said that further confirmation of these points requires more breadth or depth of data, or anecdotal evidence to make strong statements about the relationship between FX movements and all the elements of FDI flows. The academic literature seems inconclusive on this. See Box 5: Theoretical Literature on the Determinants of FDI

4. Competition, exports, linkages and innovation

Large FDI for a Closed Economy

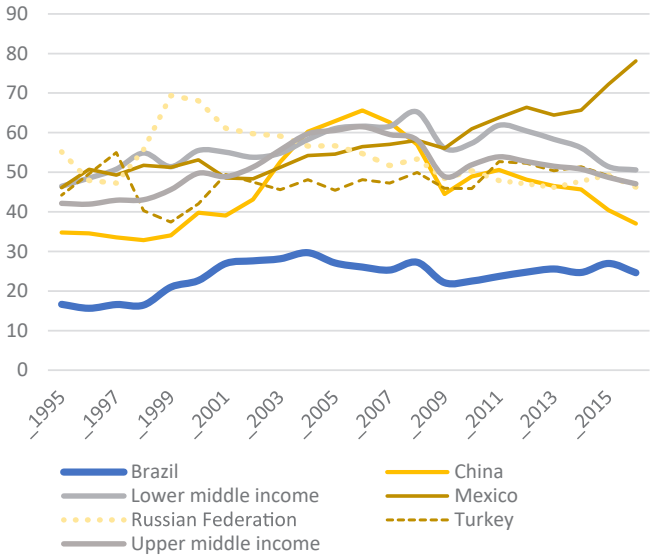
Whereas Brazil is a leader in attracting global FDI, it is decidedly a laggard in terms of the percentage GDP of international trade (sum of all imports and exports of the merchandise and services sectors). Even compared to other large economies (which have a natural tendency to be less open) it is extraordinarily closed. Peers of large economies have an average of 55% ratio whereas Brazil's is around 25%.[48] Moreover, according to 3 World Bank economists, the expected Brazilian trade sector should be around 85%. (Canuto, Fleischhaker, & Schellekens, 2015) [page]

Worse still, the concentration of exports is staggering by any measure: the number of exporters is extraordinarily low at 20,000 companies, 1% of exporters generate nearly 60% of export revenues, and 25% generate nearly all. There are several straight-forward reasons for this: Brazil is extremely poorly integrated into the world economy, i.e. very little of its exports involve importing components and intermediate goods and exporting later stages of production. Essentially, and with a few important exceptions, it is a commodity exporter with little product complexity in its export mix; and even in its manufacturing sectors, Brazil has the highest domestic value-added content among its peers. Finally, there is very little dynamism in the composition of exporting firms, [i.e. the same firms have dominated exports for decades.] (World Bank, 2014, pp. 76-81)

The degree and pattern of Brazil's 'global connectedness' reflects this. In 2012 the McKinsey Global Connectedness Index, Brazil ranked 43rd out of 131, a deterioration of 15 ranks since 1995. (McKinsey Global Institute, 2014). In 3 of the 5 dimensions, Brazil ranked around 40th (goods, services, communications), 115th in people, and only performed decently in terms of financial connectedness (18th). (Elstrodt, Manyika, Remes, & Ellen, 2014, p. 36)

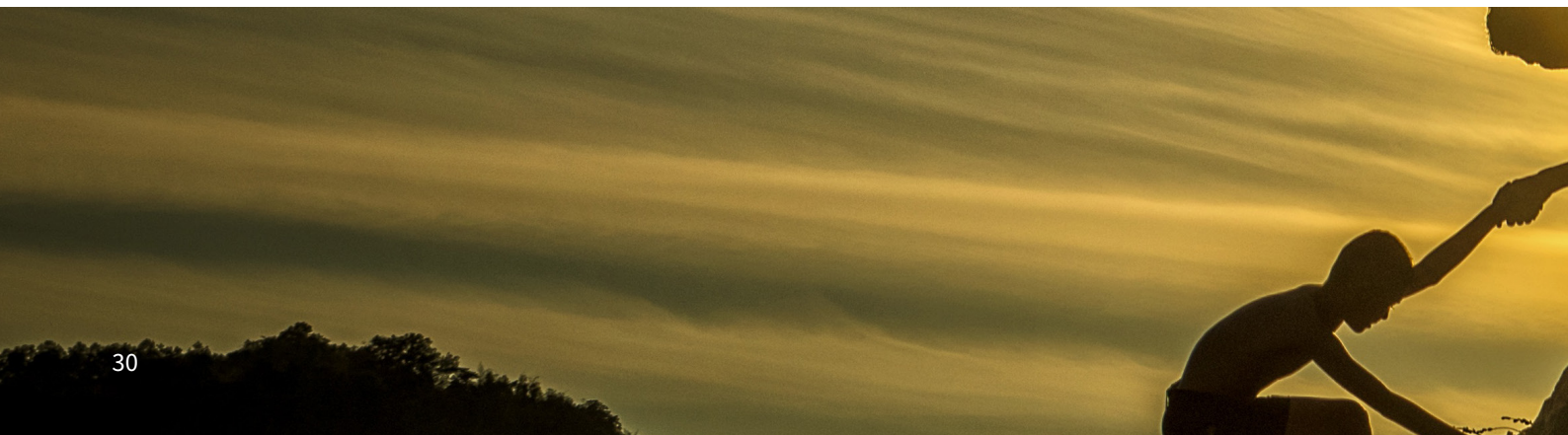
[48] It is important to note that Brazil is truly an outlier. Only the US among large economies is more closed, at 11%. Despite the many socio-economic resemblances with the US, Brazil cannot look at the US as a model and should be compared to US metrics with care. Brazil is not the world's superpower, the largest economy, the owners of the global reserve currency, and a technology leader. The US is a dynamic economy with generally high levels of competition and relatively high social and population mobility (although declining recently).

Trade %GDP, Brazil vs other EM (WB)



That the Brazilian economy is relatively closed is well-known. However, less openly discussed is that a policy mix of isolation in traded goods and high financial connectedness (FDI and finance more generally) evidently is not the optimal arrangement for productivity growth. Indeed, it biases FDI towards market-seeking rather than efficiency--seeking investments. The latter clearly presupposes integration into the global trading system and requires competitiveness,[49] whereas market-seeking FDI may be less of a validation as to the overall performance of the country. There are many possible reasons for this discrepancy, and we will investigate them further when we try to understand the characteristics of Brazilian FDI.

[49] Large aggregate import and export trade figures usually mean that a lot of the imports are intermediary inputs, as few large-scale economies can sustain double digit trade deficits (or surpluses). The United States famously ran large deficits of up to 8% of GDP but it benefits from the privilege of having the US Dollar as the global reserve currency.

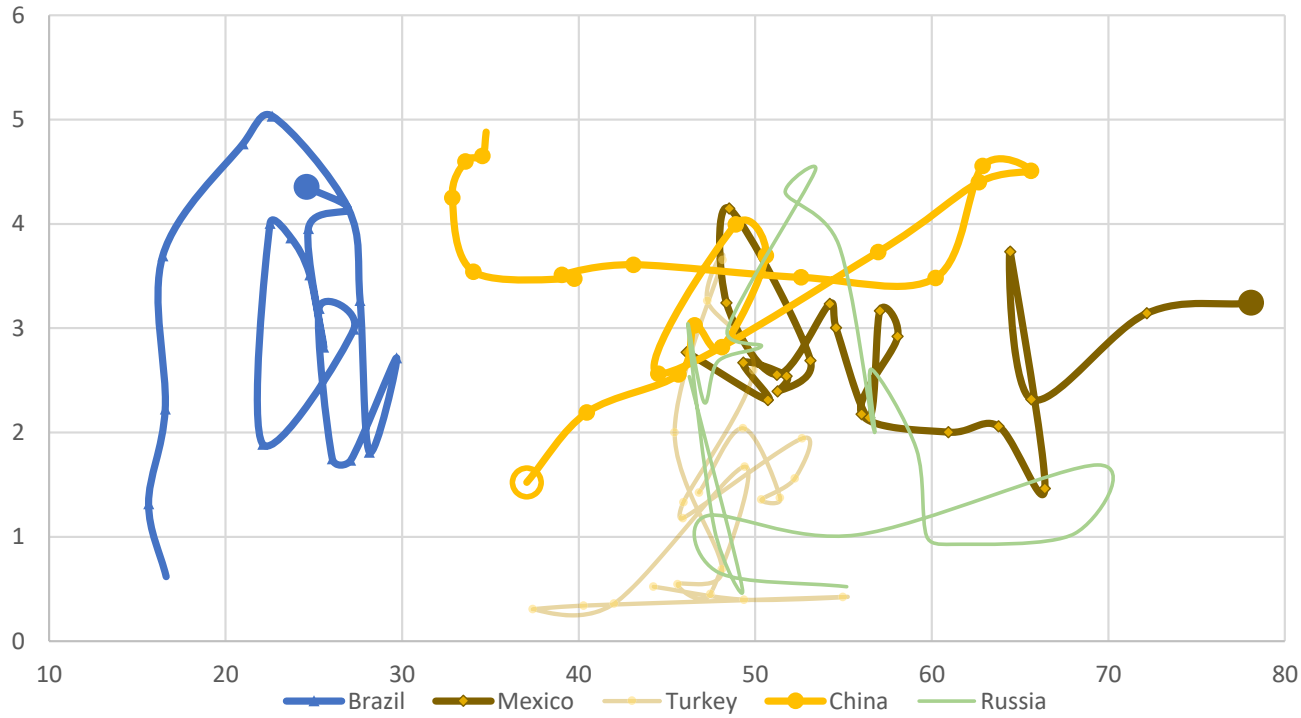


FDI and integrating Brazil into global supply chains

First let us see if we can discern any connection between FDI flows and global connectedness. The figures below chart the evolution of FDI and Trade from 1995 to 2016. Given a certain amount of time lag, we would generally expect – or hope – that FDI rises up and eventually leads to a higher international trade path with the dots shifting to the right. What we see in Brazil and in its peers, is the absence of a necessary relationship. That is, higher FDI is not itself associated with higher trade ratios for Brazil nor for others. It suggests that FDI does not have an obvious relationship to trade integration.

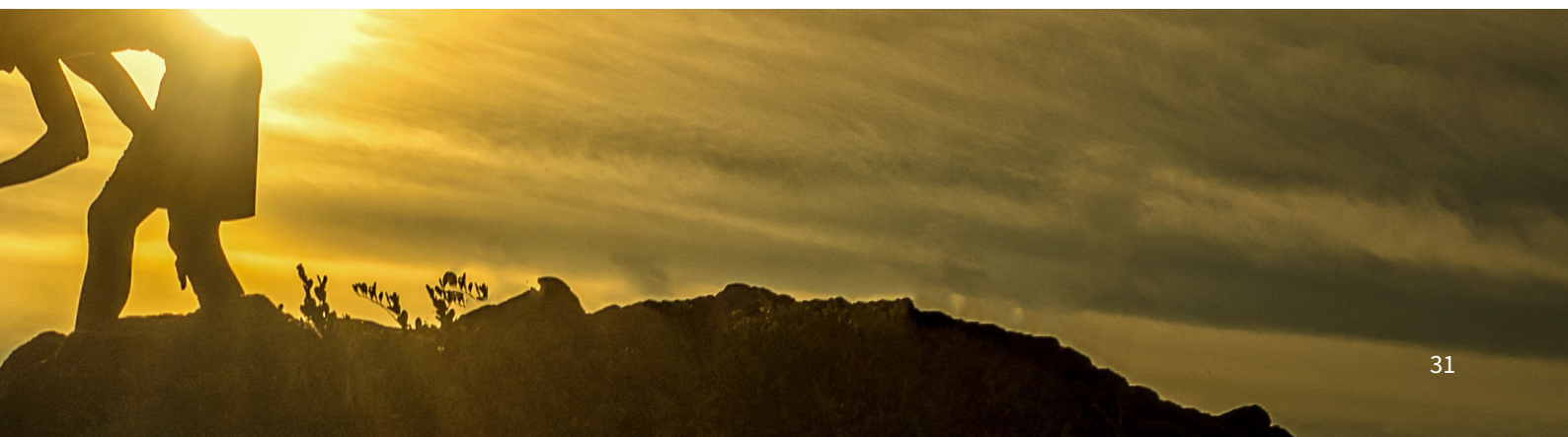
At an aggregate level, FDI has not made a noticeable difference to Brazil's integration into global markets. Since 1995, international trade doubled to only about 25% of GDP, whereas FDI nearly increased 9-fold. Mexico's level of globalisation steadily increased from an already high 45% to almost 80% although FDI hovered between 3 and 4% of GDP. Turkey's internationalisation of the economy stayed steadily around 50% despite big fluctuations in FDI.

FDI vs International Trade Evolution, %GDP 1995-2016 (WB) (large circle = 2016)



In the case of China it is possible to detect the economic evolution from huge FDI, leading to (or at least coinciding with) an enormous deepening of global supply chain integration in the 2000s, both FDI and trade peaking just before the Great Financial Crisis (GFC), which then retreated rapidly post-crisis as economic orientation pivoted to domestic demand and infrastructure investment rather than export orientation.50 [It would be good to do these charts for manufacturing FDI and trade figures]

[50] There are also the denominator effect of a growing economy and the geopolitically determined appreciation of the CNY. The opposite effects are probably present in Russia's evolution: relatively stable trade figures may be the result of countervailing effects of lower RUB against lower oil prices.

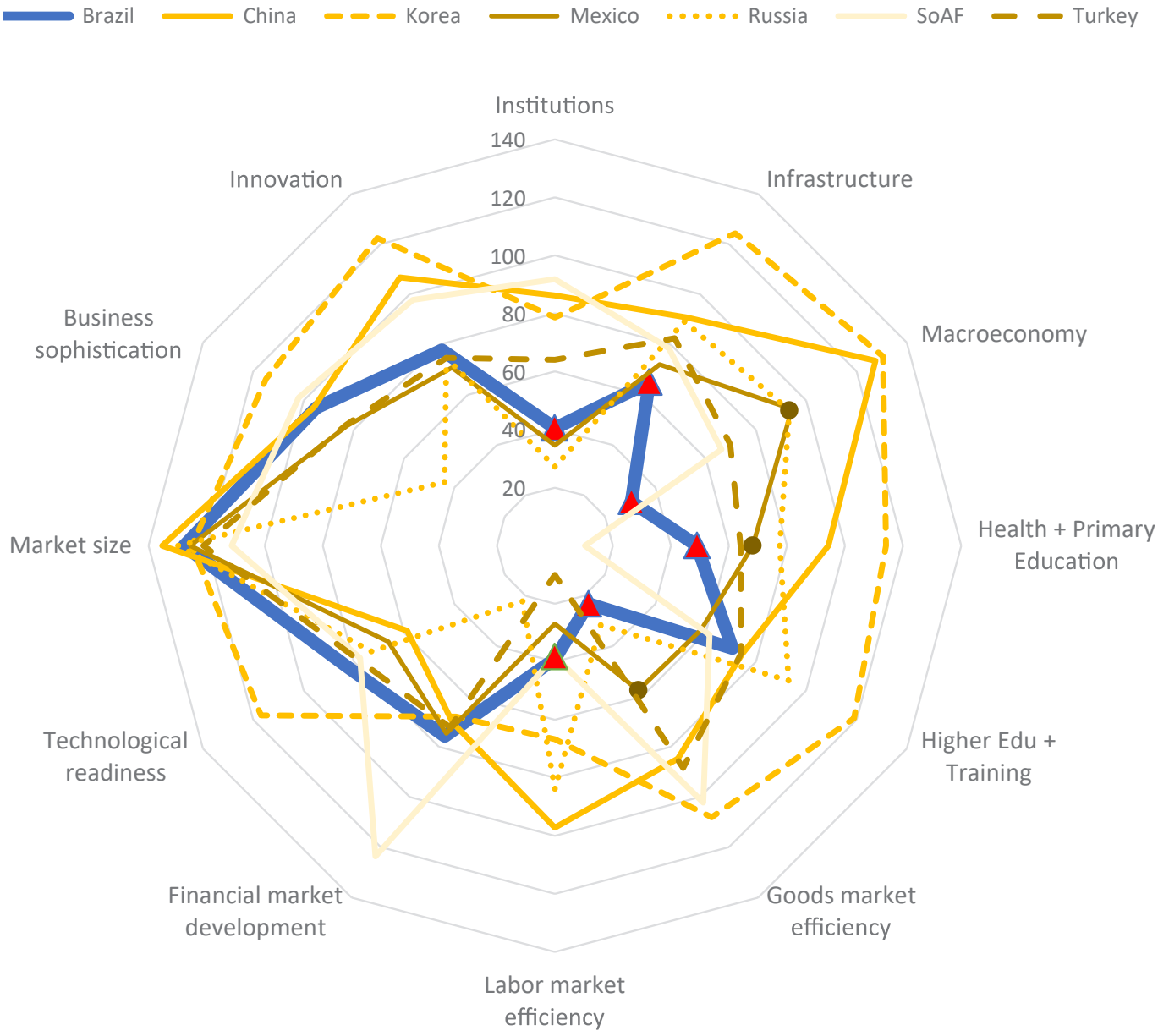


The trivial point to be made here are two-fold: changes in aggregate FDI in Brazil has not led to transformational global integration, and that it does not seem to have in other countries. The question of global integration and competitiveness are not necessarily related to FDI, and improving integration and competitiveness require independent policy actions.

Competitiveness

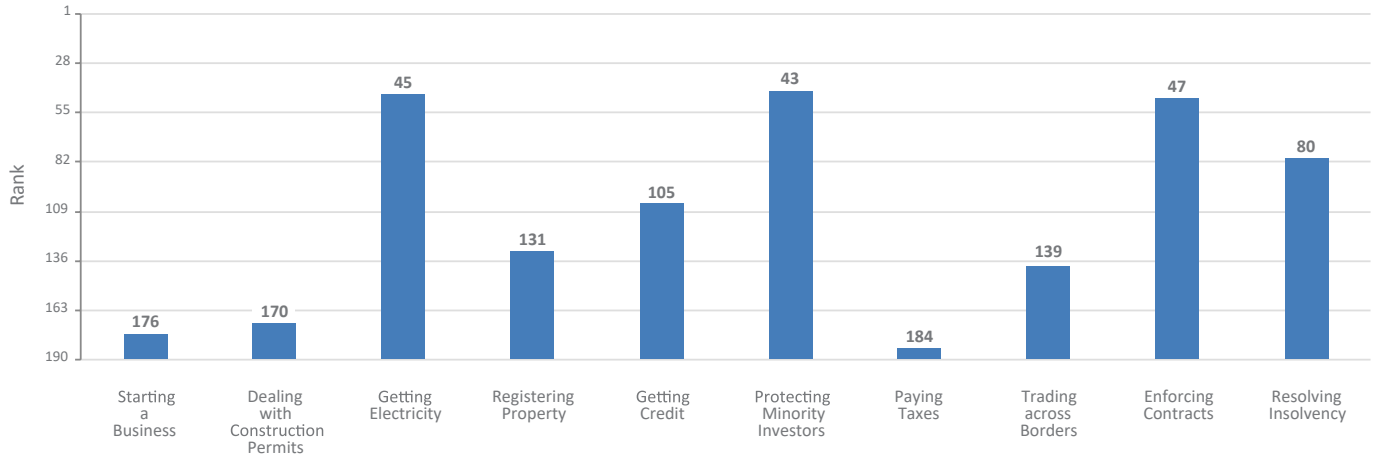
The global perception of Brazil is that it is a highly undesirable place to operate. In the 2017/8 World Economic Forum Global Competitiveness Index, Brazil ranks firmly at 80th, and in 9 of 12 subcategories, it ranks below half of the 137 countries. It manages to be better than the median only in: technological readiness, business sophistication and market size. In the first two, Brazil is still in the mid-fifties. Only in market size does it score very highly: 10th. (WEF Global Competitiveness Report 2017-18) The chart below is designed to highlight rank (in reverse order) rather than score, and we can see that Brazil ranks very poorly in terms institutions(96th), macroeconomy(107th), goods market efficiency(125th), infrastructure(65th), labour market efficiency(99th) and health and primary education(49th).

WEF Competitiveness Index Inverse Rank, 137 minus country rank (WEF)



A quick look at the 2018 World Bank's Doing Business rankings provides a similarly atrocious picture. Brazil ranks overall 125th out of 190 countries. Brazil performs particularly badly in entrepreneurial dimensions, with starting a business at nearly the very bottom of the list. It suggests that the natural mechanism to disrupt oligopolistic behaviour – new entrants – is not being helped by the state. Indeed, although the evolution may be very different from Central Asian crony capitalism, the effect of 'state capture' by existing businesses are hardwired in the business environment.

Rankings on Doing Bussiness topics – Brazil



While these ranking are not the holy grail, they confirm that Brazilian capitalism lacks the means to benefit from the main economic argument for markets: competition as an efficient allocator.

Domestic competition

Brazil's economic sectors are famously unproductive, undynamic, provincial, vertically integrated, dominated by large companies, populated by many unsustainably small firms, and rent-seeking. FDI has not, on the whole, altered this state of affairs. As one competition economist described it, neither old nor new FDI has had a transformational impact on domestic competition in any Brazilian sector. Indeed, consumer (FMCG) was cited by the same economist as an area of very high concentration, where 5 conglomerates (4 of which are foreign) dominate the supermarket shelves. This may or may not be the norm, but certainly this combined with the fragmentation of the retail sector means that rent-seeking behaviour is possible.

Domestic competition is associated with export success. The developing countries that have successfully created export economies is East Asia, relying on several instruments to promote international competitiveness, at least two of which are absent in Brazil: mercantilist foreign exchange policy and high domestic competition, even if there were reasonably high barriers for foreign competition. Brazil's is the opposite: FX is largely determined by commodity prices[51] and domestic competition stifled by the legacy of IS. FDI of the past 25 years has not altered this reality, and indeed sought to benefit from it.

[51] See Error! Reference source not found.

Huge Market and Inefficient, therefore Market seeking

It is clear from the WEF Competitiveness Index that Brazil is attracting FDI not because of its efficiency as an economy. The one thing that attracts FDI to Brazil is the market size, and countless studies assert this point.[52] Furthermore, as various interviews and anecdotal information assert, these inefficiencies lead to FDI activity that is heavily M&A-driven: given the institutional deficiencies, labour and goods markets inefficiencies, and macroeconomic challenges, an MNC prefers to buy into an existing firm that managed to survive in such a difficult environment rather than set up greenfield operations.

It is widely cited in the literature that Brazilian FDI is market-seeking, while Mexican FDI is efficiency-seeking. (Castro, 2013) This is often viewed, and often justifiably, as the maquiladora phenomenon which proved its vulnerability to the rise of China until recently, and presumably to the new American mood for closed markets. Nevertheless, as we shall see, the theoretical literature tends to favour efficiency-seeking FDI over market-seeking ones, as the former tends to have better impact on productivity and greater domestic linkages. An anecdotal validation of this observation can be found in the different levels of productivity in the Brazilian and Mexican automotive sectors, both of which are, practically speaking, entirely dominated by foreign firms. [cite]

[52] The literature is quite unequivocal on this. (Lima Júnior, 2005) (Nayanee Gupta, 2013) (Rodríguez-Clare, 1996) (Levy, 2016) (World Bank, 16/5/2017) (Laura Alfaro, 2006) (American Chamber of Commerce for Brazil, 2017)

Box 5: Theoretical Literature on the Determinants of FDI

Economists frequently cite J.H. Dunning's (Dunning, 1993) distinction between foreign investors who are "efficiency-seeking" versus "resource-seeking," with some conclusions as to which is better for the overall economy (efficiency-seeking). Dunning identified two other motives: "market-seeking" and seeking "strategic assets." It is quite clear that FDI into Brazil has been motivated by each of these at different times or simultaneously in different industries. These categories emphasise economic or sectoral drivers and how they interact with a multi-national's decisions around the vectors he called "ownership, location and internalisation" (OLI). These are strategic behaviours that try to increase access, efficiency and power versus competitors and markets.

A short study by ECLAC tries to explain Brazilian FDI employing three models: i)the Dunning model mentioned above, ii)the Hymer model which uses the industrial organisation perspective to explain the opportunities sought from market imperfections, and iii)the "product life-cycle" model which emphasises a MNC's management of product and technology distribution. The main conclusion of the study is that FDI between 2001 and 2013 were predominantly market-seeking. (da Silveira, Samsonescu, & and Triches, 2017) This is consistent with a study on Mexico and Brazil that the authors cite which make the case that in Brazil market-seeking strategy seems to have dominated whereas in Mexico efficiency-seeking prevailed. (Castro, 2013) Among other things, this is related to the higher and increasing percentage of services sector FDI in Brazil compared to Mexico, where manufacturing remains vastly dominant. (ECLAC, 2015, p. 23) Nevertheless, some works detect important statistical relationships with weak BRL, suggesting the existence of significant efficiency-seeking behaviour as well, (da Silveira, Samsonescu, & and Triches, 2017) although in aggregate we see little evidence of this. According to others, country risk, trade openness and inflation rate seem to have empirical significance. (Mattos, 2007). However, commodity prices, FX and other oft-cited factors were not significant determinants according to the literature.

Empirical studies cited in the ECLAC paper highlight the continuing importance of macroeconomic factors in FDI decisions, FDI-favourable policies such as privatisations, and market size. (Amal M. a., 2007)

Innovation capacity but lack of demand

Another area where the contrast with Mexico is apparent is in the types of companies acquired. Brazil is generally recognised as the Latin American leader in innovation capacity (ECLAC, 2015, pp. 27,28), and that naturally leads to more Brazilian companies being acquired for their innovations compared to Mexican ones.[53]

Innovation in Brazil is strong in a handful of sectors: agriculture, aerospace, health, defence and energy. These are generally areas where Brazil has strategic advantage (resources) or government industrial policy over decades (defence, aeronautics). They tend to be concentrated in the south-east corridor, where 70-80% of research is conducted in Brazil.

[53] Cite [J de Negri]. One government official expressed frustration that Brazil generally engages only in 'tropicalisation' rather than more globally competitive innovation.

There are a number of sector-specific government initiatives, both economy-wide as well as sector-specific.[54] The successful stories are in specific clusters with prominent leaders: aerospace (Embraer), agriculture (Embrapa), oil and gas (Petrobras). These were decades long investments that involved strategic intent, persistence, and funding by successive governments. In particular, Embrapa, the government agricultural R&D agency, is widely cited as a deeply successful story of government R&D that has propelled Brazil's agricultural revolution. (World Bank, 2016, p. 99)

However, more broadly, Brazil's system of innovation has failed over the past 30 years to keep up with the challenges of accelerating industrialisation that a 'latecomer' experiences. (Baumgratz Viotti, 2004) Whereas in 1980, Brazil (and Mexico) had similar share of global patents as those of Taiwan and Korea, they quickly were overtaken by orders of magnitude. Moreover, while Brazil's share of scientific publications kept up with Taiwan, e.g., it has not converted this performance to patents. Similarly, the 2000s experienced a strong increase in the number of university students, but this did not translate into transformations in innovation metrics. The optimistic aspect of this is that the costly and time-consuming task of increasing university and post-graduate enrolment has been underway for 15 years, so a lot of the hard work has already been undertaken.

[54] For a comprehensive introduction, consult (Zuniga, de Negri, Dutz, Pilat, & Rauen, 2016) as well as (Nayanee Gupta, 2013).

Box 6: Micro Initiatives and creating linkages

The Ministry of Industry, Foreign Trade and Services has several interesting initiatives that seek to enhance innovation in the private sector which are granular and which follow an 'eco-systemic' approach.

"**Innovate in Brasil**" (http://www.innovateinbrasil.com) is designed to attract R&D FDI, i.e. specifically encourage the establishment of R&D facilities of MNC in the country, both green- and brownfield. There are at least two externalities that may arise from R&D FDI: i) Brazilian researchers would be trained in applied science which eventually leads to the existence of human capital and organisational knowhow that domestic companies could also benefit from, and ii) there is expectation that R&D created in Brazil will lead to production in Brazil, and with a high export component. Other externalities sought include creating closer industrial innovation partnerships with universities.

The Ministry's assessment is that Brazilian human capital is competitive in terms of cost and quality, and government processes have been streamlined so a 'one-window' exists from inception through ongoing stages of an R&D FDI, cross-departmentally as well as across levels of government (federal and state).

"**InovAtiva Brasil**" (https://www.inovativabrasil.com.br) is a physical and virtual accelerator for startups across the country with a mentoring program, training and matchmaking service that is composed of Brazilian business persons. The accelerator has connections with Silicon Valley as well as domestic universities. Initial take up is better than expected and some companies have attracted the attention of Silicon Valley. The Ministry is able to obtain support from BNDES and FINEP to co-invest in selected projects. The effort has been financially efficient according to officials, with every 1 BRL crowding in 7.5 BRL from the private sector. The ministry is modelling the project along UK and French lines, and co-operating with their counterparts in those and other countries. However, there is not an expectation that these businesses would lead to a disruption of existing sectors, and most of the enterprises are at the moment seen to be 'copycat' efforts rather than globally innovative.

"**StartOut Brasil**" (https://www.startoutbrasil.com.br) is another incipient mentoring program whose motto is "Dare to be Global," in an explicit attempt to push Brazilian start-ups to look at global markets rather than domestic ones, i.e. to move from the 'fatty' domestic market to the more 'cut-throat' international markets. The implicit concept is to move start-up innovation from 'copy-cat' enterprises to globally innovative products.

The public sector does not seem to be lacking in ambitions, institutional structures, studies or complimentary resources. At a public sector level what seems to be lacking is the ability to take risks, commit to strategic plans, and to act as a facilitator of national innovation.[55]

Although there are a number of 'coordination failures' to convert education to applied innovation, on the whole, it seems the innovation inputs and outputs are hindered by a lack of demand rather than supply. (World Bank, 2016, pp. 97-105) Basically, Brazilian industries in aggregate are not investing in innovation essentially because of their market positioning: too comfortable in domestic markets, and not competing in international ones. The private sector's lower share of R&D spending can be interpreted in this light. It in fact decreased from 47% of all R&D expenditure in 2000 to 43% in 2012, lagging behind in government increases. The OECD average for private sector contribution is 70%, and in terms of share of GDP, Brazilian private sector invests one-third of OECD averages. (World Bank, 2016, p. 97)

FDI and Innovation

A recurrent theme is that foreign investors have targeted Brazilian firms with greater innovative capacity, and in the words of one economist acquire firms that "created in the boom, sold in the bust."

Once acquired, a Brazilian firm's R&D agenda and budget get decided at headquarters and allocation of innovation expenditures will not be optimised with respect to Brazilian subsidiaries, but at a multinational level. Depending on the how much of the sector leaders are controlled by MNC's, it is possible that the private sector's share in R&D will not rise to OECD levels.[56]

Nevertheless, there is a greater propensity to spend on innovation amongst foreign-owned companies, though it is not clear if this is because they are foreign-owned or because FDI bought the 'crown jewels' of Brazilian industry. According to Fernanda de Negri, 47% of innovation spending is carried out by foreign-owned firms, while they represent only 38% of all sales. That is, they spend about 0.86% of their sales on R&D, compared to locally-owned firms that spend only 0.52%. Moreover, 38% of foreign-owned firms invest in R&D while only 15% of locally-owned ones have an R&D program. This same pattern is repeated in Argentina and Mexico, but the skew is larger in Brazil. (de Negri F. , Foreign Direct Investment, Drivers and Success Factors, 2010, p. 9)[57]

Creating domestic linkages

As we have seen, FDI in Brazil seems to have been market-seeking rather than efficiency-seeking, and it is clear that the bias of the first is to capture rents and try to benefit from market imperfections, and the latter is about competing for export sales. As a result, efficiency-seeking FDI is associated with much greater backward linkages as they interact with domestic suppliers and upgrade them in the process.

In contrast to Brazil, Turkish manufacturing in the past 15 years managed to transform itself by achieving strong industrial links with European manufacturers who set up shop in the country. (Javorcik, Lo Turco, & Maggioni, 2017) This contributed to productivity gains and equally, importantly, increased complexity of intermediate products.58

The challenge for Brazil is clearly to create more domestic linkages with existing and future FDI with the aim of raising productivity and exports. In terms of future FDI, this presupposes attracting more efficiency-seeking investments. (World Bank, 2016, p. 90) To do this requires fixing shortcomings indicated in the section on competitiveness and Doing Business in Brazil. (See Competitiveness) Improving the business climate is also what is needed to encourage domestic firms to invest, upgrade and seek linkages to MNCs, as well as to attract new entrepreneurs. It may also entail experimenting with other determinants that induce linkages.

[55] See (de Negri J. A., 2016) for a survey of recent initiatives as well as directions for innovation investments that have been considered, and (Mazzucato & Penna, 2016) for a critical diagnostic and recommendations.

[56] See Box 6 for a Ministry of Trade program that would partially address precisely this issue.

[57] This seems to be consistent with the experience of other developing markets. (Javorcik & Poelhekke, The persistence of foreign ownership benefits: New evidence, 2016)

[58] Interestingly, in the case of Turkey there was no spill-over onto Turkish firms, who showed no greater propensity to innovate as a result of the entry of foreign production. (Javorcik, Lo Turco, & Maggioni, 2017) They did however engage in more complex production and technological upgrading.

Box 7: Literature on FDI Linkages

Aside from its financing role (of current account deficits and its obverse, savings shortfalls), FDI is widely promoted for its microeconomic effects on host countries. These are essentially about spill over effects via technology transfer, productivity boosts, employment, competition, etc. 'Domestic linkage' is the mechanism that envisions the FDI firm connecting with domestic industries to induce a host of performance improvements, market opportunities, and eventually create new domestic champions.

Not all FDI leads to substantial linkages, and this lay reader detects in the literature a mild tone of disappointment at discovering this. However, from its inception with Hirschman's elaboration of a definition (1958, pp. 98-119), economists could see the intricacies, specificities, and context-dependence of how linkages may or may not work. Many variables affect how strongly backward (upstream) and forward (downstream) linkages are induced by FDI investments.

Some may be described as structural: proximity to other production sites of the MNC and transport costs, degree of complexity of production, proximity of technological sophistication of host and investing economies, cost competitiveness, preferences for variety of inputs, etc. See e.g., (Rodríguez-Clare, 1996) Other variables may be affected by or even invite policy actions: tariff structures, regulatory interventions, etc.

One study found that domestic linkages are better induced when the MNCs and local enterprise produce substitutes rather than complimentary (final) products, suggesting the power of local and foreign buyers competing for intermediate goods catalyse backward linkages more vigorously. (See footnote 84)

It is worth noting that linkages do not necessarily imply innovation investment or even spill-overs, and it seems making linkages works is a separate challenge from increasing innovation output. However, linkages work best when, ceteris paribus, the technological sophistication of the host sector is closer to that of the MNC.

A healthy dose of scepticism is called for with respect to how much backward linkages to expect. Citing a US Bureau of Economic Analysis report, Moran states "it is striking to note even in today's globalised world how remarkably home-based MNCs from developed countries have remained. For the US, the most recent data show that US-headquartered MNCs have 70% of their operation, make 89% of their purchases, spend 87% of their R&D dollars, and locate more than half their workforce within the US economy." (Moran, 2011, p. 123) Related to this, we can say that the spill over effects have not been borne out decisively: labour productivity seems to increase in North-North FDI, but less when the South is involved.[59]

Exports and FDI

The dominant ideology on FDI is that any integration into global capital is positive, not least because it leads to best practices being adopted, more efficient allocation of resources because FDI leads to further integration into global supply chains, and eventually to domestic production that can compete in export markets. Clearly, Brazil has not witnessed any transformational rise in exports in either the manufacturing or the services sectors,[60] despite being one of the largest recipients of global FDI since the early 1950s. (See above, FDI and integrating Brazil into global supply chains).

One factor is that there may in fact be an entrepreneurial downside to FDI (particularly the market-seeking variety) which arrives on your shores by acquiring the strongest industrial players in a given sector, precisely the companies that should have the capacity to evolve into export players post-acquisition: decisions at these companies regarding production and R&D location are now taken by headquarters abroad. That is, Brazilian facilities are forced to internally compete with subsidiaries and do not have autonomy to risk-take, to invest resources into trying to open new export markets. Effectively, Brazilian management of an acquired company has practically no ability to pursue a firm-level bets, or can only take them after an internal competition with subsidiaries in China, Indonesia, Mexico, etc. Therefore, what was lost by selling industrial capacity and domestic market position to market-seeking FDI was the opportunity to take risk, learn and create externalities in Brazil for exporting. In this regard, foreign investment may have helped provincialize, not globalise, the Brazilian economy. We will return to this point, and also to why this may be a 'debilitating' problem in Brazil but not in Turkey or Mexico, and what perhaps could be done about this.

For the moment, nevertheless, it should be recognised as a secondary fact that foreign-owned firms tend to export more. In Brazil, about 20% of foreign-owned firm exports, while in Mexico the figure is 32%, and moreover, the dif-

[59] World Bank's (de la Torre, Didier, Ize, Lederman, & Schmukler, 2015, p. 28), Petersen Institute's (Moran, 2011) and HBS's (Alfaro L. , Chanda, Kalemli-Ozcan, & Sayek, 2004) emphasize the sparsity of labour productivity spill overs in aggregate. Their paper also asserts findings regarding types of backward linkages which are relevant for Brazil: "We find larger growth effects when goods produced by domestic firms and MNEs are substitutes rather than complements. Policymakers should be cautious when implementing policies aimed at attracting FDI that is complementary to local production. Desired complementarities are those between final and intermediate industry sectors; not necessarily between domestic and foreign final good produces." (Alfaro L. , Chanda, Kalemli-Ozcan, & Sayek, 2006, p. 35)

[60] A closer, subsectoral investigation of FDI and exports may yield subtler results, but that was beyond the scope of this survey.

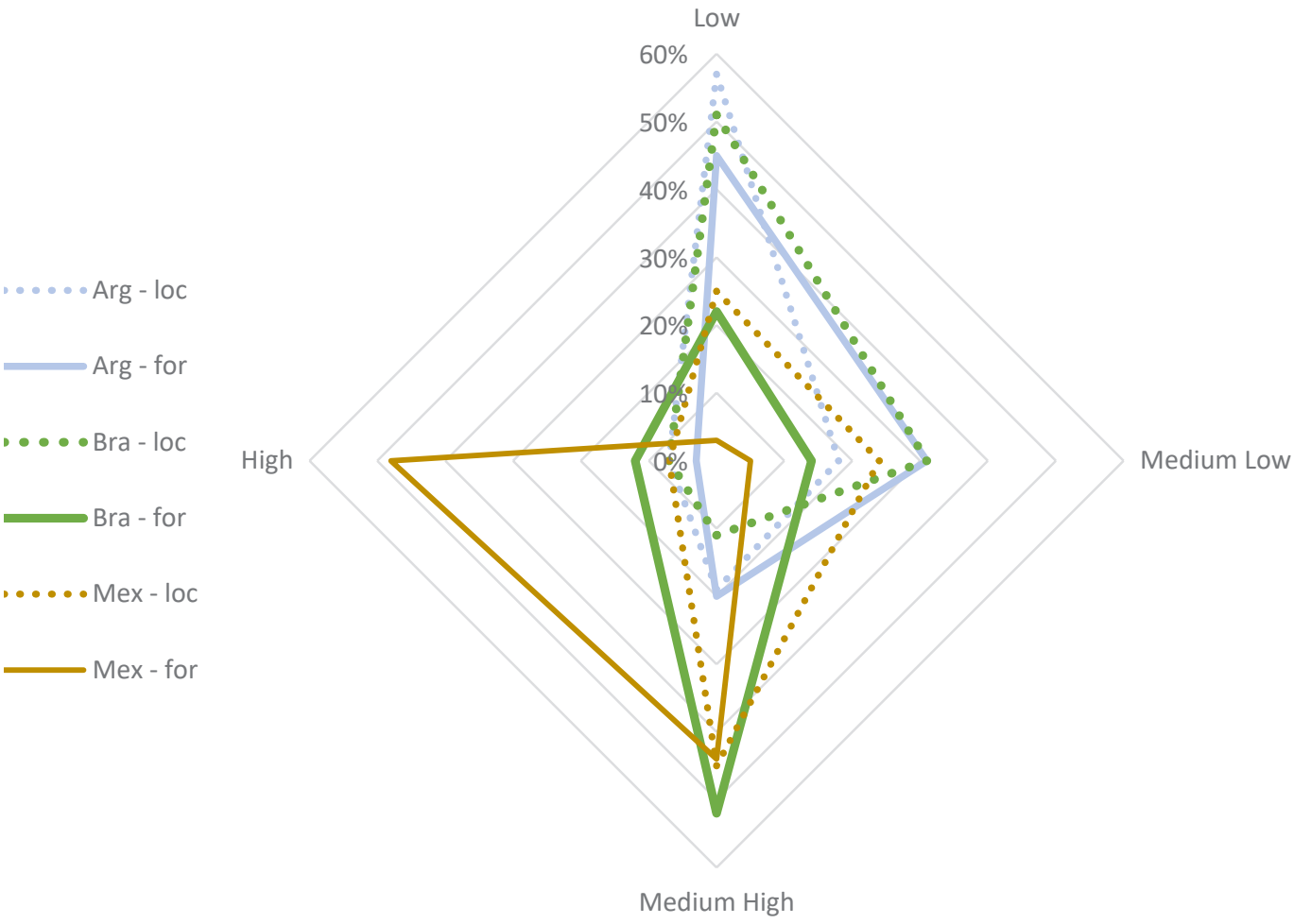
ference between the foreign- and the locally-owned firm is about 11.5 percentage points in Mexico while it is only 3.5% in Brazil. (de Negri F. , Foreign Direct Investment, Drivers and Success Factors, 2010, p. 10) In Mexico, foreign firms play a bigger role in exports and in aggregate the country as a whole is much more integrated in to global value chains (GVC) as we have seen.

There is also a correlation to exports with greater technological intensity. If we look at the radar chart below61, the most noticeable point is that technology intensive foreign-owned firms in Mexico export over 90% of exports by foreign firms. Moreover, these firms constituted about 64% of all exports while the figure in Brazil was 26%. (de Negri & Laplane, 2007, p. 18). Moreover, in the case of Brazil and Mexico, the difference in technological intensity between locally-owned and foreign-owned exporters in the two countries was substantial, especially Brazil. However, Brazilian companies seem to invest more than Mexico (or Argentina) of their innovation spending on R&D rather than equipment purchases. 62 In other words, the technology intensity we find in Mexico seems to be in the form of purchased equipment as opposed to R&D work conducted in Mexico.

[61] This is a reproduction of the chart in (de Negri F. , Foreign Direct Investment, Drivers and Success Factors, 2010, p. 13) based on data from (de Negri & Laplane, 2007, p. 18)

[62] Amongst high technology intensity firms, Mexican ones spend 17% of the innovation budget on R&D and most of the remainder on equipment, while in Brazil the figure is 50% on R&D and 26% on equipment. These findings are 15 years old, and should therefore be handled with caution. The technology intensity classification is based on OECD methodologies and the data is from 2001 and 2003. (de Negri & Laplane, 2007, pp. 15-18) Nevertheless, the findings are consistent with recent conversations with innovation specialists in Brazil.

Percentage Share of Exports, Technological Intensity vs. Ownership
Firms with >50 employees (de Negri)

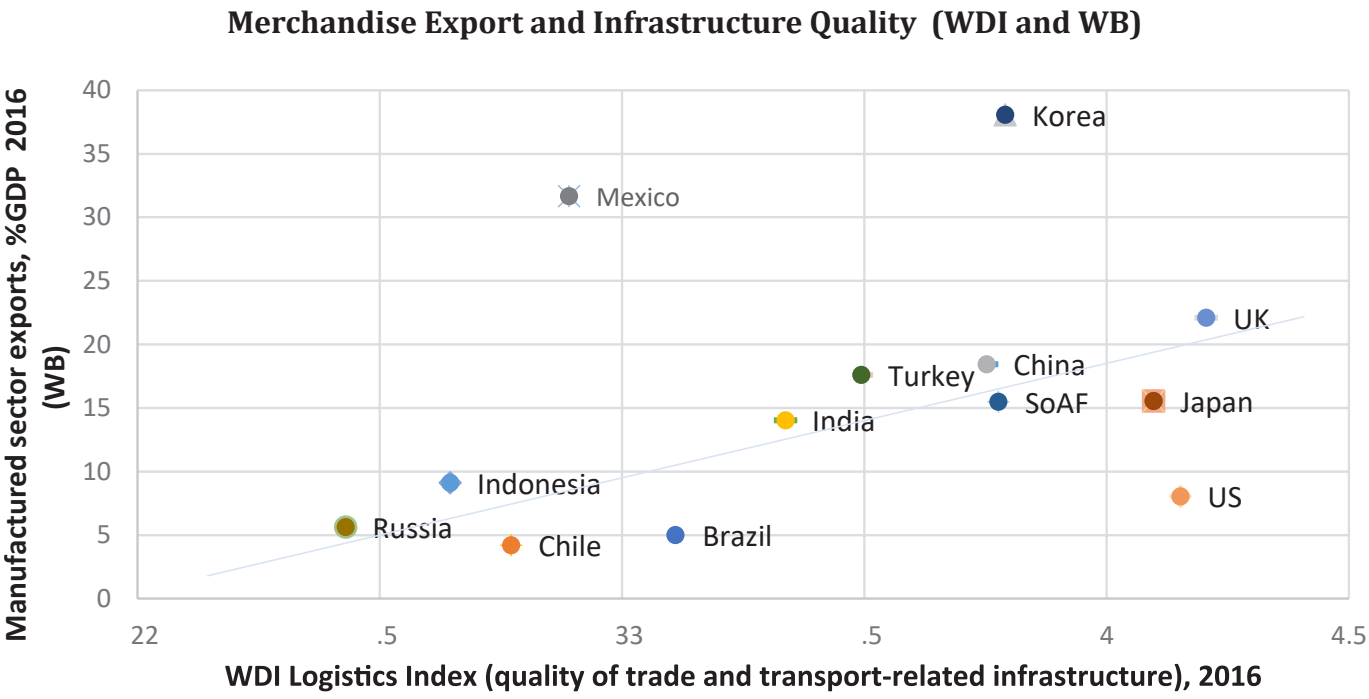


It should be noted that the services sector has important input into manufacturing exports, and this subject is covered by (Arbache, Rouzet, & Spinelli, 2016, pp. 25-27) and (Arnold, Javorcik, & Mattoo, 2011). In OECD countries, higher FDI ownership of the services sector is correlated to higher exports of services. [Elaborate]

Infrastructure and Exports

The chart below[63] describes an unsurprising connection between infrastructure quality and merchandise export. Note that the outliers: Mexico, US and Korea. The Mexican case could perhaps be explained by its proximity to the US's own higher quality logistics infrastructure Merchandise exports imply a high number of intermediate inputs, especially as complexity rises. With complexity also rises the integration into GVCs, which requires the ability to efficiently ship intermediate and final products back and forth from production sites. Brazil's merchandise exports are not only low, they have a high domestic content and where they are integrated into GVCs, they are overwhelmingly in upstream. (de la Torre, Didier, Ize, Lederman, & Schmukler, 2015, p. 21)

[63] Adapted from a chart in (Zuniga, de Negri, Dutz, Pilat, & Rauen, 2016, p. 33)



FDI and "industrial policy"

As (Javorcik, Lo Turco, & Maggioni, 2017) observe, "industrial policy is back in fashion," even in post-Thatcherite Britain. It is still to be seen if this populist-driven political trend materialises. It is however not difficult to notice that Brazil is a counter-trend under the current administration with its emphasis on a laissez-faire roll-back of the over-ambitious Plano Brasil Maior (PBM) to a government policy of essentially structural reforms along with some very austere fiscal measures.

Box 8: Brazil's Automotive Sector

Brazil's automotive sector is the poor cousin of the global auto sector as well as that of Brazil's other prominent industries. By comparison to oil, agriculture, aerospace, biofuels, construction, the automotive sector has failed to impress. It is "unwell," failed to export, failed to provide competitive domestic prices, has low productivity, and produces practically no innovation, and engages in little R&D. It is also entirely foreign owned at the final point of manufacture. It is one of the sectors that has received the most FDI over decades, incentives, policy attention, etc. It is perhaps the biggest example of the failure to transition from import substitution to exports and perhaps the failure of FDI. And its outlook is decidedly bleak if policies are not adopted to radically alter the way it operates. A lot is at stake, not least because half a million workers are employed by the sector. Needless to say, like in most economies, the automotive sector is the most prominent 'beneficiary' of industrial policy, the last round of which is the Inovar Auto, and which is being superseded by the Rota 2030 programme.

The main problem according to (Sturgeon, Lima Chagas, & Barnes, 2017) is that an outdated vision dominates the policy-making practice, viz. it seeks to replicate the entire value chain of automobile manufacturing in Brazil, whereas the reality of the sector is that it has becomes an extremely globalised and competitive value chain with extremely high barriers to entry at the top echelons. Very powerful lead manufacturers control design, research, final assembly and consumer marketing, retaining the most valuable parts of the process near their main or regional hubs, of which Brazil has virtually no chance of becoming. The next tier of primary suppliers is similarly concentrated and delivers the same unforgiving message to Brazil with respect to value and location. According to the authors, it is only when we reach the 3rd tier (suppliers to the primary suppliers) that Brazil may find meaningful linkages to be made. The key survival however would be to focus the strategy on specialisation, gradual lowering of tariffs, outward reorientation and future orientation.

Inovar Auto failed to guide the modernisation of the sector to existing GVC. It also failed to prepare for the extremely unique opportunity (and equally dangerous risk) that is presented today, viz. the well-telegraphed direction of the sector towards electric vehicles (EV), autonomous vehicles (AV) and mobility services. These new technologies are disrupting the entire automotive landscape as EVs have very significantly fewer components and are less challenging from an engineering perspective. They are easier to design, engineer and produce, and introduce new components, modalities (economic and production) and players into the GVC. AVs and mobility services will transform not only how the cars are built but also their usage and ownership norms. Brazilian planners need to take the initiative as it is highly unlikely that corporate strategy offices in Detroit, Turin, Nagoya, or Wolfsburg are giving much thought to what will happen to the 37 manufacturing plants in Brazil. The key is for planners to recognise that this fact is equally a threat and an opportunity. Otherwise they will have to revert to rewarding the next generation of foreign-owned automotive plants with subsidies and protective tariffs to enjoy above-global returns paid for by the captive Brazilian consumer.[64]

It should be said that while Inovar Auto may not have set the stage for the long-term survival of the sector, it at least attracted new investment and generated high paying jobs in the half decade of its existence. Moreover, it managed to do this in the face of a crippling appreciation of the currency, where the USDBRL rate was as strong as 1.6 whilst the 'industrial' equilibrium rate was around 4.0 according to a government economist of the administration. As is the unfortunate fate of Brazilian business, macroeconomics lead to microeconomic distortions. Justifiably or not, the reticence of monetary policymakers to pursue a more mercantilist stance meant that microeconomic measures such as local content rules and tax breaks had to be introduced by other departments with costly long-term consequences.

[64] Needless to say, these threats and opportunities are not unique to Brazil. The annual ECLAC study on FDI has a section on the threat of new technologies to the Mexican automotive industry entitled "The automotive industry in Mexico: a success story under pressure." (ECLAC, 2017, pp. 153-186)

The PBM was according to some of the economists interviewed, an attempt by the Rousseff government to replicate the East Asian experience. The 'Presalt' discoveries led to overreach and indiscipline, with the expected windfall leading to overconfidence that centralised funding will be available for the transformation of the country to a 21st century, high-tech future. It also entailed enormous and highly concentrated capex programs, procurement deals, and financing transactions, all of which were prone to typical problems of misallocation and corruption. In the end, consistent with a recurrent theme of Brazilian economic history, the effort could not survive severe reversal of fortunes at the macro-level, with external shocks massacring projects as well as fiscal and monetary projections. And the next 3 years have been spent with policy reversals and emergency management.

Today the government is compelled to operate under more realistic forecasts for commodity revenues, and has imposed on itself draconian fiscal constraints. The current arrangement amounts to an 'anti-industrial policy,' a withdrawal of regulation and encouragement of private capital. With respect to FDI, this means previous rules around profit caps, local content, environmental regulations, etc. have been reduced or eliminated, in line with a general thrust to deregulate myriad aspects of the domestic economy. As we have seen in this section, it is clear that there are debilitating bureaucratic, infrastructure and sectoral conditions that make the economy uncompetitive, leading to stagnant and oligopolistic domestic sectoral dynamics. Crucially, for our investigation, they ultimately distort FDI towards market-seeking opportunities rather than efficiency-seeking ones.

It is unlikely however that these will be sufficient to transform Brazil from its current malaise. Releasing competitive forces is necessary but insufficient for export-ready dynamism to return to various economic sectors. They are not sufficient if Brazil wants to field new companies with even a fraction of the successes of Embraer, Petrobras, Embrapa, Oderbrecht65, etc. An industrial policy need not be a national champions policy, but it needs to nevertheless direct limited resources to accelerate the market process, to redirect both domestic and foreign capital into entrepreneurial endeavours.

[65] Now disgraced and cut-down, Oderbrecht was described by an economist as having had the ambition and reach of becoming a Samsung of Brazil. This may have proven to be false analogy, but the point was that the recent crisis has justifiably or not destroyed one of the conglomerates that could have played a role of concentrated, entrepreneurial, internationally orientated, innovative company with high-skilled cadres which were a feature of the East Asian development model.

5. Savings and domestic finance

In previous sections we discussed to what extent FDI has had consequences for productivity growth, GVC integration, export growth, and introducing more competition into domestic product and services markets. Infrastructure featured as a particularly promising area. Here we will reconnect the theme of FDI to Brazil's domestic financial sector. After all, from Brazil's perspective, FDI is a means of financing investment objectives even if the fund-raising aspect is not the only the driver.

Multiple dimensions

There are several angles through which FDI and domestic finance system interact:

1. As complements
2. As substitutes when domestic finance 'fails'
3. Domestic finance as a shaper of the external sector via its role as intermediary between savings and investment in the Brazilian economy
4. FDI occurring in domestic financial institutions
5. Outward FDI investors from the financial sector

When we speak of domestic finance, we have 4 sectors in mind:

1. Commercial banks
2. Public banks
3. Local bond markets
4. Local pension funds

We will ignore equity finance altogether (including private equity and venture capital) principally because our perception is that the main problems of Brazil have to do with a kind of market failure in the creation of long-dated leverage.[66]

Complementarity – long-dated BRL financing

FDI is mostly equity as we have seen, and for equity investors leverage is used to improve the returns on equity, which is the main measure of performance of MNCs. If the leverage is obtained in BRL, it is also a means of reducing overall foreign exchange exposure, and to some extent 'country exposure.' To the extent possible, within any investment project or business, the duration of borrowings match the return horizon of the particular deployment of capital: for capex they will be longer (e.g. 3 to 30 years), for working capital shorter (e.g. 6 months to 2 years), and for trade finance a matter of months. This is because debt, unlike equity, must be repaid in full or refinanced at prevailing interest rates obtainable by the firm. Therefore, while debt allows a foreign company to increase its return on equity, it must balance this with the fact these create some of the highest-ranking obligations on the balance sheet of company. It follows that the two dimensions that matter most is the cost (interest rates) of these obligations.

The Brazilian financial system, while quite sophisticated, has not been able to create a deep and liquid market for long-term debt. Part of this is the prohibitively high real rates in Brazil that strongly disincentivise savers from extending duration. It is probably also due to insufficient work on 'market structure' and 'micro-structure' issues[67] that may need more concerted focus and creative intervention by financial authorities. There might have been a golden opportunity after the global financial crisis of 2008 to push forward such an agenda when G3 rates were extremely low and expected to remain low,[68] but the Eurobond markets since 2010 for hard currency emerging market corporate bonds was too enticing for Brazilian CFOs, who therefore did not have to invest some effort into creating markets for themselves.[69]

This vacuum has always been filled by BNDES (and other state banks), and after the 2008 crisis, its role multiplied as a confluence of events led to its even greater importance in Brazilian finance. The critics argue, it seems rightly, that BNDES overstepped and ended up causing a lot of distortions in the economy by bifurcating sharply the financial system. It also probably became a victim of that bifurcation (see Box 9: A speculative excursus into the political economy of the BNDES). Probably most critics do not accept that the financial system's own distortions led to the compelling elevation of BNDES as by far the most important provider of patient capital, that is to say that it does not come all down to 'government hubris.' As Box 9 below tries to narrate, a standard instrument of development policy found itself unable to continue its mandate as aggressively as the previous administration wished.

[66] Nevertheless, I acknowledge that some very interesting questions arise about equity markets, ownership, returns, risk financing, governance, etc. that merit a specific investigation.

[67] Market structure essentially refers to classes of participants and their expected behaviour and pricing power by virtues of their size, flexibility and influence, and how they affect price discovery, evolution, etc.; very relatedly, 'microstructure' refers to the details of regulation, conventions, information dissemination, etc.

[68] The implication here is that with very low G3 rates, ceteris paribus, the propensity for international investors to 'chase' the higher yields that the BRL offers helped improve liquidity in domestic bond markets.

[69] Estimating from the BCB's balance of payment data, with some inferences, about $120 billion of Eurobond debt was raised between 2010 and 2017 using foreign subsidies. These figures can be corroborated from other sources. See the section on Intercompany loans for an accounting discussion of this phenomenon.)

Box 9: A speculative excursus into the political economy of the BNDES retreat

The central role of BNDES in the provision of long-term finance to domestic (and foreign) investors is well-known, as is its highly charged retreat.[70] Development or industrial banking is of course the standard strategy for any ambitious "catch-up" country to drive capital formation and socialise the national risk-taking of long-term bets.[71] In France of Napoleon III it was Crédit Mobilier (a private bank run by socialist Portuguese brothers); the Rothschilds emulated them with Credit Anstalt in 19th century Austria; then the Germans followed with their universal banks; Meiji Japan with Industrial Bank of Japan et al; and more recently Korea with the ultra-aggressive KDB; and still today, China with its four state banks plus the 3 policy banks. Not all these banks survived, but they contributed a crucial role in accelerating their countries' transformation from agrarian backwaters to modern economies.

We will not be asking why BNDES has not transformed Brazil into an Asian tiger, but rather why it has been cut down to size? The focus here is on the problems of how BNDES fit into the overall financial system rather than its mission as such.[72] Development banking – and any national development endeavour – is an exercise in asking people ('the nation') to suffer today for a better outcome tomorrow. It is both a massive technocratic endeavour and a political mobilisation. A dream is being sold, and the money has to come from somewhere, and it has to keep rolling until the seeds are harvested. There were too many vulnerabilities in BNDES's set up to make this work.

1. It tried to **subsidise without financially repressing the entire system**, **leaving the parallel system to flourish**: the private banks were allowed to make rent-profits in the worst of times, (The Economist, 2016) and were allowed to continue to represent the "real market." (In East Asia, it was the opposite, following the classic model of letting a parallel shadow market form, which is always kept marginal and subject to fear of being shut down.)

2. By letting two big markets operate, **not everyone was on board**, while in Asia you had no choice. With two markets roughly equal in size operating transparently and legally, this was an arrangement that could not but end badly.

3. BNDES ended up **creating financial repression that was not sufficiently socialised**. Rather it funded with the hitherto least vocal segment, which in turn probably allowed it to operate for a while without a broader, negotiated consensus among economic stakeholders. This is clearly linked to a politico-economic legacy: a very high and entrenched GINI coefficient that means savings are coming from distinct classes that can generate a surplus, and who expect their capital to fund their future consumption.[73]

4. The effect was to create a **multi-tiered, formalised system of financial repression that was deeply regressive**. Ultimately the rich, the middle class and the corporates got to save in the formal financial sector at higher rates, which lent at high real rates to the government and to the poor with very generous credit spreads. By contrast, the poor lent at artificially low rates, saw little benefits from all this investment, and borrowed at extortionary consumer finance levels.[74]

5. The **working poor, who ultimately rebelled,**[75] **were the worst hit via three channels**:

   a. Funding: via their remanded savings (FAT, etc), and then via negative savings of the government (fiscal transfers and loans) which finances itself via regressive taxes and a regressive bond market (participating investors are skewed to middle class and above).

[70] I rely heavily on the analysis of the World Bank in two papers, "Towards a More Effective BNDES" (Frischtak, Pazarbasioglu, Byskov, Hernandez Perez, & Carneiro, 2017) and "Brazil Financial Intermediation Costs and Credit Allocation" (Pazarbasioglu-Dutz, et al., 2017) as well as (Musacchio, 2014, pp. 240-258).

[71] The grand, foundational narrative on this is (Gerschenkron, 1965)

[72] Clearly overreach, misallocation, etc. play big roles, but this excursus is a speculative attempt at understanding BNDES from the perspective of a political economy of domestic development finance.

[73] This includes more than just the '1 percent'. One economist interviewed mentioned that the middle class 'rebelled' when real rates were being lowered under the Rouseff government. In a highly racially stratified system like Brazil, the collective time-shift required to invest in the future requires exceptional leadership, and perhaps exceptional leadership in exceptional times. The point is that saving at lower real rates is transparently funding someone else's future consumption as well as ones own.

[74] Cf. The kerbside market in Korea in the 1960s and 70s were funded by ordinary households and yielded 3 times the official rate. See (Studwell, 2013, pp. 148, 149, 274n17)

[75] The irony is not lost on anyone that the working classes revolted against the party most sympathetic to their needs. In hindsight we can see that these protests were part of a global phenomenon driven by complex interactions with social media, the spectacle of the Arab Spring, and rising populism globally. Nevertheless, it is difficult to not posit a connection to the politico-economic failure of the 'dream' and the pressures it put on this segment of the population (despite the improvements we witnessed in GINI coefficients during this time).

b. Lending: worse still, BNDES aggressively lent to the national champions who needed it least, the ('Bolsa Empresário') (Leahy, 2015) and some FDI investors.[76] Some research suggests a number of borrowers used funds for financial arbitrage. While this could not be the majority of the portfolio, its political consequences were toxic with the wider pubic and opened up BNDES to the classic criticism of misallocation.

c. Crowding out: BNDES took the best clients and embedded the state as a big borrower, 'compelling' the commercial banks to seek returns in extortionary consumer finance.

6. **BNDES found itself reliant on a weak state that was itself too implicated in the cash nexus** – running a rigid budget with huge pension, social, and debt service expenditures – thereby rendering its funding channel hostage to a sceptical bond market. When things came to a head, 'fiscal pedalling' via public banks was the accusation that led to the president's impeachment.

7. **BNDES's projects failed to create quickly enough the virtuous macro cycle** needed to make this kind of 'catch-up' strategy work. The commodity boom probably enabled overoptimistic assumptions and a failure to imagine the conditions of a 'sudden stop.'

8. Probably BNDES and the government did not see the dangers because of the **dulling effect of prolonged commodity booms**, and possibly even more so because some of its biggest lending projects were dependent on the persistence of the boom. The curse of commodities led to over-commitment to Presalt, to blindness to the fragility of the funding structure of BNDES, and finally, to excessive appreciation of the BRL that led to a damaging consumer binge on imports, which sapped national savings.

Although this is probably a caricature of the workings of the BNDES system, it seeks to emphasise the failure to really socialise costs and embark on a 'collective bet.' Finance and investment are 'time-shifting' exercises: sacrifice immediate consumption for future returns. The claims of the former became impatient, as it were, and not entirely unjustifiably. Nevertheless, given that investment project returns cannot be accelerated, the acceleration of financial claims, so to speak, means the machinery snapped. In the end, not even a state-bank can lend at deeply subsidised levels and borrow at 'undistorted' ones for long.[77]

[76] As note of caution, anecdotal evidence that is not statistically supported by systematic surveys is very dangerous in these circumstances. One reason to suspect that systematically national champions were abusing BNDES largesse is that in the years 2011 and 2012, there is some evidence from OFDI data that very large ICLs were made from Brazilian subsidiaries abroad back to headquarters because domestic rates were very high. It could be argued that these national champions would not repatriate funds had they been satiated with cheap funding, although there is no reason to insist that that would be the correct interpretation. These funds could have been deployed for working capital or capex, or they could have been used by the treasuries to benefit from domestic rates.

[77] One might say, in a jocular fashion, that the East Asian model's recommendation would be to 'distort' both your lending and funding rates by a lower magnitude and smaller spreads as the system would not build up pressure within your highly transparent balance sheet. Needless to say, the growth and influence of the financial sector over the preceding decades (in Brazil and elsewhere) preclude this, and perhaps too much political commitment exists to the monetary regime established since the 1990s militate against this.

The long road from BNDES to long-dated bond financing

Ideally long-term financing is provided by bond markets, rather than banks (commercial or public sector), as they disperse the liquidity risk across economic actors rather than concentrating maturity mismatch in the banking system. This is particularly important for infrastructure projects where investment horizons are measured in decades rather than years.

Figure 4: Corporate bonds outstanding (CVM)

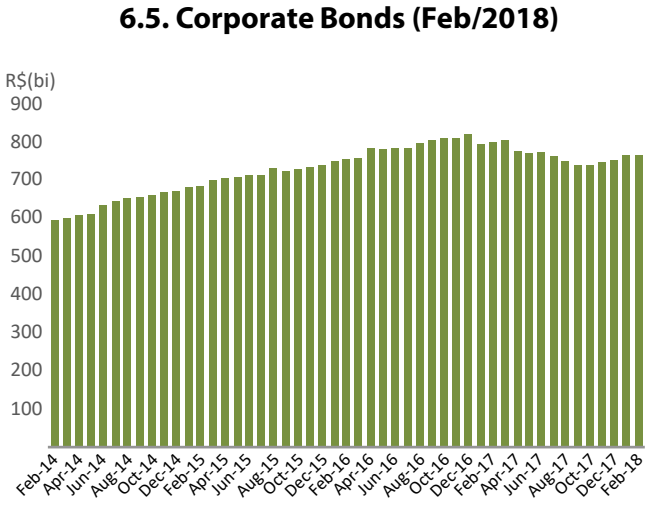
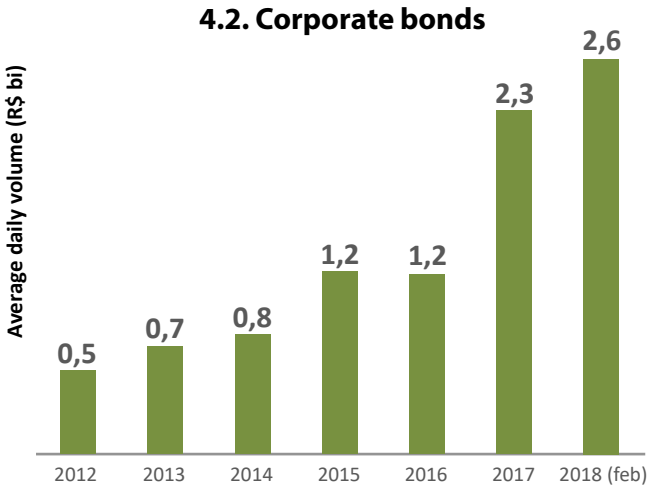


Figure 3: Average daily volume, BRL (CVM)



Fonte: SND

The corporate debentures market today is about BRL 750b, compared to approximately BRL 3.3t of federal government bonds. The market has grown rapidly in the 2000s, with issuance growing from about BRL 15b per annum to 91bn between 2001 and 2013, and with a greater proportion of public offerings compared to more restricted or private offerings. (Teixeira, Coutinho, Ferrao, Fonseca, & Lavarda, 2014, p. 32) As Figure 4 and Figure 3 indicate, since 2014, the size of the market as well as the daily turnover have increased.

The most critical issue facing Brazilian debt finance is probably that of lengthening the financing horizon that debt markets can offer to borrowers, both private and public. (A discussion of this subject in a separate section, The promise of infrastructure FDI

If the historical record of FDI can be described as 'mixed,' and disappointing in terms of boosting productivity, competitiveness and global integration, the most recent FDI inspires a bit more hope. The single most encouraging trend is the renewed interest in infrastructure.

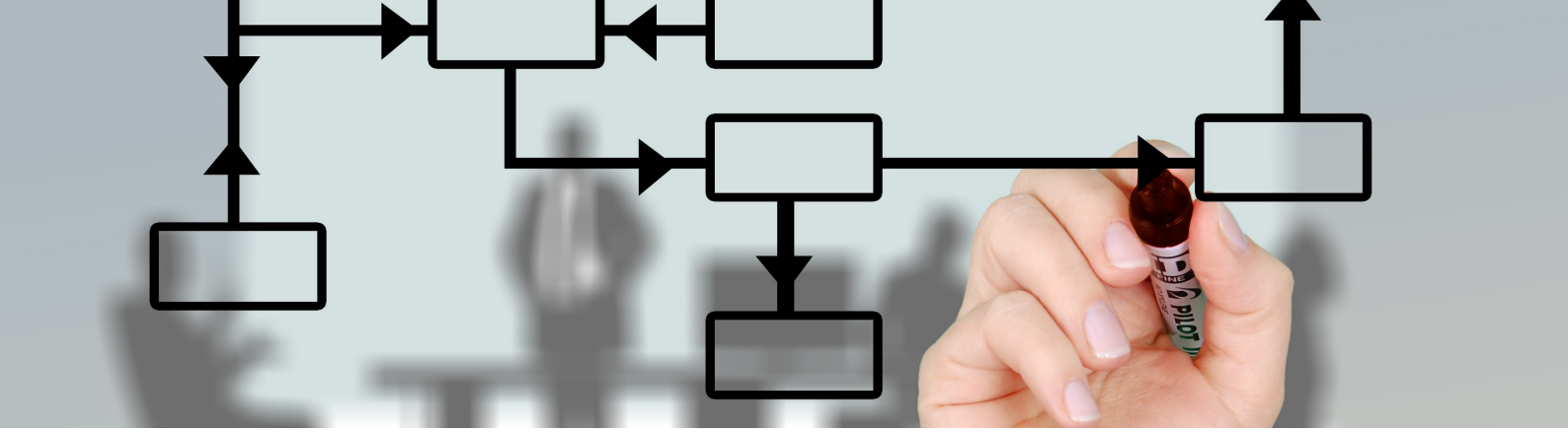
Chinese (and other) investors

Looking at sub-sector level data, we can discern how dramatically the composition of FDI has evolved. There is a very noticeable trend away from traditional FDI sectors which dominated the mid- to late-2000s – viz. commodities-related, telecom, and financial services.

Some of recent movements in subsectors targeted by China and western infrastructure funds, viz. infrastructure and transport. There is much thinking – and concern – about China's ambitions to extend its "Belt and Road Initiative" from Eurasia to Latin America through the biggest and most strategic economy. Indeed, Chinese FDI has not come without reservations from Brazilian public and private sector officials. Indeed, the Ministry of Planning decided, partly in response to public apprehensions, to publish regular bulletins on Chinese investments in Brazil.

However, we should not underestimate the role of western investors in Brazilian infrastructure plays. Indeed, government officials from different ministries suggested that there seems to be a 'crowding-in' effect of the Chinese enthusiasm for infrastructure assets in Brazil.

Even in western newspapers, Chinese infrastructure investments in Brazil is widely reported. After all, China has replaced Spain as the main FDI investor, with $21b invested in 21 electricity companies since 2015. (Stratfor, 2017) The question remains what are the strategic intentions of China? What are the modalities? Whereas it is easier to understand the desire to secure commodity supplies, the desire to own domestic power assets, e.g., seems more



opaque, and therefore, for some potentially more ambitious. Quite a few economists mentioned that the Chinese will 'encounter problems,' as they adjust an approach that was deployed in Africa. A few academic and government officials mentioned that "Latin America is not like Africa," suggesting that the Chinese will have to accommodate more developed institutions, more established elites and a more vocal civil society.

The geopolitical dimension is also highly complex, as clearly Brazil is within the orbit of US geopolitics. Indeed, it would be surprising if Chinese investments have not become a geopolitical concern for the US, and thus not only a cause of concern but even an area of very active political intervention via economic and commercial attaches.

However, some observers suggest that Chinese involvement has evolved in a discernible pattern: initially in 2010 it was focused on commodities security, then from 2014 investments diversified to manufacturing and other industries focused on the domestic market. A third phase has started that is less geo-strategically-driven and more about Chinese multinationals looking for good opportunities.

What is not in doubt is the size of the ambition. As early as 2015, President Xi Jinping of China committed to invest $250b in Brazil by 2020. (Muggah & Abdenur, 2017), a pace of investment that would be orders of magnitude larger than what Brazil has experienced so far. It would also transform Brazilian infrastructure and provide a massive impetus for growth. It is clear however that Brazil is ill equipped, to accommodate such an energetic influx of direct investment. It is not clear that the bureaucracy, political elite, the business community nor the general public are able to interface meaningfully with their Chinese counterparts for this kind of program. As one observer put it, "The real question is whether the next generation of Brazil's legislators, regulators and business leaders have the foresight and integrity to guide these new investments wisely. To be sure, Brazil's civil society already has its hands full monitoring its own political and economic class, much less the arrival of the Chinese." (Muggah & Abdenur, 2017) Even worse, the suggestions are that even a vision is lacking at this stage.

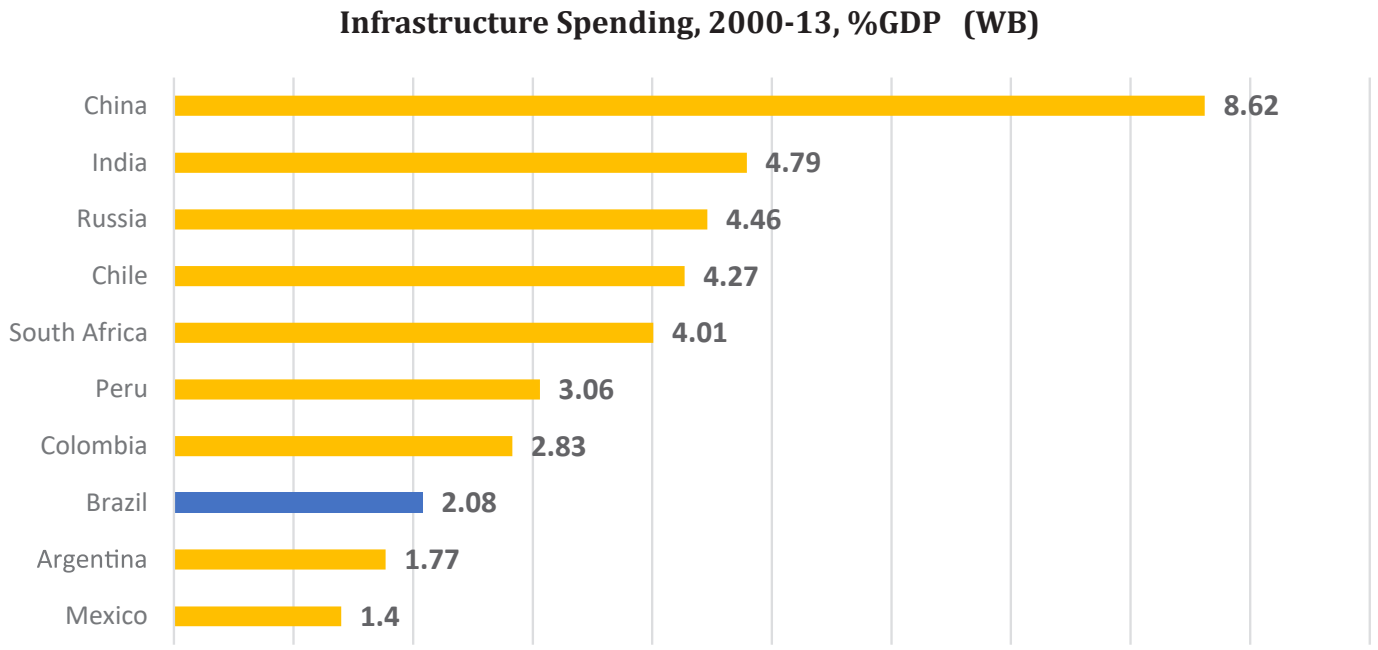
However, a well designed institutional framework, well--thought through and well-staffed could be a golden --- and possibly the only --- transformational opportunity for Brazil to jump start a process of infrastructure upgrade and productivity growth. What Brazil needs to agree with China is an investment set up that will work under multiple economic scenarios, particularly risks of slowdown in Chinese investments. Among many other things, the trick is to make sure that projects are designed such that potential economic risks from China will not lead to vast wasteland of half-completed projects in the event that China experiences a credit crisis.

One indication of how ill-equipped Brazil is the slowness of the deployment of the $20b fund set up with China ($5b BNDES, $15b China). Details are of course everything, but to date no significant deployment of these funds has occurred.

Desperate deficit in infrastructure spending

The shift of services FDI into infrastructure is a major development in Brazil, and could lead to important improvements in economic productivity. Indeed, there is a consensus that infrastructure and logistics are among the most prominent impediments to competitiveness across the entire economy as we have already highlighted. Although the Ministry of Finance analysis on productivity problems mentions infrastructure only once, in other contexts it was made clear that it is key element in the residual that explains the growth malaise afflicting Brazil. (See below, and footnote 16)

McKinsey research from 2014 suggests that Brazil requires between $2.4 and $4 trillion of infrastructure investments by 2030 (Elstrodt, Manyika, Remes, & Ellen, 2014, p. 53), which amounts to at least 6% per annum using 2014's very high $GDP figure. That is comparable to China's infrastructure investment pace rather than Latin America's. These estimates are in line with the World Bank's (Raiser, et al., 2017, p. 15), and are multiples of actual investment ratios which are just above 2% of GDP. (World Bank, 2016, p. 75) Today these barely cover depreciation (Raiser, et al., 2017, p. 9), and lags most of its peers substantially.



Particular areas of weakness are transport (road, rail and ports), water and sanitation, and the greatest investment gap has been in transport. Even after adjusting for the vastness of the country and the population sparsity, Brazil underperforms peers. It also underperforms in terms of power. This is a well-known affliction that is clearly reflected in WEF Global Competitiveness Index rankings, infrastructure ranks 73rd of 137 countries, transport (ex-airline seats) are 88th or worse. (See the section on Competitiveness above).

Efficiency gains

Lots of money needs to be spent for Brazil to catch up, but it is not only about brute quantity. The World Bank speaks of "allocative inefficiencies" (i.e., "poor targeting of investments, so that highest need priorities remain unaddressed") and "operational" ones (poor quality services, high costs, poor utilisation, high losses). On both of these counts, Brazil has potentially 'easy wins' to capture.

For example, in transport, the inefficiencies of existing infrastructure contribute to a 1.4% drag on GDP, they estimate. Specifically, modal-mix (road transport constitutes 65% of freight, which is nearly 2 to 3 times as high as India and China) and the operational shortcomings of the federal highway system. Shifting road freight to rail potentially yields a 0.7% gain in GDP, while solving the problems of the highway system would yield an equivalent GDP boost. The returns on investing in the latter are estimated at 250%. (Raiser, et al., 2017, pp. 19,20)

Private sector failure, public failure, public subsidy

The private sector has not taken up the slack in the infrastructure. One of the reasons is that projects are not designed to pass on the cost of infrastructure services to users or tax payers, and thus in the absence of clear and reliable modes of passing on costs to users, greater reliance on public sector funds occurs.

When PPP is used to attract private investment, long-term financing ends up being provided by BNDES. BNDES and CEF in 2014 funded around 68% of infrastructure investment. (Raiser, et al., 2017, p. 12) This outcome is strongly at odds with the spirit of the SDG and multilateral's concept of 'crowding-in' the private sector. The general protocol advocated by sponsors of the SGD involve the public sector underwriting some of the project risks via risk-reducing measures while the private sector participates in the less risky, long-dated credit financings. However, in Brazil, because of dysfunctional interest rates, the public sector ended up providing subsidised 'senior funding.' This has changed recently not only because BNDES has been subjected to a restructuring, but also because Chinese FDI seems to be entirely funded from China. (See Box 9: A speculative excursus into the political economy of the BNDES retreat)

PPP schemes are big in Brazil, with over half a trillion dollars invested between 1990 and 2015, but these are hampered from the outset by weak public sector capacity to prepare projects. Insufficiently staffed with capable personnel, projects are often prepared by unsolicited bidders in a process called Procedimento de Manifestacao de Interesse, which allow infrastructure companies (rather than fully independent economic consultants) to prepare projects and who are not fully remunerated for their work and therefore are incentivised to skew project preparation to their advantage as subsequent bidders. (Raiser, et al., 2017, p. 37) The net result may be to encourage private sector participation, but invariably at the expense of good competition and quality.

Contractual uncertainty is a major problem, and indeed, as one interviewee mentioned, concession reviews are quite high in Brazil (and Latin America generally), with complica-

ted implications for bidders. However, it is not clear to this author what proportion of reviews are driven by governmental authorities or by operators. More generally, judicial uncertainty has been cited as a persistent problem.

The Ministry of Finance emphasizes that first order impediments to greater private sector participation in infrastructure has been regulatory risk, and believes that the Rousseff government had to use BNDES subsidised funding to sweeten the deals to get bidders to accept ex-ante caps on profit, local content rules, and stringent environmental constraints.

Public sector execution challenges

Nevertheless, harnessing FDI, or any private investment, into infrastructure requires government bodies to rise to the challenge. Infrastructure projects require continuous public-sector involvement regardless of whether they are privatisations, concessions, PPIs, entirely public sector, etc. The complexity of these undertakings requires the highest technical skills of government bureaucrats, be they at the level of national planning and strategy or at local project lifecycle management (design, selection, execution, evaluation, regulation, etc…). They require effective execution against forces of corruption, political processes, lobbying by interest groups, in addition to complex policy trade-offs and regulatory compliance. Moreover, these need to occur against a background of extremely constrained public resources.

The World Bank has identified major shortcomings across the entire process of infrastructure project lifecycles, from planning to preparation to implementation and post-implementation. Even regulatory structures and concession basics are so underdeveloped that regulators have signed on behalf of sellers, rather than being a properly independent 3rd party. According to their report, the key problem is the "limited overall capacity for planning, executing and monitoring of complex projects…" across federal, state and municipal levels, even more than availability of funds. Their Brazil country chief summarise the key action points: (Raiser, Blog entry, 2017):

1. National infrastructure plan that outlines the key priorities based on diagnosed service gaps
2. A shortlist of projects selected on the basis of objective criteria
3. Multi-year approach to project selection and budgeting
4. Budget rules that strengthen project execution and not merely control spending
5. Safeguards to manage social and environmental risks, not merely unimplemented standards

While it is clear that Brazilian domestic sources of finance are constrained, and therefore the emphasis on low hanging fruit of efficiency gains is attractive, the other urgency is how to accommodate the 'wall of money' coming from China.

Contrasting assessments of public sector capabilities

The World Bank report is actually quite alarming in terms of its assessment of the government's absorptive capacity. Citing the unsuccessful experience during the 'golden years' of scaling up the PPI (Projeto Piloto de Investimento) into the PAC (Programa de Aceleracao do Crescimento), the report asserts "the lack of resources was not the binding constraint on public investment... disbursement data shows a consistent gap between commitment of funds and their effective disbursement, which results from low capacity for execution of the government. The Federal Government and other SOEs executed less than 30 percent of the planned investment expenses between 2001 and 2015." (Raiser, et al., 2017, p. 17)

Most Brazilian officials and academics interviewed seemed to think that technical and administrative capacities existed, especially at the Federal level. One economist insisted that transport expertise in governmental departments and agencies were world-class and that the size of the challenge is not as large as perhaps the World Bank suggests.

However, the World Bank report cites official audits at both Federal and municipal levels which suggest that most common problems (quality, delays, incompletion, etc.) stem from poor planning and ineffective management during implementation. These were more pronounced at municipal levels. The interaction of "low capacity and complex regulations facilitates corruption." (Raiser, et al., 2017, pp. 23,24)

Planning

According to the World Bank, investment planning is one of the weakest links in public investment management, not because of any identified technical weakness, but because the Plano Pluriannual (PPA) process involves recirculating and negotiating past, incomplete projects rather than pushing forward a coherent, strategically incisive plan. Implicit in the critique is the lack of sequencing and "big bets" or at least precise, focused bets (a la Hirschman). Moreover, the PPA strategies are not integrated with other sectoral strategies of government institutions, leading to unfocused execution of investment projects. (Raiser, et al., 2017, p. 26)

As one economist described it, although the current government's economic strategy have the merit of being 'less heroic' (i.e. none of the 'industrial policy' ambitions of the Rousseff administration), there is total lack of strategy at the infrastructure level. The general impression, indeed, is that ministries are struggling to develop a coherent pipeline of projects to show foreign investors, and resorting instead to dusting down old proposals without a robust and overarching plan.

Appendix: The horizon problem of Brazilian finance.) With respect to corporate debentures, unfortunately neither the Securities Commission (CVM) nor the securities dealers' association (ANBIMA) publish readily available data. Relatedly, and unfavourably, the market is almost entirely a floating-rate market where interest payments are a fixed spread over the floating 'DI' rate. (Teixeira, Coutinho, Ferrao, Fonseca, & Lavarda, 2014, p. 32)

Box 10: Case of Nova Trasportadora do Sudestes

Here we examine a recent news report about an imminent bond financing to analyse its possible impact on various economic indicators we have been discussing in this report. Grasping the complexity of specific transactions and their cumulative effect is not trivial and is worth examining in detail.

In 2016, a Canadaian investor, Brookfield Asset Management, acquired 90% of Petrobras-subsidiary Nova Transportadora do Sudestes (NTS) for [……] as part of Petrobras' post-crisis spinoffs to deleverage its balance sheet. As of March 2018, NTS is scheduled to issue the largest domestic BRL corporate bond in several years. At the time of the preparation of this report, it was in talks to issue a BRL 5.2 billion 5-year note, an issue size that is 15 times the average in the market. (Mandl & Bautzer, 2018)

Although this would be a large bond-market financing of FDI as we have been advocating, it is an acquisition financing[78] on the back of a Petrobras divestment, and therefore its overall effects on capital formation and credit formation are muted.

- **Impact on GFCF**. The acquisition transaction of 2016 generates no meaningful 'first-order' impact on national investment figures. No new productive capital was formed in the transaction; moreover, it is improbable that Petrobras will redeploy the proceeds as we know it is shedding assets to repay loans and deleverage its balance sheet. Additionally, as a 'financial buyer,' Brookfield is less likely to embark on ambitious capex programs.[79]
- **Primary impact on credit formation**. The ensemble of transactions probably reduces credit formation at a national level. We know Petrobras is reducing its liabilities after the crisis and therefore will have paid down loans (or simply refinance less.) [80] The net effect is probably that Brazilian banks (including BNDES) will have been repaid.[81] If Brookfield has leveraging capacity, or even more foreign capital to invest via new direct equity or via intercompany loans, then this would represent, ceteris paribus, new capital formation.
- **Secondary impact on credit formation**. On the basis that the new NTS is less leveraged (from Brazilian sources of credit) than when it was under Petrobras ownership, the acquisition has released more lending capacity with the economy.
- **Impact on future GFCF capacity**. The balance sheet reduction is good for the financial stability of Petrobras and its replacement by less domestically-levered investment from Brookfield is probably also good for Brazilian stability, but we are still far from a greenfield investment that is very accretive and which mobilises the domestic bond market.
- **Impact on bond markets**. According to reports, the bond issues are expected to be purchased by the asset management arms of Itau and Banco do Brasil, which may be 'rolling over' previous Petrobras loans which resided within the banking groups (or bonds issued by Perobras). If this then ends up being effectively a 'privately placement' with no secondary market activity, then the new bonds do not really offer a continuous market price signal, something that would be important for the development of the corporate bond market.
- **Impact on productivity and GVC integration**. Just to complete the analysis, we can expect that neither productivity nor GVC integration would be enhanced by this transaction as it stands. The investor is a financial buyer

[78] Indeed, these financings may have been well-planned, if not entirely secured, at the time of the acquisition.

[79] In acquisitions, a distinction is made between two types of investors. 'Financial buyers' are private equity firms who primarily see a financial opportunity of an existing business that can be profitable with some financial engineering but generally minimal operational and strategic changes. 'Strategic buyers' are industry MNCs who see a strategic and operational opportunity, be it to access markets, complete footprints, integrate in value chains, etc… and therefore are more prone to transform and enhance the acquired company.

[80] Petrobras reduced gross debt by $9b in one year from Q3 2016, and plans to reduce it another $12b by Q4 2018. (Business and Management Plan 2018-22, p. 12) About one-third of Petrobras's expenditures has gone to retiring debt, and one-fourth of that has been funded from disposals. (Financial Results Q3 2017, p. 19)

[81] Petrobras seems to have increased hard currency bond debt and paid down bank debt, although it is not clear from an initial look if these are hard currency or BRL loans. (Financial Results Q3 2017, p. 11)

The importance for infrastructure FDI of long-dated bond markets cannot be overstated. This is primarily because infrastructure is a thoroughly domestic market sector. Relying ultimately on domestic income to obtain returns (either through end-user or government payments), infrastructure investors need to consider FX risk over a long horizon. [82] The government also does not want to pass on FX volatility to end-users where it would undermine the productivity gains sought, nor will it want to socialise it via the sovereign or sub-sovereign balance sheets.

Interestingly, a few officials and economists mentioned that many FDI investors – particularly recent Chinese investors – are willing to finance from headquarters and run the long-term BRL risk, on the basis that in the long-run they can accept the volatility. This may partly reflect the perception that the BRL has adjusted after the crisis of previous years and that the balance of long-term risks is more favourable.[83] However, it is probably not the case that the entire infrastructure program could be executed on these terms, and therefore a long-term financing mechanism in addition to BNDES needs to be created.

Complementarity – corporate and SME lending

The other area where domestic finance (particularly for corporate banking and BNDES) needs to be mobilised in connection with FDI is to help fund riskier ventures that link up with downstream FDI. Availability of finance is identified in the FDI literature as a significant enabler of backward linkages. Where businesses and entrepreneurs have developed access to risk capital and credit to enable them to build business that supply MNCs who have set-up shop in the country, there is double the chance of creating those linkages.[84]

Access to credit is worst in the SME sector, which receives 12.2% of total credit, although they contribute 20% of GDP and 43% of total wages (54% of employment). Notwithstanding the inefficiency of this sector as we mentioned earlier, the lack of credit would explain part of the low productivity story amongst the smaller firms. Proportionally, SME access to finance declined to 43% in 2014, down from 49% in 2012 (World Bank, 2016, pp. 92,93), although this may change with the renewed focus of BNDES on SME.

As we can see from BIS data of corporate debt, levels of leverage are not enormous.[85] They are higher than Mexico

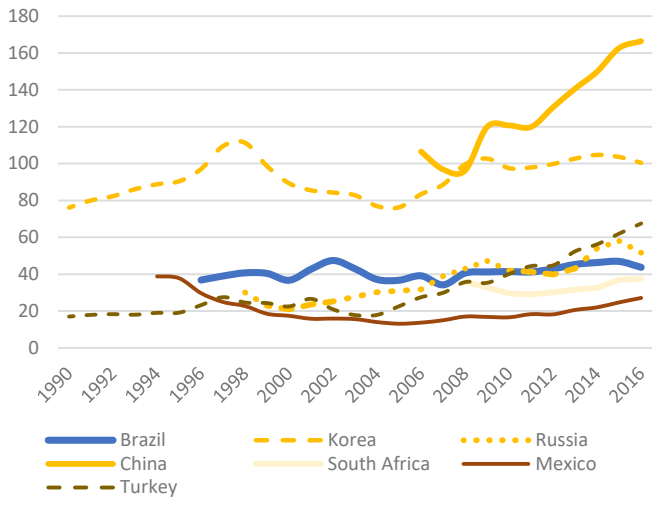
[82] It is encouraging that the BCB governor asserts, however obviously, that "The most important thing for infrastructure investment "is to have lower interest rates for good." (Financial Times, 2017)

[83] Government monetary policy would benefit by biasing BRL to remain cheap to the dollar at least during the intensive infrastructure FDI phase. There are many good reasons to want to keep the BRL cheap, not least to suppress imports, but the immediate one is to make infrastructure investors' BRL entry levels 'cheap,' which buttresses returns in future years and decades for the investor and reduces the FX and FX-driven risks for the government when these projects start to generate earning that will be converted back into hard currency and repatriated. To be reminded of how large these flows are already, revisit the section Remittance of earnings)

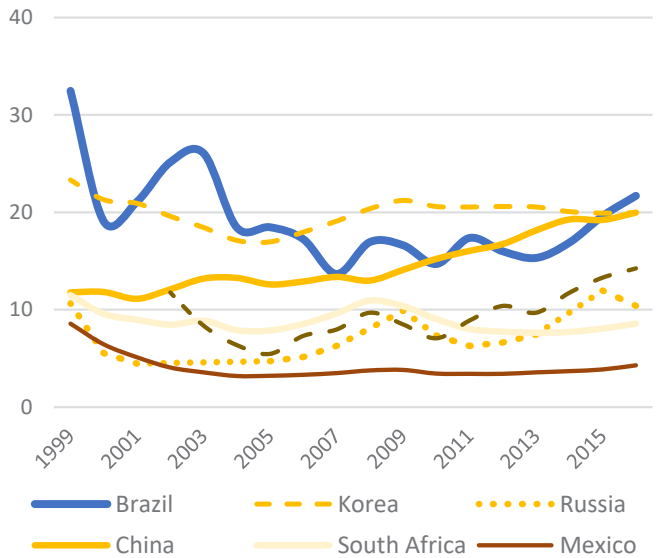
[84] See (Alfaro L. , Chanda, Kalemli-Ozcan, & Sayek, 2006) for statistical study that emphasises the importance of domestic local markets to enable backward linkages. The authors refer to literature by themselves (Alfaro L. , Chanda, Kalemli-Ozcan, & Sayek, 2004), Durham (Durham, 2004) and Hermes and Lensink (Hermes & Lensink, 2003) that make a stronger assertion, "that only countries with well-developed financial markets gain significantly from FDI in terms of growth rates." (My emphasis).

[85] An IMF study in 2017, that used both aggregate and firm-level analysis, considers Brazilian corporate debt high enough to be a drag on GFCF recovery. (Barbosa, et al., 2017) By Brazilian standards, the debt burden at around 40% of GDP translates to an extremely heavy debt service load on the actors for reasons we discussed earlier: very high interest rates and short maturities. IMF researchers also detect an elevated propensity to borrow attributable to Brazilian tax structure's 'debt bias': as interest costs are deducted from taxes, debt finance is privileged over equity finance with productivity consequences as it disadvantages new entrants' who are naturally tend to be more reliant on equities as well as less able to access credit. Finally, this bias coupled with the very high debt service costs reduces the effective marginal tax rate, and when combined with depreciation costs, debt-funded investments provide very little tax revenues. (Barbosa & Mulas-Granados, 2017, pp. 106, 106n10)

Credit to non-financial corporations, %GDP (BIS)



Debt Service Ratio of non-financial sector, %Income (BIS)



and South Africa, but hardly approximating anything resembling the East Asian levels of investment. However, if we look at debt service ratios for the non-financial sector[86] we see Brazil's non-financial sector debt burden is very large and exceeds that of much more leveraged corporate sectors, both due to very high interest rates and short-dated financing.[87]

How this relates to our earlier discussion about GFCF and savings (see "Low Savings ≈ Low Investment") is complex, and the subject of much debate. However, it seems reasonable to this researcher to make the following claims:

- there is an excess of demand for credit, evidenced by high interest rates
- high real interest rates do not seem to attract substantially more domestic savings
- the debt burden is so high that net credit formation is hampered by debt servicing

Savings, the external sector, and domestic financial conditions

We mentioned savings in relation to GFCF and productivity in an earlier section (See "Low Savings ≈ Low Investment"), where we tried to see if FDI had any impact in increasing overall investments. We concluded that FDI has not made a transformational impact to raise investment rates, i.e. it was not additive to existing savings. We return to those initial questions: we know that FDI has been enormous in Brazil over the past quarter century, to the tune of $1 trillion – so why is the aggregate savings rate is so low and why has not foreign savings added to the overall rate of savings and investment?

However, before delving into this, we need emphasise that the question of low savings is not merely 'solved' by external sector flows, but also is related to it more deeply via the 'sectoral balances identity' and is therefore implicated in external sector stability as well.[88] As a World Bank report discusses at length (de la Torre, Didier, Ize, Lederman, & Schmukler, 2015, pp. 1-40, 197-230), the persistence of low savings rate is a Latin American curse that has elaborate consequences that ultimately hit the external sector and force Brazil into vicious cycles: excess imports, inflationary pressures (domestic consumption exceeds domestic production leading to higher REER), further payments (build-up of liabilities).

There is the additional commodity price dimension. In the case of Brazil and other commodity exporters like Russia and probably South Africa, the REER appreciates on a dose of the Dutch disease, wreaking havoc to the current account. Figure 5: Commodity prices, REER, Capital Accounts (BCB, WB) shows how closely a 'Brazil blend' of commodity prices (weighted by Brazil's primary commodity exports) fits reasonably closely the REER as well as the trendline (polynomial function) of the capital account. It suggests an unhealthy connection between commodity prices, exchange rate competitiveness, and national savings. Given that commodity prices are the exogenous factor, it is more likely that it is driving the other two rather than merely coinciding with them, suggesting the presence of a Dutch disease.

De la Torre et al do not emphasize the commodity-driven dynamics, but interpret the 'supply shock' of liquidity that hit Brazil from 2000 onwards as a recycling of East Asian capital exports, as something of a replay of the Petrodollar 'supply shock' of the 1970s when OPEC country revenues were recycled via US banks.[89]

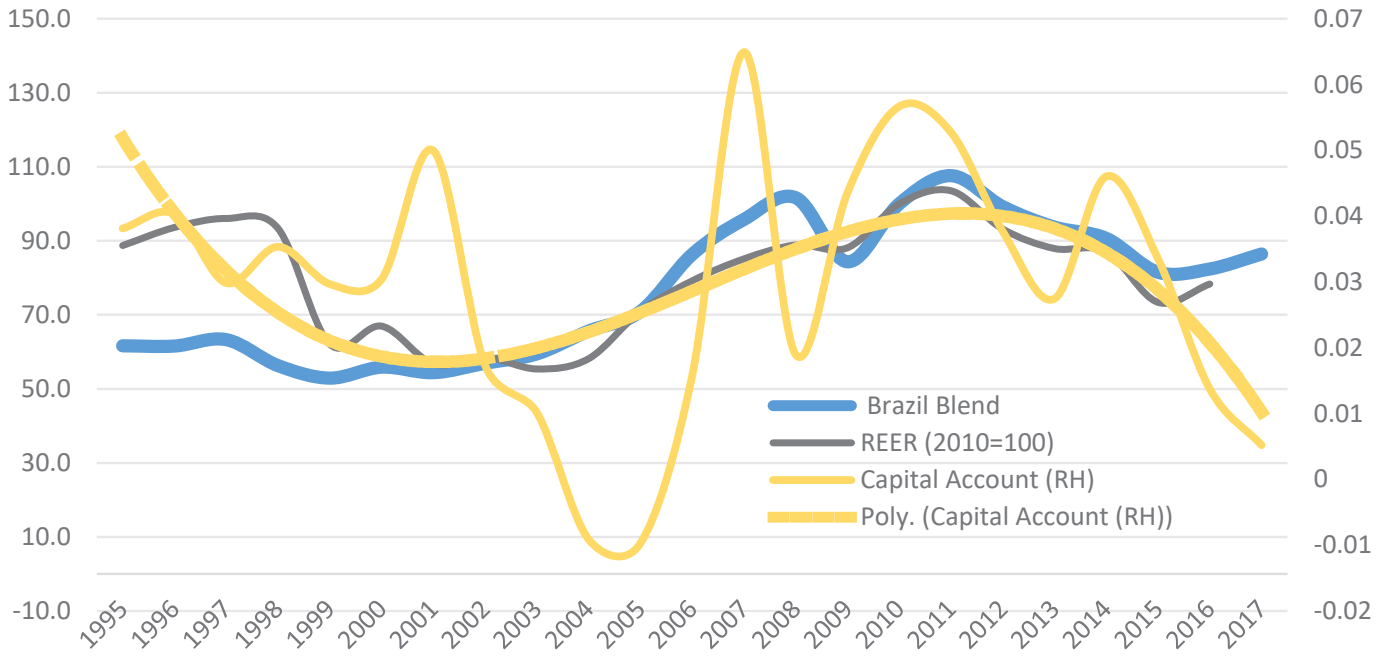
[86] This includes households. It was not possible to find BIS data for corporate debt service ratios.

[87] Note that BIS methodology estimates amortisations. See (Drehmann, Illes, Juselius, & Santos, 2015)

[88] As a reminder, savings is related to the external account more generally by the sectoral balances identity: net private savings (S – I) = government balance (G – T) + net exports (X – M). This is equivalent to saying (S – I) = (G – T) - capital account balance (outbound – inbound). Net foreign savings = (inbound – outbound). Government is persistently in deficit after interest expenses are considered. Therefore the governing relationship is something like this: net private savings = net foreign savings – government deficit. Note of course that net foreign savings = - current account deficit. These identities do not explain why the savings rate and GFCF per se are so low, as net savings could be composed of much higher levels of savings and investments. The equation clearly shows the how the growing 'twin deficits' of post-GFC where absolute levels of domestic savings are low (coinciding almost necessarily with low growth) leads to great vulnerability of a 'sudden stop.'

[89] Placing the 'blame,' as it were, on external supply of capital is similar to the argument about a 'savings glut' that Ben Bernake, Paul Krugman, and Martin Wolf, among others have used.

Figure 5: Commodity prices, REER, Capital Accounts (BCB, WB)



Box 11: The external sector's damage to domestic savings

An empirical analysis by (Bresser-Pereira, Araujo, & Gala, 2014) suggests that one must start the analysis from the dynamics of the external accounts, for which the exchange rate is the what they call a "strategic-macroeconomic price."[90] Their assertion is that there is increasing literature that clearly connects exchange rate with exports (lower), growth (lower), and capital accumulation(lower), and furthermore makes an assertion that there are savings substitution effects. There are three interesting points that arise when they apply these framworks to Brazil.

Firstly they see a negative correlation between the REER and gross domestic savings. They assert there are two channels: i) income leading to consumption – the existence of a high marginal propensity to consume among the poor and the middle classes that is very responsive to a rise in real wages (increase in REER); ii) demand for savings drops because businesses forecast poor profits as increased REER means deteriorating competitiveness.

Gross Savings %GDP and REER (2010) (WB)

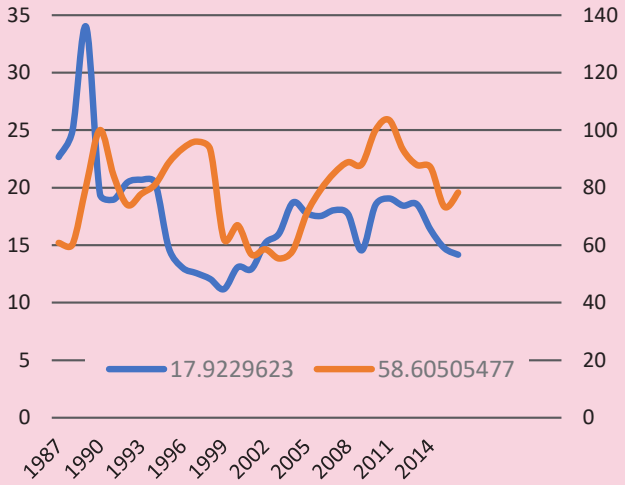
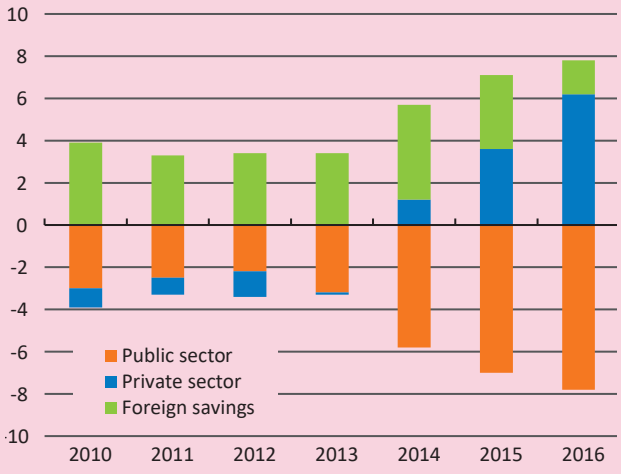


Figure 6: Recent trends in savings net of investment (OECD)



[90] I am reminded of one heterodox economist interviewed who said that even the Chileans in the heyday of 'Chicago Boys' economics adamantly refused to consider privatising CODELCO (the main exporter of copper) because of its strategic role in determining the Chilean Peso's value.

Secondly, Bresser-Pereira assert that under conditions of high REER foreign savings fail to be accretive because there a displacement effect under the macroeconomic framework that prevailed in Brazil since 1994.[91] Therefore, for our purposes, FDI has been operating in conditions where it substitutes (along with the rest of foreign savings) rather than adding to it, as we can see in Figure 6 until the large devaluations set in around 2014.[92] In effect, it is as if FDI 'crowds out' domestic savings, via dynamics of the external account.[93] Their empirical estimate suggests that the substitution is only partial where a 10% increase in foreign savings leads to 1.7% and 5.2% percentage-point decreases in domestic savings respectively for 1994 to 2002 and 2002 to 2013. (Bresser-Pereira, Araujo, & Gala, 2014, p. 64)

Third, is a more muted conclusion by the authors: their regressions show that there is a positive correlation between government savings and domestic savings – a 10% increase in government savings would lead to a 3.3 and 12.7 percentage-points for the same respective periods in domestic savings.[94] (Bresser-Pereira, Araujo, & Gala, 2014, p. 64) This contrasts with the finds of Edward's which sees a partial 'crowding effect' of government savings, though not close to -1. (Edwards, 1995, pp. 37,38)[95]

The key importance of this area of research is that it starts off with savings as an endogenous variable to be explained rather than a exogenous one that is given, which in the most simplistic iteration presents itself along the lines of, e.g, "Latin Americans do not save, Asians do," with subsequent refernce to Confucius, etc.[96]

[91] This macroeconomic framework is essentially the 'Plano Real' and Inflation Targeting regime, which the authors do not explicitly discuss.

[92] Unfortunately, it was not possible to find this OECD data to extend back to at least 1995.

[93] In the literature this is apparently called "savings displacement." Bresser-Pereira et al cite (Edwards, 1995) and (Reinhart & Talvi, 1998).

[94] This finding supports the consensus among orthodox economists across a wide spectrum that fiscal deficit crowds out domestic investment via the interest rate. See for example, (World Bank, 2016, p. 3) (Hausmann, 2008). However, if this empirical finding is borne out, the interesting question is why did the pre-GFC period (Lula' administrations) result in a partial crowding out effect while the post-GFC period resulted in a complete crowding out.

[95] Neither paper defines public savings very clearly. Bresser-Pereira et al do not at all in the version consulted, while Edwards's seems to discuss a few different concepts of public savings (which may cohere but is not explicitly stated.) Interestingly, Edwards makes a political economy point that is very relevant for Brazil with respect to public savings, where political instability is posited to lead to less government savings: "This analysis predicts that, with other things given, a greater degree of [political] polarisation will result in lower government savings." (Edwards, 1995, p. 21)

[96] Ricardo Hausmann makes the point delightfully: "a constant cannot explain a variable. China's Confucian history and cultural tradition cannot be used simultaneously to explain why growth there has been so high since 1978 and so low from 1500 to 1978." (Hausmann, 2008, p. 10)

Ultimately, current account deficits, low exports, high capital inflows, domestic savings deficit and overvalued currency are associated with each other. While this may be sustainable for long periods for economies that have a 'hard currency,' a country subject to 'original sin' like Brazil cannot afford this for long as investors (especially foreign) will not buy enough domestic debt because they cannot accept the exchange risk – it ends up experiencing a periodic 'sudden stops.'

Therefore, a sustained economic growth program cannot rely on external financing indefinitely. They can for specific periods that require "a favourable confluence of externalities and increased demand [that] create a scenario of great investment opportunities expressed as high expected profit rates, combined, in any case, with high GDP growth rates. This was, for example, the case during the Brazilian "miracle" of 1968–1973." (Bresser-Pereira, Araujo, & Gala, 2014, p. 58)

Low savings is often treated in macroeconomic discussion as an exogenous variable, and thus has a tendency to be the 'excess' or 'residual' of economic analysis, with resort to moralising or culturalist formulations. More nuanced analysis tends to call it a 'structural.' One work that approaches this problem from an angle that is sympathetic to ours emphasises the current account and therefore exports, and by implication the importance of the REER. (See Box 11: The external sector's damage to domestic savings.)

Ultimately, the lesson from Asia seems to be two-fold: one cannot grow and transform an economy without a properly large savings rate, for the work of raising productivity and competing in international markets require enormous investment (with a concomitant experience of mistakes and learning that is fundable because growth is large enough), and any tapping of foreign capital (borrowing or direct investments) requires funding to go to investment in technology, equipment that grow exports.[97]

The World Bank document by de la Torre et al contains a relatively lengthy suggestion of macro and micro-measures and are very forthright about the political challenges they entail (de la Torre, Didier, Ize, Lederman, & Schmukler, 2015, pp. 217,218). They all of course fall short of radical macroeconomic policy moves that would move Brazil closer to the East Asian developmental model (e.g., abandoning IT, or moving towards more capital controls). Nevertheless, a starting point within the existing framework would be to introduce more aggressive macroprudential regulations that limit the corrosive effect of consumer finance and encourage savings by providing aggressive incentives.

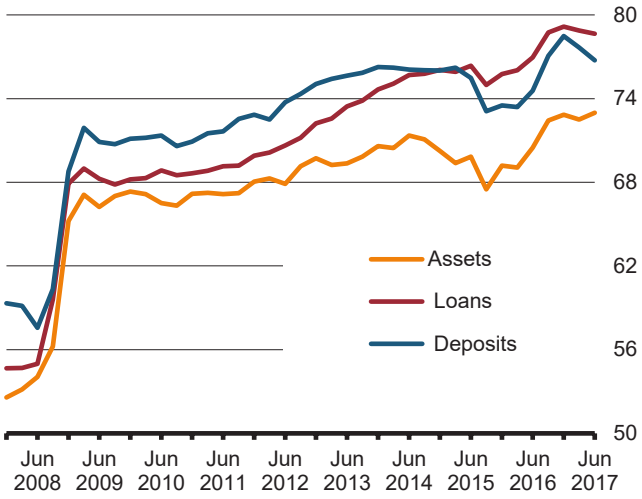
[97] See (de la Torre, Didier, Ize, Lederman, & Schmukler, 2015, pp. 1-40, 197-230) for a very incisive discussion of this subject.

FDI into the Financial Sector

The performance of Brazilian banks during the recent crisis has been described as something that "looks like a bad joke." (The Economist, 2016) Record net incomes were posted through 2014 and 2015 as GDP plummeted into a horrific recession. Only 25 banks posted a loss, out of around 180 institutions. According to the Economist, average credit price hit 32% in October 2015, while the SELIC hit 14.25% with a real interest rate of over 5%. This performance compares starkly to how most developed and developing country banking systems respond to generalised economic crises. The reasons for this are complex, but ultimately to pull off such results require pricing power.[98] As is well-known, banking is highly concentrated in Brazil and has gotten more so since 2008.[99]

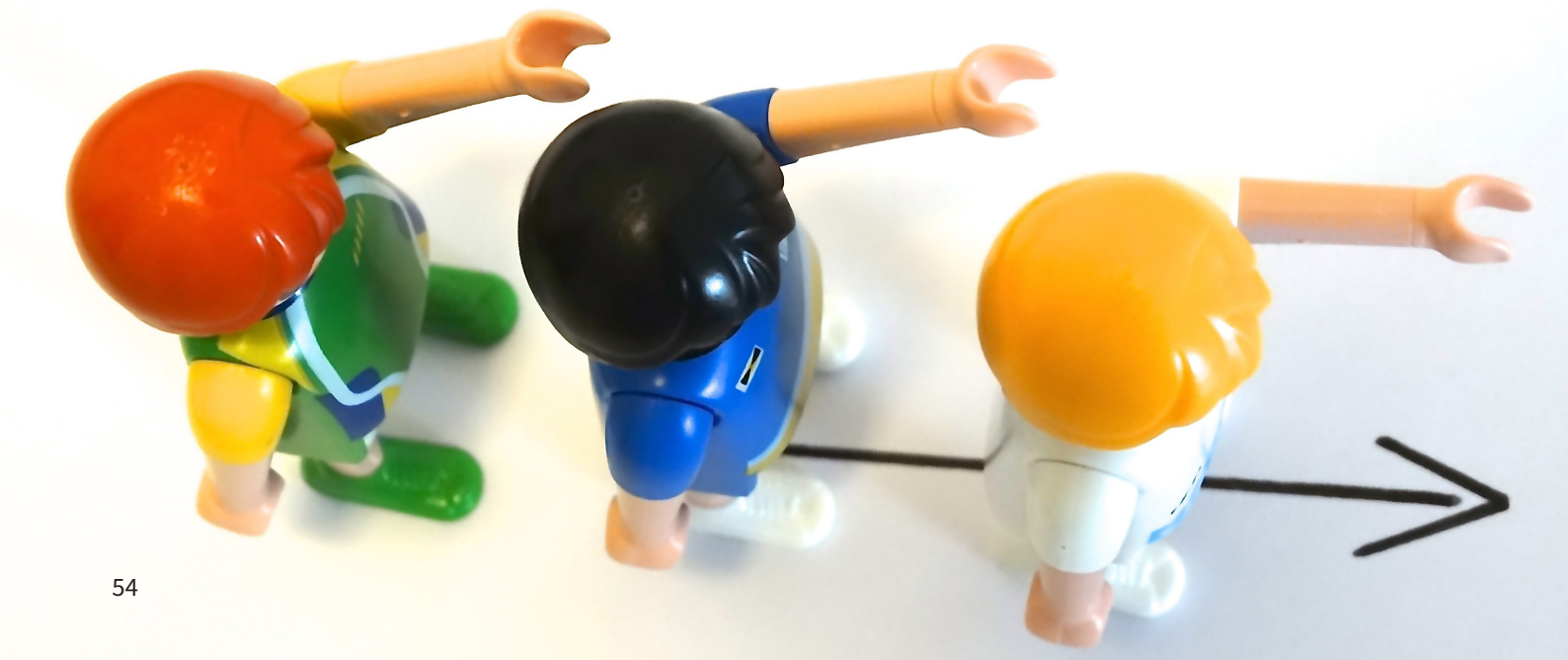
The rise in concentration is generally ascribed to consolidation, with foreign bank disposals constituting a large percentage of this. A wave of bank acquisitions in the 1990s and into the early 2000s ended up in some major exits after the GFC. This reversal of FDI was by no means a uniquely Brazilian phenomenon and was generally a response to capital needs of western banks after the 2008 crisis, as well as a general feeling that competing against well-run local banks that modernized quickly could not be beaten on their home territory in commercial banking. Those that survived, like Santander, have 'gone native' while those that tried to play a globalised model (e.g. "the global local bank") failed to sustain any advantage, with HSBC, UBS and Credit Suisse all in one way or another substantially divesting. [check names again]

Evolution of concentration levels – Banking segment Four-Firm Concentration Ratio – CR4 (Treasury)



[98] The pricing power is most clear in consumer lending. In other markets the picture is more complex as the credit market segmented between public and private banks. Therefore, their market share in corporate lending dropped from above 60% to around 45%, leaving them with a portfolio of 25% government securities that yield a real return of above 5%, and the remainder in retail and SME lending. Still more complexly, a good proportion of deposits are channelled by BCB regulations into specific lending targets as well as a very large proportion that is deposited as bank reserves with the BCB. (The Economist, 2016)

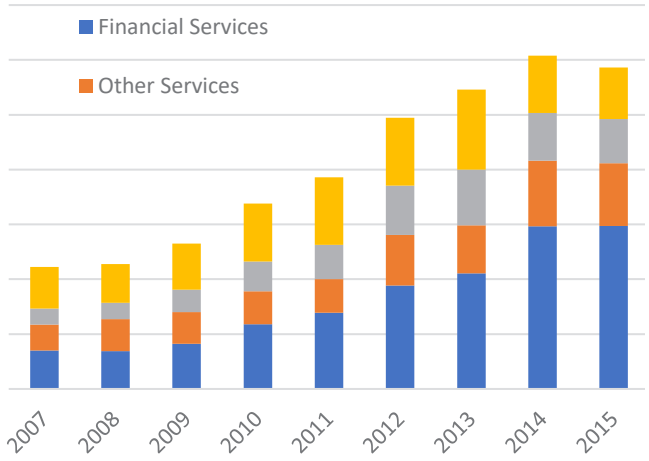
[99] There were some hopes that Brazilian fintech would disturbs this cosy state of affairs, but recently the highflying _____ was bought out by Itau for about $500m rather than listing in the public markets and pursuing an independent trajectory.



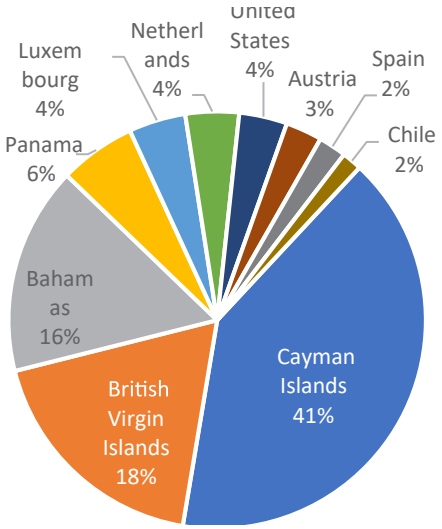
Outward FDI from the Financial Sector

Although this report has not discussed the phenomenon of outward FDI (OFDI), i.e. direct investments made abroad by Brazilian corporations, we will take a quick glance at Financial Services OFDI where it is the largest component of the past 10 years and therefore the largest stock of Brazilian overseas assets. These reached a sizable $150b by the end of 2016 or about half of all Brazilian overseas assets. Note the significant jump in assets in 2014 of around $54b which occurred as a result of the tax amnesty which encouraged Brazilians to declare their overseas holdings under the terms of the Special Regime of Foreign Exchange and Tax Regularization (RERCT). (BCB, September 2017)

OFDI by sectors, $m (BCB)



Top 10 Financial OFDI domicile



How is it that Brazil's financial system is able to invest overseas? We voiced modest scepticism about services, and especially financial services, (see Box 2: Limitations and Potentialities of Some Services FDI) with respect to export potential. Generally, the same competitive terms would apply for OFDI. Details about the nature of these investments are not easy to find and merit further study. While the financial sector is relatively advanced it is not particularly competitive to seek superior investment opportunities in overseas markets. Indeed, given the supply constrained savings market, it does not seem like there are obvious returns to chase overseas for a Brazilian financial company.

If we look into how these OFDI figures are constructed, we notice two things relevant for an understanding of this phenomenon:

1. the large divestment of foreign banks from the Brazilian banking system in the past ten years sometimes are transacted overseas, thus a Brazilian bank may purchase the shares via a Cayman vehicle, e.g., and this gets recorded as OFDI although in fact the operating assets are in Brazil.
2. if we look at the huge number of investors recorded on these transactions (about 12,500 as of 2016) it suggests that most of these transactions are not investments with operational intent. A quick look at the average transaction sizes reveals an anomaly, which this researcher has not been able to explain.

$m	Total OFDI Stock	Number of Investors	Average Investment
Financial and auxiliary services	159,536	12,456	13
Other Services	55,963	8,725	6
Manufacturing	37,808	453	83
Extractive and Agrobusinesses	54,243	218	249
Total	307,551	21,852	14

The only provisional explanation this researcher has is that these are financial structures for private wealth clients, family offices, and even corporate treasuries, to invest overseas.

6. The promise of infrastructure FDI

If the historical record of FDI can be described as 'mixed,' and disappointing in terms of boosting productivity, competitiveness and global integration, the most recent FDI inspires a bit more hope. The single most encouraging trend is the renewed interest in infrastructure.

Chinese (and other) investors

Looking at sub-sector level data, we can discern how dramatically the composition of FDI has evolved.[100] There is a very noticeable trend away from traditional FDI sectors which dominated the mid- to late-2000s – viz. commodities-related, telecom, and financial services.

[100] Sub-sectoral categories were changed in 2006, and this author has remapped the categories to pre-2006 categories based on available data. Note this data does not include reinvestment data.

Some of recent movements in subsectors targeted by China and western infrastructure funds, viz. infrastructure and transport. There is much thinking – and concern – about China's ambitions to extend its "Belt and Road Initiative"[101] from Eurasia to Latin America through the biggest and most strategic economy. Indeed, Chinese FDI has not come without reservations from Brazilian public and private sector officials. Indeed, the Ministry of Planning decided, partly in response to public apprehensions, to publish regular bulletins on Chinese investments in Brazil.[102]

[101] China is actively acquiring transport assets in South America. (Financial Times, 2017)

[102] "Boletim Bimestral sobre Investimentos Chineses no Brasil," http://www.planejamento.gov.br/noticias/planejamento-divulga-boletim-de-investimentos-chineses-no-brasil.

Inward FDI Trends in Top Subsecctors, equity only (BCB)

		1980s	1990s	2000-6	2007-8	2009-14	2015-16	2017P	Recent trend
Metallic mineral extraction	*Agri/Extract*	1%	1%	0%	18%	6%	5%	2%	...
Petroleum extraction and related servic	*Agri/Extract*	1%	1%	1%	3%	10%	8%	3%	...
Foodstuff and beverages	*Industrial*	5%	5%	5%	5%	6%	4%	5%	
Motor vehicles, trailers, semi-trailers an	*Industrial*	13%	11%	7%	2%	4%	11%	6%	...
Chemical products	*Industrial*	14%	12%	5%	7%	9%	6%	7%	
Electronic devices and communication	*Industrial*	8%	7%	2%	0%	2%	2%	1%	...
Basic metallurgy	*Industrial*	8%	7%	0%	12%	8%	2%	4%	...
Machinery and equipments	*Industrial*	9%	7%	0%	1%	1%	2%	1%	+
Mail and telecommunications	*Services*	0%	1%	29%	1%	5%	5%	1%	...
Commerce	*Services*	4%	5%	10%	7%	9%	10%	10%	
Eletricity, gas and hot water	*Services*	0%	2%	11%	2%	4%	6%	24%	+++
Financial intermediation	*Services*	4%	7%	8%	12%	8%	4%	3%	...
Services rendered to corporations	*Services*	11%	14%	11%	3%	2%	3%	2%	-
Real-estate	*Services*	1%	1%	0%	5%	6%	6%	4%	-
Transportation	*Services*	0%	0%	1%	2%	3%	4%	12%	++
Top 15 subsectors as % of total		*79%*	*81%*	*90%*	*83%*	*81%*	*78%*	*85%*	
Services		*19%*	*31%*	*70%*	*33%*	*36%*	*39%*	*55%*	+
Industrial		*57%*	*47%*	*19%*	*29%*	*30%*	*26%*	*25%*	-
Agri/Extract		*2%*	*2%*	*1%*	*21%*	*15%*	*13%*	*5%*	...
Average Annual Equity FDI ($m)		*25,082*	*31,919*	*20,867*	*39,396*	*53,169*	*55,723*	*51,150*	

However, we should not underestimate the role of western investors in Brazilian infrastructure plays. Indeed, government officials from different ministries suggested that there seems to be a 'crowding-in' effect of the Chinese enthusiasm for infrastructure assets in Brazil.

Even in western newspapers, Chinese infrastructure investments in Brazil is widely reported. After all, China has replaced Spain as the main FDI investor, with $21b invested in 21 electricity companies since 2015. (Stratfor, 2017) The question remains what are the strategic intentions of China? What are the modalities?[103] Whereas it is easier to understand the desire to secure commodity supplies, the desire to own domestic power assets, e.g., seems more opaque, and therefore, for some potentially more ambitious. Quite a few economists mentioned that the Chinese will 'encounter problems,' as they adjust an approach that was deployed in Africa. A few academic and government officials mentioned that "Latin America is not like Africa," suggesting that the Chinese will have to accommodate more developed institutions, more established elites and a more vocal civil society.

[103] See footnote 34.

The geopolitical dimension is also highly complex, as clearly Brazil is within the orbit of US geopolitics. Indeed, it would be surprising if Chinese investments have not become a geopolitical concern for the US, and thus not only a cause of concern but even an area of very active political intervention via economic and commercial attaches.

However, some observers suggest that Chinese involvement has evolved in a discernible pattern: initially in 2010 it was focused on commodities security, then from 2014 investments diversified to manufacturing and other industries focused on the domestic market. A third phase has started that is less geo-strategically-driven and more about Chinese multinationals looking for good opportunities.[104]

What is not in doubt is the size of the ambition. As early as 2015, President Xi Jinping of China committed to invest $250b in Brazil by 2020. (Muggah & Abdenur, 2017), a pace of investment that would be orders of magnitude larger than what Brazil has experienced so far. It would also transform Brazilian infrastructure and provide a massive impetus for growth. It is clear however that Brazil is ill equipped, to accommodate such an energetic influx of direct investment. It is not clear that the bureaucracy, political elite, the business community nor the general public are able to interface meaningfully with their Chinese counterparts for this kind of program. As one observer put it, "The real question is whether the next generation of Brazil's legislators, regulators and business leaders have the foresight and integrity to guide these new investments wisely. To be sure, Brazil's civil society already has its hands full monitoring its own political and economic class, much less the arrival of the Chinese." (Muggah & Abdenur, 2017) Even worse, the suggestions are that even a vision is lacking at this stage.[105]

However, a well designed institutional framework, well--thought through and well-staffed could be a golden --- and possibly the only --- transformational opportunity for Brazil to jump start a process of infrastructure upgrade and productivity growth. What Brazil needs to agree with China is an investment set up that will work under multiple economic scenarios, particularly risks of slowdown in Chinese investments. Among many other things, the trick is to make sure that projects are designed such that potential economic risks from China will not lead to vast wasteland of half-completed projects in the event that China experiences a credit crisis.

One indication of how ill-equipped Brazil is the slowness of the deployment of the $20b fund set up with China ($5b BNDES, $15b China). Details are of course everything, but to date no significant deployment of these funds has occurred.

[104] [cite article]

[105] A Bloomberg article cites Luiz Augusto de Castro Neves, a former Brazilian ambassador to Beijing: "China knows what it wants from South America.. But other than make a lot of money exporting commodities, South America still doesn't know what it wants from China." (Margolis, 2017)

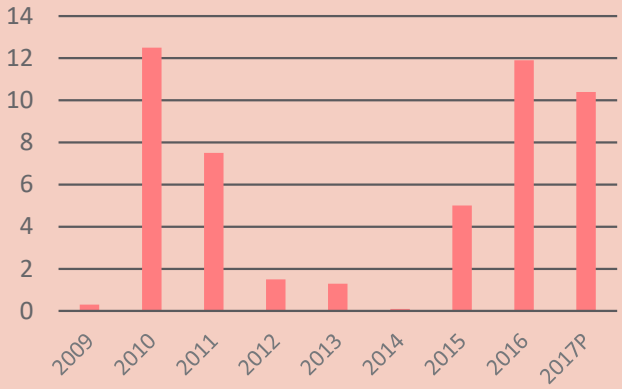
Box 12: China -- promising future but some short-term considerations

Brazil's integration into the Chinese economy is growing across various lines of the balance of payments: the merchandise account (Brazil exports commodities, imports manufactured items), services account (eventually, some of the profits will be remitted to China) and financial account (FDI).

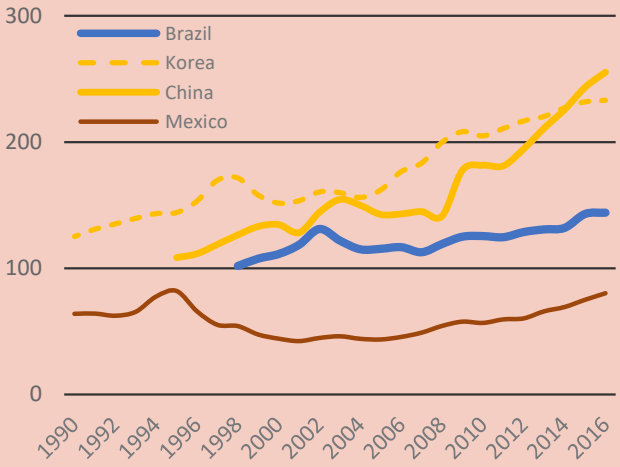
Integration implies a degree of mutual dependency of course, and as the weaker party in the equation, Brazil has to consider that its business cycle will be increasingly tied to China's, and more so than what most other countries will experience. To the extent that China will become a more developed, balanced and stable economy over the coming decades, this anchoring in the long-term can probably be managed so the benefits outweigh the risks, for there is little doubt that Chinese interest in Brazil is long term and strategic.

In the short-term, however, there may be serious risks to consider. China's recent growth is well-known to be very dependent on increased capital inputs, rather than TFP (see the section on productivity for a related discussion). The leverage in the system has ballooned since the financial crisis with credit to GDP ratios jumping to 260% in 2016 from 140% in 2008 GFC, an extremely fast and vast increase in leverage in the Chinese economic system. Not only does it suggest decreasing 'efficiency' of capital in China, as evinced by a very high incremental capital output ratio (ICOR) of about 6, but it also suggests that capital misallocation risks are higher. It should be noted that the 'China leverage' story has been around for a while in academic and professional circles.

Chinese Acquisitions, $b (FT, Dealogic)



Chinese Acquisitions, $b (FT, Dealogic)



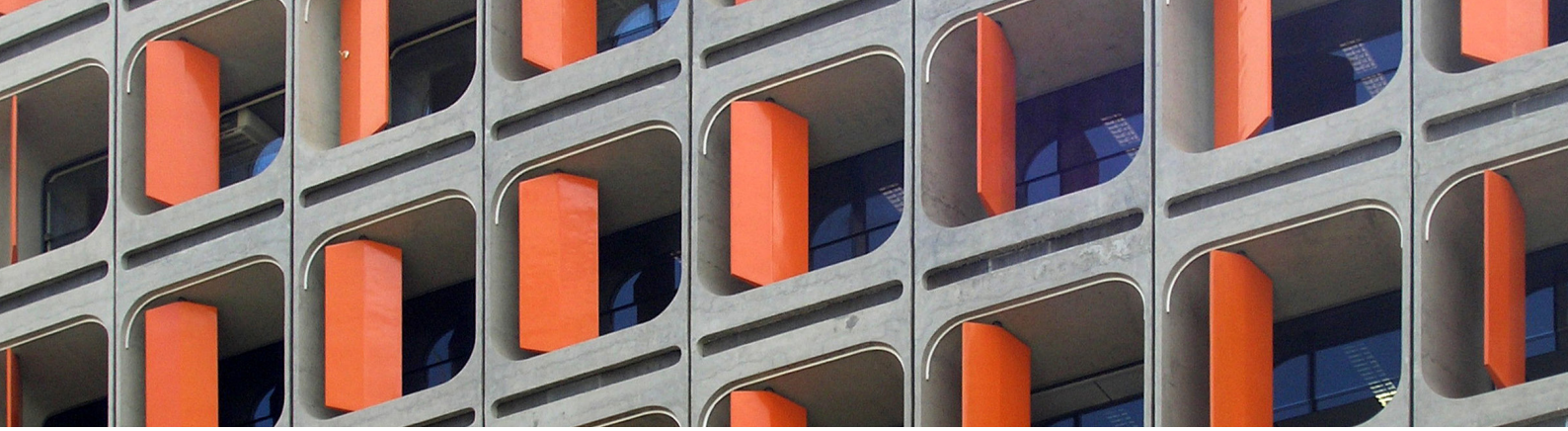
The implication for Brazil is that a credit crisis in China would result in a "sudden stop" via multiple channels, and therefore merits careful contract construction to account for such eventualities. For a clear exposition of the risks, see a recent ECB paper on the subject. (Dieppe, Gilhooly, Han, Korhonen, & Lodge, 2018, pp. 13-29)

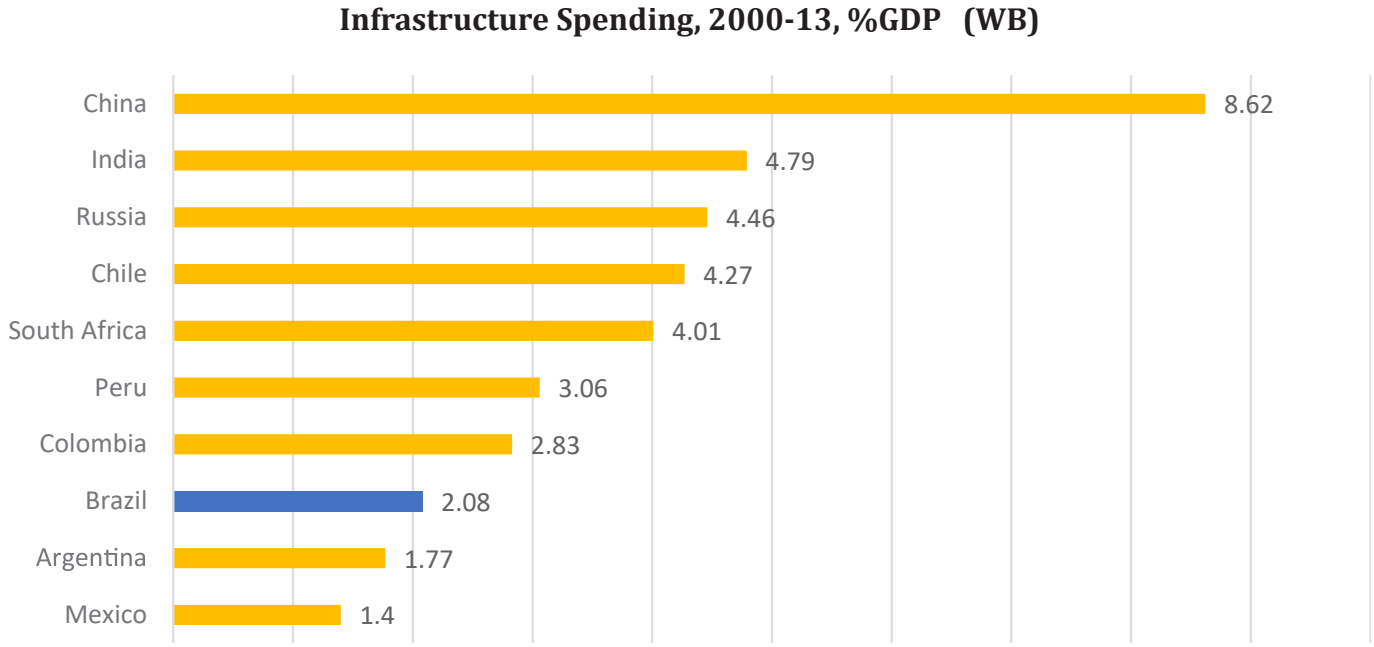
Desperate deficit in infrastructure spending

The shift of services FDI into infrastructure is a major development in Brazil, and could lead to important improvements in economic productivity. Indeed, there is a consensus that infrastructure and logistics are among the most prominent impediments to competitiveness across the entire economy as we have already highlighted. Although the Ministry of Finance analysis on productivity problems mentions infrastructure only once, in other contexts it was made clear that it is key element in the residual that explains the growth malaise afflicting Brazil. (See below, and footnote 16)

McKinsey research from 2014 suggests that Brazil requires between $2.4 and $4 trillion of infrastructure investments by 2030 (Elstrodt, Manyika, Remes, & Ellen, 2014, p. 53), which amounts to at least 6% per annum using 2014's very high $GDP figure. That is comparable to China's infrastructure investment pace rather than Latin America's.[106] These estimates are in line with the World Bank's (Raiser, et al., 2017, p. 15), and are multiples of actual investment ratios which are just above 2% of GDP. (World Bank, 2016, p. 75) Today these barely cover depreciation (Raiser, et al., 2017, p. 9), and lags most of its peers substantially.

[106] China the GFCF was 45% of GDP in 2016, of which 21.4% was in infrastructure, yielding just under 10% of GDP spent on infrastructure investment. (Wildau, 2017)





Particular areas of weakness are transport (road, rail and ports), water and sanitation, and the greatest investment gap has been in transport. Even after adjusting for the vastness of the country and the population sparsity, Brazil underperforms peers. It also underperforms in terms of power. This is a well-known affliction that is clearly reflected in WEF Global Competitiveness Index rankings, infrastructure ranks 73rd of 137 countries, transport (ex-airline seats) are 88th or worse. (See the section on Competitiveness above).

Efficiency gains

Lots of money needs to be spent for Brazil to catch up, but it is not only about brute quantity. The World Bank speaks of "allocative inefficiencies" (i.e., "poor targeting of investments, so that highest need priorities remain unaddressed") and "operational" ones (poor quality services, high costs, poor utilisation, high losses). On both of these counts, Brazil has potentially 'easy wins' to capture.

For example, in transport, the inefficiencies of existing infrastructure contribute to a 1.4% drag on GDP, they estimate. Specifically, modal-mix (road transport constitutes 65% of freight[107], which is nearly 2 to 3 times as high as India and China) and the operational shortcomings of the federal highway system. Shifting road freight to rail potentially yields a 0.7% gain in GDP, while solving the problems of the highway system would yield an equivalent GDP boost. The returns on investing in the latter are estimated at 250%. (Raiser, et al., 2017, pp. 19,20)

Private sector failure, public failure, public subsidy

The private sector has not taken up the slack in the infrastructure. One of the reasons is that projects are not designed to pass on the cost of infrastructure services to users or tax payers, and thus in the absence of clear and reliable modes of passing on costs to users, greater reliance on public sector funds occurs.

[107] Rail has a much greater importance for export commodities and agro-industrial products. (Raiser, et al., 2017, p. 18) This may indicate that more competitive sectors demand (and obtain) more efficient infrastructure.

When PPP is used to attract private investment, long-term financing ends up being provided by BNDES. BNDES and CEF in 2014 funded around 68%[108] of infrastructure investment. (Raiser, et al., 2017, p. 12) This outcome is strongly at odds with the spirit of the SDG and multilateral's concept of 'crowding-in' the private sector. The general protocol advocated by sponsors of the SGD involve the public sector underwriting some of the project risks via risk-reducing measures while the private sector participates in the less risky, long-dated credit financings.[109] However, in Brazil, because of dysfunctional interest rates, the public sector ended up providing subsidised 'senior funding.' This has changed recently not only because BNDES has been subjected to a restructuring, but also because Chinese FDI seems to be entirely funded from China.[110] (See Box 9: A speculative excursus into the political economy of the BNDES retreat)

PPP schemes are big in Brazil, with over half a trillion dollars invested between 1990 and 2015, but these are hampered from the outset by weak public sector capacity to prepare projects. Insufficiently staffed with capable personnel, projects are often prepared by unsolicited bidders in a process called Procedimento de Manifestacao de Interesse, which allow infrastructure companies (rather than fully independent economic consultants) to prepare projects and who are not fully remunerated for their work and therefore are incentivised to skew project preparation to their advantage as subsequent bidders. (Raiser, et al., 2017, p. 37) The net result may be to encourage private sector participation, but invariably at the expense of good competition and quality.

Contractual uncertainty is a major problem, and indeed, as one interviewee mentioned, concession reviews are quite high in Brazil (and Latin America generally), with complicated implications for bidders. However, it is not clear to this author what proportion of reviews are driven by governmental authorities or by operators. More generally, judicial uncertainty has been cited as a persistent problem.

The Ministry of Finance emphasizes that first order impediments to greater private sector participation in infrastructure has been regulatory risk, and believes that the Rousseff government had to use BNDES subsidised funding to sweeten the deals to get bidders to accept ex-ante caps on profit, local content rules, and stringent environmental constraints.

Public sector execution challenges

Nevertheless, harnessing FDI, or any private investment, into infrastructure requires government bodies to rise to the challenge.[111] Infrastructure projects require continuous public-sector involvement regardless of whether they are privatisations, concessions, PPIs, entirely public sector, etc. The complexity of these undertakings requires the highest technical skills of government bureaucrats, be they at the level of national planning and strategy or at local project lifecycle management (design, selection, execution, evaluation, regulation, etc…). They require effective execution against forces of corruption, political processes, lobbying by interest groups, in addition to complex policy trade-offs and regulatory compliance. Moreover, these need to occur against a background of extremely constrained public resources.

The World Bank has identified major shortcomings across the entire process of infrastructure project lifecycles, from planning to preparation to implementation and post-implementation. Even regulatory structures and concession basics are so underdeveloped that regulators have signed on behalf of sellers, rather than being a properly independent 3rd party. According to their report, the key problem is the "limited overall capacity for planning, executing and monitoring of complex projects…" across federal, state and municipal levels, even more than availability of funds. Their Brazil country chief summarise the key action points: (Raiser, Blog entry, 2017):

1. National infrastructure plan that outlines the key priorities based on diagnosed service gaps
2. A shortlist of projects selected on the basis of objective criteria
3. Multi-year approach to project selection and budgeting
4. Budget rules that strengthen project execution and not merely control spending
5. Safeguards to manage social and environmental risks, not merely unimplemented standards

While it is clear that Brazilian domestic sources of finance are constrained, and therefore the emphasis on low hanging fruit of efficiency gains is attractive,[112] the other urgency is how to accommodate the 'wall of money' coming from China.

Contrasting assessments of public sector capabilities

The World Bank report is actually quite alarming in terms of its assessment of the government's absorptive capacity. Citing the unsuccessful experience during the 'golden years' of scaling up the PPI (Projeto Piloto de Investimento) into the PAC (Programa de Aceleracao do Crescimento), the report asserts "the lack of resources was not the binding constraint on public investment... disbursement data shows a consistent gap between commitment of funds and their effective disbursement, which results from low capacity for execution of the government. The Federal

[108] Cf UK 20-25%, India 50-55% according to the same report.

[109] This does not preclude private sector involvement in riskier 'tranches' of an infrastructure investment of course. Quite the contrary, the private sector operator (foreign or domestic) is expected to put in the equity tranches, domestic or international private credit funds the senior 'tranches' and public sector provides some fiscally efficient enhancements (guarantees, off-take contracts, e.g.). The state is of course tasked to provide judicial and policy stability.

[110] According to one economist, Chinese investors found BNDES rates too unattractive and decided to obtain leverage from China. [BNDES economist]

[111] For a comprehensive, brief and very lucid assessment of infrastructure problems, and public-sector management challenges, see the World Bank's summary brief. (Raiser, et al., 2017)

[112] The World Bank has a few high-profile papers on improving the efficiency of infrastructure spending. [cite]

Government and other SOEs executed less than 30 percent of the planned investment expenses between 2001 and 2015." (Raiser, et al., 2017, p. 17)

Most Brazilian officials and academics interviewed seemed to think that technical and administrative capacities existed, especially at the Federal level. One economist insisted that transport expertise in governmental departments and agencies were world-class and that the size of the challenge is not as large as perhaps the World Bank suggests.[113]

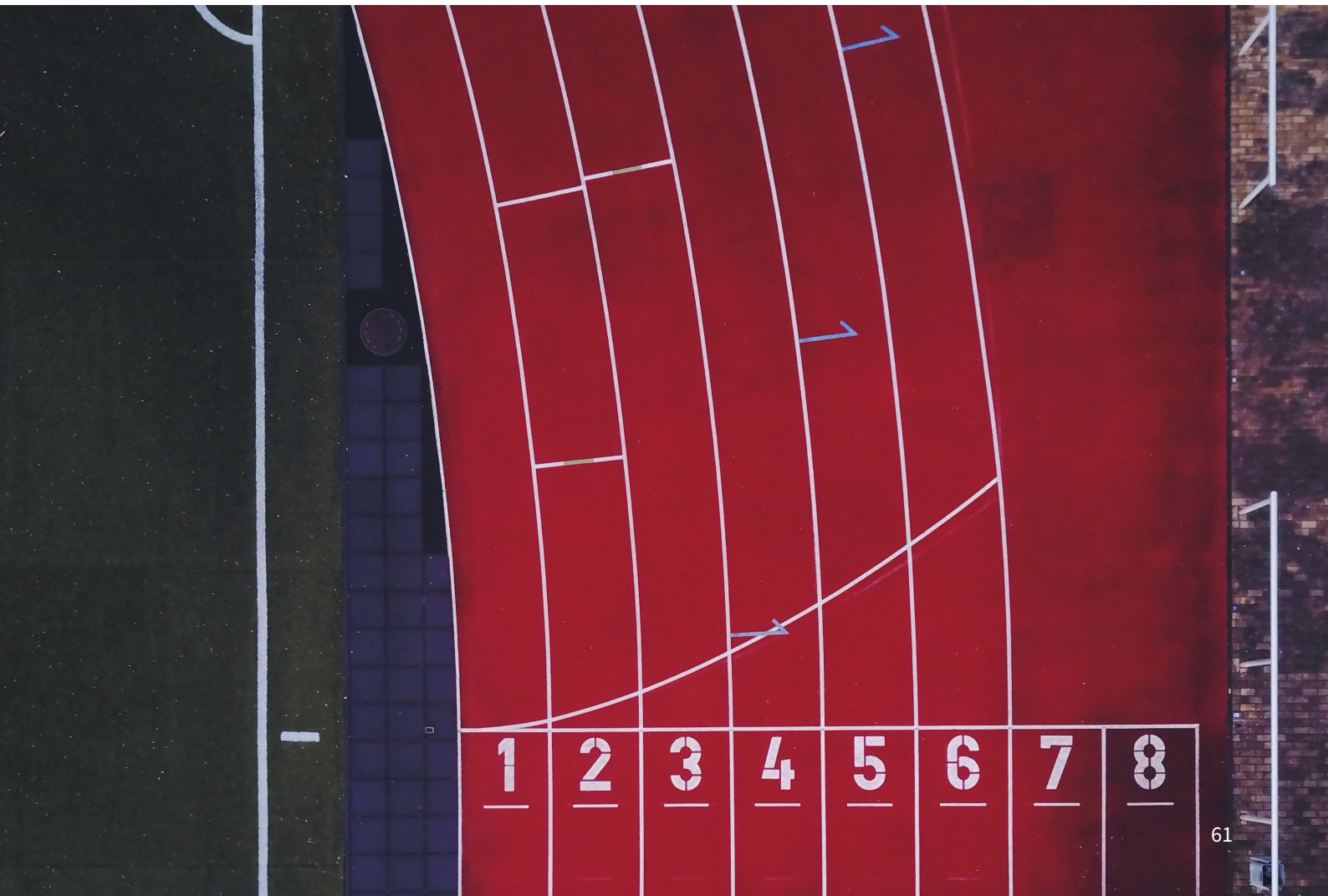
However, the World Bank report cites official audits at both Federal and municipal levels which suggest that most common problems (quality, delays, incompletion, etc.) stem from poor planning and ineffective management during implementation. These were more pronounced at municipal levels. The interaction of "low capacity and complex regulations facilitates corruption." (Raiser, et al., 2017, pp. 23,24)

[113] [Mauro Borges]

Planning

According to the World Bank, investment planning is one of the weakest links in public investment management, not because of any identified technical weakness, but because the Plano Pluriannual (PPA) process involves recirculating and negotiating past, incomplete projects rather than pushing forward a coherent, strategically incisive plan. Implicit in the critique is the lack of sequencing and "big bets" or at least precise, focused bets (a la Hirschman). Moreover, the PPA strategies are not integrated with other sectoral strategies of government institutions, leading to unfocused execution of investment projects. (Raiser, et al., 2017, p. 26)

As one economist described it, although the current government's economic strategy have the merit of being 'less heroic' (i.e. none of the 'industrial policy' ambitions of the Rousseff administration), there is total lack of strategy at the infrastructure level. The general impression, indeed, is that ministries are struggling to develop a coherent pipeline of projects to show foreign investors, and resorting instead to dusting down old proposals without a robust and overarching plan.

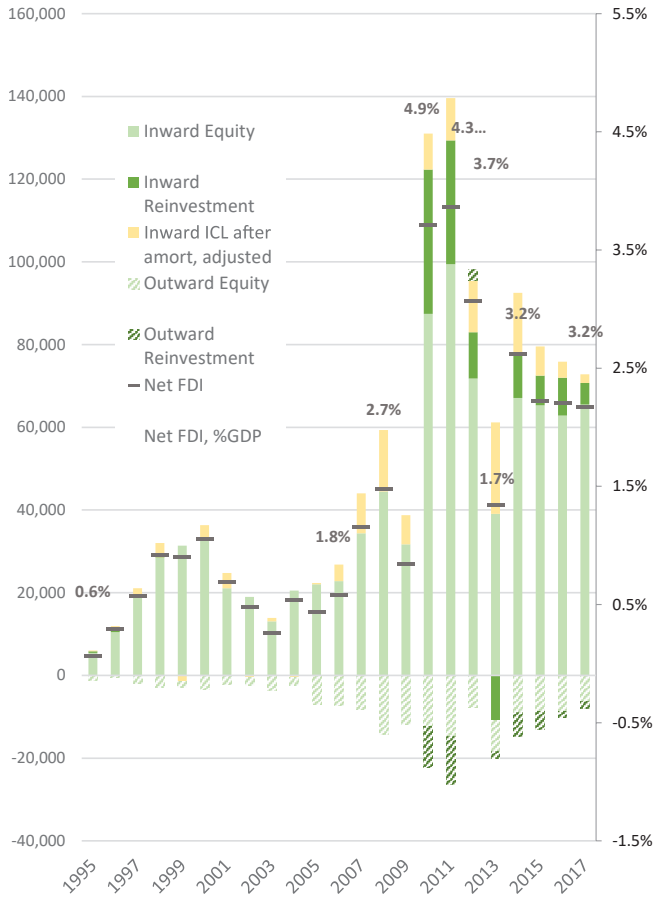


7. Key Findings

Review of FDI's descriptive characteristics

1. As we have seen, **inward flow of FDI** into Brazil in the past 10 years has been between $70b and $140b per annum. The cumulative FDI over the past 20 years is about $1 trillion and are currently valued at around $660b. These aggregate figures represent a high percentage of GDP and are among the highest in Brazil's peer group. There has been considerable outward FDI as well, and we present adjusted figures (for ICL reverse investments).
2. Composition trends are important: with **services** increasing and manufacturing decreasing, more or less in line with the economy. This divergence between FDI sectors and export sectors suggests that FDI is 'market-seeking' rather than 'efficiency-seeking.' The preliminary point is that FDI has not been associated with exports, and instead seeks to extract returns from Brazil's enormous domestic market. This is in large measure a result of, and a fascinating perversion of, the import substitution policies that still affect the microeconomic regulatory framework of Brazil. Moreover, there is reason to be generally sceptical about FDI to the services sector, which globally have unfavourable export/import propensities according to the OECD, and therefore eventually tends to put pressure on the current account.

FDI Components (BCB)



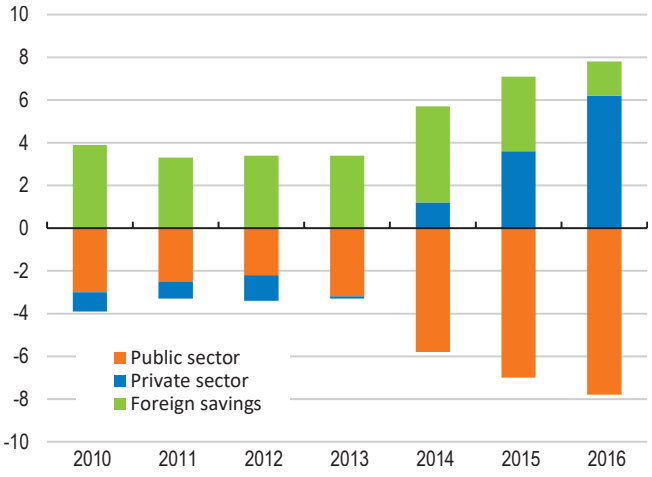
3. Other compositional dimensions such as **acquisition versus greenfield** are interesting in that they may indeed reflect the deleterious effects of 'custo Brasil' — which does not only affect local businesses, hinder entrepreneurship, lower inter-firm competition, lead to rent-seeking, etc. but also promotes acquisition FDI rather than greenfield investments. Greenfield is better in terms of both macro- and micro-economics: it is more secure for the external accounts and for capital formation in the country and is more likely to introduce competition in domestic markets.
4. There is interesting work to be done on other dynamics of FDI such as ICL and reinvestment flows. These could provide insight on how MNC's manage their various expenditures in Brazil, from capex to working capital to treasury functions. This combined with sectoral and country data could be particularly interesting.
5. **Remittance of earnings** out of Brazil are already large, substantially reducing the actual flow of net FDI, and will only grow as a problem. It is frequently said that 'today's FDI is tomorrow's current account deficit.' In Brazil yesterday's FDI is already today's current account pressure. Therefore, attention to what kind of FDI and into which sectors it is flowing is important for policy makers to consider.
6. As we have seen, foreign investment in manufacturing seems to have the greatest rate of repatriation. This may represent the effect of past investments yielding returns or may reflect more specific dynamics of the manufacturing sector FDI. This is an area that probably merits economists' attention.
7. Once we take into account these various dimensions, a **more nuanced picture emerges where FDI flows are less impressive**, as they get netted out by various compositional effects (high acquisition rates, high in services, high in ICL, etc…) The scope of this study does not allow for a detailed comparison versus peers at the level of composition, but the subject merits attention.

FDI and productivity, the macro angle

8. Everyone knows **Brazil invests too little**. The impact of low investment on Brazil has been low productivity growth, where the economy continues to deliver very modest GDP per capita growth. FDI has not transformed this reality: there is little evidence at the aggregate level that FDI has made a positive difference with respect to sustaining growth-inducing levels of GFCF.
9. Yet, **FDI** continues to be mentioned by officials and economists as a necessary substitute for **domestic savings**. Indeed, if not for FDI there would be persistent savings deficits as we can see from the limited OECD data presented in **Figure 7**, which include FPI (portfolio

flows) as well. In short, FDI is merely a savings deficit stopgap, which is the corollary of the current account stopgap we discussed earlier. However, as we saw, it is already at its limits, and it may even be contributing via other channels negatively to the savings rate.

Figure 7: Recent trends in savings net of investment (OECD)



10. In terms of TFP, it has failed to achieve any of the productivity growth that East Asia managed (especially after the Asian Crisis of 1997). When we look at the automotive sector, we get anecdotal validation that **FDI has not transformed the productivity** picture – or certainly not enough. Indeed, the shallow GDP per capita gains we saw in the "golden years" were mostly factor increases and labour formalisation.

11. **Why is it that FDI's contribution is so modest?** Doubtlessly, it has to do with the fact that Brazil attracts **market-seeking FDI** which is more likely to "go native" and enjoy the domestic spoils than to evolve Brazilian production sites into globally competitive spaces. Moreover, much FDI investments have occurred in the form of acquisitions without obvious evidence of rapid redeployment of sales proceeds as GFCF. In earlier decades these flows focused on manufacturing and more recently they have been **going to services** as the latter's weight in the economy grew rapidly after the 1990s. And services is where aggregate productivity is most dismal in Brazil, though more interesting findings may be possible if we looked at some of the subsectors.[114]

12. Indeed, in the final analysis, the heavy lifting needs to be done domestically: without increasing domestic savings (via exports and consuming less), as one Brazilian economist said in another context, "the degree of freedom of focusing on priorities is low and the ability to define our destiny is limited."

Market-seeking FDI and future current account deficits

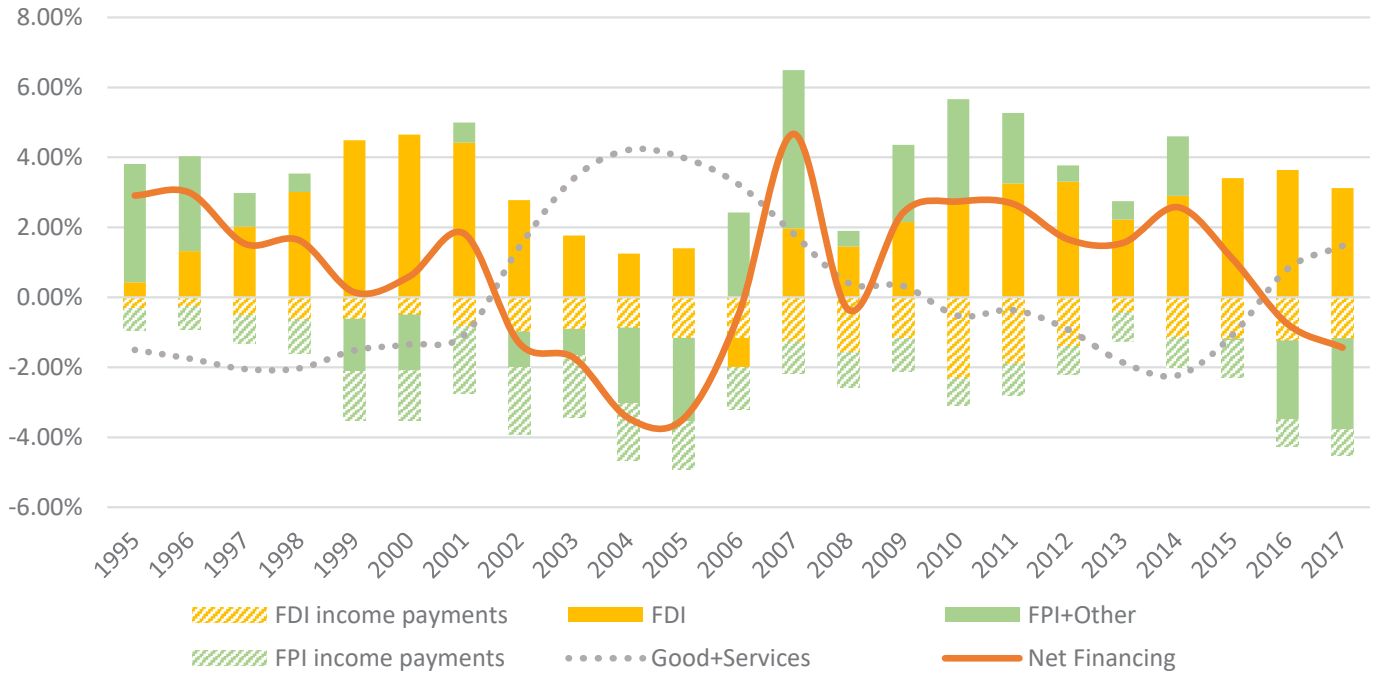
13. An underlying assumption of this report is that the Brazilian political economy requires external exposure to extract it from its malaise, but that this external 'intervention' in the form of 'market-seeking' FDI will not do. Exiting the stasis in the system, especially as seen in the lack of dynamism amongst firms (low competition, low exports, highly concentrated exports in the primary sector), and real productivity growth require globalised integration and export dynamism in 'sophisticated products.'

14. The question hitherto has been why FDI – and globalisation – has not transformed Brazil's provincial economy, despite the quarter century of very prominent presence of global MNCs. Brazil receives ample FDI, is very well-integrated financially (18th in the world as we saw earlier), innovates more than others in Latin America, and yet exports less, especially of sophisticated products, and is less integrated into GVCs. When we also take into account that it is uncompetitive on many dimensions and a painful place to do business, yet attracts enormous FDI, it is not difficult to conclude that **MNCs are after the consumers**, and not the productive capacities of the economy. Apparently, the market for consumers is worth all the pain of business in Brazil – or, we may even say, the pain of business in Brazil is what makes the consumers worth it.

15. Brazilian politicians and policymakers should be alarmed by this state of affairs, as it continues to **build long-term external liabilities** to enable domestic consumption today. This will lead ceteris paribus to painful future current account deficits, and this vicious circle will be punctuated with periodic macroeconomic 'sudden stops.' As the chart below shows, the financing payments (FDI and FDPI) represent about 2% of GDP.

[114] A granular study of other sub-sector FDI and productivity impacts might present a more nuanced picture but that was beyond the scope of this survey.

National Accounts, net figures, %GDP (BCB)



16. To the extent that market-seeking FDI drives greater consumption it is a menace for Brazil: consumption rises and puts the current account under pressure; half of the earning are repatriated which itself is a large component of the current account; mobilises the financial sector in the pursuit of consumption rather than investment; and increases the dependency of the economy on the commodity sectors to balance the external sector.

17. This is the external balance reasons for why improving 'sophisticated products' export performance is urgent. Needless to say, if Brazil becomes a sufficiently large and consistent net exporter of non-commodities then it will necessarily lead to excess savings, and therefore Brazil would become an exporter of capital, thereby reversing the build-up of liabilities. But commodity exports are not the exports of choice, for they attract as many problems as they solve. What you export matters, and sophisticated manufactured products are preferable for well-known reasons.[115]

FDI and productivity, the micro angle

18. For decades, the microeconomic promise of FDI has been spill overs in the form of technology transfer, backward linkages, and other learning processes. By this standard, the true litmus test of success is not whether you produce more cars or aircrafts for your protected domestic market, but if you can sell it overseas on a level playing field with international competitors. And hence the measure of FDI's spill over success is in how much it has led to exports, and relatedly to integration into GVC.

19. The automotive sector has its particularities, but it reflects the harsh logic of mature, sophisticated, globalised, and competitive industries where even the 8th largest economy in the world cannot dictate a 'good deal' for itself. To quote one World Bank report:

> "The globalization of automakers and suppliers in GVCs means that both automakers and most large suppliers will not be headquartered in Brazil, will concentrate R&D near headquarters outside of Brazil, and carry out product, technology, and investment strategies on a global basis. This means that the spill overs from import substituting industrial policies will mainly be limited to manufacturing employment. In other words, despite long-held expectations that domestic production will lead to significant spill overs in the domestic supply-base or in domestic R&D, this is not automatic, and the investments in R&D that do occur are often very limited in scope (e.g. localization of existing designs)." (Sturgeon, Lima Chagas, & Barnes, 2017, p. 80)

[115] See the works of Rodrik and Hausmann on this subject. From a microeconomic perspective, the primary merit of exporting manufactured goods is that it is ferociously competitive, and not subject to rent-seeking behaviour and the machinations of local business elites who know how to play the domestic game: product quality should improve and costs drop as capacity and knowhow improve. Industries in sophisticated exports generally have more stable demand profiles than just domestic markets, or at least their demand may be less correlated with domestic macroeconomic conditions. On a macro level, not only are there first order effects on the current account, but if the exports are sufficiently broad, they should relieve domestic price pressures. Moreover, they have important effect on the saving-investment channel as we discussed.

20. Not only are FDI spill-overs very limited in Brazil, but also there are negative effects on what is critical for entering any new market: an entrepreneurial, risk-taking willingness to invest in a process of learning and experimentation.[116] Today, foreign-owned production facilities in any sector, implement decisions from headquarters who will optimise on an internal, global basis and accumulate export learning overseas.[117]

21. Many officials and economists of a certain age asked why Brazil failed to extend the successes in aerospace, agriculture, fossil- and bio-fuel. It is difficult to ignore that most of these initiatives had an export-oriented ambition, or at least a global one. Perhaps it is not the case that they are export oriented because they are industries in which Brazil is 'naturally' competitive, but rather, they are competitive because the market scale and other factors related to the business opportunity compelled an export orientation, and therefore, obligated a marshalling of capacities to compete. In these sectors, by virtue of the fact that global competitive pressures are beyond the power of business executives, firms had to spend on innovation and therefore generated the demand for R&D and other inputs.[118] Moreover, it is difficult to escape the observation that these were precisely the sectors that were not entirely opened up to acquisition by foreign investors, either intentionally or by coincidence.

22. Nevertheless, we have to ask ourselves the question: why is it that FDI in Mexico and Turkey have led to increased exports despite lower innovation capacity? Does it even suggest that large emphasis on innovation capacity is not very meaningful for export generation? Clearly the simple answer is that FDI into Brazil has been market-seeking while those to Turkey and Mexico are efficiency-seeking. Capital, both foreign and domestic, will flow where it sees opportunities (in Brazil, market seeking). Indeed, a government official said of FDI: "investors are making their own decisions not necessarily as we like it." The challenge for the government is to anchor its economic vision around export efficiency, rather than ad hoc or exceptional attempts to win a particular FDI investment.

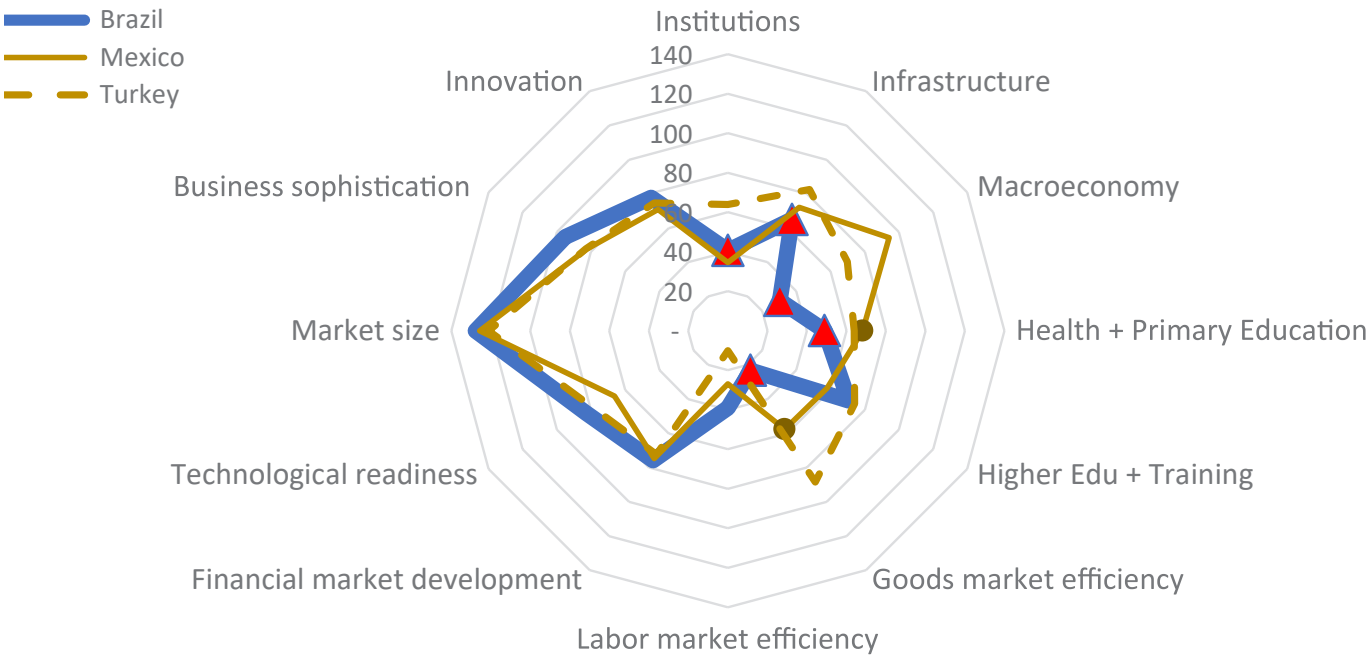
23. What makes for export efficiency? If Turkey and Mexico are guides, we discover that labour cost is the as central a determinant as both the right and the left seem to think. Using the WEF competitiveness index as a guide, the areas of outperformance of Turkey and Mexico is not labour market effieincy, but rather goods market efficiency, health and education, macroeconomy, institutions, and infrastructure. Indeed, and surprisingly, Brazil scores marginally better than Turkey and Mexico when it comes to labour efficiency.

[116] In the laissez-faire economic model, risk-taking practically disappears once information is perfect, transaction costs are zero and the country is open for business. (Who owns, who finances, who produces are irrelevant.) Brazil is far behind in this 'race to the bottom' and therefore a realistic model requires catalysts hat work with Brazil's politico-economic environment that are distant from Switzerland's or Singapore's. More importantly, it is also not the way businesses operate: investment decision are taken under conditions of uncertainty, trial and error, and learning. The point here is to say that the business process has been compromised with market-seeking, acquisition FDI and a policy debate influenced too strongly by academically-oriented economics rather than business people and other stakeholders. It may be that to build an export sector in a particular industry requires Brazilian business executives to take multi-year bets where expected returns are not high enough for a business executive who is in London and has multiple proven export facilities ready to produce.

[117] The Ministry of Trade initiative "Innovate in Brasil" is probably an undersized effort to mitigate this.

[118] The World Bank stated it thus: "the reasons for the relatively low aggregate and the substantial variation in innovation activity at the firm level in Brazil may lie on the demand side more than on the supply side." (World Bank, 2016, p. 98)

WEF Competitiveness Index Inverse Rank, 137 minus country rank (WEF)



The unique opportunity of infrastructure

24. The positive externalities of improved infrastructure could be immense for Brazil, especially given its stunted starting point. We have seen that it is identified as a major liability for international business leaders, it imposes huge drags on all sectors of the economy (measurable in percentage-points of annual GDP), hinders the integration of manufacturing into GVC and therefore hinders exports of sophisticated goods, and imposes environmental costs (road vs. rail e.g.). The good news is that the investors are lining up.

25. Infrastructure, more than other vectors of productivity improvement, requires deep and consistent public-sector leadership at multiple stages of projects. The involvement is intellectual, political, financial and regulatory. And given the nature of these endeavours – the procedural intensity, technical complications, political interests involved, and sums of money involved – they require highly skilled public officials following best practice with the integrity, strength and authority to withstand the pressure of interested parties.

26. Clearly there is a mismatch between the public sector's readiness and the infrastructure needs of a modernised and upgraded Brazil. Fixing this mismatch is urgent as there is an opportunity today to solve the infrastructure gap, for there is ample evidence that international – and particularly Chinese – investors are keen to deploy capital.

27. Getting infrastructure right is critical of course because the difference between getting it right and getting it wrong can be very costly over generations of a particular locale, or even at a national scale. The scale of the problem and the opportunity should encourage a national approach that bridges party lines in order to withstand the volatility of changes in the political administration, but also as a means of trying to encourage a federal-level coordinated infrastructure plan and coordinating body, rather than having the process hostage to state-level and local parochial interests. This would also help raise investor confidence in the durability of operating environments.

28. Given the World Banks's very vocal position on the state of planning and execution, their involvement in driving an accelerated upgrade of the public sector's absorptive capacity ought to be the priority of the country office.

29. A proper machinery to drive an infrastructure boom also requires long-term financing. With the public banks no longer providing vast amounts of subsidized BRL loans, other mechanisms will have to be found so that investors do pass on costs to users and governments. Although we heard that infrastructure investors are willing to take long-term foreign exchange risk and fund with hard currency, it seems likely that this attitude will not be available for the entire range of infrastructure projects.

30. Related to the question of long-term finance is the need for the government to maintain macro-economic and juridical stability and predictability. Part of this is earned over time, but where some measures are available today to enhance long term credibility, they should be taken.

FDI from the perspective of savings and finance

31. For Brazilian policymakers, FDI has in effect been about finance rather than technology transfer, linkages, GVC integration. Under the pressures of conflicting policy objectives, lack of elite consensus on key economic parameters, and chronic crises, FDI becomes just another source to finance the economy. It is essentially a temporary stopgap that has lasted for 25 years to cover the shortage in domestic savings.

32. At the heart of Brazil's lacklustre economic performance is this very low savings rate. Its effects are multiple and multi-layered and can be summarised thus:

    a. Low savings is related to the extremely high real rates, as cause and effect

    b. It affects the ability to create long-dated financing via simple market mechanisms, as well as making it difficult to create 'financial repression' to kickstart a 'catch up'

    c. It distorts FDI which typically requires access to economical, long-dated debt financing to raise returns and reduce currency exposure. Because costs will be passed on where they can, these high rates distort the shape of FDI in Brazil:

        i. In infrastructure projects, this leads to cheaper pricing of acquisition or concessions because FDI investors need to 'price in' the currency risk that has not been passed on. Infrastructure FDI investors are reportedly willing to run long-term BRL risk, but only because they are able to acquire the assets at a cheap-enough level.

        ii. In market-seeking FDI, the CFOs will plan accordingly and make sure that Brazilian customers will be charged so financings costs or FX volatility are bearable. This probably means that market-seeking FDI comes to Brazil because they are reasonably sure they can seek rents, i.e. that they secure strong pricing power in near oligopolistic conditions.

        iii. Efficiency-seeking FDI may decide to altogether avoid Brazil because of the 'custo Brasil' (including high finance costs): domestic markets under Brazilian conditions may allow for rent-seeking, but export markets do not allow for those costs to be passed on.[119] Moreover, backward linkages that are more associated with efficiency-seeking FDI are constrained by the absence of all kinds of commercial financing.

[119] Note that an export-oriented efficiency seeking FDI plant will have a much higher hard currency revenue component so it will be able to borrow more heavily in currencies other than BRL.

iv. The net effect is a predominance of market-seeking FDI. Amongst OECD countries and some EM ones, FDI is about productivity enhancement, GVC integration, and industrial policy. In Brazil it is in the final analysis financings. The end result: policymakers seek finance, MNCs are drawn to domestic rents.

d. Low savings are associated with (caused by) the very high REER prevailing in Brazil.

i. Via the supply channel, viz. overconsumption (assisted by a monetary policy that keeps the BRL too strong) and the aggressive provision of consumer finance at exorbitant interest rates (like in other EM economies).

ii. Via the demand channel, viz. lack of 'animal spirits' due to depressed profit forecast in a very high REER. This same lack of demand for savings may be behind the lack of demand for innovation.

iii. The current account deficit creates therefore a capital account surplus which in turn drives REER appreciation, its confidence buoyed by cyclical commodity surges which leads to even more pressure on appreciation. (de la Torre et al emphasise the global savings glut causing the overconsumption, while Bresser-Pereira et al emphasise the prevalence of inflation targeting monetary policy without quite stating it).

33. The financial sector, especially the domestic bond markets, is only slowly increasing duration. Lengthening duration and having a well-traded fixed yield price for longer-dated obligations (as opposed to long-dated indexed bonds) is critical. This is because efficient finance is supposed to transfer away financial risks at a fixed price so borrowers who make real economy investment decisions have a predictable flow of obligations and can focus on investment decisions. Making the financial sector price and therefore absorb more of this risk will help GFCF, infrastructure investment, infrastructure FDI, and government financing.

34. FDI activity directly into the financial sector has reversed since the GFC and in a manner that has led to an increase in concentration of the financial sector. The unfortunate conclusion is that the hope that FDI will increase domestic competition in this sector has not materialised.

35. Finally, the report noted that outflows registered as financial sector OFDI are inconsistent with what we would expect from a savings starved economy like Brazil's, and the structure of the transactions suggest that these may in fact be financial investment products rather than OFDI.

The tyranny of the political economy

36. Regardless of the precise causalities that govern the REER-savings-investment relationship, according to this report the key missing element is exports-orientation. In an extremely competitive world, exporting requires favourable business environment, good domestic resources (capital, labour, human capital, infrastructure), and a REER that is not set by commodity booms. The global market for more 'sophisticated goods' is viciously competitive and it is not desirable – and probably not realistic— in a political economy like Brazil's with its very high GINI coefficients to require nominal wage declines to do the REER adjustment.

37. Alas, fragmented political systems like Brazil's do not allow for the mobilisation of consensus to coordinate a way out, and thus imbalances build up while conflicting agendas are pursued in parallel. These show up as a twin deficit and end up in chronic sudden stops as the one we have just witnessed. Equally, today we are witnessing some of the multiple benefits of a cheaper currency obtained via a painful economic shock.

38. BNDES et al failed to 'short-circuit' the vicious cycle by being the subsidising provider of long-term finance because it could not alter the political economy of low savings (and in fact distorted it by financially repressing the poor and not the middle class and the rich), and the state and its government could not mobilise resources (savings) equitably for an agreed long-term investment plan which entails collective 'delayed gratification' and a collective bet on the future. In the end, BNDES was cut down because it was not able to operate above Brazil's politico-economic legacy. It may be trite and overly dramatic to sum it thus: the past caught up with the present and killed that future.

39. After BNDES only FDI remains as the provider of LT financing – a refrain heard from a few economists. Thus far, this FDI has been market-seeking and to some extent strategic-asset seeking. The crisis has entailed a painful REER adjustment that included devaluation, unemployment, temporary inflation, massive fiscal and social reforms. The lower REER and a more laissez-faire attitude seems at the moment to be attracting enough infrastructure investors to come in without domestic leverage, as they assess that Brazil is worth the short-term risk.

40. It is ironic that we have a situation where Chinese infrastructure investors – and even financial investors (such as Brookfield) – are willing to take long-term bets on Brazil, and even take substantial FX and country risk, while Brazilian financial investors require over 5% real returns for sovereign debt. Of course, this is perhaps the essence of what it means to be underdeveloped[120], and it could also be argued that foreign infrastructure investors are investing in real assets (and thus somewhat hedged) and they are naturally more diversified than their local counterparts. Nevertheless, to paraphrase an official this author interviewed, there is a sense that it is not only that the "ability to define our destiny is limited"— essentially because 'we do not save'— but the will to define destiny is evidently absent—as seen by the unwillingness to do what it takes to save.

[120] A more precise description would be 'colonial' rather than underdeveloped, for Brazil and Latin America more generally.

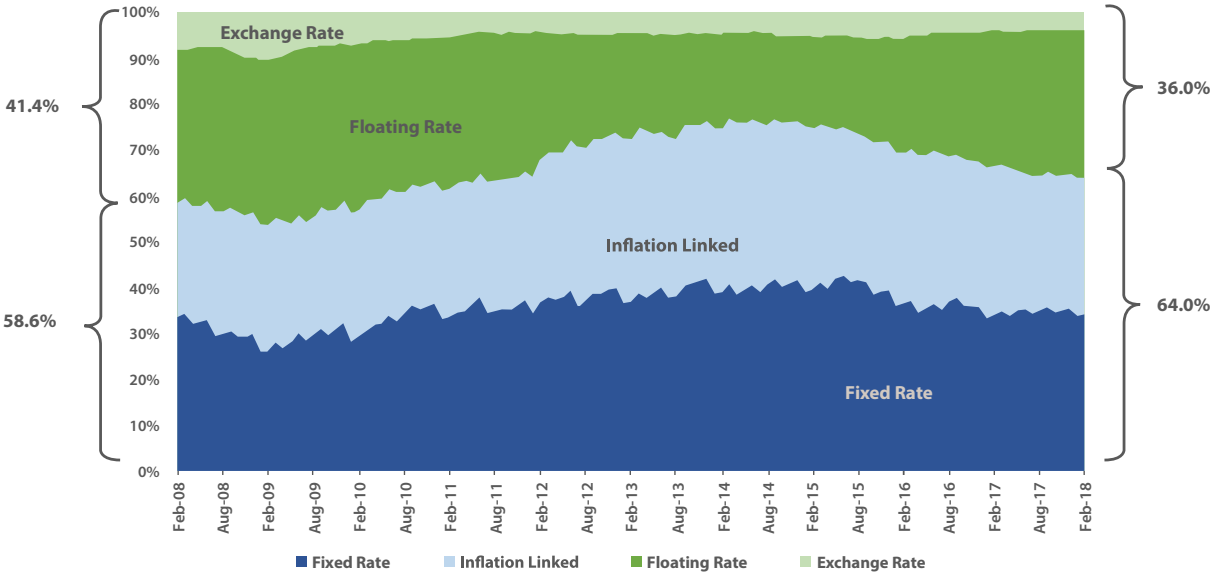
8. Appendix: The horizon problem of Brazilian finance

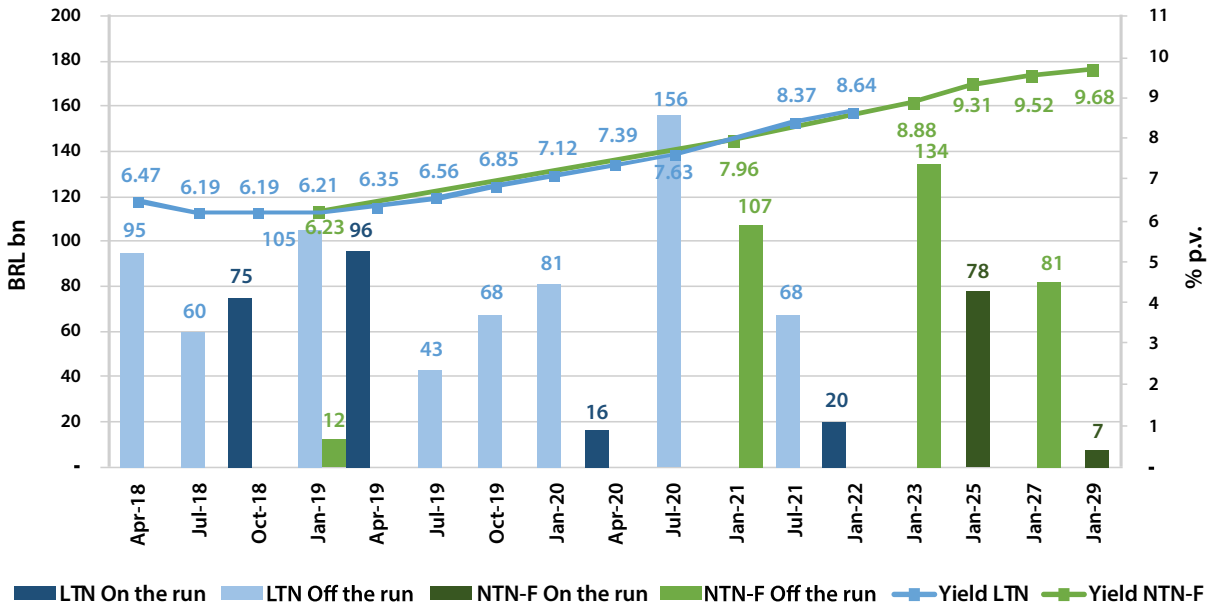
Extending maturities

To extend the maturities of the corporate debentures market, it is normally expected that sovereign debt creates a 'yield curve' that has a long horizon and reflect market-determined pricing. These prices create a yield curve that reflects only interest rates, and do not contain credit risk (i.e. the risk of default on repayment). The debentures market will then apply a spread above those 'risk-free' rates. Therefore, the preponderant effort of lengthening maturities is in the 'risk-free' bonds, namely the Treasury that is responsible for issuing federal government bonds.

The Treasury over the past decade has worked on reducing dependence on short-dated bills and essentially SELIC--linked medium-term bonds, by extending issuance into long-dated fixed coupon or inflation-linked bonds. As Figure 8 shows, the overall trend seems to be improving slowly. Whereas 10 years ago, about 30% of federal liabilities were due in 12 months, today that figure is 18%. (Tresouro Nacional, 2018, p. 30) The composition of bond types has improved but floating rate (i.e. effectively SELIC-linked) debt increased since 2014. Note that the treasury is experiencing a temporary windfall since SELIC and inflation rates are near historic lows and therefore the debt service has reduced.

Figure 8: Composition of federal debt and Term structure of longer-dated Bonds (Treasury)

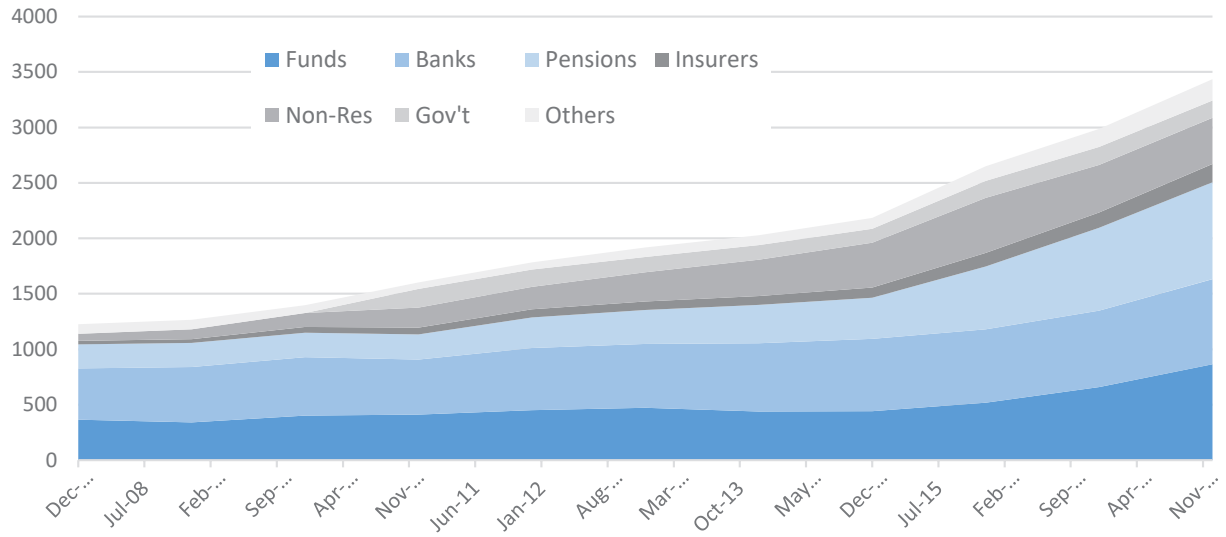




As Figure 8 shows, the curve is quite steep with the 1y5y slope at about 300 bps, which correlates with the undeveloped state of longer-term debt. There are about BRL 500 billion fixed rate bonds beyond the 2y maturity and another BRL 800 billion of inflation-linked long-dated notes.

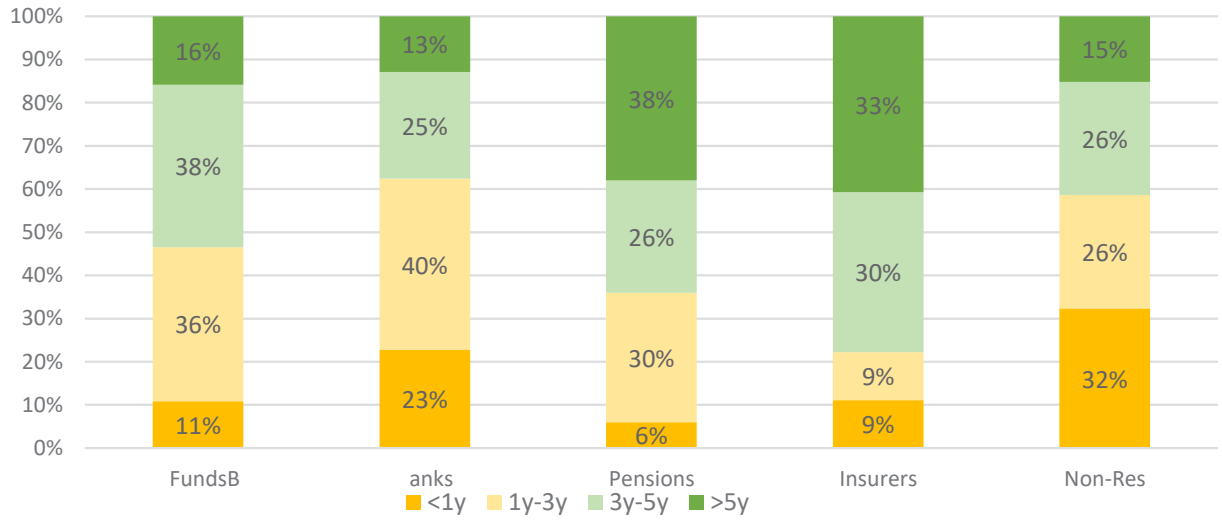
We can see that 2014 was an inflection point where debt outstanding more than doubled as the fiscal deficit ballooned. Mutual funds are the largest investors, followed by banks and then pension funds. Foreign participation is substantial but has not grown.

Domestic Government Bonds, BRL billions (Treasury)



As we would expect, pension funds and insurers have the longest duration portfolios, but even they have scope to be encouraged further out the curve. Banks are the second biggest participants in the market, but they clearly have a strong preference for shorter-dated portfolios. There may be a number of regulatory means of getting banks to provide more liquidity to encourage extension of duration, perhaps by giving them more obligations against privileges of being primary dealers.

Composition of Holding by Maturity, Feb 2018 (Treasury)



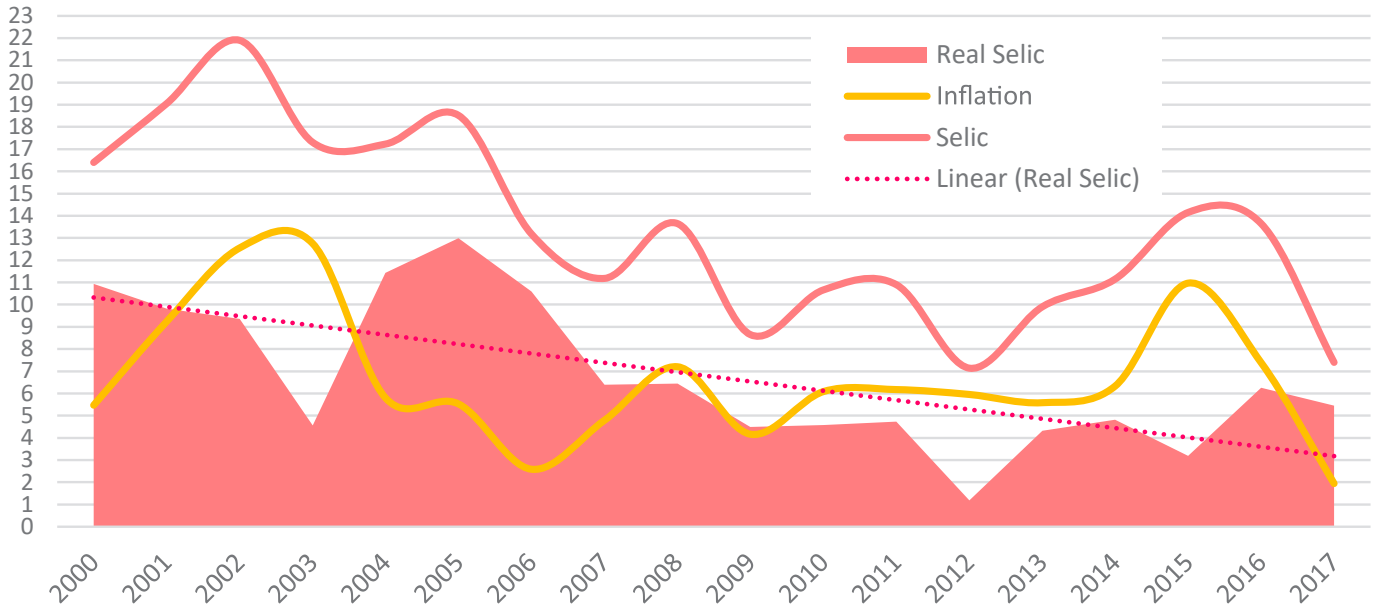
[BNDES could also play a role developing the bond market, as that is an investment that will continue to give back in the future. This could be done by issuing into the market (currently only BNDESPAR issues in the domestic markets in relatively small size), developing new instruments, etc..[121]]

[121] A very underdeveloped OECD briefing paper on how development banks could promote their domestic capital markets. (IFC, 2016)

Debilitating and abnormal interest rates

Over 30% of federal debt is effectively linked to the SELIC rate (a repo rate that is targeted by the decisions of the COPOM) and short-dated, while another 30% is linked to inflation and quite long-dated (NTN-B, NTN-C) with very high real rates embedded [recheck]. Given that short-term rates responds to inflation rates to maintain a certain real return, this means that about 60% of funding is linked to short-term rates and/or short-term movements in inflation rates.

SELIC, IPCA, SELIC - IPCA (December avgs.) (BCB)



Moreover, for multiple and controversial reasons, the Brazilian financial system manages to charge a 'sticky' real interest rate for the past 17 years hovering around 5% and rarely below it. A longer term trajectory seems however to have been established where real rates have halved over nearly two decades, and if recent market moves continue we may approach international levels.

Real interest rate on long-term bonds*

The situation is less optimistic if you consider that the longer-term inflation-linked bonds trade at real rates above 5%, that is to say, the marginal buyer in Brazil will not buy bonds unless it pays 5% real rates for the next 30 years. To put this into perspective, it says that a Brazilian will not accept less than multiplying their money by 4.4 times after inflation[122] for lending to the federal government for that period. By all means these rates are very high by international standards. Balliester Reis provides a useful table of comparative real rates, which is reproduced in Figure 9: Comparative Real Rates (Balliester Reis)[123].

Figure 9: Comparative Real Rates (Balliester Reis)

Country	1996-2000	2001-2005	2006-2010	2011-2015	1996-2015
BRA	16.36	9.69	4.27	2.22	8.14
CHL	2.53	-2.36	-1.99	1.60	-0.05
COL	5.64	0.73	1.70	0.65	2.18
IDN	-6.60	2.10	-5.41	1.36	-2.14
PHL	2.20	2.72	1.20	1.05	1.79
THA	4.13	-0.78	-0.98	0.31	0.67
ZAF	7.36	1.58	1.24	-0.67	2.38
AVR	4.52	1.95	0.00	0.93	1.85

[122] 'After inflation' means that substantially any devaluation risk is also largely neutralised. In the first instance as this sovereign debt is considered 'risk-free' (of credit risk) as the sovereign has the ability to print fiat money in extremis. However, these instruments (NTN-B, and other inflation-linked notes) are immunized from that sovereign option as its coupon and principal adjusts with the inflation rate. [Looking further, we may speculate that if a sufficiently large proportion of domestic sovereign debt is inflation-linked, then inflation risk is transformed into credit risk because the option of inflating away is effectively no longer available. Highly simplifying, the logical conclusion of this is that sufficiently large proportion of indexed debt ultimately disrobes the sovereign of the ability to print money, and from a fiscal perspective, negates for the sovereign the point of having a sovereign currency altogether. In the case of Brazil, we can say that almost 60% is highly linked to inflation (both floating rate and inflation-indexed), and therefore, we may be approaching this point of transformation. Continuing on this reductive logic, the real rate should equal the credit spread of Brazil's hard currency bonds after adjusting for the basis point value differential, which very approximately is about 1.7-to-1 using 5.6% and 10%. On 23 January 2018, Brazil issued its 30-year USD bond at 5.6%, which implies a spread of about 2.62% which suggests a ratio of 1.93:1, and so on this hypothetical logic, we can say that Brazil's domestic credit risk is estimated as riskier than its international debt. It should be noted that this is a highly jejune exercise that seeks to bring out the magnitude of the distortions besetting this market.]

[123] One failing of Balliester Reis' paper is that it does not include Turkey, which had comparably high interest rates, exchange volatility and macroeconomic crises. (Balliester Reis, 2016)

The causes for such high interest rates are multiple, complicated, mutually-reinforcing, and above all highly controversial. The World Bank has a convenient and generally non-committal summary that is a list of most orthodox explanations: low domestic savings, segmented credit market, Brazil's history of inflation and inflation volatility, fiscal crowding out, institutional factors, reduced monetary credibility. (World Bank, 2014, p. 67)[124] The heterodox and political economy explanations seem to focus on the misplaced Inflation Targeting (IT) policy,[125] as they emphasize inflation pass through as opposed to domestic business cycle, and therefore suggest that it is being imposed at an extreme cost on the rest of society, viz. extremely high real rates.[126]

The rigidities of IT has come at a high cost that has failed to extract Brazil from the growth impeding macroeconomic situation. While many orthodox economists probably believe that one of the few successful anchors of Brazilian macroeconomic policy has been the IT, Vernengo expresses stridently a view from the heterodox camp with his unforgiving assessment that IT "has been unsuccessful by almost any criteria chosen—the achievement of the targets, the effects on growth and unemployment, or its effect on income distribution." He goes on to say, IT "did not promote a significant change from the pegged exchange rate regime, in particular because the exchange rate continues to be central for controlling prices." (Vernengo, 2008, p. 107)

A more political economy approach speaks of power relations and competing interests, and in general see vested interests of an essentially 'rigged system' driven by rent-seeking.[127] A helpful survey, if rather rushed, believes both orthodox and heterodox fail to explain Brazil's uniquely high rates. See Figure 10: Orthodox explanations for high real rates (Balliester Reis) Figure 10 and Figure 11 for an incomplete list of explanations.

[124] See also (Barbosa-Filho, 2008) (Seguar-Ubiergo, 2012).

[125] According to de Melo Modensi et al the three 'stylised facts' of Brazilian monetary policy are: "flimsy inflation sensitivity to the interest rate," "correlation between inflation and the business cycle is weak," and "the exchange rate has been the main transmission channel of monetary policy." (de Melo Modensi, Reis, Lyrio Mondesi, & da Silva, 2017, p. 225)

[126] For an external observer, what is amusing is the degree of disagreement between the two camps regarding how much 'pass through' inflation existed or exists. One Orthodox economist estimated that today pass through is down to 0.15 [check again]

[127] That commercial banks in Brazil pursue rent-seeking in credit spreads (especially consumer finance) is a mainstream view. See (The Economist, 2016) and (Horch, 2015). However, rent-seeking via high real-rates is a much more controversial view that may not be implausible but requires a more sophisticated analysis of how it arises in practice.

Figure 10: Orthodox explanations for high real rates (Balliester Reis)

Argument	Proponents	Cross-country comparison	Empirical support
Exchange rate volatility	Arestis et al. 2008; Sicsú 2002	South Africa has strong volatility as well	No
High exchange rate pass-through	Baltar 2015; Ono et al. 2005; Oreiro et al. 2012	Brazil shows a lower coefficient than Colombia	No
Cost-push inflation	Modenesi and Modenesi 2012; Oreiro et al. 2012; Serrano 2010; Summa and Serrano 2012	Colombia exhibits indexation of administered prices too	No
BCB conservatism	Modenesi 2011; Oreiro et al. 2012	Chile also implemented conservative targets in the 1990s	No

Figure 11: Heterodox explanations for high real rates (Balliester Reis)

Argument	Proponents	Cross-country comparison	Empirical support
Low level of saving	Arida et al. 2003; hausmann 2008; Lara Resende 2011; Segura-Ubiergo 2012	Colombia, the Philippines and South Africa have lower saving rates	No
Default history	Reinhart and Rogoff 2004; Salles 2007; Segura-Ubiergo 2012	Brazil only has more default issues than other countries in the 1990s	No
Convertibility risk	Arida 2003 Arida et al. 2003	The Philippines show higher capital control measures for the entire sample	No
Jurisdictional uncertainty	Arida et al. 2003; Bacha et al. 2009; Gonçalves et al. 2007; World Bank 2006	Colombia, Indonesia and the Philippines exhibit worse rule-of-law indicators	No

Balliester Reis' finds that a "conclusion of the econometric analysis regards the country fixed effects of the sample countries. In comparison to other countries, Brazil had a very high coefficient, which means that there are some specificities of the country that are not captured by the model. Based on the political economy literature, my suggestion is that the rentier class in Brazil has a strong influence over the establishment of central bank policy rates and that this may help explain the phenomenon of extraordinarily high real interest rates." (Balliester Reis, 2016, p. 22) Without getting into the details of the policy debate, its necessity at the time, and the difficulty of leaving it, it seems pretty clear that it has taken a toll on the vectors that this paper has emphasized, viz. higher savings, GFCF, export orientation, productivity growth, efficiency-seeking FDI, etc.

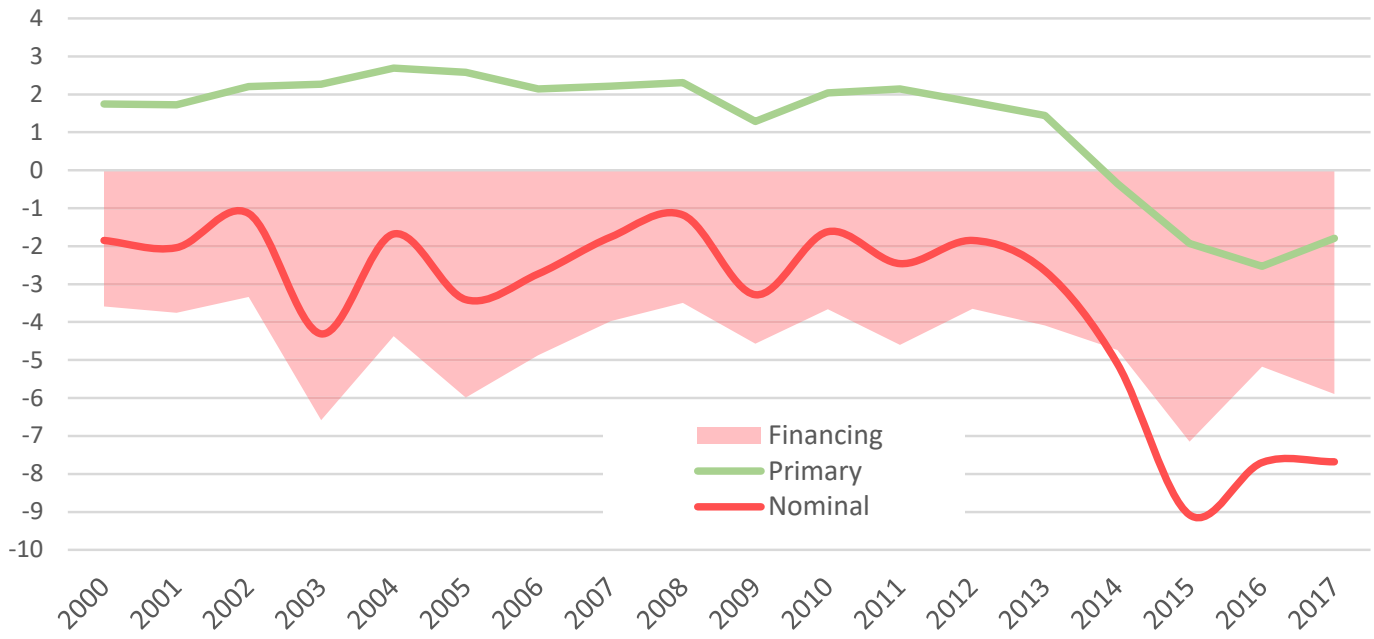
Vicious cycle

Such high real rates is the precise opposite of the 'financial repression' that characterised the East Asian model and more generally the "catch-up" model that we discussed with respect to BNDES. (See Box 9: A speculative excursus into the political economy of the BNDES). The result of this tax is that the Federal government runs primary surpluses for over a decade yet records budget deficits because of federal debt financing costs that amount to about 4 to 5% of GDP.[128] Much like the distortions of BNDES, a highly regressive political economy is at play where the state has to tax and slash budgets in order to pay bond holders. The result like all extreme credit situations is that the fiscal danger (the 'credibility' problem) is almost self-fulfilling. For the moment however, it seems the extreme recession combined the current administrations success in convincing bond markets that extreme austerity will eventually lower government debt levels and therefore has driven nominal and real rates much lower and has slightly flattened the yield curve.[129]

[128] Note this includes external debt which is between 25 to 30% of GDP, or about a third of gross debt to GDP. The debt service cost expressed as a percentage of GDP is sensitive to volatility in BRL and will have contributed to the spike in financing costs.

[129] Despite the recent progress (which is extracted at a very high cost to Brazilians), it seems like Brazilian interest rates suffer from its own 'inertial inflation' and probably need a financial market version of 'Plano Real.' Another way of expressing this is that the monetary system and structures of Brazil seem to have transferred the inertial inflation expectation from the real economy to the financial economy. Inflation targeting has not managed to substantially reduce real rates, and therefore a similar level of shock to the system as the one delivered by the 'Plano Real' may be required to reset debilitating rates to something approximating global norms. This is of course calling for highly recessionary fiscal spending which would only be possible if savings and investments are simultaneously 'crowded-in' to replace the collapse in consumption (at the government level).

Primary + Nominal Federal Budget, Financing Cost, %GDP (BCB)



De-indexing

The persistently high short-term real rates, its influence on the price level as well as the sheer size of the inflation--linked and floating rate bonds, make the development of the longer-term fixed-rate bond market more difficult.

[As odd as it may seem, functioning and liquid markets probably require participants to be thinking in terms of nominal rates and not break-even real rates. The reality is that bond markets (and any market) start to become liquid when their prices have a looser connection to fundamentals (such as inflation) and develop a dynamic of their own, partly because that invites short-term traders to provide liquidity. If the price of long-dated bonds are too anchored to real rates then longer-dated prices do not develop the 'reflexive' quality required to create market dynamics.]

9. Appendix: The East Asian development model[130]

Clearly, East Asia stands out as successfully transitioned from poverty to "middle income" and even to "upper income." It is worth refreshing our memory of what made Asia work, not to discover what may need to be copied, but also to highlight how heterodox and hybrid these policies were. The East Asian model of growth depended on the existence of most of the following: (i)deep land reform; (ii)a starting point of quite significant degree of levelling, usually imposed by war or violent upheaval and complemented by land reforms; (iii)state-driven ISI that managed to transition energetically to export-orientation; (iv)high competition among large national conglomerates that pooled capital and human capacity and competed fiercely with each other, emphasising market share and R&D over short-term profits; (v) small states (in terms of % of GDP) but very interventionist, mercantilist and unafraid of capital controls; (vi)and finally and not insignificantly, very significant "financial repression" via caps on interest rates as well as directed lending.

This list forms an organic whole, that effectively creates a collective bet on the long-term, co-ordinated by interventionist state institutions. These were able to operate at an unusually high calibre, and relatedly, to operate somewhat above competing interests precisely because it was not very involved in the nexus of transactions: it did not tax a lot, did not borrow a lot, did not redistribute a lot. Famously, the social safety net of East Asian countries did not exist until fairly recently. The state therefore was freer to act, more able to focus resources and energies, all enabled by often quite authoritarian systems.

It should not be forgotten that, additionally, they benefitted from post-war largesse of the US, two regional wars to which they supplied goods, and a self-reinforcing and dynamic economic region with whom to compete and cooperate. Each success story inspired the next, not leaving much of an option to adapt. Their elites had no other choice – devastated by wars, resource-poor, generally unconnected to the European metropolis, deeply nationalist and even chauvinist, not very ideological about markets or states, and sufficiently suspicious of their sponsors (the West), geopolitical foes (viz. USSR), and historic foes (e.g. Japan) to forge their own path.

Models are of course dangerous things, especially when specificities are not taken into account. Brazil has several disadvantages. Brazil's history is of course intricately tied to the "resource curse," that has evolved over centuries but continues to have a huge grip over its destiny even if Brazil today is a very diversified economy.

[130] I am influenced by (Studwell, 2013)

10. Appendix: Schematic of the current context for FDI

FDI in Brasil

Schematic of today's vicius cicles and the policy reconfigurations required

Sustainble, inclusive growth requires productivity growth

- In Brazil this has lagged for 25 years
- Not only stagnant, but part of a vicious cycle that keeps productivity growth low
- In the current condiguration, FDI is part of this problem

Vicious cycle with many feedback loops

To simplify

- Domestic orientation → high REER → high consumption → low savings → low investments → low productivity

Some feedback loops

- C/A deficit= K/A surplus → high REER
- high REER → low exports → low investment → low productivity
- low exports → domestic rent-seeking → low productivity
- low investment → bad infrastructure → low productivity and → low exports

FDI today is part of this vicious cycle

It is clear that $1trillion of FDI over 25 years has not led Brazil out of this vicious cycle

- FDI investment hardly incremental to GFCF
- Productivity remains low
- Domestic competition low

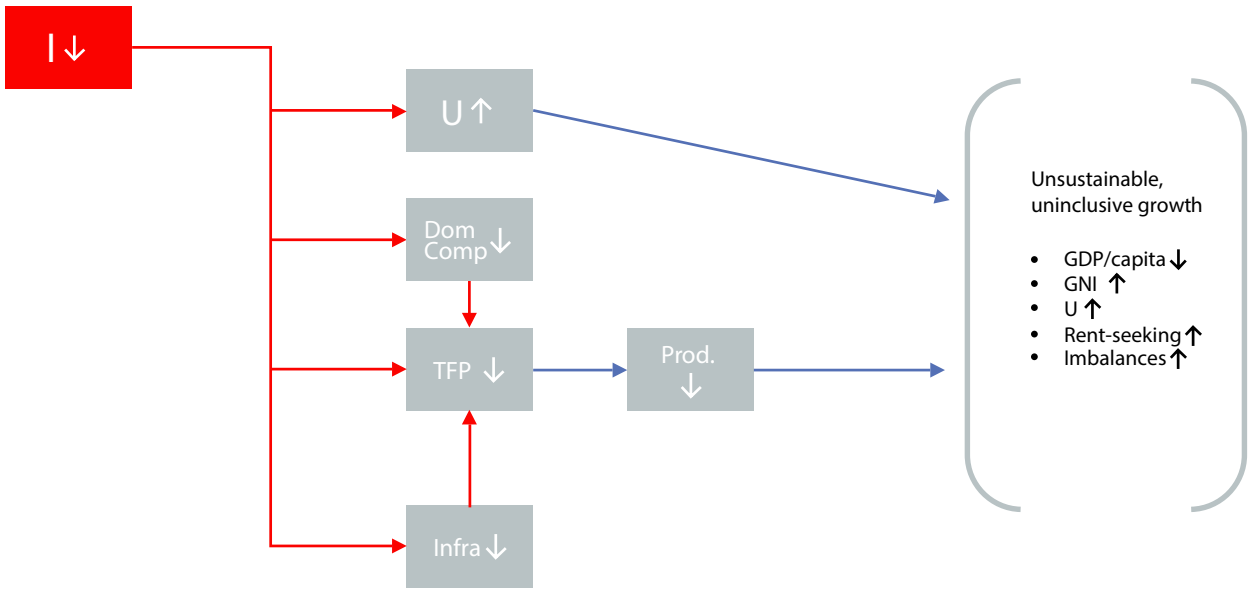
In fact, FDI is part ofthe vicious cycle- not its cause, but not its solution either

FDI investors seek opportunities, and in Brazil the opportunity is created by the 'custo Brasil', the closed market, the low competition: in short, the rents

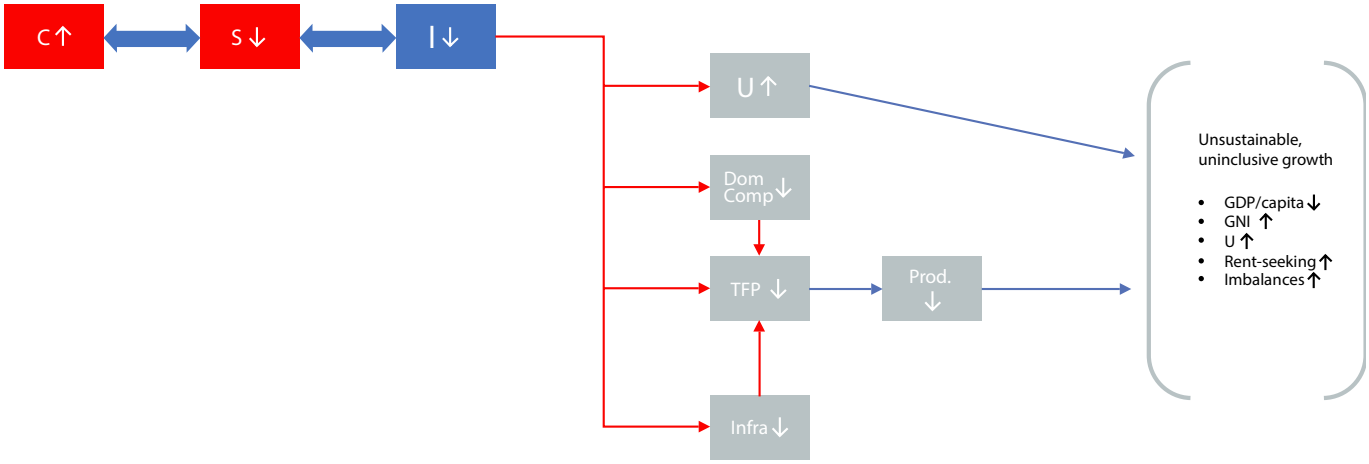
These conditions crowded out other types of FDI; FDI therefore 'market-seeking' (and some 'strategic asset-seeking')

Market-seeking FDI → low backward linkages → low TFP improvements → lower exports

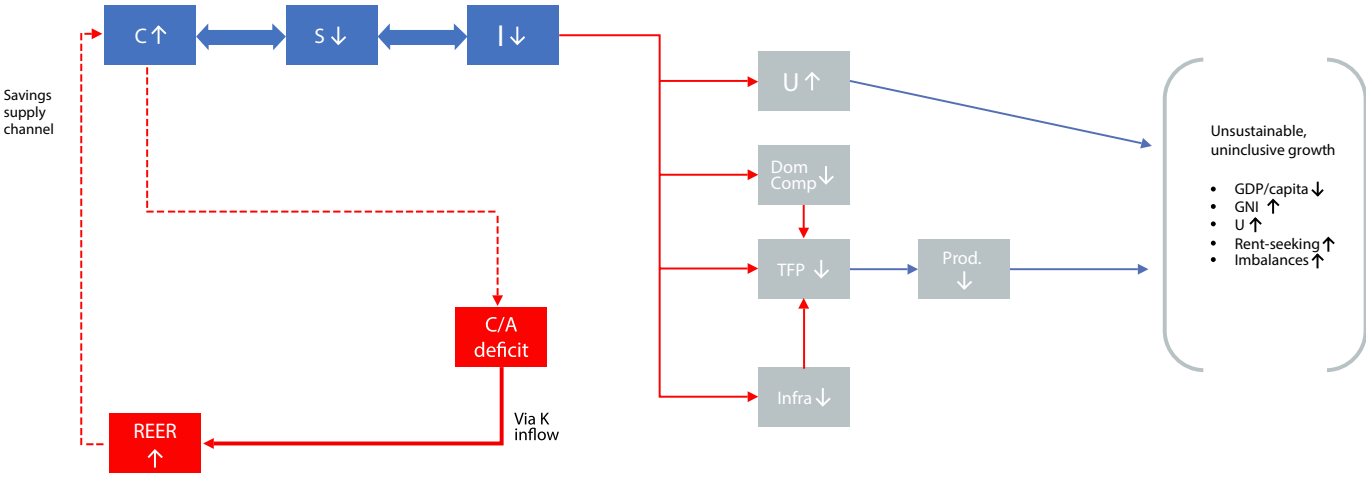
Unsustainable Growth: **low Investment** → low productivity growth (via low TFP, bad infrastructure, low domestic competition)



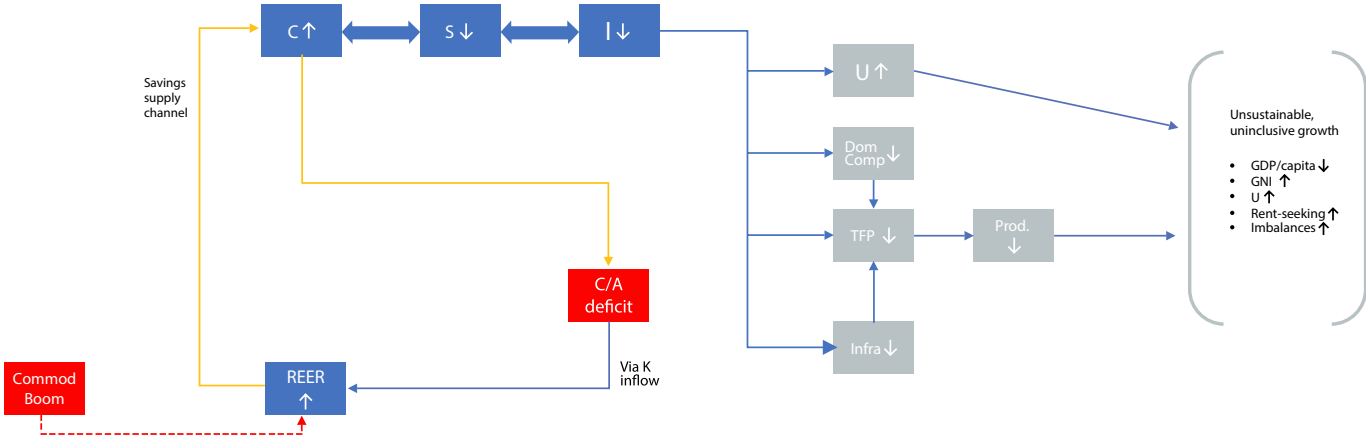
Low Investment = low savings = **high consumption**



(1) High REER → High consumption due,encourages vicious C/A deficit cycle



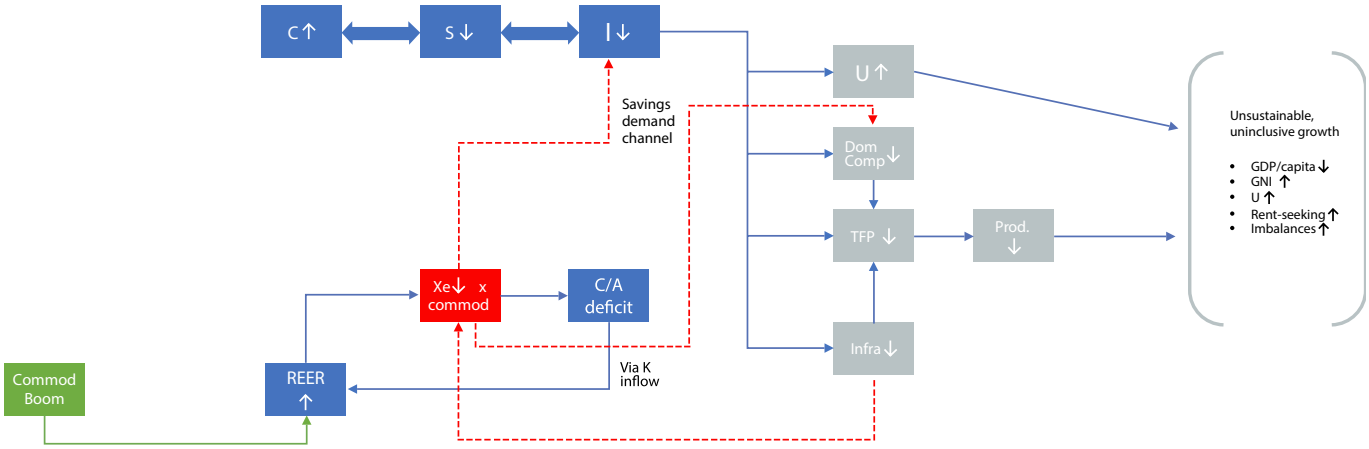
(2) High REER → Exacerbated by Commodity boom (Dutch disease)



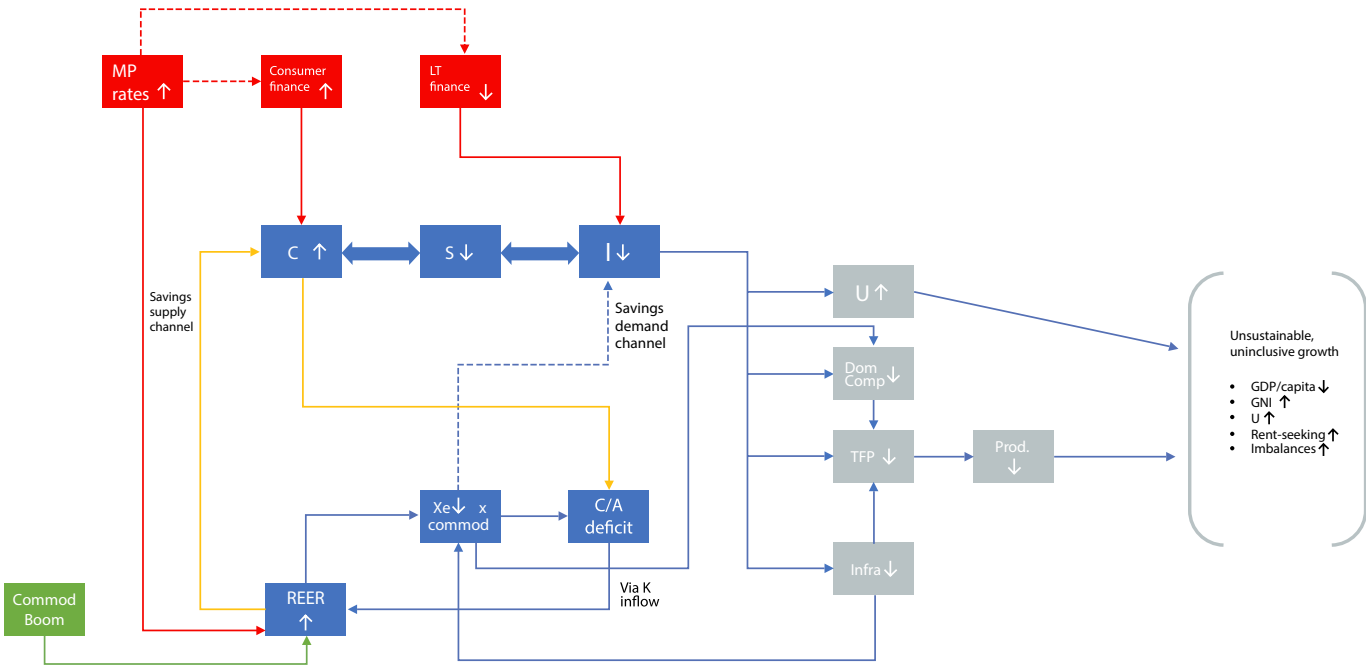
Other effects: **lower non-commodity exports** → (1) lower investments → lower demand for savings

(2) stagnant TFP,domestic markets are prone to rent-seeking

(3) low infrastructure spend → lower non-commodity exports

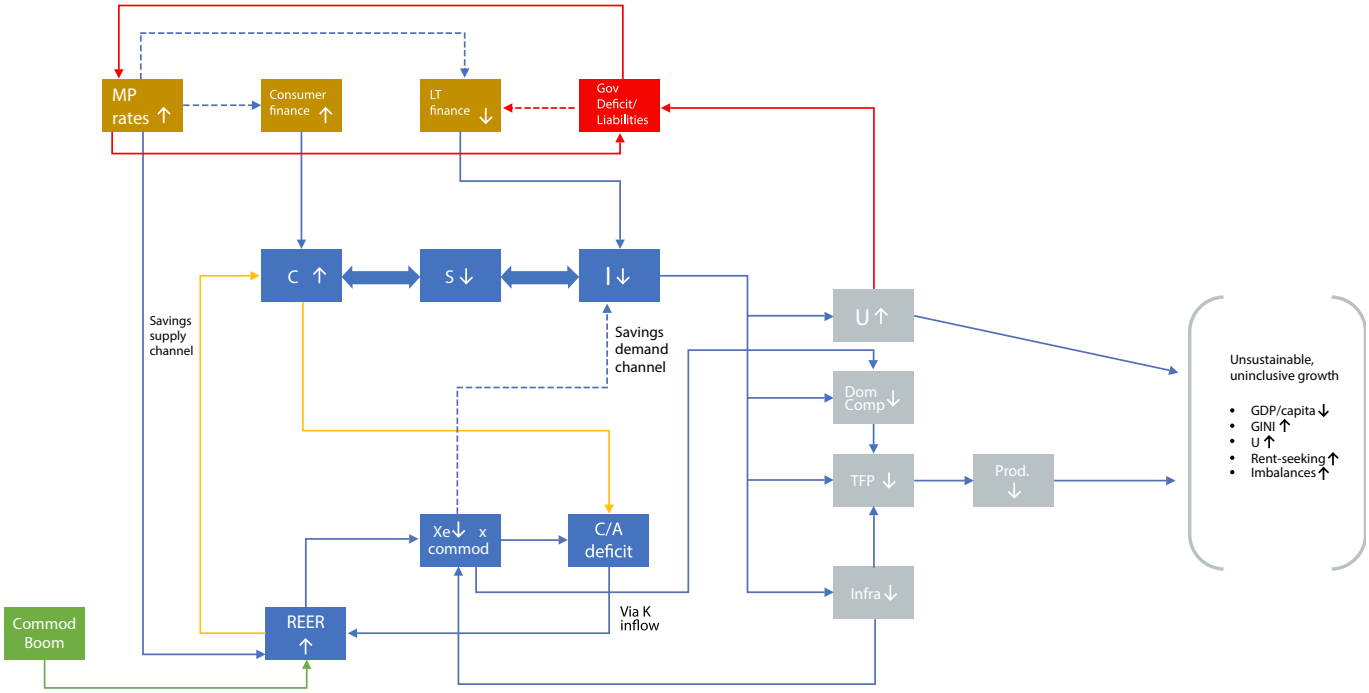


Domestic finance (including monetary policy) → **raises REER,increases consumption, drops investment**

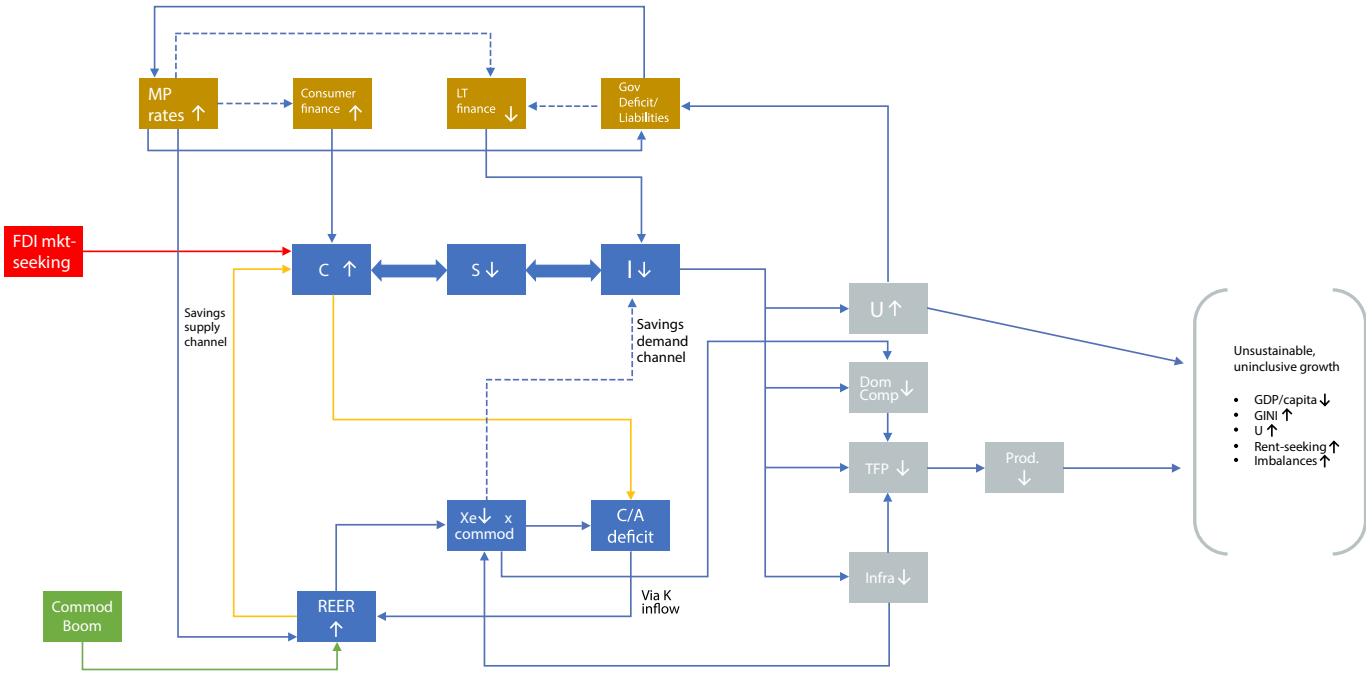


Government deficit and liabilities (pensions) → **has crowding out effect**

← liabilities increase with unemployment (revenue and transfers effects)

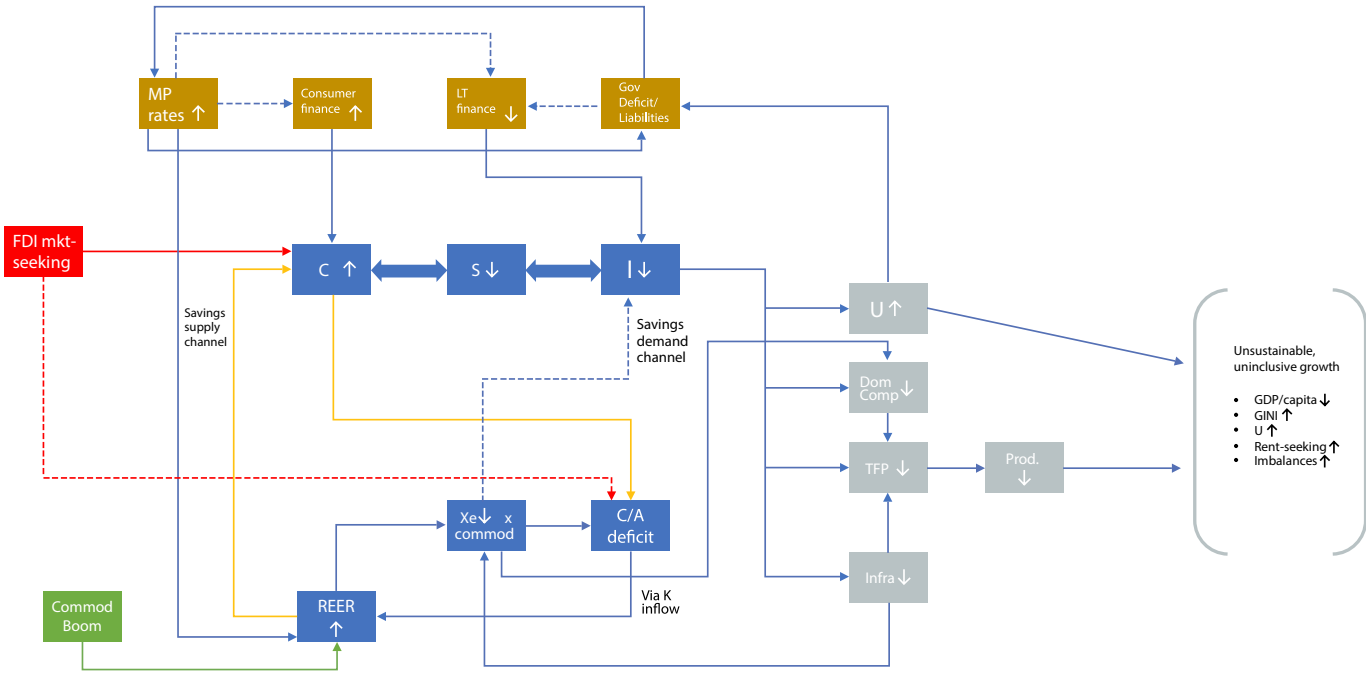


Inefficient,low -productivity, expensive, big economy → **attracts market-seeking FDI** → higher consumption

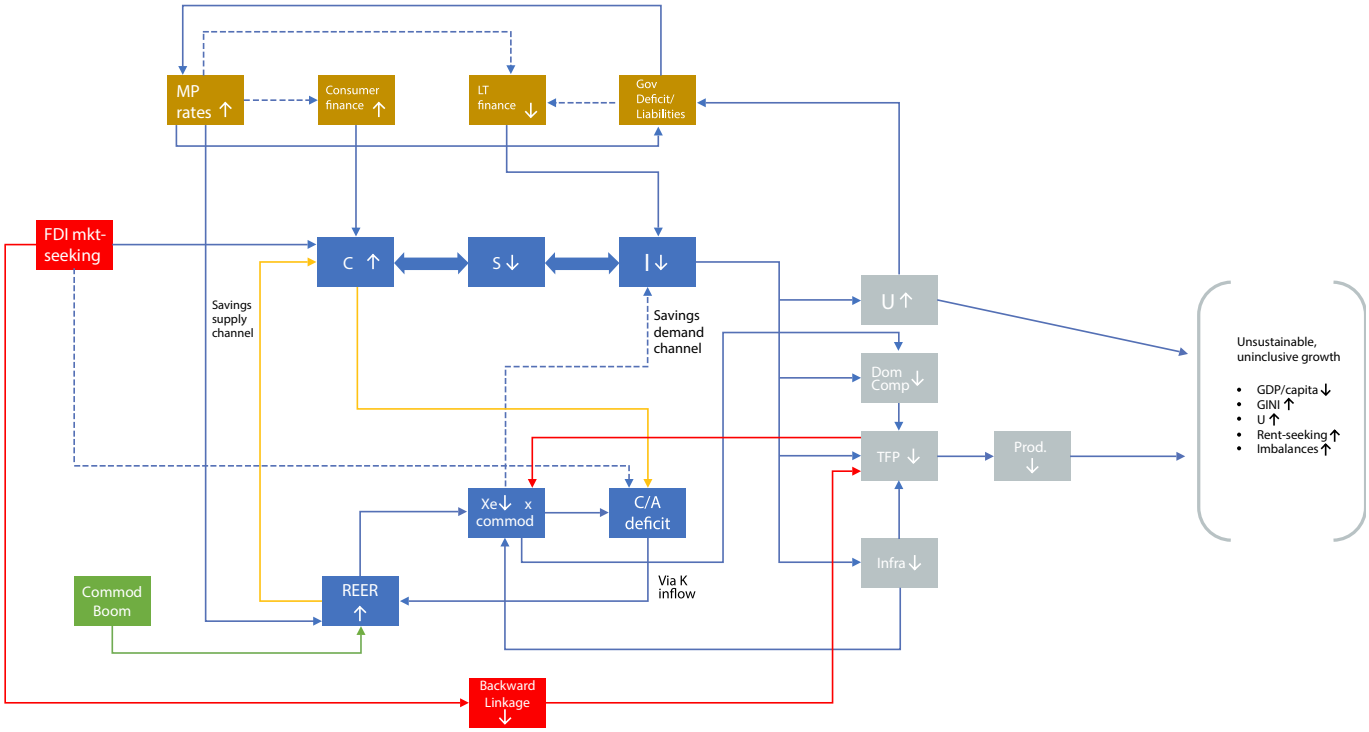


FDI adds to C/A deficit → **(1) future repatriation of earnings** (though repatriation higher w hen REER is high)

→ **(2)** higher propensity to import (if services FDI)



Market-seeking FDI → **low backward linkages** → **lower TFP improvements** → **lower exports of non-commodities**



Virtuous cycle requires a reorientation

To make it a solution, a reorientation is required

A virtuous cycle would require radical re-orientation towards exports, i.e. anchoring both macro and micro policies on non-commodity export performance

Why non-commodity exports: 'sophisticated' exports= greater GVC integration, productivity, associated with lower GINI

Why exports? Because it is the short-cut to productivity--driven virtuous cycle:

- Micro: global markets are not easily subject to rent-seeking -7 forces investment,TFP gains
- Macro: productivity -7 lower REER, exports -7 lower C/A defic it, higher savings -7 investments

Policy reconfiguration

- remove vestiges of import substitution – they serve MNC's rather than the opposite
- demolish 'custo Brasil'
- REER is too high, i.e. fight tomorrow's battles, not yesterday's – keep consumption low to raise savings/investment
- regulate and aggressively curtail consumer credit
- improve domestic competition
- fix financial markets: LT financing via de-indexing
- promote entrepreneurship
- take government out of nexus, i.e. fiscal austerity: as long as it is hostage to the financial system it will not be able to make policy
- find way of 'sterilising' commodity flow

FDI would then be part of the virtuous cycle

'Good' FDI =

- 'efficiency-seeking' FDI

  Export, integrates into GVC, backward linkages, promotes domestic competition

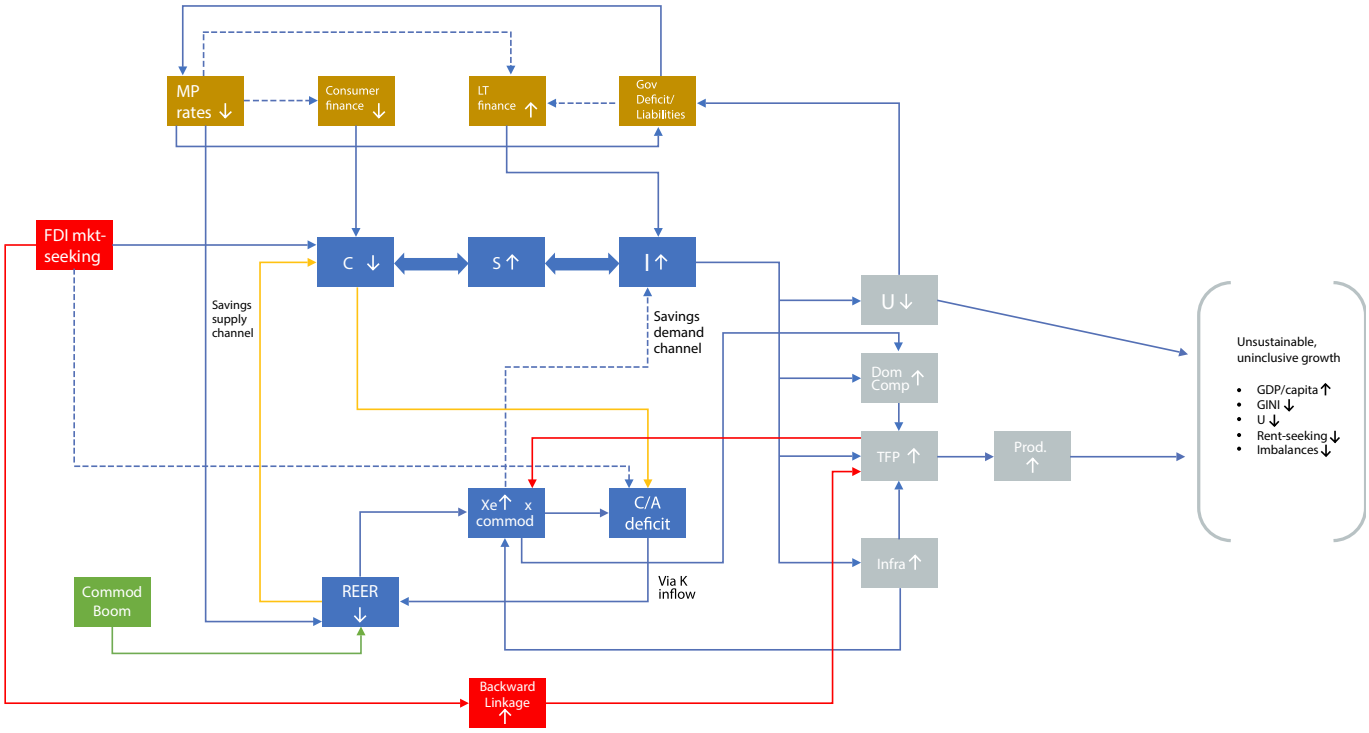
  FDI performance needs to be assessed by asking: 'does it promote exports?'

  Offer incentives – very tough as every country seeks export-oriented FDI

- infrastructure-FDI

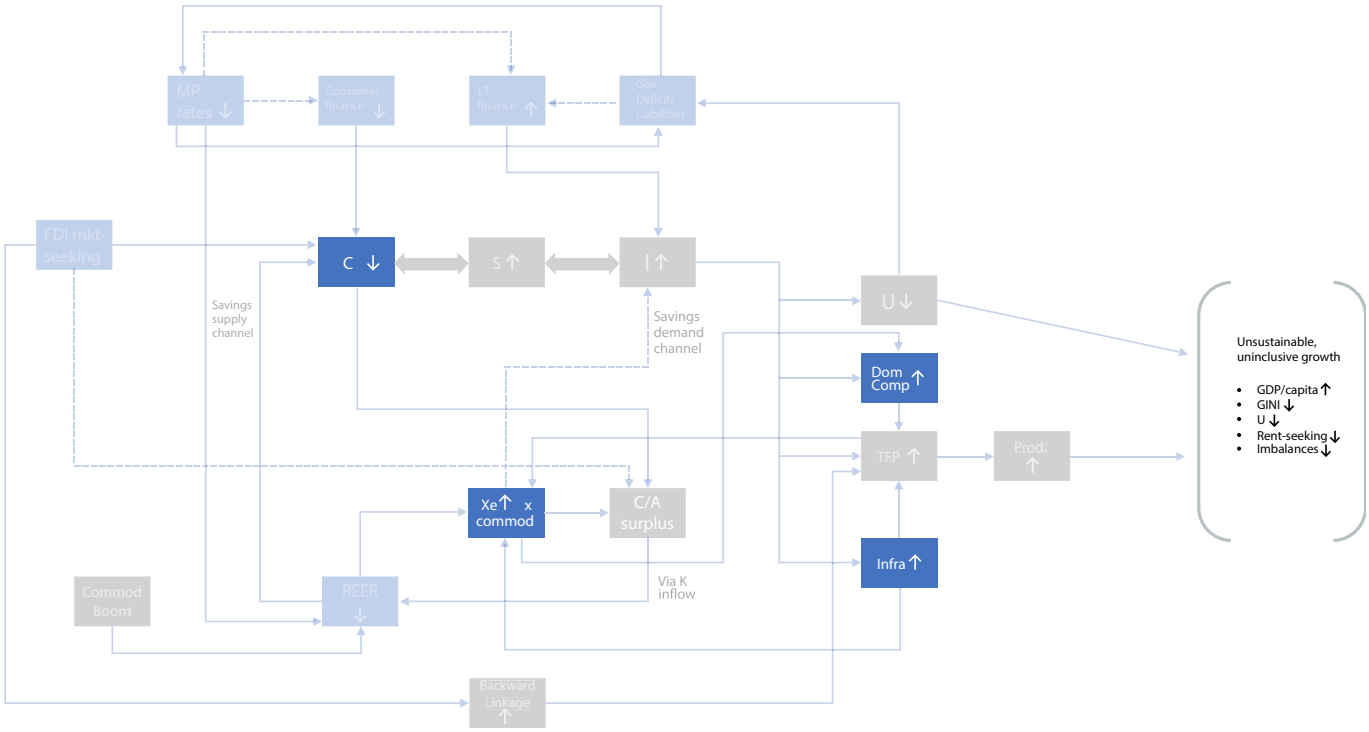
  Harness global interest in Brazilian infrastructure

Virtuous Cycle = opposite of vicious cycle. But where are the key action areas?



Virtuous Cycle = opposite of vicious cycle. But where are the key action areas?

- increase exports,
- lower consumption,
- increase infrastructure spending,
- increase domestic competiton



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