

Assessing the Impact of Fiscal Consolidations on Unemployment and Growth in the Brazilian Economy

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Resumo

Desde 2015, uma consolidação fiscal foi implementada no Brasil com impactos no desemprego e nas finanças públicas. A diminuição do investimento público contribuiu para a desaceleração econômica e queda contínua nas receitas fiscais. Para quantificar esse fenômeno, este artigo estima o trade-off entre taxa de desemprego e superávit primário, bem como o impacto de uma forte consolidação fiscal baseada em transferências sociais, a partir de uma adaptação da metodologia apresentada em Lopes e Amaral (2017). Também é realizada a quantificação do impacto da variação de cada componente da demanda sobre a variação do emprego através de uma análise de decomposição estrutural. O artigo discute os argumentos para sustentar a natureza autodestrutiva da consolidação fiscal no Brasil. Para isso, primeiramente apresentamos as medidas de austeridade que o governo brasileiro adotou desde 2015, destacando as mudanças estruturais implantadas em 2016: a emenda constitucional que impede o crescimento real dos gastos públicos primários por pelo menos dez anos. Em segundo lugar, apresentamos os principais impactos em termos de resultado primário, receitas e gastos primários e um tratamento especial para os impactos sobre emprego. Os resultados corroboram os custos de uma consolidação fiscal, tanto em termos de desemprego como de agravamento das políticas sociais.

Palavras-chave: Política fiscal, austeridade, matriz insumo-produto e desemprego

Abstract

In Brazil, since 2015, there was a major fiscal consolidation with huge impacts on unemployment and public finances. The decrease on public investment has actually contributed to the economic downturn leading to a continuous decrease on tax revenues. In order to identify and quantify this phenomenon, this paper applies an adapted methodology based on Lopes and Amaral (2017). We derived an unemployment rate/budget balance trade-off equation, as well as the impact of a strong fiscal consolidation based on social transfers. We also performed a structural decomposition analysis allowing the quantification of the impact of each demand component variation on the employment variation. The paper discusses the arguments to sustain the self-defeating nature of the fiscal consolidation in Brazil. In order to that, we first present the austerity measures that Brazilian government adopted since 2015, highlighting its following changes in 2016: the constitutional amendment that prevents any real growth of primary public spending for at least ten years. Secondly, we present the main impacts in terms of primary balance, tax revenues and expenditures trends, and a special treatment to the unemployment impacts. The results confirm the huge costs of a strong and permanent fiscal consolidation, both in terms of unemployment and worsening in social policy.

Keywords: Fiscal Policy, austerity, input output matrix and unemployment

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Introduction

The role of fiscal policy for both economic growth and income distribution has been back to the academic debate since the Crisis of 2008/2009. After a long period of monetary policy hegemony, during the crisis many countries adopted expansionary fiscal policies with important results. As discussed by Krugman (2018), even when fiscal policy were not totally expansionist, at least, governments refrained from drastic tightening of fiscal policy, allowing automatic stabilizer, associated with large welfare states, to kick in. The worsening of the economic situation, related to the crisis, associated to these measures led to the deterioration in the fiscal framework, increasing the pressure for countries to adopt austerity measures, which came in to place in 2011/2012.

As many countries promoted large austerity measures, the economic recovery stopped. Since then, the economic literature has increasingly addressed the consequences of a possible self-defeating fiscal adjustment.⁴ This phenomenon happens when the austerity policy lead to a depressed economic environment and tax revenues rapidly falls. In this scenario, austerity measures further aggravate the fiscal framework rather than improving it, imposing even larger fiscal adjustments and creating a vicious circle. On top of that, several countries that implemented large fiscal consolidations have also faced an increase in inequality.⁵

In Brazil, there is an important debate about the role of fiscal policy for economic growth and income distribution. From 2004 to 2014, there was an increase in wage shares in GDP, a major reduction in extreme poverty, and a reduction of income inequality, especially in the labor market. Many authors recognized the role played by fiscal policy in attaining a more inclusive economic growth⁶. However, since 2015, the economic slowdown, during Dilma's first administration, became a major recession. In the ensuing macroeconomic debate, fiscal policy also played a central role in explaining the slowdown and the following recession, both in the mainstream and in heterodox field.

There are currently two opposing views on the role of fiscal policy. The first one⁷ claims that lack of fiscal discipline has a fundamental role in explaining the economic slowdown and the following crisis. Their argument is that the increase in public spending would be a distinctive element of Dilma's administration economic policy that led to an increase in public debt and to fiscal crisis, and eventually to economic crisis. In this interpretation, the fiscal crisis caused the growth slowdown.

The opposing view⁸ is that Dilma's administration misguided fiscal policy decisions, influenced by mainstream ideas, led to a cut in government spending. The cuts, which were mainly in public investments, withdraw a major impulse to the demand-led growth framework built in the Lula's administration. According to this view, the fiscal outcome was a result of the economic slowdown, which is explained by the mainstream turn of fiscal policy.

The political debate led to a major change in fiscal policy. Since 2015, austerity measures became the new *modus operandi* in Brazil, especially through expenditure cuts. During 2016, there was a major institutional reform on fiscal policy: the approval of a Constitutional Amendment, preventing any real growth of federal public expenditure for at least 10 years. In addition, the

⁴ See DeLong and Summers (2012), Fatás and Summers (2016a and b) and Lopes and Amaral (2017).

⁵ See Bastagli, Coady and Gupta (2012); Ball, Furceri, Leigh and Loungani (2013); Ostry, Berg and Tsangarides (2014)

⁶ See IPEA (2012), IPEA (2010).

⁷ See Barbosa Filho and Pessoa (2014); Barbosa Filho (2015); Mesquita (2014); Biasoto and Afonso (2014).

⁸ See Serrano and Summa (2015), Orair and Gobetti (2015).

government passed a major labor market flexibilization and it was pushing forward pension reforms.

The question that emerges is how the large fiscal consolidation, as a result of the current Brazilian fiscal regime, has impacted on growth and unemployment. The hypothesis is that the current fiscal regime goes against the best fiscal rules in the world economy today, by combining a rigid primary budget surplus with an expenditure rule that prevents any countercyclical policy. In order to measure the impact of a strong fiscal consolidation on unemployment, we use input-output methodologies. First, we present a structural decomposition analysis of employment growth, for 2010 to 2015, to capture the role of each final demand component as well as technological change and trade pattern. Secondly, we adapted the methodology presented in Lopes and Amaral (2017), using input-output matrices to estimate an employment *versus* budget balance trade-off equation, as well as the impact on social transfers. The main adaptation is that we use the primary balance budget, instead of nominal balance, since that is the target in Brazil.

In addition to this introduction, this paper presents five sections. Section I reviews the recent literature to introduce the empirical debate on fiscal policy, discussing the new fiscal rules and the self-defeating effects of fiscal consolidations. Section II presents the methodology to calculate both the structural decomposition analysis and the employment x budget balance trade-off. Section III presents current Brazilian fiscal regime, addressing its main institutional features and presents the austerity measures that Brazilian government adopted since 2015, highlighting its following changes in 2016. Section IV presents the results of both exercises and discusses the arguments to sustain the self-defeating nature of the fiscal consolidation in Brazil, given the main impacts in terms of primary balance, tax revenues and expenditures trends and unemployment. Section V presents the main conclusions and argues for the need of a new fiscal regime.

I. From Expansionary Fiscal Austerity to Self-defeating Fiscal Consolidation

Fiscal policy, and its role during an economic crisis, is the subject of an intense debate in the field of economic theory. In general, one can split the current debate on the role of the state and fiscal policy into two main theoretical perspectives.

On the one hand, there is the position of the New Neoclassical Synthesis supporters, who argue for the restricted role of the state and the use of fiscal policy to ensure the sustainability of the public debt. The main goal here is to provide signs to the market that there will be no risk of default, and to avoid the instability of the main macroeconomic variables, especially the interest rates and the inflation. The “expansionary fiscal austerity” thesis upheld this position. According to this thesis, both the credibility of an austere fiscal policy and the commitment to the sustainability of public debt have beneficial effects on the expectations of economic agents, thus raising investment and economic growth. However, the increase in expenditure tends to produce expectations of raising taxes in the future and to cause private agents to reduce investments, with a consequent slowdown of activity.

On the other hand, we find the economists of the Keynesian tradition, for whom public spending plays an essential role in the creation of a conducive environment to private investment, capable of sustaining economic agents’ expectations and economic growth. This is due to the Keynesian multiplier mechanism - or even the supermultiplier, that includes also the induced effect of private investment on total expenditure. This mechanism shows that increases in public spending will give rise to an expansion of aggregate demand higher than that of the spending itself, which, given the existence of idle factors of production, leads to the expansion of economic activity and stimulates private investment. Whenever there is a slowdown of the activity or a recession, they advocate even more for the state's action through fiscal policy, since repressed private demand tends to lead to a decline in production, an increase in unemployment of productive factors, and consequently to a reduction of income, consumption, and investment, in a vicious circle that further

deepens the recession. In this situation, an exogenous impulse in demand from public spending, or external demand, can reverse the recession.

Before the 2008 crisis, “the expansionary fiscal austerity” thesis prevailed, based on the idea that the expansionist effects obtained by multipliers of public spending were low and that they would be smaller than the contractionary effects generated by the deterioration in the agents' expectations after the increase in public debt. This hypothesis was defended by Giavazzi and Pagano (1990) and Alesina and Perotti (1995), who analyzed cases of fiscal adjustments in Europe in the 1980s.

Although this argument has had some impact during the austerity period that followed the first recovery of the 2008 crisis, the state of affairs changed after the global economic crisis of 2008, when several countries made intense use of fiscal policy to stimulate aggregate demand and to avoid deepening the crisis. The International Monetary Fund (IMF) itself, which was one of the main proponents of ideas of fiscal austerity, contributed to the debate by publishing a paper signed by its chief economist. The authors assume that the magnitude of the ongoing recession contests all the consolidated knowledge about economic policy since the period known as “The Great Moderation” (Blanchard, Dell’Ariccia and Mauro, 2010). Therefore, even agencies such as the IMF began to change their historical positions on the role of fiscal policy (Fiebiger and Lavoie, 2017).

Schaechter et al., (2012) shows how fiscal rules were adapted in many countries after the financial crisis, in an effort to achieve greater flexibility to make use of countercyclical fiscal policy. These “new-generation” of fiscal rules provided a greater flexibility of short-term fiscal goals, with the enforcement of escape clauses. Those clauses allow the government to make active use of fiscal policy in times of significant growth slowdown while also adopting measures to ensure debt sustainability in the medium and long run, such as the enforcement of a limit for the trajectory of public debt or for expenditure.

Therefore, even though many countries, especially in Europe, reverted the initial Keynesian view and did adopt strong austerity measures after the crisis, it is important to notice that the debate about fiscal policy did not go back to the “Alesina-time” pre-crisis. As pointed out by, among others, Lavoie and Seccareccia (2017), an increasing number of authors highlighted the effects of those austerity policies over economic activities, extensively described in Fatás and Summers (2016a), which led to, what they called a “New Fiscalism”.

Contrary to the reading of mainstream neoclassical economists, what has actually happened because of the financial crisis is the metamorphosis of fiscal policy into a distinct form, a New Fiscalism (...). This new form is neither compatible with the traditional theory of sound finance nor with the Lerner vision of functional finance (Lavoie and Seccareccia, 2017, pp.291-292).

In a recent paper, Girardi, Meloni and Stirati (2018) presented an “anti-Alesina” type of empirical study. They analyzed 94 episodes of demand expansion in 34 OECD countries between 1960 and 2015. They look at the sum of primary public expenditure and exports, a variable they call “autonomous demand”. They find a highly significant persistent positive effect on the GDP level of a one-off expansion in their autonomous demand variable. They also documented a strong persistent effect on capital stock, employment, and participation rates. Moreover, the authors did not find that expansions, on average, cause high or accelerating inflation.

Fatás and Summers (2016), on the other hand, studied countries that implemented large fiscal consolidations in 2010-11 and tried to investigate if they might have found themselves in 2012 with a depressed economy that might have required even larger adjustments in fiscal policy that further depressed future growth. Their main conclusion is that the reduction in output makes the goal of the fiscal consolidation harder as it raises the ratio of debt to GDP and it reduces tax revenues. As they highlight, hysteresis is crucial for the possibility of self-defeating fiscal consolidations.

II Methodology

II.1 Structural decomposition analysis

The methodology of the structural decomposition performed in this paper follows Freitas e Dweck (2010) and other works done in the research group GIC/UFRJ.

We start the decomposition model with an Input-Output identity:

$$\begin{aligned} x &= Ax + f \Leftrightarrow x = Ax + c * v + f^* \Leftrightarrow x = Ax + A_c x + f^* \Leftrightarrow x = (A + A_c)x + f^* \Leftrightarrow \\ x &= (\bar{A})x + f^* \Leftrightarrow x = (I - \bar{A})^{-1} f^* \Leftrightarrow x = \bar{L} f^* \Leftrightarrow x = \bar{L} f^* \end{aligned} \quad (1)$$

where A is the matrix of domestic technical coefficients; f is the final demand vector of the domestic production by industry; c is the final consumption vector of the non durable consumption goods domestic production by industry; x is the output vector per industry; $\bar{A} = A + A_c$ and; and \bar{L} is the augmented Leontief inverse, with partially endogeneized consumption, considering that:

$$A_c = \widehat{v * c_w} * w'$$

$$f^* = f - (c * v) = f^{C*} + f^I + f^G + f^X$$

$$c = v * c_w * w' * x + f^{C*} \Leftrightarrow c = A_c * x + f^{C*}$$

$$\Delta L = L_1(\Delta A)L_0$$

where v is a vector of 1 and 0 with dimensions 1x42 identifying the activities we classified as a supplier of mainly non durable goods (1) or not (0), f^{C*} , f^I , f^G and f^X are the autonomous components of final demand⁹; c_w is the vector of final consumption per domestic industry divided by the total wages of the economy ("propensity to consume domestic products"); w' is the line vector of wages per industry.

Pre-multiplying both sides of equation (1) by \hat{l} , a diagonalized vector of employment by output by industry we have an equation for the total employment by activity vector (N):

$$N = \hat{l}x = \hat{l}\bar{L}f^* \quad (2)$$

Starting from equation 2, we can present a structural decomposition analysis with endogenous consumption of non-durable goods and services. In other words, we considered the consumption of durable goods as an autonomous component of the final demand, and the non-durable goods and most services as dependent on wages.

Since the paper Dietzenbacher and Los (1998), it has been agreed in the literature that the decomposition of the growth of any variable, resulting from the product of the two or more elements, can be done as follows:

$$\begin{aligned} \Delta N &= \underbrace{\frac{1}{2} \Delta \hat{l} (\bar{L}_1 f_1^* + (\bar{L}_0 f_0^*))}_{\text{Change in Employment by Output by Activity}} + \underbrace{\frac{1}{2} (\hat{l}_0 \bar{L}_1 \Delta A \bar{L}_0 f_1^* + \hat{l}_1 \bar{L}_1 \Delta A \bar{L}_0 f_0^*)}_{\text{Change in Technology}} + \\ &\quad \underbrace{\frac{1}{2} (\hat{l}_0 \bar{L}_1 \Delta A_c \bar{L}_0 f_1^* + \hat{l}_1 \bar{L}_1 \Delta A_c \bar{L}_0 f_0^*)}_{\text{Change in Induced Consumption of Households}} + \underbrace{\frac{1}{2} (\hat{l}_1 \bar{L}_1 + \hat{l}_0 \bar{L}_0) \Delta f^{C*}}_{\text{Change in Autonomous Consumption of Households}} + \end{aligned}$$

⁹ The superscript * means that the variable had its endogenous part excluded, representing only autonomous demand. C represents households' consumption and includes non-profit organizations, I represents investments and includes variation of stocks, G represents government consumption and X exports.

$$\underbrace{\frac{1}{2}(\hat{l}_1\bar{L}_1 + \hat{l}_0\bar{L}_0)\Delta f^I}_{\text{Change in Investment}} + \underbrace{\frac{1}{2}(\hat{l}_1\bar{L}_1 + \hat{l}_0\bar{L}_0)\Delta f^G}_{\text{Change in Government Consumption}} + \underbrace{\frac{1}{2}(\hat{l}_1\bar{L}_1 + \hat{l}_0\bar{L}_0)\Delta f^X}_{\text{Change in Exports}} \quad (3)$$

To better understand the growth in employment, we will evidence in equation (5) the effect of the change in the trade pattern in each demand component. Let: $A = \Lambda \otimes A_t$. Where: A_t is the matrix of the total technical coefficients and \otimes is the Hadamard product (multiplication element by element). Consequently, Λ is the matrix of domestic technical coefficients as a proportion of the total technical coefficients. We have:

$$\Delta A = \underbrace{\frac{1}{2}\Delta \Lambda \otimes (A_{t1} + A_{t0})}_{\text{Trade Pattern Change}} + \underbrace{\frac{1}{2}(\Lambda_0 + \Lambda_1) \otimes \Delta A_t}_{\text{Total Technology Change}} \quad (4)$$

We can apply the result of equation (4) to the other variables in “deltas” of equation (3) using the following relations: $A_c = \gamma \otimes A_{cT}$ (where A_{cT} is a matrix constructed analogously to the matrix A_c : $A_{cT} = v^* \widehat{c_{WT}} * w'$. c_{WT} is the vector of total final consumption per industry (domestic and imported) divided by the total wages of the economy ("propensity to consume")); $f^i = \hat{\mu}^i f_t^i$ (where f_t^i is the total final demand (for domestic and foreign production) from each component of final demand). Therefore, we have:

$$\begin{aligned} \Delta N = & \underbrace{\frac{1}{2}\Delta \hat{l}(\bar{L}_1 f_1^* + \bar{L}_0 f_0^*)}_{\text{Change in Employment by Output by Activity}} \\ & + \underbrace{\frac{1}{2}(\hat{l}_0\bar{L}_1 \left[\frac{1}{2}\Delta \Lambda \otimes (A_{t1} + A_{t0}) \right] \bar{L}_0 f_1^* + \hat{l}_1\bar{L}_1 \left[\frac{1}{2}\Delta \Lambda \otimes (A_{t1} + A_{t0}) \right] \bar{L}_0 f_0^*)}_{\text{Change in Technology Trade Pattern}} \\ & + \underbrace{\frac{1}{2}(\hat{l}_0\bar{L}_1 \left[\frac{1}{2}(\Lambda_0 + \Lambda_1) \otimes \Delta A_t \right] \bar{L}_0 f_1^* + \hat{l}_1\bar{L}_1 \left[\frac{1}{2}(\Lambda_0 + \Lambda_1) \otimes \Delta A_t \right] \bar{L}_0 f_0^*)}_{\text{Change in Total Technology}} \\ & + \underbrace{\frac{1}{2}(\hat{l}_0\bar{L}_1 \left[\frac{1}{2}\Delta \gamma \otimes (A_{cT1} + A_{cT0}) \right] \bar{L}_0 f_1^* + \hat{l}_1\bar{L}_1 \left[\frac{1}{2}\Delta \gamma \otimes (A_{cT1} + A_{cT0}) \right] \bar{L}_0 f_0^*)}_{\text{Change in Induced Consumption of Households Trade Pattern}} \\ & + \underbrace{\frac{1}{2}(\hat{l}_0\bar{L}_1 \left[\frac{1}{2}(\gamma_0 + \gamma_1) \otimes \Delta A_{cT} \right] \bar{L}_0 f_1^* + \hat{l}_1\bar{L}_1 \left[\frac{1}{2}(\gamma_0 + \gamma_1) \otimes \Delta A_{cT} \right] \bar{L}_0 f_0^*)}_{\text{Change in Total Induced Consumption of Households}} \\ & + \underbrace{\frac{1}{4}(\hat{l}_1\bar{L}_1 + \hat{l}_0\bar{L}_0)\Delta \widehat{\mu}^{\widehat{C}^*} (f_{t1}^{C^*} + f_{t0}^{C^*})}_{\text{Change in Autonomous Consumption of Households Trade Pattern}} + \underbrace{\frac{1}{4}(\hat{l}_1\bar{L}_1 + \hat{l}_0\bar{L}_0)(\widehat{\mu}^{\widehat{C}^*}_1 + \widehat{\mu}^{\widehat{C}^*}_0)\Delta f_t^{C^*}}_{\text{Change in Total Autonomous Consumption of Households}} \\ & + \underbrace{\frac{1}{4}(\hat{l}_1\bar{L}_1 + \hat{l}_0\bar{L}_0)\Delta \widehat{\mu}^I (f_{t1}^I + f_{t0}^I)}_{\text{Change in Investment Trade Pattern}} + \underbrace{\frac{1}{4}(\hat{l}_1\bar{L}_1 + \hat{l}_0\bar{L}_0)(\widehat{\mu}^I_1 + \widehat{\mu}^I_0)\Delta f_t^I}_{\text{Change in Total Investment}} \\ & + \underbrace{\frac{1}{4}(\hat{l}_1\bar{L}_1 + \hat{l}_0\bar{L}_0)\Delta \widehat{\mu}^G (f_{t1}^G + f_{t0}^G)}_{\text{Change in Government Consumption Trade Pattern}} + \underbrace{\frac{1}{4}(\hat{l}_1\bar{L}_1 + \hat{l}_0\bar{L}_0)(\widehat{\mu}^G_1 + \widehat{\mu}^G_0)\Delta f_t^G}_{\text{Change in Total Government Consumption}} \\ & + \underbrace{\frac{1}{4}(\hat{l}_1\bar{L}_1 + \hat{l}_0\bar{L}_0)\Delta \widehat{\mu}^X (f_{t1}^X + f_{t0}^X)}_{\text{Change in Exports Trade Pattern}} + \underbrace{\frac{1}{4}(\hat{l}_1\bar{L}_1 + \hat{l}_0\bar{L}_0)(\widehat{\mu}^X_1 + \widehat{\mu}^X_0)\Delta f_t^X}_{\text{Change in Total Exports}} \quad (5) \end{aligned}$$

II.2 Methodology to calculate the employment x budget balance trade-off

The methodology used in this part is based on the one proposed by Lopes and Amaral (2017) to analyze the Portuguese case. Since the Brazilian fiscal target is the primary result, the original methodology, which uses nominal results as reference, was adapted to the Brazilian case. Therefore, the nominal general budget balance is replaced by the primary one, S and the variable “Other Net Government Receipts”, O , does not includes the net interest payments as in Lopes and Amaral (2017).

In the context of the Input-Output Model hypothesis, the Gross National Product at market prices, Y , is determined by the following equation (6):

$$Y = va_C C + va_G G + va_I I + va_{Ex} Ex \quad (6)$$

Where C, G, I and Ex refer to Private Consumption, Public Consumption, Total Investment, and Exports respectively, and the parameters va_C, va_G, va_I e va_{Ex} are the final demand value added coefficients of each demand components. It is important to highlight that the Total Investment includes both enterprises and general government investment, $I = I^E + I^G$.

The primary budget balance S of the general government is obtained from:

$$S = tY + O - G - I^G - TR \quad (7)$$

Where t, O, TR represent respectively the average tax rate, the Other Net Government Receipts (excluding the public debt interest) and the Government Transfers to the families. The Available Income of the families, Y_d , is represented by the equation (8) and the private consumption by the equation (9), in which n is the average consumption propensity.

$$Y_d = Y - tY + TR \quad (8)$$

$$C = nY_d \quad (9)$$

II.2. 1 The trade-off between Employment and Fiscal Budget Balance

With the hypothesis assumed previously, it is possible to rewrite the equation (9) as it follows:

$$C = n(Y + O^* - S) \quad (10)$$

Where O^* is derived from $O^* = O - G - I^G$. Substituting (10) in (6), after some algebraic manipulations, the equation (11) can be reached:

$$Y = \frac{va_C n O^* + va_G G + va_I I + va_{Ex} Ex - va_C n S}{1 - va_C n} \quad (11)$$

It is possible then to make the Private Consumption, C , as function of S :

$$C(S) = n \left(\frac{va_C n O^* + va_G G + va_I I + va_{Ex} Ex - va_C n S}{1 - va_C n} + O^* - S \right) \quad (12)$$

Since the value of C is dependent from S and being the values of G, I and Ex exogenous it is possible to write an equation that express the trade-off between the level of employment, L , and the Primary Result:

$$L = l_C C(S) + l_G G + l_I I + l_{Ex} Ex \quad (13)$$

Where l_C, l_G, l_I e l_{Ex} are the employment coefficients of the Final Demand of Private Consumption, Public Consumption, Total Investment and Exports. Substituting the Private Consumption given by the equation (12) in the (13), the equation (14) is reached:

$$L = l_c \left[n \left(\frac{va_{cn}O^* + va_GG + va_{lI} + va_{Ex}Ex - va_{cn}S}{1 - va_{cn}} + O^* - S \right) \right] + l_GG + l_{lI} + l_{Ex}Ex \quad (14)$$

By setting S equal to zero, it is possible to obtain the employment level correspondent to the Public Sector Budget equilibrium.

II.2.2 Fiscal Consolidation through Government Transfers, with O^* exogenous

As previously said, in equation 2, the primary result of the public sector is $S = tY + O - G - I^G - TR$, with $O^* = O - G - I^G$, with $S = 0$, we arrive at $TR = tY + O^*$. Departing from that, and with Y given by the equation 6 e being $S = 0$, the Government Transfers to the families is going to be determined by the equation (15):

$$TR = t \frac{va_{cn}O^* + va_GG + va_{lI} + va_{Ex}Ex - va_{cn}S^{Nom}}{1 - va_{cn}} + O^* \quad (15)$$

or written alternatively, by the equation:

$$TR = \frac{[1+(t-1)va_{cn}]O + (tva_G-1+va_{cn})G + tva_{lI} + (tva_{lPub}-1+va_{cn})I^G + tva_{Ex}Ex}{1 - va_{cn}} \quad (16)$$

It is possible then to get the dynamics between G and TR and between I^G and TR , as can be seen in the equation 17 and 18:

$$\frac{dTR}{dG} = \frac{(tva_G-1+va_{cn})}{1 - va_{cn}} \quad (17)$$

$$\frac{dTR}{dI^G} = \frac{(tva_{lPub}-1+va_{cn})}{1 - va_{cn}} \quad (18)$$

Assuming a fix tax rate t , it is possible to calculate the tax revenue (tY) as a function of government spending and the budget target itself as presented in the equation (19). It is important to notice that a reduction in GDP will have a negative impact on tax revenues.

$$tY = t \frac{va_{cn}O^* + va_GG + va_{lI} + va_{Ex}Ex - va_{cn}S}{1 - va_{cn}} \quad (19)$$

Another possible impact of the spending cuts will be the increase in unemployment insurance, given the negative impact on employment. We have estimated the increase of unemployment insurance, q , according to equation (20), where u is the value of the benefit, p is the period that the benefit can last, f the rate of formal jobs over total employment, and ΔL is the variation of employment.

$$q = -u p f (\Delta L) \quad (20)$$

III. Brazilian Fiscal Framework and the austerity measures of 2015 and the “New Fiscal Regime”

The current fiscal regime adopted in Brazil at the Federal and subnational levels was built over time, based on the guidelines defined in the Constitution, laws, and Presidential decrees, complemented by subnational regulations and recommendations by the National Audit Office. There are a large number of legal and infra-legal rules that determine the institutional limits to fiscal policy and define the framework for macroeconomic and social performance.

However, until the approval of Constitutional Amendment 95/2016 (from the Portuguese expression, EC 95/16), the main change that initiated a new guideline in the conduct of fiscal policy was the approval of the Fiscal Responsibility Law (from Portuguese, LRF) in 2000. This law came in the midst of the administrative reform of the government of Fernando Henrique Cardoso (FHC) and its main objective was the focus on structural fiscal adjustment, with a clear reorientation to the 'fiscal balance' based on legal instruments and punishments and penalties for noncompliance.

In terms of fiscal rule, during the economic boom, the existing institutional framework was not an obstacle, the government was able to meet the fiscal targets and expand social transfers and public investments, two important components of economic growth itself. However, in a context of economic deceleration, the difficulties in the conduct of fiscal policy became evident.

In fact, after the financial crisis of 2008, the difficulties in conducting fiscal policy within a very tight institutional constraint became evident in a context of economic slowdown. There was a fall of tax revenue, and the government started some countercyclical measures. There was a clear expansionary policy during the crisis and a more contractionary fiscal policy in 2011, which was rapidly reverted, until 2014. As happened to several countries, the reduction in fiscal results increased the pressure coming from conservative politicians and from mainstream economists against the measures that have led to a reduction of primary budget surplus.

Accordingly, there was a conflict between rigid fiscal targets in the short term and the need for a fast reaction in terms of economic policy in order to avoid the crisis. Therefore, since the target could only be changed through legislation there was a contradiction between the economic timing and the political timing, subject to the level of government approval in Congress. Since 2009, the government had to request the Parliament to change the fiscal target almost every year, given the fact that it is usually set in the previous year. Besides that, the fiscal band was amplified in order to cope with tax exemptions and the lower primary results in subnational entities.

During the 2014 elections and right after, the debate on fiscal policy became one of the main topics. Many argued that the fiscal policy adopted after the crisis was destabilizing for the economy and it would lead to large size public-sector deficits, as well as it could lead to the non-sustainability of the public debt. This debate about fiscal policy led to a major change in economic policy and, since 2015, a set of austerity measures became constant in Brazil, especially through expenditure cuts.

The second administration of President Dilma started with a major change in the economic policy. A mainstream economist became the new finance minister and he conducted a major fiscal consolidation with an increase of 1.75 p.p. in the cyclically adjusted primary surplus, mainly through expenditures cuts. The government promoted the largest block in the budget authorization, since the beginning of the Fiscal Responsibility Law, which led to a review of schedules of infrastructure projects and government programs and suspended any hiring for new public positions.

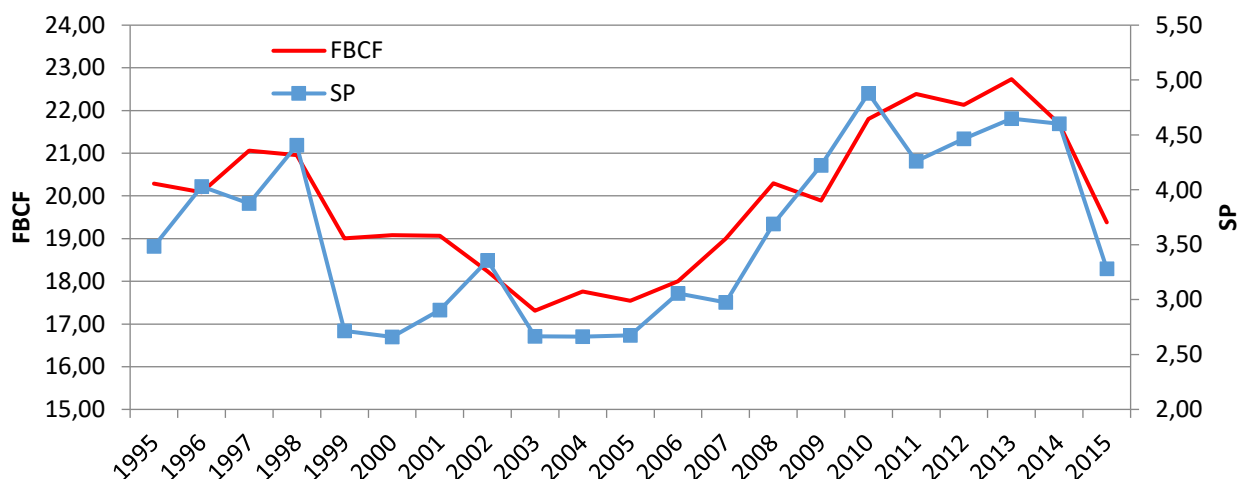
In 2015, the total amount of the fiscal consolidation was R\$ 134 billion, representing 2.3% of the GDP. Besides expenditures cuts, there was some attempt to increase revenues: some tax exemptions were revised, such as payroll tax, tax on vehicles, furniture, and cosmetics. In addition, there was an increase in the financial operation tax (IOF) for household credit, an increase in taxation on fuels, on cold drinks and on financial institutions. Some tariffs were also increased, such as betting on lotteries and passport dispatching. However, it was not enough to cope with the decline of revenue and the rise in some mandatory spending.

In terms of spending cuts, public investments were reduced by more than 30% reinforcing the vicious circle. According to macroeconomic theory, investment is the most important element in aggregate demand to explain short-term economic fluctuations, given the relative stability of household and government consumption. Two recent papers (Cerqueira, 2016; Orair, 2016) are

very important to analyze the role of public investment in Brazil in the last years. Both papers highlighted the crowding in effect that the increase in public investment had in the previous years.

The share of public sector investments, including state-owned enterprises, is lower today than in the 1970s, the peak of the industrialization process. However, the data show that the public sector is still very important in the capital formation in the Brazilian economy, and consequently exerts a significant influence on the GDP growth rate. As can be seen in figure 1, there is a crowding in effect between public and private investment. In the first year of the Lula administration, a strong fiscal adjustment contracted public investments to something close to 1999 level and remained relatively low until 2006, when there was a strong acceleration until 2010. Thereafter, there is relative stability until 2014, as may be seen in figure 1, until the fiscal consolidation of 2015.

Figure 1 Total and Public Investment* (% GDP)



Source: IBGE (old series), Orair (2016) (adjusted). * SP (Public Sector, right axis) and FBCF (Fixed Capital Formation, left axis) deflated by Fixed capital formation deflator.

In mid-2015, it became obvious that it would be impossible to reach the primary balance target of 1.2% of GDP contained in the Budget Guidelines Law. This goal was established in December 2014, and it was based on a market expectation of GDP growth of 0.8% in 2015. By July, the expectation was already a GDP decrease of 1.5%. At the end of the year, Brazilian GDP actually declined by 3.8%. The government, once again, requested the Congress to change the fiscal target, but this time, the political movement related to the approval of the new target was much more intense than in the previous years. In some respects, this legislative debate was present in the impeachment process that started in October 2015, right after the decision of the national audit court about the Federal Government Accounts of the previous year¹⁰. The main points of the opposition can be traced back to the mainstream explanation to the crisis. According to that, the loss of credibility given the deterioration of the fiscal result, which in their view was related to a great increase in "wasteful public spending", was the main explanation to the crisis that started in 2015, after a period of growth slowdown.

Based on these arguments, in December of 2016, the new government, after the deposition of President Dilma presented a Constitutional Amendment, the so-called "New Fiscal Regime", approved by the end of the same year. The two central purposes of this amendment were to prohibit any real growth of federal public expenditure for at least 10 years and to reduce the minimum mandatory spending on health and education¹¹ (Rossi and Dweck, 2016). Hence, we can assume that the major goal is to reduce federal public spending and to scale down the Brazilian State, since

¹⁰ See TCU (2015).

¹¹ Until then, the Constitution defined that both health and education spending should be at least a fixed amount of revenues. The "New Fiscal Regime" defined that the minimum amount of each year would be the previous year minimum amount, plus inflation. Therefore, there will not be any guarantee of real increase on those amounts anymore.

federal primary spending will grow only by inflation, while GDP will have some real growth. Thus, each year, federal spending will grow less than GDP, ensuring a decrease in expenditures relative to GDP. Given the composition of federal public spending, it is possible to say that in order to promote the amount of expenditure cut, there must be a combination of cuts in many social spending.

In short, the new fiscal regime institutes a permanent austerity measure, since it implies a real freezing of the total spending of the Federal Government. That is, according to the rule, public spending will not keep up with income and population growth. On the contrary, it will depress GDP growth, since almost 20% of aggregate demand will have zero growth. Overall, the proposition of such an unsuitable fiscal rule, not seen in any other country, was based on an interpretation of the fiscal data that in our view reverted the main causality between economic growth and fiscal results.

IV. Main results: the self-defeating fiscal adjustments

Since 2015, we are observing in Brazil the consequences of a self-defeating fiscal consolidation. There is some evidence of the fiscal framework deterioration, as can be seen in the chart below. Before the 2008/2009 crisis, revenue and expenses had very similar behavior, resulting from a pro-cyclical fiscal rule of rigid primary surplus. After the crisis, there was a more countercyclical performance, with revenue and expenditures presenting, often, opposite trajectories. But with the large fiscal consolidation of 2015, both fell. Thus, when the government tried to improve the fiscal result by making large spending cuts, the consequence was an even greater fall in revenue and a sharp drop in investments with negative consequences on the level of activity, fueling the vicious circle of falling revenues and worsening fiscal results.

Figure 2 Average Growth Rate of Net Revenues and total Primary Spending (YoY)

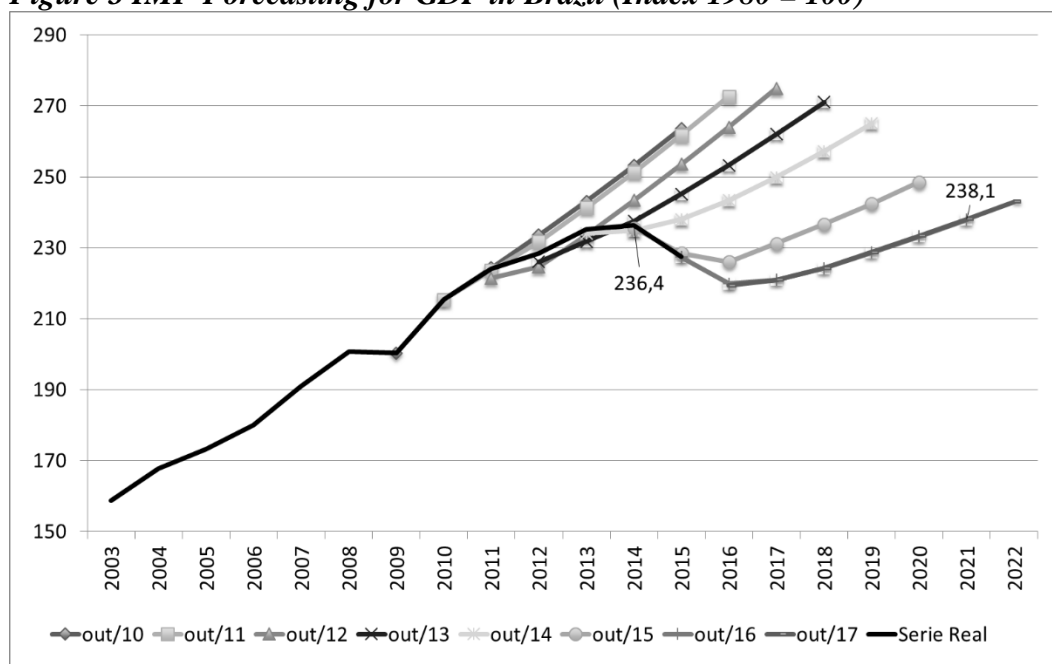


Source: Brazilian Treasury adjusted, in both cases the effect of operations with Petrobras and the Treasury's compensation to the tax exemption of social security. In the series with adjustments, the main refinancing programs of tax debts were discounted.

However, instead of understanding the reasons that led to the fall in tax revenues and the difficulty of complying with the fiscal rule, the government chose to reinforce the austerity discourse, even though the economic activity was melting down. For two consecutive years, the GDP decreased almost 4.0%. As can be seen in the graph below, using IMF forecasting for Brazil's GDP growth, published in different years of the World Economic Outlook, we can see the fast

decrease on growth expectations. The most recent, published on October 2017, points out that the level of GDP of 2014 will only be recovered in 2021.

Figure 3 IMF Forecasting for GDP in Brazil (Index 1980 = 100)



Source: IMF/WEO for different years. Own elaboration.

With this scenario, similar to countries like Greece, it is important to highlight the effect of the economic meltdown on the fiscal result. The evolution of the primary deficit or surplus depends, by definition, on the evolution of current government spending total current revenue from all types of taxes and contributions. The large decrease in the primary fiscal balance, since 2014, can be explained by the sluggish and even weakened behavior of tax revenue, and not by the evolution of current government spending. On the contrary, the government spending seems to have a reverse sign to what would be expected, with lower growth in periods of worsening of the primary balance than in periods of higher primary surplus. This characteristic is very similar to other countries, where fiscal adjustment has led to vicious circle, with greater economic slowdown compromising public revenue and even increasing some social benefits such as unemployment insurance.

Until the crisis, real average growth of public revenue was higher than growth of expenditures, ensuring the conditions for obtaining the positive primary balance. From the crisis (2009-2013), the relationship was reversed, with net revenue growing at lower rates than the expense. In the last period (2015-2016), during the major fiscal consolidation, the federal public revenue has simply melted down.

Table 1 – Average Yearly Real Growth Rate For Selected Periods

	1999-2002	2003-2006	2007-2010	2011-2014	2015-2016
Total Expenditures*	5.0	5.9	8.2	5.1	-0.1
Net Revenues**	7.5	5.7	6.6	2.7	-5.1

Source: STN.*Adjusted as explained above ** Without non-recurrent revenues

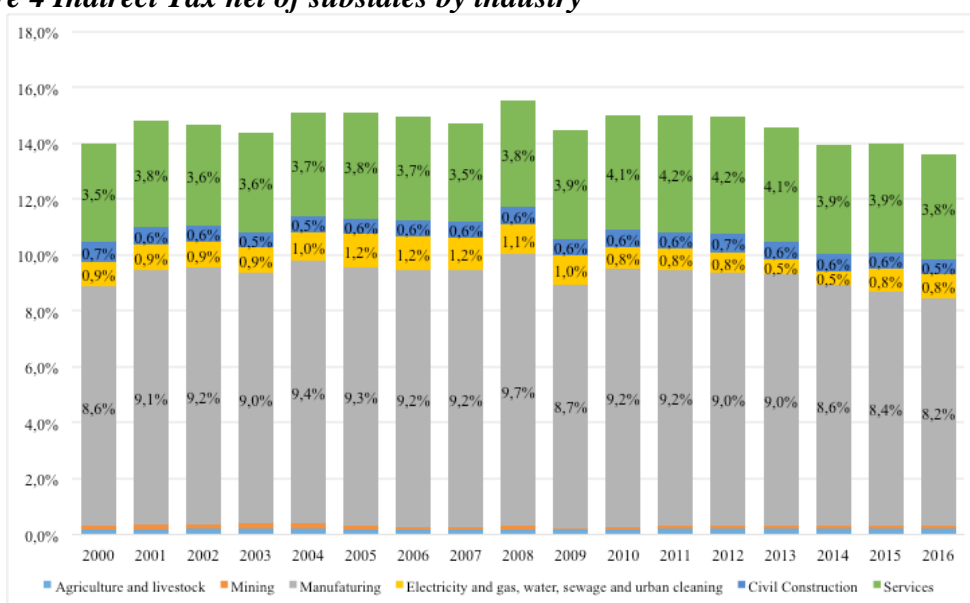
In terms of expenses, it is observed that there is a continuous growth until 2006, then a fluctuation around 17% until 2013 and acceleration from 2014. The reduction of the primary surplus from 2011, given the combination of the decline in revenue and the increase of expenditure as a share of GDP led to the thesis of “wasteful spending”. However, this sharp rise in expenditure as a share of GDP in the recent period happened precisely when the growth rate of expenditure was the lowest. This outcome can be explained since it is a ratio and, as such, its behavior depends on the evolution of both the numerator and the denominator. Thus, if the decline in the GDP growth

rate is sharper than the decline in the rate of growth of expenditure, the expenditure as a share of GDP will rise.

From the 2009 crisis on, there was a shift in the level of federal tax and contributions revenue, much like the decline in industry share in GDP. Non-tax revenues initially offset the drop in the growth rate immediately after the crisis: dividends and concessions of public services to private sector and special treatment to unpaid tax in previous year. However, as can be seen in figure 2 above, the average rate of growth in the period from 2011 to 2016 was the lowest, since the beginning of the historical series presented. From 2015 onwards, it has been a negative real growth every month.

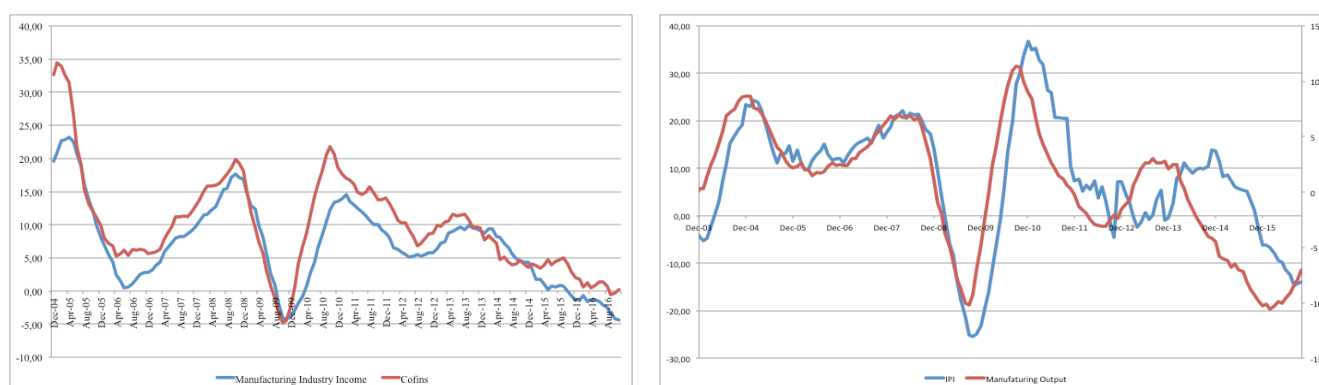
From input and output tables it is possible to see that part of the decrease in tax revenues is related to a decrease in manufacturing sector that declined sharply since 2015. From 2001-2011, the indirect taxes related to manufacturing sector represented 9.2% of the GDP, in 2015 and 2016, even though there was a sharp decline of the GDP, this amount represented 8.4% and 8.2% respectively.

Figure 4 Indirect Tax net of subsidies by industry



Source: IBGE – supply and use tables.

Figure 5 Tax Revenues and Economic Data (explanatory variable)



Source: Brazilian Treasury and IBGE

Many authors attribute this fall in the tax revenue to the tax breaks. However, many of the tax exemptions approved by the government were a perpetuation of previous ones, and therefore cannot be considered new. Although we need a more refined analysis, we can say that the behavior

of the tax revenue did follow, quite closely, the behavior of its main explanatory variable as can be seen in figure 5.

IV.1 Data used

The data used in this part is based on the Input Output Model as calculated by Passoni and Freitas (2018a, 2018b) for the period 2010-2015. These I-O matrices harmonize the Brazilian I-O official data offering a series of I-O matrices compatible with the most up-to-date National Accounts manual, the SNA 2008. These matrices are square, offering a disaggregation of 42 activities. The proportion of the public in the total of the investment was taken from the proportion of General Government Gross Fixed Capital Formation over the total of Gross Fixed Capital Formation present at the Integrated Economic Account from the System of National Accounts/IBGE. For the case of the Public Investment, it was used the data from Miguez *et. al* (2017) to calculate the Public Investment vector, by products. Besides that, the data relative to the fiscal variables were extracted from Orair *et. al* (2016).

Table 2 Value of Macroeconomic variables, Brazil 2015 (R\$ millions)

<i>Y</i>	5.155.601,00	<i>I</i>	907.717,06	<i>O</i>	83.417,08
<i>G</i>	1.182.248,49	<i>I_{Pub}</i>	118.313	<i>T</i>	1.963.620,24
<i>C</i>	3.280.431,79	<i>I_{Priv}</i>	789.403	<i>TR</i>	826.819,03
<i>Ex</i>	776.249,27	<i>S</i>	-80.343,55	<i>L</i>	101.945.076

Sources: Passoni and Freitas (2018), Integrated Economic Accounts (CEI, 2015), Miguez *et. al* (2017), Orair, Gobetti and Siqueira (2016). Nominal Variables: Millions reais; Labour Variable: units.

IV. 2 Employment Impacts of Austerity Measures

IV.2.1 Structural decomposition analysis

As can be seen in table 7 in the Appendix, from 2010 to 2015 there was an increase in total amount of jobs in every year except in 2015, when the number of jobs fell 3.34%. The main impact was related to the fall of investment, which explains 5.57 p.p. of the 3.34. Therefore, the impact on employment was not as large as the one promoted by the fall in investments because there was a countercyclical effect in terms of decrease in labor productivity (0.5 p.p.), usually associated with labor hoarding, and an increase in marginal propensity to consume (0.85 p.p.). Another compensating effect was an increase in exports (2.76 p.p.). However, if we add all the impacts in terms of import penetration related to each component, the total negative impact was (1.99 p.p.). Therefore, as a total, external sector had a positive impact of (0.77 p.p.). It is important to highlight that part of the result of the external sector might be related to relative prices effect, since there was a major exchange rate depreciation in 2015.

Therefore, one can say the decrease in investments explains the total amount of the decrease in employment. Since private investment has an endogenous component, it is important to separate the effect of government and enterprise investment, since only the first is autonomous and is directly related to fiscal consolidation.¹²

IV.2.2. Employment x Budget Balance Trade-off

Table 2 shows the values of each macroeconomic variable for the year of 2015. With those variables, it is possible then to calculate the remaining needed variables: $Y_D = 4.018.799$; $n =$

¹² A separation of government and enterprise investment in the framework of a structural decomposition analysis will be performed in further developments of this work.

0,82; $t = 0,32$; and $O^* = -1.217.144$. Considering the equations (10), (11), and (13) and the data available we have that:

$$C(S) = 3.069.805,67 - 2,62 * S$$

$$Y(S) = 4.977.910,15 - 2,21 * S$$

$$L(S) = 98.380.198,52 - 44,37042754 * S$$

With the methodology presented at the section II, the value added and employment coefficients from each demand component are calculated and presented in the table 3 below:

Table 3 Value Added and Employment Coefficients for each Final Demand Component

	Ex	G	C	I_{Total}	Y	I_{Pub}	I_{Priv}	S
va_{FD}	0,75	0,93	0,84	0,78	0,84	0,79	0,78	
l_{FD}	17,45	13,55	16,93	18,57	16,59	20,20	18,33	
$Y(S)$	2,40	2,98	Endogenous	2,50	-	2,52	2,50	-2,21
$L(S)$	50,70	54,72	Endogenous	53,23	-	55,13	52,95	44,30

Sources: Passoni and Freitas (2018), Integrated Economic Accounts (CEI, 2015), Miguez et. al (2017), Orair, Gobetti and Siqueira (2016), and authors calculations. Nominal Variables: Millions reais; Labour Variable: units.

Similarly to the work of Lopes and Amaral (2017), the Public and Private Consumption have the highest value added coefficients among the final demand components. On its turn, public investment component presents the greatest employment coefficient and the public consumption the lowest one.

Considering the endogenous private consumption, as in equation 6, the fiscal target and tax rate constant, we can see at the third row in table 3, refereed as $Y(S)$, that the public consumption and the public investment have the greatest impact on the total income, 2,98 and 2,52. On the other hand, exports the final demand component have a lower impact, 2,40 and 2,50, respectively. With the same hypothesis, the impact on employment of the public investment and the public consumption are the greatest ones, 55,13 and 54,72, followed by the private investment and exports 52,95 and 50,70.¹³

With these results, it is possible to analyze different fiscal targets scenarios. In this sense, the table 4 shows three cases: (a) the previous target, 1,2% of GDP, almost R\$ 60 billions; (b) the balanced budget scenario; and (c) the actual result, - R\$ 80.3 billions. As can be seen in table 4, the last column is the observed data, while the second and the third present the trade-off in terms of Consumption, GDP and jobs, for different primary balance. If the government had tried to maintain the previous target, R\$ 60 billion, there could have resulted in a loss of 6 million jobs or 3,5 million if the target was a balanced primary budget.

Table 4 Macroeconomic Variables for different Fiscal Targets

S (billions)	60	0	-80,3
C (billions)	2.912,5	3.069,8	3.280,4
Y (billions)	4.845,2	4.977,9	5.155,6
L	95.717.972,87	98.380.198,52	101.945.076
ΔL (millions)	-6,23	-3,56	0

Source: Sources: Passoni and Freitas (2018), Orair, Gobetti and Siqueira (2016), and authors calculation. Nominal Variables: Billions Brazilian reais; Labour Variable: units.

Calculating the equations 12 and 13 we estimate how much a cut in each public spending allows an increase in the Government Transfers to the families. As expected, by its high value

¹³ It is worth to highlight that in the text as in the tables the values of labor impact are calculated in terms of 1 million jobs. Also, the results of the last two rows of table consider that all private consumption is endogenous as in Lopes and Amaral (2017), having no autonomous part, which may overestimate n .

added coefficient, the trade-off for the Public Consumption is -0.02 (one unit of public consumption that is spared enables an increase of 0.02 units of Government Transfers), and the trade-off for the Public Investment is -0.17.

As usually happens in large fiscal consolidations, one of the main cuts was in the Public Investment. For the year of 2013, at constant prices of 2015, the Public Investment, excluding the public enterprises expenditure, was 147.2 billions of Brazilian Reais. At 2014, the Public Investment hit the 162.9 billions, at prices of 2015, an increase of 10.6% at that year. An interesting exercise is to see what would be the total impact on income and employment level, if there were no cuts on Public Investment.

Table 5 Macroeconomic Variables for each level of Public Investment (Constant Prices 2015)

	2013	2014	Same as in 2014	Actual level of 2015	Same growth rate of 2014
I_{pub}	147.2	162,9	162,9	118,3	182,4
L (Thousand)			102.845,6	101.945	103.238
Y			5.206,0	5.155,6	5.206,0
ΔL (Thousand)			900.60	0.00	1,293.00

Sources: Sources: Passoni and Freitas (2018), Orair, Gobetti and Siqueira (2016), and authors calculation. Nominal Variables: Billions Brazilian reais; Labour Variable: thousands.

It can be observed that if in 2015 the government maintained the same the level of public investment in real terms as in 2014, there would be demand for 0.9 million more occupations. On the other hand, if the Public Investment had grown in 2015 at the same rate as it did in 2014, the model shows that more than a 1.3 million occupations would be demanded. It is worth noting that, this last simulation does not include the induced effects over private consumption, just the backward linkage effect of the Public Investment in the employment.

At table 6 is possible to observe the impact of each final demand component at the taxation revenue, also considering the fiscal target and tax rate constant (0,325). Because of their higher total income impact, the public investment and public consumption have the highest impacts on the taxation revenue, with 0,976 and 0,828.

Table 6 Fiscal impacts for each type of final demand component

	Ex	G	C	I	I _{pub}	I _{priv}
ΔtY	0,7884	0,9761	Endogenous	0,8217	0,8282	0,8207

Sources: Passoni and Freitas (2018), Integrated Economic Accounts (CEI, 2015), Miguez et. al (2017), Orair, Gobetti and Siqueira (2016), PNAD (2016) and authors calculations.

Nominal Variables: Millions reais; Labour Variable: units.

In sum, an austerity program that aims at the public consumption would be self-defeating and a decrease in public investment is not an effective way for the government to increase primary balance, especially if we take into account the externalities of public investment.

V. Final remarks: the need for a countercyclical fiscal rule

The difficulties in conducting fiscal policy in a context of economic slowdown should be taken into account when analyzing the recent period. The rigid fiscal target system was observed until the end of 2008 – a period where revenue and expenditure had a very similar behavior and generated a strong pro-cyclical movement, although 2005-2008 was the most upward phase of the cycle. From 2009 on, the correlation between the two series is not as precise and there are periods with negative and positive correlation, and the primary balance target was the adjustment mechanism, ensuring some countercyclical performance of fiscal policy. The decrease in primary balance, as happened in other countries, led to a major change in fiscal policy and the adoption of tight austerity measures.

However, in 2015 the government adopted a large fiscal consolidation, which, combined with other factors, both internal and external, led to a major recession. In this paper we tried to capture the impact of the fiscal policy to explain the recession leading to what has been called a self-defeating fiscal consolidation. First, we presented the impact on growth perspective for the next years and the major fall in tax revenues. In terms of economic growth the most recent data, published by the IMF, on October 2017, points out that the level of GDP of 2014 will only be recovered in 2021. In terms of tax revenues, the average rate of growth in the period from 2011 to 2016 was the lowest, since the beginning of the historical series presented. From 2015 onwards, it has been a negative real growth every month. So, even though, there was no real growth of expenditures in 2015, primary balance decreased because tax revenues fell 5.1% in real terms.

From the structural decomposition analysis it was possible to observe that since 2010, only in 2015 the number of jobs fell, -3.34% growth. The main impact was related to the fall of investment, which explains 5.57 p.p. of the 3.34. Since private investment has an endogenous component, it was important to separate the effect of government and enterprise investment, since only the first is autonomous and is directly related to fiscal consolidation.

As usually happens in large fiscal consolidations, one of the main cuts was in the Public Investment. In 2015, government investments fell 27.4%, while in 2014 it had increased 10.6%. As a counterfactual, we measured the impact on income and employment level, if there were no cuts on government investment. If in 2015 the government maintained the same the level of public investment in real terms as in 2014, there would be demand for 0.9 million more occupations. On the other hand, if the Public Investment had grown in 2015 at the same rate as it did in 2014, the model shows that more than a 1.3 million occupations would be demanded.

As it was shown above, the results would have been much worse if the government had tried to maintain the previous target, R\$ 60 billion, instead of a deficit of R\$ 80.3 billion. According to our estimates, there could have resulted in a loss of 6 million jobs or 3,5 million if the target was a balanced primary budget.

Undoubtedly, what we need now is to open a debate on the adoption of more flexible fiscal rules in the short run and additional rules for public debt sustainability in the medium and long run. It is important to the change in fiscal rules towards a greater flexibility in order to allow the countercyclical use of fiscal policy. However, the government reaffirmed its commitment to the primary surplus target and approved a constitutional amendment that will promote a continuous fiscal consolidation. This will lead to a constant reduction on public investment and to large reform of social security. These measures will probably have the significant effects on decreasing economic growth and increasing inequality in the next years.

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Appendix

Table 7 - Structural Decomposition of Total Employment Variation (contribution to total variation)

Period	Total Employment variation	Change in Employment per Industry	Change in Technology	Change in Induced Consumption of Hoeseholds	Change in Autonomous Consumption of Hoeseholds	Change in Investment	Change In Government Consumption	Change in Exports
2010 - 2011	1,48	-3,67	0,66	0,88	-0,15	1,09	1,05	1,61
2011 - 2012	1,41	-1,83	0,11	1,19	0,52	0,01	0,25	1,17
2012 - 2013	1,56	-2,34	-0,66	0,26	0,31	0,96	2,20	0,82
2013 - 2014	2,86	2,03	0,57	1,84	0,06	-1,44	0,71	-0,91
2014 - 2015	-3,34	0,50	-0,49	0,85	-1,10	-5,57	-0,29	2,76

Period	Change in Technology		Change in Induced Consumption of Hoeseholds		Change in Autonomous Consumption of Hoeseholds	
	Trade Pattern	Total Component	Trade Pattern	Total Component	Trade Pattern e	Total Component
2010 - 2011	-0,39	1,05	-0,13	1,01	-0,09	-0,05
2011 - 2012	-0,89	1,00	-0,19	1,38	-0,03	0,55
2012 - 2013	-0,55	-0,10	-0,21	0,47	-0,07	0,37
2013 - 2014	-0,10	0,67	0,01	1,83	0,00	0,05
2014 - 2015	-1,23	0,75	-0,21	1,06	-0,06	-1,04

Period	Change in Investment		Change In Government Consumption		Change in Exports	
	Trade Pattern	Total Component	Trade Pattern	Total Component	Trade Pattern	Total Component
2010 - 2011	-0,04	1,13	0,00	1,05	0,00	1,61
2011 - 2012	-0,15	0,16	0,00	0,25	0,00	1,17
2012 - 2013	0,45	0,51	0,00	2,20	0,00	0,82
2013 - 2014	1,10	-2,54	0,00	0,71	0,00	-0,91
2014 - 2015	-0,47	-5,10	-0,01	-0,28	0,00	2,76

Sources: Passoni and Freitas (2018), Integrated Economic Accounts (CEI, 2015), Miguez et. al (2017), Orair, Gobetti and Siqueira (2016), and authors calculations.