

Aggregate demand and the slowdown of Brazilian economic growth in 2011-2014

Demanda agregada e a desaceleração do crescimento econômico brasileiro de 2011-2014

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Abstract

This paper looks in detail at the sharp slowdown in the Brazilian economy for the years 2011-2014. We argue that the slowdown is overwhelmingly the result of a sharp decline in domestic demand, rather than a fall in exports and even less any change in external financial conditions. The sharp fall in domestic demand, in turn, is shown to be a result of deliberate policy decisions made by the government and was not necessary, i.e., it was not made in response to some external constraint such as a balance-of-payments problem.

Keywords

Brazil; demand-led growth; macroeconomic policies.

JEL Codes B51; E60; O11.

Resumo

Neste artigo analisamos a forte desaceleração da economia brasileira para os anos de 2011-2014. Argumentamos que a desaceleração é majoritariamente causada por uma queda acentuada da demanda agregada doméstica, ao invés de ter sido causada por uma queda nas exportações e muito menos por qualquer mudança nas condições de financiamento externo. A queda acentuada da demanda agregada doméstica, por sua vez, é demonstrada ser resultado de decisões deliberadas de política econômica tomadas pelo governo. Estas medidas não eram necessárias, no sentido que não foram tomadas como resposta a alguma restrição externa, como um problema no balanço de pagamentos.

Palavras-chave

Brasil; crescimento liderado pela demanda; políticas macroeconômicas.

Códigos JEL B51; E60; O11.

1 Introduction

The Brazilian economy experienced a period of faster growth from the mid-2000s to 2010, after nearly a quarter-century with very little growth in GDP per capita. The rebound was due both to a major change in external conditions combined with a smaller but very important change in the orientation of domestic macroeconomic policy. The average growth of GDP in the period 2004-2010 was 4.4%, slightly more than twice that observed in the period 1995-2003 (Serrano; Summa, 2012).¹ However, the average growth rate of the period 2011-2014 dropped considerably to 2.1%.

The purpose of this paper is to argue that this sharp slowdown in the growth rate of the Brazilian economy since 2011 can be explained predominantly by changes in the orientation of domestic macroeconomic policy, rather than to changes in the external conditions of trade and finance. Moreover, we shall argue that, as the economy was neither constrained by foreign exchange nor by the general scarcity of labor or capital, these changes in macroeconomic policy led to a substantial decrease in the rate of growth of aggregate demand and are chiefly responsible for the lower growth of both output and business investment.

In the period 2004-2010, after the marked improvements in external trade and financial conditions since 2003, the government gradually, and initially with some hesitation, took responsibility for directly generating growth through an expansion of the domestic market. This was done through a series of policy measures boosting aggregate demand in order to promote economic growth, measures which were quite successful. However, since 2011, despite the continuity of the ease in financing the large current account deficits, the government changed the orientation of macroeconomic policy. The new strategy was first to make space and then to provide macroeconomic incentives for the private sector to lead growth in investment and the economy more generally. This was done in two phases. The first was a strong and deliberate contraction in aggregate demand growth in 2011, with its effects lasting until 2012. This included a large reduction in public investment to open up space for the presumed

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 1 See Barbosa-Filho and Souza (2010), Vernengo (2011), and Weisbrot *et al.* (2014) for an overview of the recent Brazilian economic and social performance. Most of the data presented in this paper and its sources are summarized in Table A1. For the data not included in Table A1, we will cite the source in footnotes.

private investment and export boom. As investment and exports did not respond to these interest and exchange rate changes, and the exchange rate devaluation began to accelerate inflation, interest rates were increased again. After that the government tried to revive private sector investment mainly through large tax breaks, hoping that the private sector would respond by expanding investment and aggregate demand. As the measures taken since mid-2012 did not significantly increase final aggregate demand – they increased neither the internal nor the external market – private investors naturally found no reason to expand investment and, in the end, the new strategy considerably reduced economic growth.

Our argument will proceed as follows. Sections 2 and 3 discuss, respectively, the possible role of external and internal causes of this marked reduction in growth rates. Brief final remarks are made in section 4.

2 External causes to the economic slowdown

The Brazilian economy greatly increased its resiliency during the 2004-2010 period of favorable external financial conditions. In this section, we review how, despite changes during the years 2011-2014, notably a significant depreciation of the exchange rate, the country maintained low debt levels, an improved debt profile, and large international reserves. We note that the size of the external sector in Brazil is relatively small compared to the overall economy, and thus slower trade growth does not explain Brazil's economic downturn.

2.1 External financial conditions

Rising commodity prices and abundant and cheap credit in international markets were especially helpful to developing countries from 2003 to 2010. Many of these economies took advantage of the improved external conditions to boost growth through their internal markets. There was also a large increase in south-south trade and a substantial improvement in the management of capital flows by a large number of these countries, by means of heavily managed floating exchange rate regimes and a massive

accumulation of foreign exchange reserves.² World trade in general grew fast until 2008, and had already recovered from the world crisis by 2010, only to fall again after 2011 -- the contraction being greater in the case of trade in industrial goods (Figure 1). On the other hand, especially due to the very low interest rates in the rich countries, abundant and relatively cheap private international capital flows to developing countries not only recovered quickly from the crisis but are still available in large quantities.

External conditions can influence a country's GDP growth in two ways; one directly, due to the role of exports as a source of aggregate demand, and the other indirectly in providing foreign exchange and thus loosening the external constraint to attempts to growth based on the expansion of the internal market (Medeiros; Serrano, 2006). Due to the continued availability of large foreign capital flows, the general external conditions of the Brazilian economy have improved since 2003 (Serrano; Summa, 2012) and are still quite comfortable now, despite the fact that the growth of exports and its contribution to aggregate demand has fallen.

Given these external changes and the improvement in the management of its financial account in the current dirty floating exchange rate regime, Brazil has had no scarcity of foreign exchange since 2003, in spite of its large current account deficits. Accumulated foreign exchange international reserves reached a peak of USD\$ 375 billion by mid-2012 and have been oscillating around this level since then. This massive accumulation of foreign exchange reserves improved the indicators of external solvency and external liquidity (Serrano; Summa, 2012; Lara, 2012a). In addition, Biancarelli (2011, 2014) and Lara (2014) call attention to the fact that a large part of Brazilian foreign liabilities are now ultimately denominated in our own currency (from 25% in 2003 to 65% in 2010), so that a large part of the exchange rate risk is being borne by international investors. As a result, in spite of the large current account deficits of 2013 and 2014, the actual dollar value of Brazilian net foreign liabilities has *decreased* in those years, due to the large exchange devaluations of the Real.

In spite of large exchange rate devaluations since 2011, Brazil has not (at least up to now) faced a domestic financial crisis in banks or corporations based

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 2 The improvement in the external conditions of most developing economies in the 2000s, together with the improvement in the management of their financial accounts prevented the occurrence of major balance of payments crisis in developing countries (Freitas; Medeiros; Serrano, 2015; Serrano, 2013).

in Brazil that were overly indebted in dollars for speculative reasons (contrary to what happened in the case of several large Brazilian companies in the late 2008 world financial crisis), nor was there a sudden stop in international credit (as there was during the 2008 crisis) that, through the short term impact on business spending and on available credit conditions by private banks, could have explained the rapid slowdown in Brazilian GDP growth since 2011.

2.2 The export slowdown

The negative impact of international conditions on Brazilian economic growth seems thus to be restricted to the direct impact on aggregate demand of the lower growth of exports. The average annual growth of Brazilian exports of goods and services in 2011-2014 (1.6%) was indeed much lower than during the period 2004-2010 (5.2%). This substantial fall in the growth of exports was undoubtedly relevant. However, total exports account for a small share of aggregate demand in Brazil³ (Freitas; Dweck, 2013), even taking into account the possible further effects of the lower growth rate of exports on induced consumption and investment.

Many Brazilian economists (as Bresser-Pereira (2010)) argue that the stagnation of Brazilian exports of manufactured goods (as opposed to commodities) are a result of the overvaluation of the real exchange rate. We hold a very different view: that the lower growth of exports seems to have been almost entirely determined by the slowdown of the growth of demand and trade in the world economy.

Econometric evidence from estimations of export functions for Brazil using many different methods suggests that price effects are very weak and the income effects are quite strong.⁴ Moreover, despite a depreciation of 45% of the real exchange rate from 2011 to 2014, the rate of growth of Brazilian exports of goods and services in 2011-2014 was still quite low.

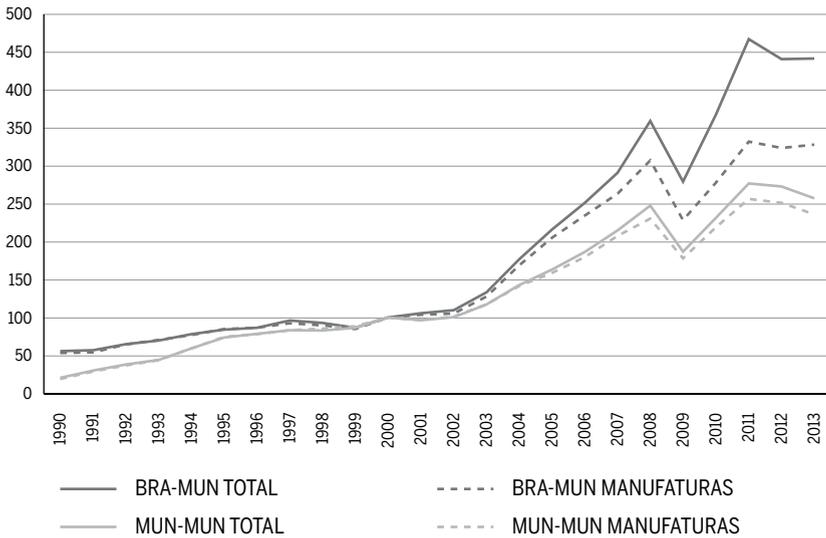
Total goods and manufacturing goods world exports shrank in 2012 and 2013, while Brazilian exports of manufactures remained relatively con-

3 The ratio of exports and GDP hovers around 11% and many of our exports have a high import coefficient. Lara (2012b) and Silva and Lourenco (2014) show that the contribution of exports to GDP growth is very small.

4 For a survey, see de Paula, Modenesi and Pires (2015), Padron *et al.* (2015) and Bhering *et al.* (2015).

stant (Figure 1). Brazil’s market share of world commodity exports had a substantial increase and even its market share of world’s manufacturing exports slightly increased during the period 2000-2012 (with the single exception of high tech industrial exports, of which shares fell slightly, Corrêa and Xavier (2013)). So the country’s slower export growth since 2010 reflects a global trend, with Brazil outperforming the world average by some measures in 2012 and 2013.

Figure 1 **Brazilian and world exports**
(Index = 100 in 2000, reflecting export values in nominal US\$)



Source: COMTRADE; Elaborated by Castilho, M. (2015).

2.3 ‘Leaky’ aggregate demand

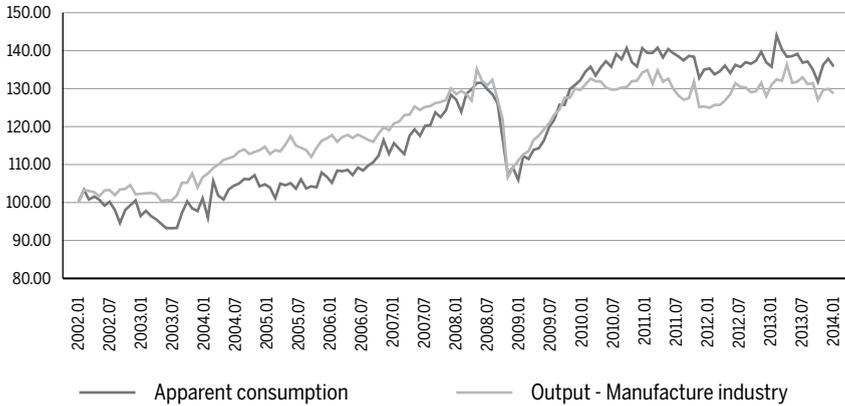
One explanation for how the external sector has caused slower economic growth since 2010 is based on the belief that manufacturing industry in Brazil was hurt by an overvalued real exchange rate. Aggregate demand in the period 2011-2014 supposedly continued to grow fast but, due to the real exchange rate, an increasing part of it leaked out of the country, through imports of goods and services. This view is usually illustrated by comparing some index of retail sales (as a proxy of demand for indus-

trial goods) with industrial output, as the former kept increasing while the latter has remained stable since 2011 (see for example, Paula; Modenesi; Pires, 2015). A big problem with this analysis, however, is that a retail sales index is totally inadequate as a proxy for the demand for industrial goods, and it is surprising that so many analysts use such an indicator. First of all, this index does not include, of course, the sales or the demand for capital goods, and as we shall see the rate of growth of investment in machinery and equipment fell drastically in 2011-2014. And second, it does not include industrial exports, which also stagnated.

There is, however, a much better proxy for the domestic demand for industrial goods -- the index of apparent consumption of manufacturing industry. Apparent consumption means production minus exports plus imports and is equal, by definition, to domestic demand plus the accumulation of inventories. Assuming that over a longer period of time the accumulation of inventories (positive or negative) must be small, the index becomes a good proxy for the evolution of the domestic demand for manufactured goods. Using the available estimates (Carvalho; Ribeiro, 2012), domestic demand for manufactured goods stopped growing since 2010, after growing about 40% in the 2002-2010 period (Figure 2). As the demand for Brazilian exports of industrial goods also fell, the stagnation of Brazilian industry is largely explained by the stagnation of both domestic and foreign demand for Brazilian industrial goods.

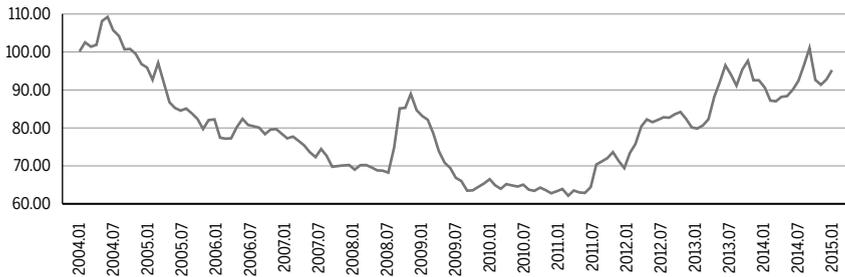
Note also that there is a change in the difference between apparent consumption and industrial output. From 2004 to 2008 industrial production is growing faster than apparent consumption or domestic demand (abstracting for inventories), which means that industrial exports are increasing faster than imports in the period of real exchange rate revaluation. On the other hand, in the period after 2010, industrial production grew less than domestic demand. But this necessarily means that industrial net exports are falling, since industrial production is equal to industrial net exports plus domestic demand. Furthermore, Figure 3 shows the real exchange rate in Brazil since 2004 and we can see that industrial net exports were increasing in the period of real exchange appreciation and decreasing in the more recent period of real depreciation of the currency. In general, both the idea that domestic industrial demand was still growing fast but leaking out abroad, and that these leakages are mainly a consequence of the overvalued real exchange rate – popular as they may be in Brazil – find no support in the available data.

Figure 2 Apparent consumption and manufacturing output



Source: IBGE/PIM; IPEA (IPEADATA).

Figure 3 Real exchange rate (n. b. an increase means a real depreciation)



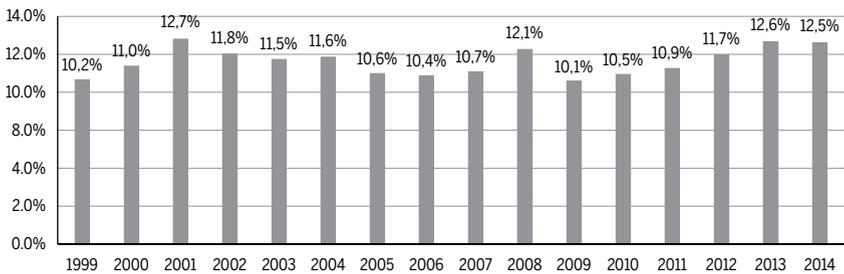
Source: IPEA (Real effective exchange rate, INPC).

The import content coefficient⁵ of Brazilian aggregate demand as a whole shows the share of total (domestic and foreign) demand of the economy that is met by imports (Figure 4). This index has been growing since 2009, but in 2011 it was lower than the average of 1999-2008 (11.3%). The average of 2011-2014 (11.9%) is very close to the year 2008 (12.1%). And we should remember that its value is affected directly by the real exchange rate (it increases with real depreciation even if nothing else changes). The

5 We constructed this index by dividing imports by total supply (GDP plus Imports), in current prices. SquEFF (2015) shows that the relation between the real growth rates of imports and the growth of GDP is stable in the period 1996-2013. The growth rate of imports was 13.4% in 2004-2010 and 4.1% in 2011-2014, while the growth rate of GDP was 4.4% and 2.1% in the respective periods.

import content coefficient fluctuates a lot and does tend to grow over time as imports grow faster than aggregate demand in the long run, but is still quite small. Imports are 12.5% of the total supply (in the year of 2014) of the economy, meaning that 87.5% of the supply is from domestically produced goods and (mainly) services. This also makes it impossible to sustain the view that after 2011 the expansion of aggregate demand suddenly stopped influencing GDP and mostly leaked out as imports.

Figure 4 **Import content coefficient**



Source: SCN/IBGE.

Finally, Dos Santos *et al.* (2015b) found that the real exchange rate elasticity of Brazilian imports is very low and that this reflects mainly the low elasticities of intermediate goods, oil and fuel, and services such as transportation, royalties, and rents paid on machinery and equipment, which amount to about two thirds of aggregate Brazilian imports⁶.

2.4 Conclusion

We can thus reach four conclusions from the analysis presented in this section. First, that the Brazilian economic slowdown is not a consequence of any important changes regarding the balance of payments position and capital flows because there was no shortage of foreign exchange in the economy after 2011. Second, although the overall import content coef-

⁶ After disaggregating Brazilian imports in seven different groups, Dos Santos *et al.* (2015b) found that several of these imports have very low or null possibilities of substitution by domestic products, due to structural technological deficiencies of the local economy. The Brazilian industry of semiconductors, electronics, chemicals and petrochemicals, together with fuel and oil are listed as examples of sectors that suffer from these structural deficiencies.

ficient has been growing over time, and there has been a step increase in the industrial trade deficit after 2009, neither of these can plausibly be attributed to the exchange rate appreciation nor are they of a magnitude that could have made aggregate demand leak mostly abroad as imports⁷.

Third, that the drop in world trade in general and in trade in manufactures in particular fully explains Brazilian exports growth slowdown in 2011-2014. And fourth, that the fall in Brazilian GDP growth in 2011-2014, as seen in section 1 above, was too large to be explained only by the fall in the growth of exports. This indicates that the most important causes for the recent slowdown of the Brazilian economy are internal not external.

3 Macroeconomic policy and the internal market

The faster growth rates of the Brazilian economy in the 2000s were due to the great improvement in external conditions since 2003, together with an increasing activism of economic policy from 2004 on. In this process, it is important to distinguish three different factors that operated together, leading to the sustained growth of domestic demand from 2004-2010 (Serrano; Summa, 2012). The first of these factors was the expansion of household consumption (and of housing investment), which came as the combined result of a rapid increase in household credit, strong job creation in the formal sector, rising real wages, and growing public sector transfers to households.

The second element was the expansionary impact of fiscal policy on aggregate demand. And this is also connected to the dynamics of household consumption. Due to the increased tax revenues that resulted from both the boom in new jobs and higher real wages in the formal labor market, as well as rising commodity and financial asset prices, the government was able to implement a more pragmatic economic policy aiming to directly stimulate aggregate demand growth through higher government expenditures and social transfers even without abandoning its primary surplus targets. These included substantial increases in the real value of

7 Note that in Serrano and Summa (2012) we ourselves have overestimated the extent by which import coefficients were rising (by quoting secondary data for the import penetration coefficient, instead of import coefficients). The former, being defined as imports over apparent consumption (and thus excluding exports) gives a wrong impression that the latter is increasing fast in sectors where exports (and their imports) are rising fast. We also overestimated how much exchange rate devaluations could help improve the balance of trade.

the minimum wage (and therefore also social and social security pension transfers which are linked to the level of the minimum wage), the resumption of rapid growth of investment by state owned- enterprises and by the government, and higher growth of government consumption (including through increased civil servants' wages).

The third factor was the response of private nonresidential investment, which tends to adjust the productive capacity of the private sector to the trend growth in aggregate demand. As soon as the faster pace of demand growth was perceived as a more sustained phenomenon (based on the two mechanisms mentioned above), the growth of nonresidential investment accelerated and grew more than the other components of aggregate demand. The (flexible) accelerator mechanism operated as usual in the Brazilian economy and, together with the other two mechanisms mentioned above, contributed both to the growth of aggregate demand as well to the generation of the productive capacity necessary to meet that higher growing demand. (Dos Santos, 2013; Dos Santos *et al.*, 2015a).

The change in the orientation of macroeconomic policy since 2011, we will argue, was the main cause of the progressive dismantling of the first two of the three above mentioned factors that generated the faster demand-led growth of the Brazilian economy up to 2010. And the resulting lower growth of the internal market (and also, for external reasons, that of exports) naturally made the accelerator process work in reverse, with a pronounced fall in the rate of growth of private induced investment, in an attempt to adjust the creation of new productive capacity to the much lower new trend of growth of the market after 2011. Let us turn then to analyze the evolution of the domestic components of aggregate demand and the role of the new orientation of macroeconomic policy in reducing the rate of growth of each of these components in the 2011-2014 period.

3.1 Expanding Consumption in 2004-2010

After a period of slow growth that lasted until 2003, annual household consumption grew, on average, 5.3% between 2004 and 2010 but fell to 3.1% during 2011-2014⁸.

8 For a detailed structural analysis on the evolution of consumption patterns in Brazil and in particular the connection of these patterns with changes in income distribution, see Medeiros

The growth of household consumption in Brazil depends on the evolution of real disposable income, the availability of consumer credit and the real interest rates of these lines of credit (Dos Santos, 2013). To this, we can add the little noticed but important effect of the public sector wage bill, given that the consumption expenditures of public sector workers (both active and retired) also appears as private consumption. And all of these elements helped consumption to grow fast in the period 2004-2010.

The improvement in international conditions after 2003 brought with it lower interest rates in the U.S. and significantly lower interest rate spreads for emerging markets in general, including Brazil. As the external interest rate (international rate plus country spread) was falling considerably, this allowed the Brazilian central bank to cut domestic interest rates and stimulate consumption (and housing investment) while at the same time maintaining a positive interest rate differential and thus a tendency towards revaluation of the exchange rate that helped to hit its inflation target (Serrano; Summa, 2012).

Besides lowering real interest rates, many measures were taken to increase the availability of bank credit, and to improve access to credit for poorer households. One policy that turned out to be important was the creation of the so-called *crédito consignado* in 2003. Under this system, those with fixed income collateral such as a public pension or formal sector job (mainly in the public sector, but also private sector) enjoy reduced interest rates because banks are able to automatically deduct compulsory payments from retirement benefits or wages (Lavinias, 2015).

Moreover, the economic growth experienced in these years was accompanied by a process of growth in employment, increasing labor formalization and growing real wages in particular due to large increases in real minimum wages (Summa; Serrano, 2015). The federal government increased public social transfers, broadening coverage and increasing real benefits⁹ (Dos Santos, 2013), and also increased the public sector wage bill.¹⁰ As a consequence, private consumption increased both directly, through the effect of disposable income on consumption, and indirectly, through the

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(2015a, 2015b).

9 The majority of these social transfer benefits were formally indexed to the minimum wage, which grew considerably in this period (Orair; Gobetti, 2010).

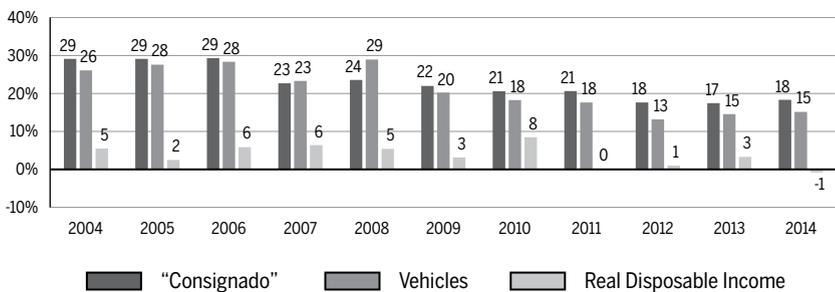
10 Besides the direct effect of the expenditure of the public sector wage bill on consumption, there was also an increased availability of credit for these workers.

effect of incorporating more workers into the formal sector thus granting them easier access to consumer credit lines.

The problem with a rapid expansion of consumer credit is related to its sustainability over time. As Barba and Pivetti (2009) point out, in the long run it is important to compare the growth rates of the real disposable income of consumers with the real interest rate at which they are borrowing. But even if the real interest rates are lower than the growth rate, depending on circumstances the debt-to-income ratio may climb so high that banks impose credit constraints or consumers themselves stop asking for new loans. On the other hand, in the unsustainable case in which the interest rates are higher than the growth of disposable income, the growth of the debt-to-income ratio may be slow or fast and the time it takes for credit constraints and repayment difficulties to arise may be accordingly longer or shorter. Thus, the amount of time that rising consumer credit levels can increase the rate of growth of private consumption depends not only on the difference between interest rates and growth rates, but also on the initial ratio of household debt to disposable income, loan terms, and other credit conditions.

The real interest rates of some of the cheaper credit lines were on average around 24.5% in the years 2004-2010, while real disposable income grew around 5% per year in the same period (Figure 5). At the same time there was a clear tendency towards a reduction of the difference between the rate of interest and the rate of growth of disposable income within that same period (Figure 6).

Figure 5 Consumers' real interest rate and growth rates of households' disposable income (including public sector workers)



Source: BCB, DIMAC/IPEA (methodology in Dos Santos et al., 2012).

Some events helped the growth of consumer credit to continue, initially delaying a faster rise in the debt to income ratio. In the beginning of the consumption boom (January 2005) the ratio of household debt to 12-month household income was very low, only 18%. By 2014 it had risen to 46% (if we exclude residential housing credit, the ratio was 15.3% in 2005 and 28.4% in 2014).¹¹ From 2005-2006 to 2010 real interest rates fell over time and the loan durations in general (to buy cars and durables in particular) increased (Figure 7). This process was also “extensive” in the sense that it continued by incorporating new households that previously had no access to bank credit into the formal credit market, given the fast rate of job creation in the formal sector.¹² In the 2004-2010 period, 10.2 million new formal jobs were created. This process of increasing consumer credit under these conditions is not sustainable for an individual household, but at the aggregate level, the process continues through the incorporation of many new (and not yet indebted) households into the formal credit market.

The problem with this extensive model is that, in order for credit-based consumption to remain growing at the same pace, the process of reduction of consumers’ real interest rates and longer loan terms must continue; the economy must also continue to incorporate new borrowers in the formal market, and the rate of growth of aggregate disposable income should be at least stable (or preferably increasing).

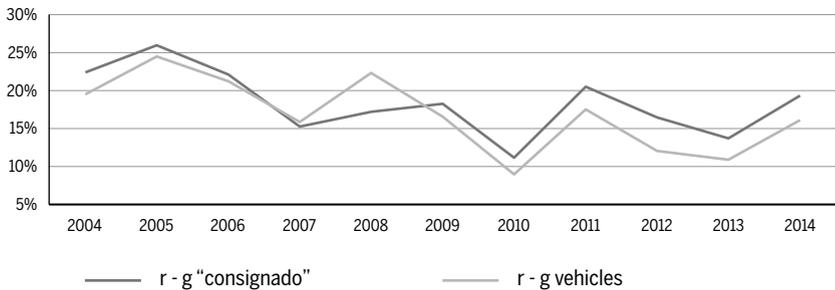
3.2 Macro-prudential measures and monetary policy 2010-2014

In 2010 and then again in the beginning of 2011, inflation increased as a result of rising international commodity prices and was incorrectly interpreted as reflecting excessive growth of aggregate demand (Summa; Serrano, 2015). The government then took measures that went against the conditions required to maintain the growth of consumer credit and real disposable income (Figure 5). The Central Bank began a cycle of interest rate increases after February 2010 that lasted until August 2011, raising the basic nominal interest rate from 7.5% to 13.5%.

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 11 Data from BCB.

12 For example, as Lavinás (2015) noticed, in 2008-9, 9.9% of the bottom 20% in the distribution of personal income owned a credit card, as opposed to 2.2% in 2002-3.

Figure 6 **Difference between the real interest rate and the growth of real disposable income**



Source: BCB, DIMAC/IPEA (methodology in Dos Santos et al., 2012).

The government then decided to reduce the growth in aggregate demand more quickly and in late 2010 and early 2011 adopted some measures to control consumer credit.¹³ These so called macro-prudential measures, along with the increase in the basic interest rate, in fact led to some increase in interest and consumer credit spreads and to shorter loan terms for consumer credit lines, such as those for durable goods and vehicles (Figure 7).^{14, 15}

The nominal interest rate increases and the macro-prudential measures helped, to a certain extent, to end the consumption boom (especially of durable goods) and contributed to an increase in default

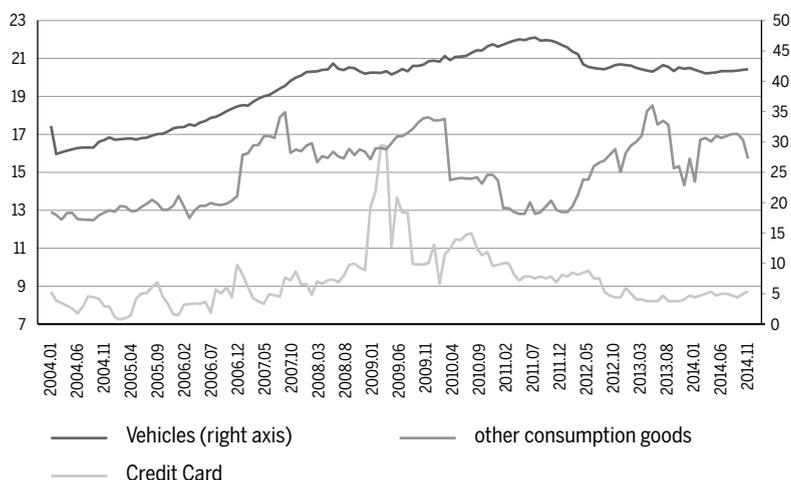
13 They included: a) an increase in the compulsory deposit of deposits in banks, which acts as a tax and tends to increase the bank spread; b) an increase in the minimum capital required of banks for consumer loans of longer maturities (such as car financing, but not mortgages); c) increasing taxes on financial transactions for consumer credit in general; d) raising the minimum payment percentage on credit card balances (Prates; Cunha, 2012).

14 It is important to note that the loan durations of overall credit to households keep rising due to the increasing participation of mortgage loans in total credit (which are in general much longer than consumer credit), despite the fall of loan durations for consumption goods and services.

15 There was not clear logic behind the adoption of these measures. If the concern was the stability of the financial sector, why was the central bank worried about a supposed consumption bubble financed by credit, while at the same time encouraging the expansion of housing mortgages that could generate more dangerous bubbles? If the priority was to control the defaults of workers and consumers in general, why the simultaneous increase in retail interest rates and reduction of personal credit availability that has the opposite effect, at a time of slower income growth, of increasing debt service as a percentage of income? If the main aim of macro-prudential measures was controlling inflation, why the Central Bank try to reduce the growth of credit specifically for durable goods, where there was a tendency for the stability of the nominal prices of these products in Reais (Braga, 2013)?

rates.^{16, 17} Even so, these measures were considered a success by all and only began to be reversed in late 2011 when the Central Bank finally realized the extent and severity of the ongoing slowdown in the growth in the Brazilian economy.

Figure 7 Loan durations (months)¹⁸



Source: BCB.

At this time the Central Bank again reversed the direction of monetary policy. The BCB quickly lowered the basic nominal interest rate and took other credit and tax measures to try to stimulate private consumption again.¹⁹ But

16 The default rate of households increased substantially in 2011, from 5.83% in the first quarter of 2011 to 7.53% in the first quarter of 2012 and 7.8% in the second quarter of 2012 (BCB).

17 And clearly did not have any effect at all on the dynamics of inflation. The option of using macro-prudential measures rather than larger increases in the basic interest rate makes these policies ineffective against inflation because it does not make use of the main transmission channel of monetary policy in Brazil: the impact of the increase in the difference between domestic and foreign interest on the exchange rate, and from that on to the costs of all sectors (Serrano; Summa, 2012, 2015).

18 To construct this time series, we used two sets of data produced by BCB, the new series that start in 2011.03 and are expressed in months and the old series expressed in days and calculated according to a different methodology. We supposed that the old data in 2011.02 was equal to the new data in 2011.03. Thus, we calculated a multiplier and applied it to the old series.

19 In early 2012, the government forced publicly owned retail banks (Banco do Brasil and Caixa Econômica Federal) to reduce their interest-rate spreads, and through competition, the

by mid-2013 the Central Bank once more changed the direction of monetary policy.

It is important to note that, despite these erratic changes, real interest rates remained high, especially if compared with the growth rates of real disposable income. And from 2011 to 2014 the general tendency is for this gap to increase (Figure 6).

Moreover, as a result of the lower rate of economic growth, the rate of job creation in the formal sector was lower in each year since 2010, which also harmed the 'extensive' incorporation of new borrowers. In fact, the rate of growth of real disposable income fell from 5.3% in 2004-2010 to 1.2% in 2011-2014. Finally, it is important to note that households became much more indebted compared with 2004. In 2005, the ratio of mortgage household debt and 12-month household income was 3%, while in 2014 it was 18%. Servicing this debt forced many indebted households to cut consumption.

3.3 The fiscal adjustment of 2011 and the fiscal policy stance in 2011-2014

With the improvement in external trade and financial conditions since 2003, the Brazilian government decided to take responsibility for generating economic growth. At first they began timidly, with measures to improve credit, raise the minimum wage and increase social transfers, but after 2006 the government more openly and deliberately took measures to increase public investment (Serrano; Summa, 2012). From 2004-2010, real spending on government consumption grew, on average, 3.2% per year, social transfers and social security grew 5.6% per year, public administration investment had an average annual growth rate of 14%, and investment by state-owned enterprises had an average annual growth of 16.3%. On the other hand, public sector revenues grew on average 7.2% annually in real terms from 2004-2010, faster than GDP.

Although government spending and social transfers grew very fast over 2004-2010, tax revenues did as well. The result was that, as a share of

..... private banks also quickly lowered their spreads, confirming the thesis that the very high bank spreads in Brazil are supported by collusive and anti-competitive relationship between the major public and private banks. In addition, it promoted in 2012 a set of temporary reductions in indirect taxes to try and lower the retail price and stimulate the purchase of some durable consumer goods (including automobiles).

GDP, the primary surplus fell only a little over this period. According to Dos Santos and Gouveia (2014), fiscal revenues grew so fast mainly because of a large increase in the formal sector workforce and rising commodity and financial asset prices. The net effect of such large simultaneous increases in spending, social transfers, and tax revenues on aggregate demand was clearly expansionary. As we know, since Haavelmo's balance budget theorem (Haavelmo, 1945), raising expenditures and taxes by the same amount has a unitary multiplier. So even raising taxes a little more than spending may still have positive effects on aggregate demand (although with a multiplier lower than one), especially if the propensity to spend by those who are taxed is smaller than that of those who receive government social transfers, as was clearly the case in Brazil during 2004-2010. Thus, even with a small positive multiplier the very fast increase in government expenditures and social transfers during this period made an important contribution to the growth of aggregate demand.

In addition, some amendments were made to relax the rigid official targets for the primary budget surplus in order to allow for faster growth of public investment. The PPI plan made it possible to exempt a share of public investment from the official primary surplus target, and also investments made by the main state-owned enterprises (Petrobras and Eletrobras) were excluded from computation of the official target in an attempt to boost investment in federal and state-owned enterprises and to promote the PAC public investment plan. The result of both a large increase in expenditures and revenues and a small reduction of the actual primary surplus to GDP ratio expanded aggregate demand.²⁰

However, at the end of 2010, the government decided to change its economic policy orientation and to begin opening space and giving macroeconomic incentives for the private sector to take over the responsibility to generate economic growth. The hallmark of this change was the decision taken at the end of 2010 to promote a strong fiscal adjustment in order to increase the primary surplus and to meet the full target of 3.1% of GDP in 2011 even though the rules of the PAC/ PPI programs could have been used to exclude a share of public investment from the official primary surplus target, bringing it down to 2.42% of GDP. Another sign

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 20 This is confirmed by estimates of a fiscal impulse index by Lara, Rodrigues and Bastos (2015) which is always positive in the years 2004-2010 in Brazil, in spite of the large primary surpluses.

of this contractionary commitment of the new government was the decision, after years of high increases, not to raise the real minimum wage at all in 2011, something that had not occurred in Brazil since 1994. These measures show the strong commitment, by late 2010, of both the administration that was coming to an end and the one that started in 2011, which are from the same party, to greatly reduce growth in domestic aggregate demand. Furthermore, despite the global economic slowdown in early 2011, the signs of which were evident from the first quarter, fiscal adjustment was maintained throughout the year 2011 and the full target for the primary surplus was achieved.

This rapid increase in the primary surplus was only possible thanks to a strong reduction in the growth of real public spending. Government consumption grew only 2.2% in 2011, but more dramatic was the behavior of public investment, both of the central government and the state-owned companies in 2011, which decreased 17.9% and 7.8%, respectively. These cuts were so deep that there was a reduction in the nominal value of both types of these investments.

Note that these cuts occurred while the PAC plan, which was designed specifically to promote public investment, was supposedly in effect. The 2011 experience demonstrated once again the fact that strong fiscal adjustments almost always lead to disproportionate falls in discretionary public investment, instead of other current public spending and transfers that are more rigidly fixed by legal rules and/or rights. Given the endogenous nature of tax revenue and public transfers, as well as the practical impossibility of very large cuts in public sector payroll in the short run, both the international and the Brazilian experience show that invariably it is public investment that becomes the adjustment variable.

In 2012, the government further signaled that it had given up on the idea that public investment should play a key strategic role in generating growth.²¹ Instead, the government decided to promote Public Private Partnerships through concessions of infrastructure projects that had favorable financing conditions for entrepreneurs (National Plan of Integrated Logistics). Public administration investment recovered slightly after 2012, but

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 21 Public investment has a double role. On one hand it is a component of aggregate demand, usually with a low import content. But its most important role is that of generating positive externalities, increasing the productivity and competitiveness of the private sector and as a vehicle for industrial policy.

the average annual rate of growth over 2011-2014 was -1%. The growth rate of investment by state-owned enterprises recovered more strongly in 2012-2013, but a drastic fall in 2014 of 20.8% resulted in an average real growth rate of -2.7% over 2011-2014. Adjusted for inflation, public investment in 2014 was a bit below that of 2010.

After 2012 the government also promoted large tax breaks and social security exemptions on the payroll of firms in many sectors, in an attempt to promote private investment and exports. In addition, there were temporary indirect tax breaks for producers of durable goods (IPI) in order to boost consumption. To try to spur innovation, there were exemptions for the import duty for purchases of capital goods as well as other exceptions and subsidies.

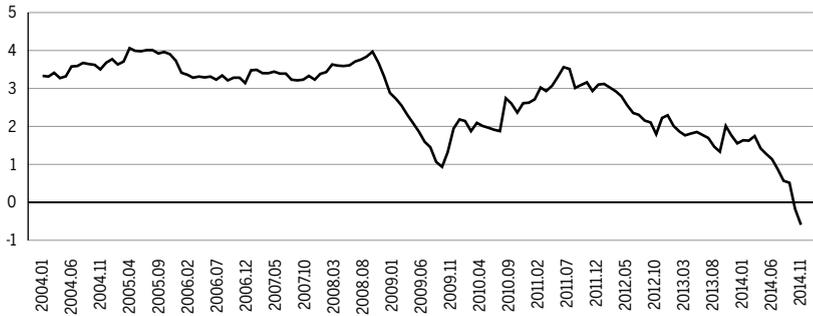
There are various problems with these policies. First, the government decided to diminish its role in public investment precisely in the sectors that have crucial positive logistical externalities. These sectors, like energy and infrastructure, to a lesser extent also help support aggregate demand. The government attempted to convince members of the private sector to invest, but interest in these partnerships depends on the willingness of the private sector and on a complex negotiation of the terms and conditions, which is costly in terms of time, human and monetary resources.²² Second, the large tax relief for firms did not expand aggregate demand, as private investment unsurprisingly did not respond at all to these measures (for more details see the next section).²³ And finally, because the tax breaks taken together with the economic slowdown considerably reduced the evolution of fiscal revenues, the primary surplus fell in 2013 and became negative in 2014. This combination of lower growth in government spending and transfers and the fact that the greatest part of tax breaks was given to firms that did not increase their investment expenditure meant that fiscal policy during 2011-2014 was less expansionary than it was during 2004-2010. This occurred in spite of the fact that the average primary surplus in the more recent period was 1.7%, much smaller than the 3.2 percent average primary surplus of the earlier period, even when including

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22 It is important to remember that the 2007 PAC plan to boost public investment was decided after an earlier effort by the federal government to promote public private partnerships from 2003 to 2006 led to nothing.

23 For empirical evidence, Pires (2014) shows that the multiplier effect of a change in public investment is much stronger than the multiplier effect of a change in net tax burden.

the sharp fall of the primary surplus and revenues during the crisis year of 2009 (Figure 8). The fall in the primary surplus led later to a near consensus around the need for another contractionary fiscal “adjustment” in 2015.

Figure 8 Primary Surplus/GDP



Source: BCB.

3.4 The collapse of investment growth

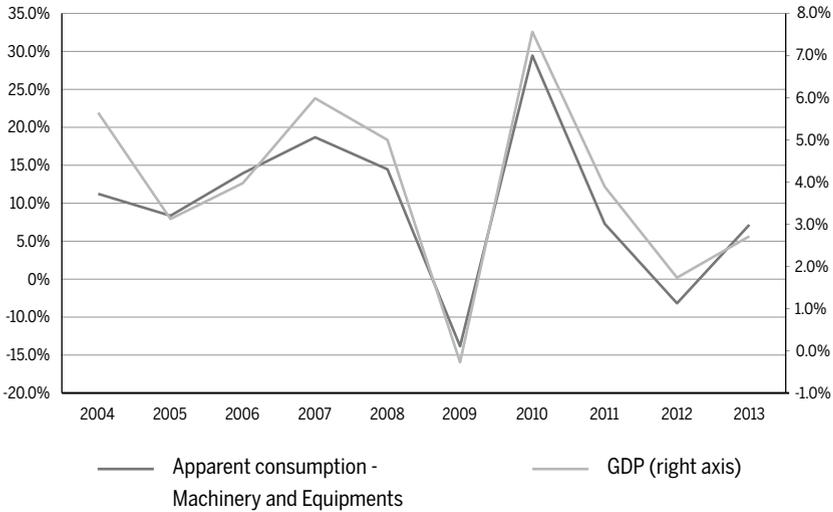
After growing at an average annual rate of 8.0% between 2004 and 2010, aggregate investment spending in fixed capital (with public and private investment combined) growth fell to 1.8% in 2011-2014, lower than the growth rate of private consumption.

Total investment in construction (residential and non-residential, public and private) which grew at a rate of 5.8% on average in the period 2004-10, grew at a much lower rate of 2.8% in 2011-2014, probably largely as a consequence of the large reduction in the growth of public investment. However, most dramatic was the behavior of investment in machinery and equipment which grew at an average rate of 12.3% in the period 2004-10 and -0.7% in 2011-2014. This category includes investment spending by the private sector, but also that of the state-owned companies.

The private component of investment in machinery and equipment is basically driven by the need to adjust the stock of capital to trend growth in effective demand. Through the flexible accelerator mechanism, a rise in the expected and actual trend growth of demand causes this type of private investment to grow temporarily faster than aggregate demand. The

same happens in reverse when the growth trend falls. This is what allows the actual degree of capacity utilization to oscillate within a fairly narrow range. Figure 9 shows this close relationship between growth of productive investment and effective demand.^{24, 25}

Figure 9 Growth rates of GDP and investment
(Apparent consumption of machinery and equipment)



Source: IBGE/SCN; IPEA.

Since there were clear prospects of a tendency for lower demand growth after the quick and intense recovery from the 2009 crisis, a certain slow-down in the growth of private investment in machinery and equipment in 2011 would have been expected anyway. In fact, during the year 2010, the annualized growth rate of apparent consumption of machinery and

24 For strong econometric evidence of business investment being largely induced by demand in Brazilian data see Avancini *et al.* (2015) and Dos Santos *et al.* (2015a).

25 Apart from the expected growth of the domestic market, the expected growth of the world economy or at least of international demand for commodities is one important determinant of investment in the “vertically integrated” export “subsystem” of the economy. Given the relatively small size of exports relative to the economy, this effect does not seem to be too big quantitatively. One can have a different impression when we include investment by Petrobras that, although being stated owned, sometimes behaves following the logic of a private company (but not always). These effects appear to have been captured in Dos Santos *et al.* (2015a) estimates.

equipment and also GDP was already falling continuously and quickly each quarter. This strong deceleration of non-residential investment during the year 2010 makes it even more difficult to understand the government's strong commitment to monetary and fiscal contraction at the end of 2010, given the clear evidence of a domestic slowdown, regardless of the situation of world trade and before the change in the orientation of macro-economic policy.

The government responded to the general fall in investment in 2011 by trying to stimulate the private sector through policies that reduce investment costs and increase profit margins. It reduced the basic nominal interest rate and the rate charged by BNDES, the national development bank. The government also allowed the currency to depreciate, which tends to increase profit margins in the tradable sectors because Brazil is a price taker in the majority of its export markets. Tax exemptions for wages in some sectors and for import duties for some capital goods were passed, along with other tax exemptions and subsidies for innovation. The government also announced, in August 2011, the so-called "Plano Brasil Maior," which included very modest measures for public sector purchases with local content clauses. Later, the National Plan of Integrated Logistics was introduced, in an attempt to stimulate Public Private Partnerships with concessions on investments in infrastructure in very favorable financing conditions for entrepreneurs. Overall these measures were quite unsuccessful in reversing the negative trend of investment expenditures.²⁶

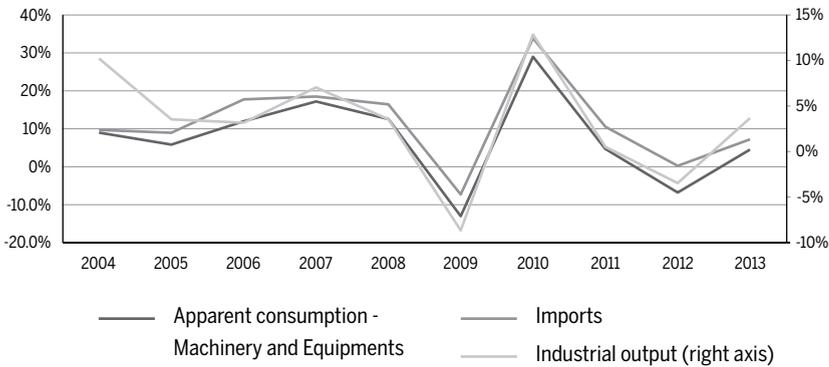
Moreover, the behavior of investment growth, particularly in machinery and equipment, allows us to better understand the performance of the Brazilian manufacturing industry. As we discussed in section 2, there is a broad consensus in Brazil that industry has not been growing, mainly because of the overvalued real exchange rate. In fact, given the small effects of the real exchange rate on the external competitiveness of our industry, it is hard not to see that the main cause of the fall in manu-

26 This outcome should have been expected since there is no good reason to think that private firms will invest without an expectation of increasing demand, regardless of any increase in their profit margins. Profit margin increases may occasionally prevent the closure of some firms that are on the brink of failure without minimum conditions of profitability in their internal or external markets. But the vast majority of firms that are producing and investing regularly clearly have current profit margins way above the minimum viable levels. For those firms, additional increases in margins tend to have no effect on their investment decisions. This also may well be the reason why large exchange rate depreciations after 2011 had so little impact.

facturing output growth was the large reduction in investment growth, especially investment in machinery and equipment, both from private and state-owned enterprises.

As all the machines and equipment that are not imported are obviously produced by the manufacturing industry, in the short term, when the investment share of GDP increases (decreases) investment and industrial production necessarily increase (decrease) more than the production of all the other sectors. So it was the strong reduction in investment growth, not a supposed process of “deindustrialization” related to the real exchange rate, that explains the slowdown in industrial production. The manufacturing industry grew in the years 2007-2008 and in 2010, when the exchange rate had already appreciated, and therefore it is hard to believe that suddenly the exchange rate has become a barrier to the growth of industry as a whole. Note also that the appreciated real exchange rate was very important for controlling inflation and thus also for increasing real wages and the growth rate of household consumption.²⁷

Figure 10 Growth rates of industrial output, imports and investment (Apparent consumption of machinery and equipment)



Source: IBGE/PIM; IBGE/SCN; IPEA.

On the other hand, total imports, which grew on average by 13.4% in real terms in the period from 2004 to 2010, also decreased in pace to 4.1% in 2011-2014. This decrease is also explained basically by the large variations

27 See Barbosa-Filho (2013) and Dos Santos *et al.* (2015) for econometric evidence of the negative impact of a real devaluation on investment.

in the growth rate of investment in machinery and equipment, given the strong complementarity between domestic and imported components of investment in machinery and equipment, and its high import content). Thus, in the short run, investment in machinery and equipment, industrial production and total imports of the economy oscillate together in Brazil, whatever the level of the real exchange rate (Figure 10).

4 From policy induced slowdown to policy induced crisis

In this paper, we have argued that Brazil's economic slowdown since 2011 can be explained by the lower rate of growth of the domestic components of demand, and that these lower rates of growth of domestic demand are mainly the result of changes in the orientation of macroeconomic policy, more than due to changes in external trade or financial conditions. In the period 2004-2010, after external conditions improved and external constraints were loosened, the government gradually took responsibility for generating economic growth directly by boosting aggregate demand through measures that increased mass consumption, and through a large increase in public investment. The latter measures were also crucial to begin to address Brazil's serious infrastructure deficiencies. This policy as a whole was very successful in attaining high growth. The main problem was that it did very little to change the productive structure of the country, and so it led to a rising current account deficit, although, as we have seen, the negative effects of the real exchange rate appreciation on the competitiveness of Brazilian industry appear to be grossly overestimated. In any case, the favorable changes in the world economy and the improved management of the country's financial accounts under a heavily managed floating exchange rate regime allowed these large deficits to be easily financed.

Despite the continuity of generally favorable external financing conditions, the government changed again the orientation of its macroeconomic policy in late 2010 and early 2011. The priority was shifted to opening space and generating incentives for the private sector to lead growth through autonomous investment and exports. This led the government to deliberately promote a major contraction in aggregate demand growth

rates in 2011. We have shown that both monetary and fiscal policy accounted for most of the sharp slowdown in output growth in 2011, with effects lasting until 2012. After that, the government tried to stimulate private investment by creating incentives for the private sector, such as reduced interest rates for investment projects, large tax breaks and a large exchange rate devaluation. In general, these incentives had little positive effect on aggregate demand and served just to increase profit margins in some sectors. The failure of this new policy orientation largely explains the much lower growth trend in 2011-2014. Table A1 summarizes and contrasts what happened to the growth of aggregate demand and some of its main determinants in the two periods.

The failure of the new 2011-2014 policy regime appears only to have convinced the government to double down on its bets. In 2015, a new economic cabinet began by publicly declaring another major shift in the orientation of macroeconomic policy. The main stated objective is to reduce the *gross* public debt, and the new strategy involves an attempt to reduce the size and importance of government spending and of the credit offered by government-owned banks in the economy. The adjustment plan consists of a strong fiscal adjustment with cuts in government current spending and social transfers, tax increases (credit, consumption, fuel), increases in the interest rates controlled by the government and other measures to constrain the growth of credit by state-owned banks. The new policy contains a further strong depreciation of the real exchange rate and large increases in prices monitored by the government (mainly fuel and electricity).

These contractionary and inflationary measures caused a massive recession and increase in inflation in 2015. But they make sense in their real purpose which is to begin to roll back state intervention in the economy in general and check the growth of the welfare state while simultaneously shifting the distribution of income away from wages (Summa; Serrano, 2015; Serrano; Melin, 2015).

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About the article

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Appendix

Table A1 Brazilian macroeconomic indicators 2004-2014
(real yearly average rate of growth unless stated otherwise)

Economic Activity	2004-2010	2011-2014
GDP	4.4%	2.1%
Industrial output	3.6%	-0.9%
Formal employment (average)	1,458	829
Unemployment rate	9.0%	5.4%
Aggregate Demand	2004-2010	2011-2014
Household consumption	5.3%	3.1%
Public Adm. consumption	3.2%	2.2%
Investment	8.0%	1.8%
Machinery and equipment	12.3%	-0.7%
Construction	5.8%	2.8%
Exports	5.2%	1.6%
Imports	13.4%	4.1%
Fiscal Policy Variables	2004-2010	2011-2014
Primary surplus/GDP	3.2%	1.7%
Public sector revenues	7.2%	1.2%
Public transfers to households	5.6%	4.9%
State-owned enterprises (Federal)	16.3%	-2.7%
Public Adm. investment *	14.0%	-1.0%
Credit and Households Income	2004-2010	2011-2014
Credit to households	21.5%	4.6%
Mortgages	20.1%	29.3%
Real wages (formal employment)	2.9%	2.9%
Households real disposable income **	5.3%	1.2%

Sources: (1) GDP and Aggregate Demand (SCN/IBGE); (2) Industrial Output (PIM/IBGE); (3) Formal Employment (CAGED/MTE); (4) Unemployment rate (monthly PME/IBGE); (5) Primary Surplus/GDP from BCB; (6) Real Revenues calculated as nominal Total Revenues from Central Government (STN/MF) deflated by IPCA (IBGE); (7) Public Transfers to households calculated as nominal TAPS (DIMAC/IPEA) deflated by IPCA (IBGE); (8) State-owned Enterprises Investment calculated by Afonso and Fajardo (2015); Public Administration Investment calculated by Nominal Public Administration Investment (DIMAC/IPEA) deflated by INCC (IBGE); (9) Credit to households calculated as total nominal credit to households ("pessoafísica") (BCB) deflated by IPCA; (10) Mortgages calculated as total nominal Hou-

sing Credit (BCB) deflated by IPCA; (11) Real wage calculated by nominal average wage of formal employment (CAGED/MTE) deflated by IPCA; (12) Households real disposable income at average prices of 1995 (DIMAC/IPEA).

* Jun 2014

** Sep 2014