

# Multiplier effects of social protection: a SVAR approach for Brazil

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**Resumo:** Com base em uma abordagem VAR Estrutural de Blanchard e Perotti (2002), estimamos multiplicadores fiscais para benefícios sociais no Brasil no período 1997-2018. Os resultados sugerem que os benefícios sociais possuem um efeito multiplicador relativamente alto, até mesmo comparável ao do investimento público. Os multiplicadores são maiores na amostra completa, que inclui a crise recente do país (2014-16), em comparação ao período 1997-2014. Os maiores multiplicadores estimados na amostra inteira também aparecem na resposta do consumo das famílias e do investimento privado a choques nos gastos sociais totais, bem como para diferentes tipos de benefício social (e.g programas de transferências de renda, seguro-desemprego e aposentadorias). Em um contexto no qual a expansão da proteção social ganhou proeminência como resposta a mudanças estruturais no mercado de trabalho, nosso artigo reforça seu papel complementar para a recuperação da economia após a pandemia.

**Palavras-chave:** multiplicadores fiscais, benefícios sociais, ciclo econômico, proteção social.

**JEL:** E62, H53, I38.

**Área Anpec:** 6 (Crescimento, Desenvolvimento Econômico e Instituições).

**Abstract:** Based on Blanchard and Perotti (2002)'s Structural VAR approach, we estimated fiscal multipliers for social benefits in Brazil for 1997-2018. Our results suggest that social benefits have relatively large multiplier effects in Brazil, even when compared to public investment. The multipliers are also larger in the full sample, which includes the country's 2014-16 economic crisis than in the period 1997-2014. The higher estimated multipliers in the full sample appear in the response of household consumption and private investment to shocks in total social expenditures and for different types of social benefits (e.g., cash transfers, unemployment insurance, and pensions). In a context in which the expansion of social protection gained prominence due to structural changes in the labor market, our paper reinforces its complementary role for the post-pandemic economic recovery.

**Keywords:** fiscal multipliers, social benefits, business cycle, social protection.

## 1) Introduction

Since the Covid-19 pandemic started to show its effects on the global economy in 2020, the need to address new public health, social and economic challenges enhanced the importance of cash transfers, unemployment insurance, and other social benefits in alleviating the impact of structural transformations in the 21st-century labor market. These efforts find empirical support in a vast literature that shows a significant role of social protection in reducing poverty and inequality<sup>3</sup>. However, as governments around the World are adding social protection to their post-pandemic green and inclusive economic recovery plans, the empirical literature on positive short-run macroeconomic effects of social benefits is relatively scarce.

In particular, the most conventional VAR (Vector Autoregressive Model) approach to estimate fiscal multipliers in a country-specific context builds on Blanchard and Perotti (2002) and Perotti (2004), who removed income transfers from total government revenues in the estimations. Many authors have followed this strategy<sup>4</sup>. However, as social security systems have grown substantially in OECD countries after the Second World War (Gechert, Paetz and Villanueva, 2018), other authors have criticized this approach (Gáldon, 2013; Gechert, Paetz and Villanueva, 2018; Baum and Koester, 2011; Pereira and

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<sup>3</sup> See Sánchez and Perez, 2018; Haile and Zarazúa, 2018; Ocampo and Arteaga, 2016; Wagle, 2016; Ulu, 2018; Niehues, 2010; Claus, Matinez-Vazquez and Vulovic, 2012; Ospina, 2010; Holzner, 2011; Vazquez, Dodson and Vulovic, 2012.

<sup>4</sup> Tenhofen, Wolff and Heppke-Falk, 2010; Lozano and Rodriguez, 2011; Peres, 2006; Peres and Ellery, 2009; Mendonça, Marçal and Holland, 2016; Grudtner e Aragon, 2017; Jemec, Kastelec and Delakorda, 2013; Burriel et al., 2010; Giordano et al., 2007.

Wemans, 2013). Hence, while the implementation of the American Recovery and Reinvestment Act (ARRA) in the United States during the Global Financial Crisis has been partially justified in terms of significant multiplier effects of income transfers by the Council of Economic Advisers (2009), only a few studies have focused on estimating the impact of social expenditures, namely income transfers (such as unemployment insurance or cash transfers) and social security.

The literature that began to use the conventional VAR approach of Blanchard and Perotti (2002) shows contradicting results. Some authors have found significant multiplier effects for social expenditures (Gechert, Paetz and Villanueva, 2018; Gáldon, 2013; Adams and Wong, 2018), even if non-persistent (Adams and Wong, 2018). Various studies have estimated positive but low multipliers for social transfers. Generally, these studies estimate higher multipliers associated with a cut in direct taxes, a positive shock in government consumption, or, mainly, increases in public investments (Bova and Klyviene, 2019; Pereira and Wemans, 2013; Silva, Carvalho and Ribeiro, 2013). In other cases, the multiplier for social transfers is large in absolute terms, but different types of expenditures show a similar or a higher multiplier effect on output (Pereira and Wemans, 2013; Fatás and Mihov, 2001; Pereira and Sagalés, 2009).

This paper aims to contribute to this literature by adding evidence on the macroeconomic effects of social expenditures in Brazil -- a country with high inequality levels and a relatively well-developed social protection system. Two more aspects add to our interest in focusing on the macroeconomic effects of social benefits in Brazil. First, the country has been facing a deep economic crisis since 2015, but the fiscal consolidation strategy in 2015-2019 has spared several components of social expenditures that are constitutionally mandatory. While advocates of cutting additional budgets have been calling for structural reforms that reduce expenses, these items may have helped prevent an even deeper downturn. Second, Brazil has built on its previous experience with Programa Bolsa Família - the World's most extensive conditional cash transfer program - to provide around 6.5% of GDP in an emergency cash relief program with more than 67 million beneficiaries during the pandemic. In this context, discussions around the role of the program in attenuating the fall in GDP in 2020 and on potential benefits of permanently expanding social transfers in Brazil have attracted renewed interest due to its multiplier effects.

More specifically, our contribution to the empirical literature on fiscal multipliers is twofold: first, the present study finds considerable differences in the size of social benefits multipliers between the sample that includes the recent economic recession (2014-2016) and the pre-crisis sample. Second, we go beyond existing studies by providing a disaggregated analysis: we estimate social protection multipliers on household consumption and private investment and different types of social benefits expenditures (e.g., cash transfers, unemployment insurance, and pensions). Our study reveals that a social protection spending shock triggers a more significant output increase in the sample that includes the recession. These higher estimated multipliers in the full sample appear in the response of both household consumption and private investment to shocks in total social protection expenditures.

The article has five sections in addition to this introduction. Section 2 presents the structure and evolution of Brazilian social expenditures. Section 3 reviews the empirical literature on multiplier effects of social protection. Section 4 introduces our methodology, and section 5 analyzes our estimation results. A final section concludes the paper.

## **2) The Brazilian social protection system**

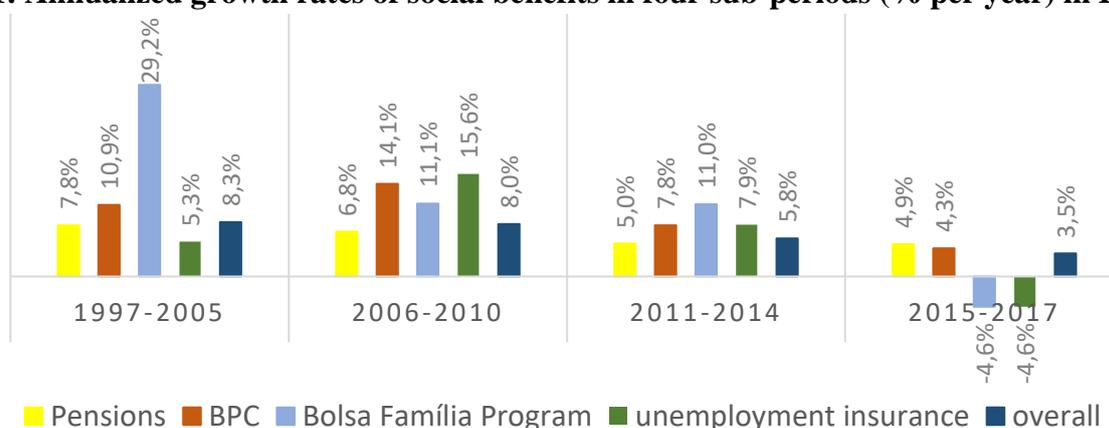
Spending on social security and welfare are the main drivers of the rise in Brazilian federal primary expenditures from 12.7 percent of GDP in 1986 to 19.5 percent in 2016 (Pires and Borges, 2019). The expansion of direct income transfers in Brazil started to a large extent with the enactment of the country's 1988 Constitution. Still, it was enhanced in the 1990s with the approval of the Lei Orgânica de Assistência Social (LOAS), which established non-contributory social security benefits for low-income older adults, people with disabilities (Benefício de Prestação Continuada - BPC) and retirees in rural areas. In the 2000s, direct cash transfers reached an unprecedented level with the establishment and expansion of the conditioned cash transfer program Programa Bolsa Família (PBF) (Tupy e Toyoshima, 2013). Table 1 provides a brief description of each item of the Brazilian social protection system.

On top of the creation of new programs and the increase in the number of pension beneficiaries due to population aging, the rise in the average value of social benefits since 1986 is responsible for a significant share of the observed expansion in social expenditures. In particular, since minimum wages act as a floor for pensions and other social programs, substantial minimum wage gains since the country's price stabilization in 1995 help explain a significant part of the increase in the average value of social expenditures. According to the study by Pires and Borges (2019), out of the 5.9 percentage points increase in central government's primary spending between 1988 and 2016, 1.9 percentage points were due to the 62% rise in the country's real minimum wage between 1988 and 2016. New social expenditures created in the Brazilian 1988 Constitution would account for 1.5 percentage points. A smaller portion (0.5 p.p.) is due to real increases in social security benefits above the minimum wage.

Figure 1 shows the annualized growth rate of different types of social expenditures between 1997 and 2017. Expenditures on pensions have shown the most stable rise throughout the period. As for the social assistance program aimed at low-income older adults and people with disabilities (BPC), 2006-2010 has been marked by a 14% annual growth in spending, whereas crisis years 2015-2017 have only shown a 4.3% increase.

In 2004, Programa Bolsa Família (PBF) unified the management and implementation of previous federal programs. Soares, Ribas and Osório (2007) identify two main objectives to PBF: 1) alleviating short-run poverty by providing households with a minimum income; 2) fighting intergenerational poverty by meeting educational and health-related conditions. As suggested by the high growth rate per year in expenditures on PBF observed in Figure 1, the program grew substantially since its implementation. The substantial increase in the number of beneficiaries in all states and the rise in the annual per capita value transferred to municipalities in each state explain this expansion (Landim Junior, 2009). While in January 2004, PBF benefited 3.6 million families, in 2010, this number reached 12.8 million. In August 2017, the number of families benefiting from the program was 13.5 million. But as shown in Figure 1, there is a reduction in expenditures on PBF during the 2015-2017 crisis.

**Figure 1: Annualized growth rates of social benefits in four sub-periods (% per year) in Brazil**



Source: Own elaboration. Data from Orair and Gobetti (2017).

**Table 1: Components of the Brazilian social protection system**

Social Protection Component	Description
Programa Bolsa Família (PBF)	PBF is a federal conditioned cash program targeting families that live in poverty and extreme poverty (monthly income per capita below BRL 154). The transfer is conditional to primary healthcare, child nutrition, and educational attendance criteria.

Pensions	Pension benefits are regimented by Regime Geral de Previdência Social (RGPS) (public pension system). Contributory pensions are calculated based on workers' average salaries. Other pension benefits include survivor's pensions and family and maternity allowances (Boletim estatístico da previdência social, 2015). Rural pensions are non-contributory and consist of a monthly minimum wage paid to individuals who worked in rural activities for at least 15 years (Souza, 2011).
Benefício de Prestação Continuada (BPC)	BPC is a social assistance program established by law that guarantees a monthly minimum wage to older adults aged 65 and over and to people with disabilities. The beneficiaries' monthly family per capita income must be below one-fourth of the minimum wage (Boletim estatístico da previdência social, 2015).
Unemployment Insurance	Besides providing financial assistance to the unemployed worker during a period, the program helps them find a job through integrated orientation, outplacement, and professional training.
Wage allowance	It assures the value of an annual minimum wage to Brazilian workers who receive on average up to two monthly minimum wages from employers who contribute to the Programa de Integração Social (PIS) or the Programa de Formação do Patrimônio do Servidor Público (PASEP).

Source: Own elaboration.

Spending on unemployment insurance (alongside wage allowances) stands out for its sizeable positive variation in 2006-2010, of little more than 15% per year. The role of unemployment insurance expenditures as an automatic stabilizer during the 2008-09 global financial crisis is noteworthy (25% expansion). Nevertheless, its annual average variation was negative during the 2015-2016 crisis. From 2014 to 2015, these items were reduced by 15%. Still, the average yearly growth of total expenditures on social benefits was positive during the 2015-2016 crisis thanks to the maintenance of constitutionally mandatory expenses such as pensions and BPC.

### 3) The empirical literature on social benefits multipliers

The literature on fiscal multipliers has grown significantly since the Global Financial Crisis. In country-specific studies, the most conventional approach has made use of linear VAR models (autoregressive vectors) to estimate the impact of an exogenous shock in public expenditures or government revenues on the level of economic activity, following Blanchard and Perotti (2002). When disaggregating different types of public spending, this literature shows a higher and more persistent multiplier effect of public investment on GDP (Deleidi, Iafrate and Levrero, 2019; Izquierdo et al., 2019; Ilzetki, Mendoza and Vegh, 2013). As already mentioned in the introduction, while many papers have focused on the effects of public expenditure and tax shocks, the impact of changes in social benefits has received less attention.<sup>5</sup>

In this regard, Pereira and Wemans (2013) (p.10) state that: “Initial studies applying the structural VAR methodology to fiscal policy adopted a very aggregate definition of budgetary variables, considering only taxes net of transfers, on the one hand, and public expenditure (fundamentally consumption and public investment), on the other. These definitions have been used in a great deal of subsequent work in this field. It is, however, plausible that the various headings that make up these aggregates have distinctive influences on economic activity”. From this standpoint, our study is an extension of Blanchard and Perotti (2002). Instead of subtracting social benefits from revenue, we use the VAR approach to estimate the macroeconomic effects of social protection.

<sup>5</sup> “In recent years, there has been a tremendous surge in the literature on the size of fiscal multipliers. While many papers have focused on the effects of federal and local public procurement, employment and investment spending, and tax shocks, the impact of changes in social security contributions and benefits has received only little attention. This seems surprising given the fact that social security systems have grown substantially in OECD countries after the Second World War and account for about half of the overall budget in countries like Germany” (Gechert, Paetz and Villanueva, 2018, p.2).

Table 2 shows studies that apply the conventional VAR methodology and mostly the Structural VAR (SVAR) approach developed by Blanchard and Perotti (2002). In some estimations, the social benefits multiplier is above one: every \$1 of government spending on social benefits would ultimately generate more than \$1 in additional GDP. The study carried out by Hollmayr and Kuckuck (2018) stands out by estimating an even higher multiplier (3.8 after five years).

By using a narrative approach based on episodes of fiscal expansion in different countries, Romer and Romer (2016) find a substantial response of consumption to a permanent increase in social expenditures. On the other hand, a tax reduction appears to have the highest and most persistent multiplier effect. Alesina et al. (2017) present comparable results for a panel of OECD countries: fiscal consolidations based on higher taxes are more costly in terms of output than those that relied on spending cuts (government consumption spending or transfers). Conversely, Gechert, Paetz, and Villanueva (2018) employ a similar methodology to assess the macroeconomic effects of social spending in Germany and find a higher and more persistent multiplier for social spending than for social contributions that finance these expenditures.

Some authors have also estimated multipliers using panel techniques for a group of countries (or states/regions of the same country) via VAR or one-equation methods.<sup>6</sup> In the specific case of social expenditures, the study carried out by Furceri and Zdzienicka (2012) finds a positive accumulated multiplier (despite being smaller than one) for a group of OECD countries, with an emphasis on health expenditures (0.9) and unemployment insurance (2.1). Reeves et al. (2013) estimate a high social protection multiplier for a group of European countries (3). Health expenditures have an even greater multiplier (4.9).

**Table 2: Multiplier effects of social expenditures in the econometric literature (Linear VAR approach)**

Study / Country / Period	Social expenditure	Multiplier	Method
Adams and Wong (2018)- New Zealand (1990-2017)	Transfers	1.53 (impact) and 0.76 (cumulative one year)	SVAR
Gechert, Paetz and Villanueva (2018) -Germany (1974-2013)	Social Security	0.5-1.5 (impact)	SVAR
Pereira and Wemans (2013) -Portugal (1995-2011)	Social transfers in cash	Near 1 (peak); 0.6 (cumulative one year)	SVAR
Bova and Klyviene (2019) -Portugal (1995-2017)	Transfers (old age, unemployment, and disabilities transfers)	-0.27 (impact); 0.1 (cumulative)	SVAR
Silva, Carvalho and Ribeiro (2013) -Euro Area (1998-2008)	Transfers/social expenditures in cash/in kind	-0.118 (impact) and 0.82 (cumulative ten quarters) (recession scenario)	VAR
Pereira and Sagalés (2009) -Portugal (1980-2005)	Public transfers	1.88 (impact) and 1.81 (cumulative)	VAR
Fatas and Mihov (2001) -US	Social security, other transfers, and subsidies	Positive and significative impact of transfers on GDP, after eight quarters.	VAR
Romer and Romer (2016) -US (1952-1991)	Social Security Benefits	Significant response of consumption (mainly impact). However, tax revenues have a higher effect during the time.	Narrative/ VAR
Hollmayr and Kuckuck (2018) -Germany (1993-2017)	Social expenditures (pensions/unemployment)	2 (impact); between 0.3 and 3.8 (after 5 years)	SVAR

Source: Own elaboration.

As can be seen in Table 3, estimations of social benefits cumulative multipliers in Brazil are quite significant, mostly greater than the unity, comparable in magnitude to those measured for public

<sup>6</sup> Silva, Carvalho and Ribeiro, 2013; Furceri and Zdzienicka 2012; Reeves et al, 2013; Izetski, Mendoza and Vegh, 2013; Izquierdo et al, 2019; Carrière-Swallow, David and Leigh, 2018; Deleidi, Iafate and Levvero, 2019; Konstantinou and Partheniou, 2019.

investment (see Sanches and Carvalho, 2019; Orair, Siqueira and Gobetti, 2016; Resende, 2019). The literature also shows evidence that, in addition to having a high multiplier effect, the impact of social protection expenditure on GDP is more relevant during downturns (Orair, Siqueira and Gobetti, 2016; Sanches and Carvalho, 2019).

**Table 3: Multiplier effects of social expenditures in the econometric literature for Brazil**

Study/ period	Social Benefits multiplier (impact and peak)	Social Benefits multiplier (cumulative)	Methodology
Orair, Siqueira and Gobetti (2016) (2002-2016)	1.51 (peak) (recessions)	8 (accumulated in four years) (recessions)	STVAR (non-linear VAR)
Resende (2019) (1997-2018)	0.72 (impact)	2.99 - 4.07 (accumulated in a year)	VAR
Sanches and Carvalho (2019) (1997-2018)	0.75 (impact) / 1.2 (peak)	2.9 (accumulated in two years) / 2.6 (accumulated in a year)	SVAR
Neri, Vaz, and Souza (2013)	1.78 (PBF), 1.19 (BPC), 1.06 (unemployment insurance/ wage allowance), 0.53 (pensions)		input-output methodology
Mostafa, Souza and Vaz (2010)	1.44 (PBF), 1.38 (BPC), 1.23 (pensions)		input-output methodology

Source: Own elaboration.

#### 4) Methodology

As seen in the previous section, the empirical evaluation of fiscal multipliers mainly draws on the estimation of structural vector autoregression (SVAR) models developed by Blanchard and Perotti (2002) (Table 2). The identification of exogenous fiscal policy shocks derives from the fact that the model assumes causation from fiscal variables to output. At the same time, there could be reverse causality through automatic stabilizers and discretionary fiscal policy responses of policymakers to output (Perotti, 2007). Blanchard and Perotti (2002) argue that when using high-frequency data (monthly or quarterly), there is little or no fiscal policy response to unexpected shocks in output within the same month or quarter. GDP does not affect public spending contemporaneously because policymakers take more than a quarter (or a month) to perceive the output shock and decide the next steps in fiscal policy, as well as to present them to the legislature<sup>7</sup>.

The vector of endogenous variables is three-dimensional with the series of social expenditure, revenue, and output. According to Perotti (2007), shocks of the reduced form can be seen as linear combinations of three components: a) the automatic response of government spending and revenue to changes in output; b) the discretionary response due to changes in endogenous variables (Perotti, 2007, gives the example of tax changes in response to a recession); c) random discretionary shocks: structural shocks, which are uncorrelated and unobservable. So that:

$$u_t^g = \alpha_{gy}u_t^y + \beta_{gt}e_t^t + e_t^g \quad (1)$$

$$u_t^t = \alpha_{ty}u_t^y + \beta_{tg}e_t^g + e_t^t \quad (2)$$

<sup>7</sup> See, for example, the “test of endogeneity” proposed by Deleidi, Iafrate and Levrero (2019): “In order to detect whether public investment is influenced by the output level, we follow a procedure similar to that suggested by Born and Muller (2012). More specifically, we use quarterly data to test whether annual government investment is exogenous by evaluating whether the rate of growth of public investment responds to the rate of growth of GDP within the year” (Deleidi, Iafrate and Levrero, 2019; p.14). Similar tests have been carried out in our study and confirmed that we could consider social benefits exogenous within the quarterly/monthly VAR framework.

$$u_t^y = \gamma_{yt}u_t^t + \gamma_{yg}u_t^g + e_t^y \quad (3)$$

Where  $u_t^g$ ,  $u_t^t$ ,  $u_t^y$  are the unexpected movements in the expenditure, revenue taxes and output variables, respectively. Also,  $e_t^g$ ,  $e_t^t$ ,  $e_t^y$  are the structural shocks. The coefficients  $\alpha_{ij}$  reflect the response of variable  $i$  to variable  $j$  - the components "a" and "b" listed above are captured by the coefficients  $\alpha$ . While  $\beta_{ij}$  measures the contemporaneous response of variable  $i$  to a structural shock in variable  $j$  - that is, the component "c" (Perotti, 2007).

By using high-frequency data, component "b" is removed, which makes the coefficients reflect only the response of the automatic stabilizer: "it typically takes longer than a quarter for discretionary fiscal policy to respond to, say, an output shock" (Perotti, 2007, p.176). In other words, given the identification hypothesis, there is no discretionary response of fiscal variables to output, so that<sup>8</sup>:

$$\alpha_{gy} = 0 \quad (4)$$

The elasticity of revenue to output  $\alpha_{ty}$  is estimated based on the "IMF method", as in Andreis (2014), which is a regression of tax revenues on GDP using time dummy variables and a trend control<sup>9</sup>. We can capture the cyclically adjusted residuals  $u_t^{g,ca}$  and  $u_t^{t,ca}$ , which are the shocks without the effects of the cycle, to eliminate the automatic stabilizer responses:

$$u_t^{g,ca} = u_t^g - \alpha_{gy}u_t^y = \beta_{gt}e_t^t + e_t^g \quad (5)$$

$$u_t^{t,ca} = u_t^t - \alpha_{ty}u_t^y = \beta_{tg}e_t^g + e_t^t \quad (6)$$

Blanchard and Perotti (2002) claim that there is no reason to choose  $\beta_{gt} = 0$  or  $\beta_{tg} = 0$ . After a shock in spending and revenue, there is no theoretical or empirical justification to sustain which variables will react first. However, as the correlation between adjusted residuals is small, Perotti (2007) points out the order does not change the result. Using  $\beta_{gt} = 0$  and estimating equation 6 (Burriel et al., 2010)<sup>10</sup>, it is possible to obtain estimations for  $e_t^t$  and  $e_t^g$  ("isolated" from the influence of output since the automatic response component has been removed). Having obtained estimations for the structural shocks, we use them as instruments for the reduced form shocks in the estimation of equation 3. The last step is estimating the impulse-response functions of the SVAR model.

The basic model is estimated<sup>11</sup> using the vector of endogenous variables, in logarithm: social protection expenditure, total primary tax revenue, GDP. Further, GDP and social spending are replaced, respectively, by other macroeconomic variables (household consumption and private investment) and by each component of social benefits. The central government revenue and expenditure data for 1997-2018 are obtained from Orair and Gobetti (2017). For Gross Domestic Product (GDP), we use data from IBGE (quarterly) and from the Central Bank of Brazil (BCB) (which provides a monthly interpolated estimated series for GDP). IPCA deflator, household consumption, and total investment data are also extracted from IBGE<sup>12</sup>. All series are in real terms and seasonally adjusted using X-13 arima in Eviews. We also added as control variables the basic interest rate (BCB), a commodity price index (IMF), and a real effective exchange rate index (BCB).

<sup>8</sup> Some studies – such as Galton (2013), Adams and Wong (2018), Pereira and Wemans (2013), Baum and Koester (2011), Hollmayr and Kuckuck (2018) - estimate the SVAR considering unemployment insurance as an automatic stabilizer expenditure. They estimate the weighted elasticity of this type of expenditure relative to output. By making this adjustment, however, our results only change marginally.

<sup>9</sup> We obtained the following estimations of the elasticity of primary revenue to GDP, household consumption, and private investment, respectively: 1.5; 1.4; 0.3 (full sample) and 1.3; 0.96 and 0.2 (pre-crisis sample).

<sup>10</sup> Models have also been estimated assuming  $\beta_{tg} = 0$  (decisions relating to revenue happen before those relating to expenditure) and proved to be robust, as is usual in the literature.

<sup>11</sup> The variables used in this paper are not stationary and hence we use their first difference as indicated by diagnostic tests (Dickey-Fuller, Phillips and Perron, KPSS). The number of lags is chosen based on information criteria and autocorrelation LM test (Matteo et al., 2018) (most models use two lags). All models show stability.

<sup>12</sup> Private investment data are obtained by subtracting public investment (from Orair and Gobetti (2017)) from total investment (IBGE). Investment is available from 1997 to 2017.

The effect of government spending on economic activity may also differ between different phases of economic cycles (Auerbach and Gorodnichenko, 2012). To examine the existence of this asymmetric effect for social protection spending, we have estimated linear VAR models for the entire sample, covering the years 1997 to 2018 (until June); and for the pre-crisis sample, from 1997 to the first quarter of 2014 (according to the CODACE report, the recession began in the second quarter of 2014). This estimation strategy allows us to evaluate possible changes in social protection multipliers during the crisis (Matheson and Pereira, 2016; Deleidi, Iafrate and Levrero, 2019). Hence, an estimation using a non-linear method (Orair, Siqueira and Gobetti, 2016; Auerbach and Gorodnichenko, 2012) would not allow a specific assessment of the behavior of multipliers during the 2015-2016 crisis.

The empirical literature generally estimates four types of multipliers (Spilimbergo, Symanski and Schindler, 2009): a) the impact multiplier for the analysis of a short-run period:  $\frac{\Delta Y(t)}{\Delta G(t)}$ ; b) the horizon multiplier for a specific period:  $\frac{\Delta Y(t+n)}{\Delta G(t)}$ ; c) the peak multiplier, which represents the highest value in the period under analysis:  $\max \frac{\Delta Y(t+n)}{\Delta G(t)}$ ; d) the accumulated/cumulative multiplier for the analysis of a more extended period:  $\frac{\sum_{i=1}^n \Delta Y(t+i)}{\sum_{i=1}^n \Delta G(t+i)}$ . The cumulative multiplier is the most appropriate measure since the economy requires some time to absorb the initial shock (Ilzetzki, Mendoza and Vegh, 2013; Ramey and Zubairy, 2018; Restrepo, 2020).

To calculate multipliers, we divide the elasticity of GDP to the social benefits variable by the average share of social expenditures in the output (or components). As the variables are in logarithms, impulse-response functions provide the elasticity of the output (Y) related to the fiscal variable that suffered a shock (X):

$$\xi_{Y,X} = \frac{\frac{\Delta Y}{Y}}{\frac{\Delta X}{X}} = \frac{\Delta Y}{Y} \frac{X}{\Delta X} = \frac{\Delta Y}{\Delta X} \frac{X}{Y} \quad (7)$$

Since  $\frac{\Delta Y}{\Delta X}$  is the definition of multiplier (Pires, 2014), we have:

$$\frac{\Delta Y}{\Delta X} = \frac{\xi_{Y,X}}{\frac{X}{Y}} \quad (8)$$

## 5) Results

### 5.1) The role of economic crisis (aggregated exercise)

We now estimate the response of GDP to an expansionary shock in social benefits. The following graphs (Figure 2 and Figure 3) display the accumulated response of output to a standard-deviation shock in the total social spending item, using a confidence interval of one and two standard-deviations<sup>13</sup>. Impulse-response functions are significant at 95% at most periods after the initial shock.

As Figures 2 and 3 illustrate, the impact of social protection expenditure on GDP in the entire sample turns out to be higher (black line). In particular, the impulse-response functions of the two samples are statistically different from each other when considering a band of one-standard-deviation (Figure 3). We have tested several specifications, such as dummy time variables, data in different

<sup>13</sup> Ramey (2011) (p.11-12) claims: "Although this is common practice in the government spending literature, it has no theoretical justification. Some have appealed to Sims and Zha (1999) for using 68% bands. However, there is no formal justification for this particular choice. Most papers in the monetary literature use 95% error bands". For instance, Blanchard and Perotti (2002), Fatàs and Mihov (2001), Tenhofen, Wolff and Heppeke-Falk (2010), Perotti (2007), Burriel et al (2010), Izquierdo et al (2019) adopt a one standard-deviation band.

frequencies (monthly and quarterly), and other deflators. The differences between the two samples do not change.<sup>14</sup>

Table 4 summarizes the estimated multipliers (impact and cumulative during eight quarters)<sup>15</sup>. Looking at the results, we note there is little difference when comparing the impact multipliers of the two samples. Regardless, a social protection expenditure shock triggers a more prominent output increase in the full sample in accumulated terms.

Overall, the findings align with the range of estimates of short-term multipliers for total government spending on social protection presented in previous empirical studies (Table 3). In particular, the macroeconomic effects of social protection are similar to the evidence provided by Resende (2019) for Brazil. Our results are also in line with Orair, Siqueira and Gobetti (2016), which estimates more significant social benefits multipliers during economic recessions.

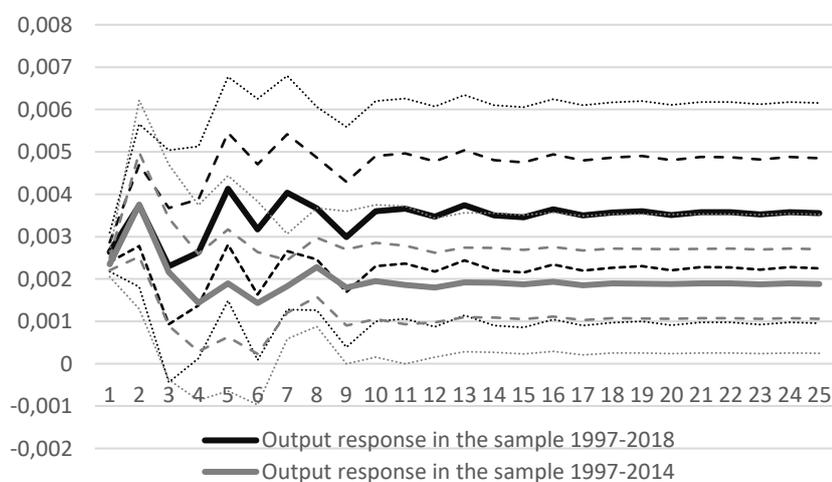
However, our contribution sheds light on the change in the multiplier in the 2014-16 economic crisis in particular. Indeed, it emphasizes that social protection expenditure performed a significant income stabilizing effect in aggregate demand during this period. As estimated by Sanches and Carvalho (2019), GDP would be 2.53% lower if social benefits had not continued to grow in 2016 and 2017 due to constitutional obligations.

**Table 4: Social benefits multipliers in the two samples (impact and cumulative in two years)**

Sample/Exercise	Monthly exercise-Figure 2	Quarterly exercise-Figure 3
1997-2018 sample	0.77 (impact) / 2.9 (cumulative)	1.3 (impact) / 4.5 (cumulative)
1997-2014 sample	0.7 (impact) / 1.9 (cumulative)	1.3 (impact) / 3.1 (cumulative)

Source: Own elaboration.

**Figure 2: Accumulated response of output to a shock in social benefits (using monthly data)**



Source: Own elaboration. The dashed and dotted lines correspond to the interval of one and two standard-deviations, respectively, namely confidence levels of 68 and 95%.

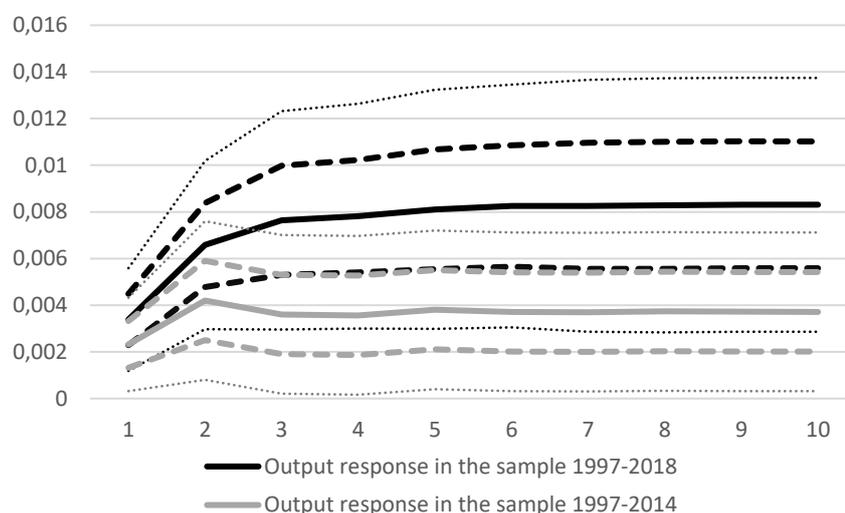
Social protection multiplier dynamics can be enhanced since people who receive these benefits tend to have a relatively high propensity to consume. As reported by Ipea (2011), 80 percent of resources

<sup>14</sup>The baseline specification used time dummy variables: 1) dumdate99: assumes value from 1999 Q1, onwards (government's budgetary dynamics have changed); 2) dum08 assumes 1 in 2008Q3-Q4 and 2009Q1 (international crisis), 3) dum09, introduced to capture the post-crisis recovery period, assumes the value 1 in 2009Q3-Q4; 4) dum10 and dum67 (capture outliers in 2010 and 2006/2007). Besides showing at least 10% statistical significance, the inclusion of time dummy variables improved the general model significance. The removal of these variables only changed results marginally.

<sup>15</sup> The cumulative multiplier is estimated considering its persistence: "The long-run multiplier is defined as the cumulative multiplier when  $J \rightarrow \infty$ , but in practice is used the number of periods needed for the multiplier to stabilize at its long-run value. In this paper, 24 periods are used as all multipliers stabilize after that number of quarters" (Garcia, Lemus and Mrkaic, 2013, p.11).

transferred by the PBF go to the bottom 40 percent of the distribution. Several studies emphasize the effective targeting of social programs in Brazil to the bottom of the income distribution (Medeiros, Britto and Soares, 2008; Soares, Ribas and Osório, 2007; Denes, Menezes-Filho and Komatsu, 2016; Souza, 2011). For instance, Medeiros, Britto and Soares (2008) estimate that more than 80 percent of the beneficiaries of PBF and BPC programs are in the first four-tenths of the per capita household income distribution.

**Figure 3: Accumulated response of output to a shock in social benefits (using quarterly data)**



Source: Own elaboration. The dashed and dotted lines correspond to the interval of one and two standard-deviations, respectively, namely confidence levels of 68 and 95%.

In fact, according to Pesquisa de Orçamento Familiar (POF) data (2017/2018), households from the first income bracket who receive up to R\$ 1.908 monthly have an average propensity to consume larger than one, while the top income bracket with income above R\$ 23.850 has a propensity to consume of 0.43.

The cumulative multiplier of 2.9, for example, suggests that spending one unit on social expenditures generates a final change in GDP of almost three after two years. In a simple Keynesian model, the multiplier depends directly on the marginal propensity to consume. Since social benefits tend to be received by households with a higher propensity to consume, these expenditures may boost consumption and raise sales expectations by firms and business investment. Moreover, our findings suggest that this multiplier effect is more relevant in the sample that includes the recent economic recession. In other words, recipients may consume an even higher share of social benefits when economic activity is weak.

We have introduced some control variables in the econometric exercises. Table 5 summarizes the results when including control variables (quarterly data exercise). Including the interest rate and the exchange rate is standard in the empirical literature on fiscal multipliers (Ilzetzki, 2011; Perotti, 2004; Tenhofen, Wolff and Heppke-Falk, 2010). We also have controlled for a commodities prices index given that the Brazilian economy is mainly dependent on commodity exports<sup>16</sup>. Table 5 shows impact, peak and cumulative multipliers in eight quarters. The period when the peak multiplier occurs is indicated by “t”.

**Table 5: Social benefits multipliers– impact, peak and cumulative, respectively**

Exercise/Sample	Multipliers complete sample	Multipliers pre-crisis sample
Baseline	1.3, 3.25 (t=7), 4.5	1.3, 2.4 (t=2), 3.1
Controlling for commodities price index	1.1, 2.4 (t=3), 3.5	1, 1.86 (t=2), 2.5
Controlling for interest rate	1.2, 3 (t=8), 4.2	1.2, 2.1 (t=2), 2.78

<sup>16</sup> See Borges, 2017 and Carvalho, 2018.

Controlling for exchange rate	1.19, 3.4 (t=6), 4.4	1.3, 2.5 (t=6), 3.6
Using the three controls	1.1, 2.5 (t=3), 3.6	1.1, 2 (t=3), 2.8

Source: Own elaboration.

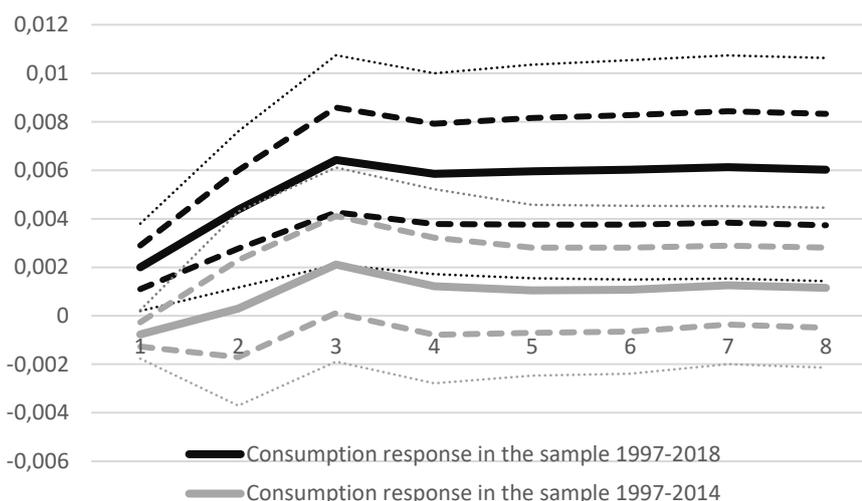
The commodities prices index is the most significant (at 1%) control variable in the output equation. It positively impacts both samples, showing the relevance of external demand in the country's income. By removing its influence on the Brazilian economy, the multiplier effect of social benefits diminishes.

## 5.2) The effect of social protection expenditures on household consumption and private investment

Given the absence of previous empirical studies focusing on disaggregating the components of demand, we estimate fiscal multipliers for household consumption and private investment in this section. Figure 4 considers the accumulated response of household consumption to a shock in social protection expenditure, statistically significant at 95% (complete sample). On the other hand, the impulse-response function estimated using the smaller sample is not statistically significant at 68%.

When the government spends one unit on social expenditure, it increases household consumption by 2.3 units after two years. The estimated cumulative multiplier using the pre-crisis sample is 0.54 after two years.

**Figure 4: Accumulated response of household consumption to a shock in social benefits**



Source: Own elaboration. The dashed and dotted lines correspond to the interval of one and two standard-deviations, respectively, namely confidence levels of 68 and 95%.

**Table 6: Social benefits multipliers (household consumption) – impact, peak and cumulative, respectively**

Exercise/Sample	Multipliers complete sample	Multipliers pre-crisis sample
Baseline	0.5, 1.6 (t=3), 2.3	-0.27, 0.75 (t=3), 0.54
Controlling for commodities price index	0.41, 1.22 (t=3), 1.7	-0.5, 0.26 (t=3), 0.08
Controlling for interest rate	0.32, 1.3 (t=3), 1.8	-0.41, 0.45 (t=3), 0.18
Controlling for exchange rate	0.49, 1.6 (t=3), 2.25	-0.26, 0.78 (t=3), 0.57
Using the three controls	0.25, 1 (t=3), 1.4	-0.5, 0.003 (t=3), -0.4

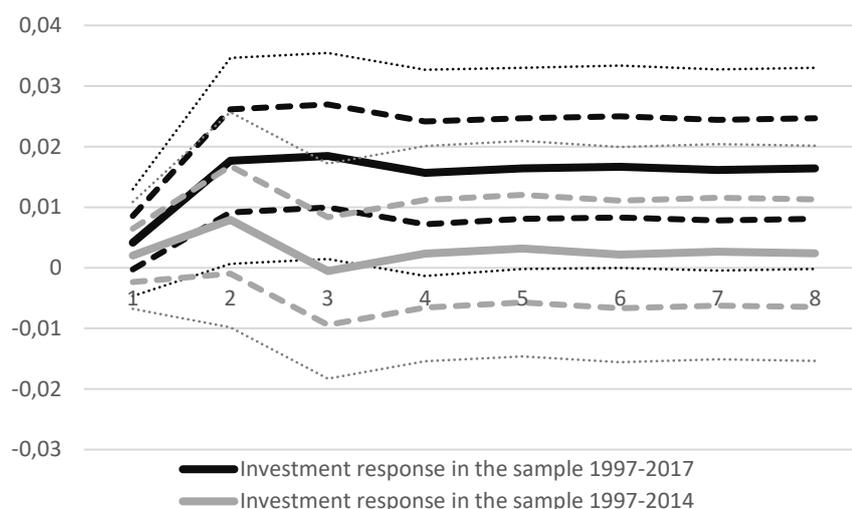
Source: Own elaboration.

Regarding control variables, the coefficient for the basic interest rate is negative in both samples in the consumption equation and significant at 5%. Commodities prices show a positive coefficient in the

household consumption equation, statistically significant at 5%. Introducing the exchange rate index as a control barely changed multiplier values. This variable shows a non-significant negative coefficient in the consumption equation<sup>17</sup>. When removing the effect of the three controls, we notice that the social benefit multiplier is less sensitive to the inclusion of exogenous variables in the entire sample than in the pre-crisis sample (Table 6). This evidence suggests that social protection expenditures played a crucial stabilizing role during the crisis.

Finally, we estimate the response of private investment to a shock in social benefits. As shown in Figure 5, private investment is also more responsive in the sample that includes the crisis. Albeit this discrepancy is less significant than in the case of household consumption (Figure 4), the cumulative multiplier estimated for the whole sample is still larger by 1.13 (Table 7).

**Figure 5: Accumulated response of private investment to shocks in social benefits**



Source: Own elaboration. The dashed and dotted lines correspond to the interval of one and two standard-deviations, respectively, namely confidence levels of 68 and 95%.

**Table 7: Social benefits multipliers (private investment) – impact, peak and cumulative, respectively**

Exercise/Sample	Multipliers complete sample	Multipliers pre-crisis sample
Baseline	0.27, 1.22 (t=3), 1.58	0.2, 0.79 (t=2), 0.45
Controlling for commodities price index	0.03, 0.95 (t=3), 1	-0.28, 0.2 (t=2), 0.1
Controlling for interest rate	0.41, 1.66 (t=3), 1.91	0.22, 0.9 (t=2), 1.06
Controlling for exchange rate	0.007, 1.46 (t=3), 1.55	-0.08, 1.15 (t=2), 1.05
Using the three controls	0.2, 1.27 (t=3), 1.4	0.04, 0.7 (t=2), 0.75

Source: Own elaboration.

The commodities price index<sup>18</sup> control variable has a positive coefficient in the investment equation, significant at 1% level, which is in line with the study performed by Dos Santos et al. (2016).

<sup>17</sup> Such lagged index, however, shows a negative coefficient with a significance of 10% in both samples. Estimated multipliers: 0.4 (impact), 2 (cumulative) and 1.45 (peak, period 3) (full sample); and -0.5 (impact), 0.3 (cumulative) and 0.45 (peak, period 3) (pre-crisis sample).

<sup>18</sup> Contrary to household consumption, lagged control variables show statistical significance in the investment equation. The commodities price index with a lag as an additional control is significant at 10%, with a positive coefficient (both samples). Estimated multipliers are the following. Full sample: 0.2 (impact), 1.2 (cumulative) and 1.1 (peak, period 3). Pre-crisis sample: 0.17 (impact), 0.5 (cumulative) and 0.68 (peak, period 2). In this case, the difference between the samples in terms of the cumulative multiplier is slightly lower.

Given the importance of primary products in the Brazilian productive structure, the favorable external scenario could encourage private investment and facilitate the inflow of foreign currency.

Overall, expansionary changes in social protection seem to trigger a more robust household consumption response in the full sample than in the pre-crisis sample (the difference is statistically significant - see Figure 4). Regarding the impact of social protection on private investment, the multiplier is 1.13 greater (or 251%) in the sample that includes the 2015-16 recession. Hence, we find that increases in social benefits lead to significant increases in household consumption. Yet, both channels are essential to explain the more relevant response of GDP to a shock in social benefits in the complete sample exercise.

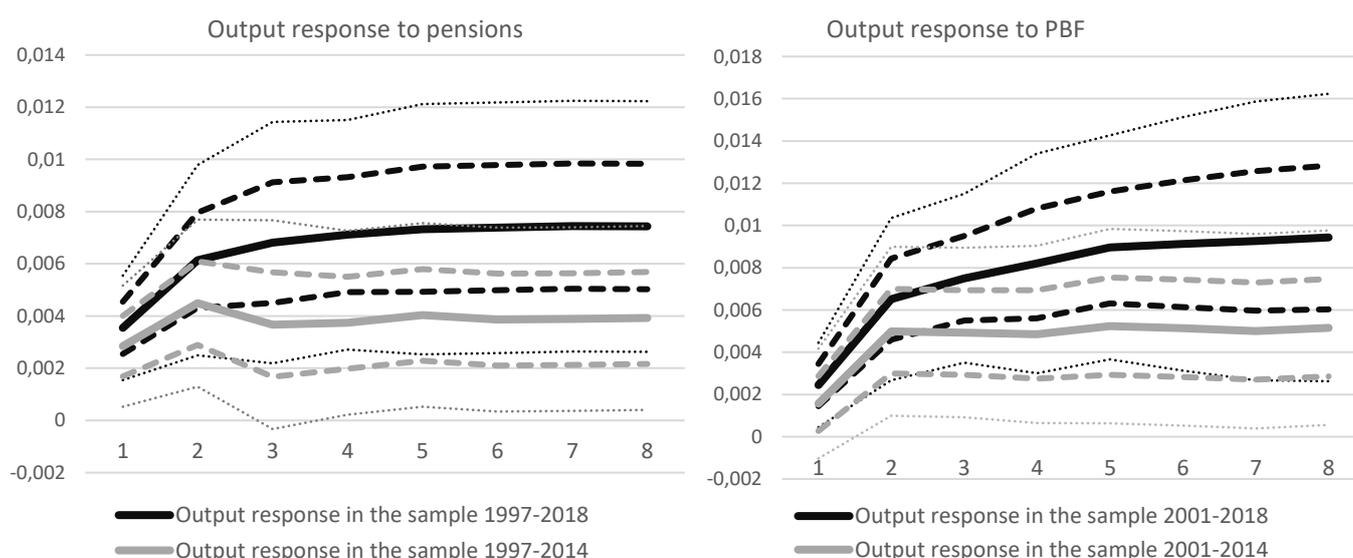
### 5.3) Disaggregation of social benefits

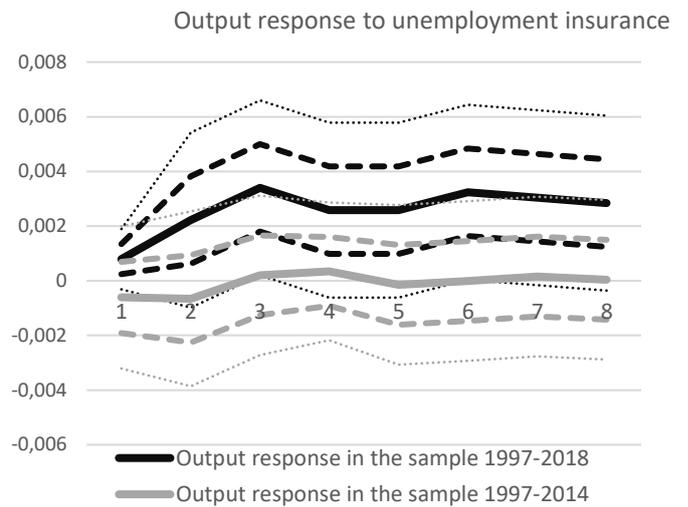
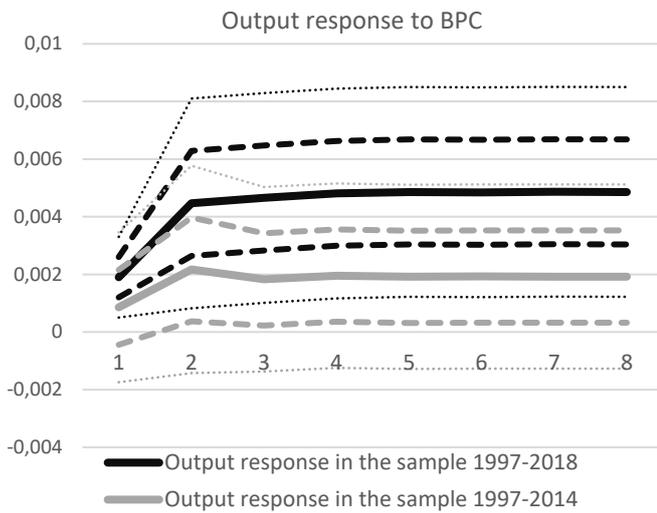
In this section, we disaggregate social benefits expenditures into pensions (social security), Programa Bolsa Família (PBF), Benefício de Prestação Continuada (BPC), and unemployment insurance (alongside wage allowances). The GDP responses to each category (Figure 6) are similar to those observed in the aggregate estimation (Figure 3). Looking at sub-components of social benefits expenditure emphasizes that all of them - to a greater or a lesser extent - contribute to the estimated discrepancy in the multiplier effect between the two samples.

Indeed, other studies find a more significant effect of PBF on GDP (Tupy and Toyoshima, 2013; Neri, Vaz and Souza, 2013). In other cases, BPC has the largest multiplier effect (Denes, Menezes-Filho and Komatsu 2016). Our findings align with Neri, Vaz and Souza (2013), who estimate relevant multiplier effects of PBF, BPC and unemployment insurance. However, in our study, we also find significant multipliers for pensions.

Figure 7 illustrates the household consumption response to a shock in each type of social protection expenditure. It is noteworthy that the discrepancy between the samples is more significant for pensions and PBF. For BPC, on the other hand, it is smaller and less significant. Unlike household consumption, the response of private investment to a shock in BPC is the component that presents the most significant difference between the two samples (Figure 8). BPC is established in the Federal Constitution and therefore is not subject to abrupt cuts during fiscal consolidation episodes.

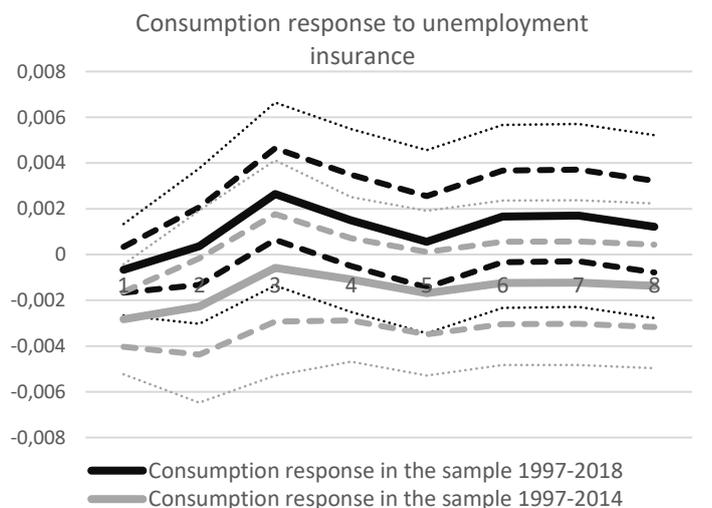
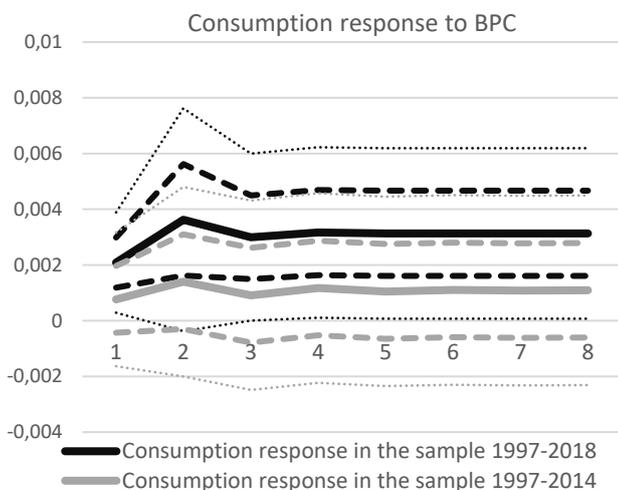
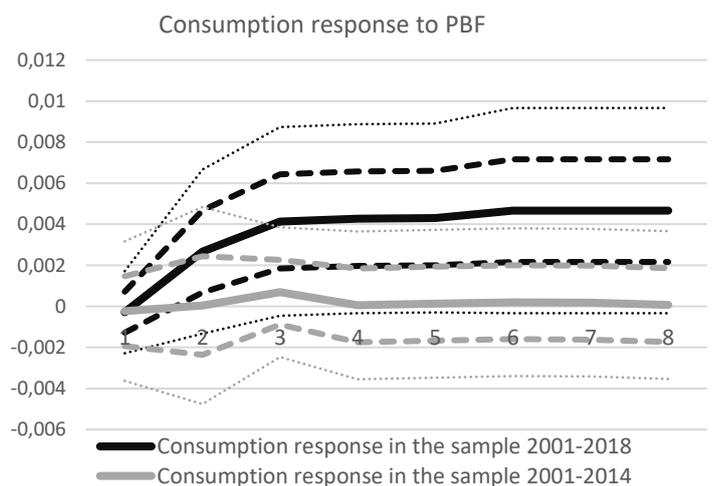
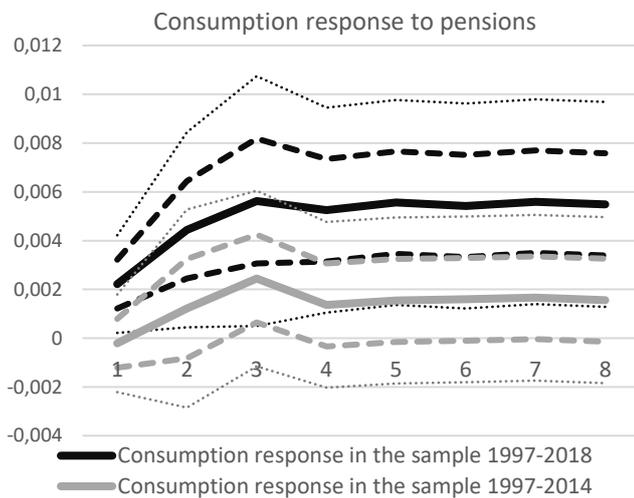
**Figure 6: Accumulated response of output to a shock in social benefits components**





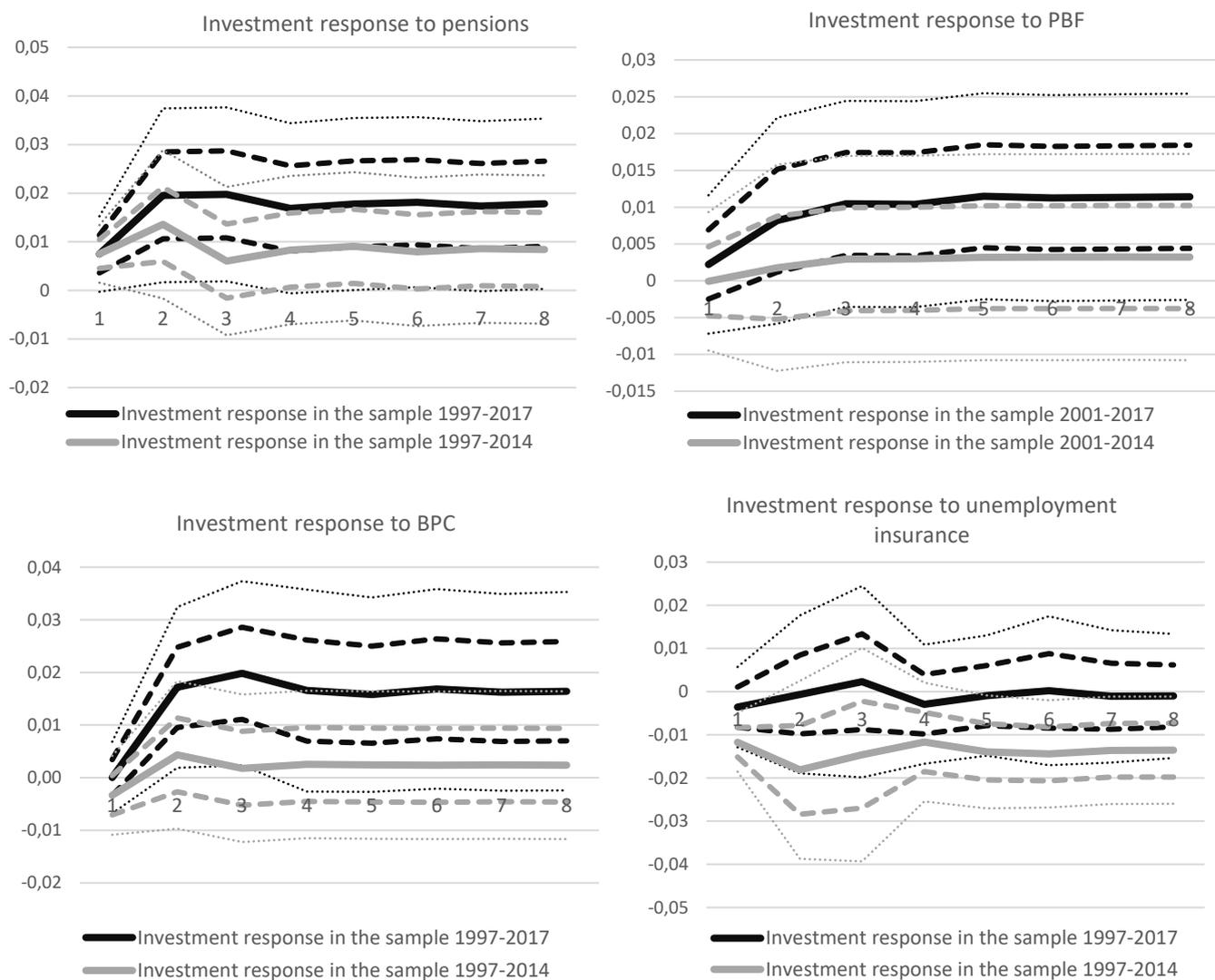
Source: Own elaboration. The dashed and dotted lines correspond to the interval of one and two standard-deviations, respectively, namely confidence levels of 68 and 95%.

**Figure 7: Accumulated response of household consumption to a shock in social benefits components**



Source: Own elaboration. The dashed and dotted lines correspond to the interval of one and two standard-deviations, respectively, namely confidence levels of 68 and 95%.

**Figure 8: Accumulated response of private investment to a shock in social benefits components**



Source: Own elaboration. The dashed and dotted lines correspond to the interval of one and two standard-deviations, respectively, namely confidence levels of 68 and 95%.

## 6) Concluding remarks

Based on Blanchard and Perotti (2002)'s Structural VAR approach, this paper has analyzed the short-term impact of social spending on economic activity in Brazil for 1997-2018. Our results suggest social benefits have relatively large multiplier effects in Brazil, comparable in size to those estimated for public investment. While the high and persistent multipliers of public investment are well-established (Pires, 2011; Pires, 2014; Castelo Branco, Lima and Paula, 2015; Orair, Siqueira and Gobetti, 2016; Dutra, 2016; Peres, 2006; Peres and Ellery, 2009; Orair, 2016), the result for social benefits had only appeared in the studies carried out by Orair, Siqueira and Gobetti (2016) and by Resende (2019). We find these multipliers to be larger in the full sample, which includes the country's recent economic crisis (2014-16), than in the pre-crisis period 1997-2014. In this context, our paper reveals an important stabilizing macroeconomic role played by social protection expenditures in maintaining aggregate demand during downturns and avoiding an even deeper recession.

In addition to dividing the sample to consider a specific crisis period, we go beyond existing studies by providing a disaggregated analysis. In particular, the larger multipliers in the full sample appear in the response of both household consumption and private investment to shocks in total social expenditures, as well as for different types of social benefits.

## References

- ADAMS, A.; WONG, M. Quantifying fiscal multipliers in New Zealand: the evidence from SVAR Models. *Reserve Bank of New Zealand Analytical Note Series*, 2018.
- ALESINA, A.; BARBIERO, O.; FAVERO, C.; GIAVAZZI, F.; PARADISI, M. The Effects of Fiscal Consolidations: Theory and Evidence. *NBER Working Paper*, n.23385, 2017.
- ANDREIS, A. Balanço Orçamentário Estrutural no Brasil: a política fiscal no Brasil é pró ou anticíclica no período pós plano real? *Finanças Públicas, XIX Prêmio Tesouro Nacional*, 2014.
- AUERBACH, A.; GORODNICHENKO, Y. Measuring the output responses to fiscal policy. *American Economic Journal: Economic Policy*, v.4, n.2, p. 1-27, 2012.
- BAUM, A.; KOESTER, G. The impact of fiscal policy on economic activity over the business cycle – evidence from a threshold VAR analysis. *Discussion Paper Series Economic Studies - Deutsche Bundesbank*, n.3, 2011.
- BLANCHARD, O.; PEROTTI, R. An empirical characterization of the dynamic effects of changes in government spending and taxes on output. *Quarterly Journal of Economics*, v.117, n.4, p.1329–1368, 2002.
- BOLETIM ESTATÍSTICO DA PREVIDÊNCIA SOCIAL. v. 20, n.1, janeiro de 2015.
- BORGES, B. Debate dos impactos da nova matriz econômica: a visão de que há exagero. *Conjuntura Econômica*, 2017.
- BOVA, E.; KLYVIENE, V. Macroeconomic effects of fiscal shocks in Portugal. *European Economy Discussion Paper*, n.096, 2019.
- BURRIEL, P.; CASTRO, F.; GARROTE, D.; GORDO, E.; PAREDES, J.; PEREZ, J. Fiscal policy shocks in the euro area and the US an empirical assessment. *Fiscal Studies*, v.31, n.2, p. 251–285, 2010.
- CARRIÈRE-SWALLOW, Y.; DAVID, A.; LEIGH, D. The macroeconomic effects of fiscal consolidation in emerging economies: evidence from Latin America. International Monetary Fund. *IMF Working Papers*, n.142, 2018.
- CARVALHO, L. *Valsa Brasileira. Do boom ao caos econômico*. Editora Todavia, 2018.
- CASTELO-BRANCO, M. A.; LIMA, E. C. R.; PAULA, L. F. Mudanças de Regime e Multiplicadores Fiscais no Brasil entre 1999-2012: uma avaliação empírica. *Anais do XLIII Encontro Nacional de Economia da Anpec*, 2015.
- CLAUS, I.; MARTINEZ-VAZQUEZ, J.; VULOVIC, V. Government Fiscal Policies and Redistribution in Asian Countries. *Asian Development Bank Economics Working Paper Series*, n.310, 2012.
- COUNCIL ECONOMICS ADVISERS. Estimates of job creation from the American recovery and reinvestment act of 2009, 2009.
- DELEIDI, M.; IAFRATE, F.; LEVRERO, E. Public investment fiscal multipliers: an empirical assessment for European countries. *Structural Change and Economic Dynamics*, v.52, p.354-365, 2019.
- DENES, G.; MENEZES-FILHO, N.; KOMATSU, B. Uma avaliação dos impactos macroeconômicos e sociais de programas de transferência de renda nos municípios brasileiros. *Inspere Policy Paper*, n.21, 2016.

- DOS SANTOS, C.; MODENESI, A.; SQUEFF, G.; VASCONCELOS, L.; MORA, M.; FERNANDES, T.; MORAES, T.; SUMMA, R.; BRAGA, J. Revisitando a dinâmica trimestral do investimento no Brasil: 1996-2012. *Revista de Economia Política*, v.36, n. 1 (142), p. 190-213, 2016.
- DUTRA, F. Multiplicadores fiscais no Brasil: estimativas a partir de Modelos STVAR. *Trabalho de conclusão*. Universidade Federal do Rio Grande do Sul, 2016.
- FATAS, A.; MIHOV, I. The Effects of Fiscal Policy on Consumption and Employment: Theory and Evidence. *Centre for Economic Policy Research (London). CEPR Discussion Paper*, n.2760, 2001.
- FURCERI, D.; ZDZIENICKA, A. The Effects of Social Spending on Economic Activity: Empirical Evidence from a Panel of OECD Countries. *Fiscal Studies*, v.33, n.1, p.129-152, 2012.
- GALDÓN, C. Are Fiscal Multipliers larger during recessions? *Columbia University*, 2013.
- GARCIA, J.; LEMUS, A.; MRKAIC, M. Fiscal Multipliers in the ECCU. *IMF Working Paper*, n.13/117, 2013.
- GECHERT, S.; PAETZ, C.; VILLANUEVA, P. The Macroeconomic Effects of Social Security Contributions and Benefits – Evidence from Germany. *Macroeconomic Policy Institute (IMK)*, 2018.
- GIORDANO, R.; MOMIGLIANO, S.; NERI, S.; PEROTTI, R. The effects of fiscal policy in Italy: Evidence from a VAR model. *European Journal of Political Economy*, v.23, p.707–733, 2007.
- GRUDTNER, V.; ARAGON, E. Multiplicador dos gastos do governo em períodos de expansão e recessão: evidências empíricas para o Brasil. *Revista Brasileira de Economia*, v.71, n.3, p.321-345. 2017.
- HAILE, F.; ZARAZÚA, N. Does social spending improve welfare in low-income and middle-income countries? *Journal of International Development*, v.30, p.367–398, 2018.
- HOLLMAYR, J.; KUCKUCK, J. Fiscal multipliers of central, state and local government and of the social security funds in Germany: evidence of a SVAR. *Deutsche Bundesbank Discussion Paper*, n.28, 2018.
- HOLZNER, M. Inequality, growth and public spending in Central, East and Southeast Europe. *Society for the Study of Economic Inequality. Working Paper Series*, n.221, 2011.
- ILZETZKI, E. Fiscal Policy and Debt Dynamics in Developing Countries. *Policy Research Working Paper World Bank*, n.5666, 2011.
- ILZETZKI, E.; MENDOZA, E.; VEGH, C. How Big (Small?) Are Fiscal Multipliers? *Journal of Monetary Economics*, v.60, p.239–254, 2013.
- IPEA. Equidade fiscal no Brasil: impactos distributivos da tributação e do gasto social. *Comunicados do IPEA*, n. 92, 2011.
- IZQUIERDO, A.; LAMA, R.; MEDINA, J.; PUIG, J.; RIERA-CRICHTON, D.; VEGH, C.; VULETIN, G. Is the public investment multiplier higher in developing countries? An empirical investigation. *NBER Working paper series*, n.26478, 2019.
- JEMEC, N.; KASTELEC, A.; DELAKORDA, A. How do fiscal shocks affect the macroeconomic dynamics in the slovenian economy? *Delovni Zvezki Banke Slovenije Banck of Slovenia Working Paper*, 2013.

- KONSTANTINOU, P.; PARTHENIOU, A. The Effects of Government Spending Over the Business Cycle: A Disaggregated Analysis for OECD and Non-OECD Countries. *Quarterly Review of Economics and Finance*, 2019.
- LANDIM JUNIOR, P. H. Os Efeitos do Programa Bolsa Família sobre a Economia dos Municípios Brasileiros. *Relatório Final. Insper*, 2009.
- LOZANO, I.; RODRIGUEZ, K. Assessing the macroeconomic effects of fiscal policy in Colombia. *Journal of Financial Economic Policy*, v.3, n.3, p.206-228, 2011.
- MATHESON, T.; PEREIRA, J. Fiscal multipliers for Brazil. *International Monetary Fund, IMF Working papers*, n.79, 2016.
- MATTEO, D.; VINCENZO, D.; MAZZUCATO, M.; AGNOLUCCI. Fiscal Multipliers: a SVAR approach for the US. *Associazione Italiana per la Storia dell'Economia Politica (STOREP)*, 2018.
- MEDEIROS, M.; BRITTO, T.; SOARES, F. Targeted cash transfer programmes in Brazil: BPC and the Bolsa Família. *International Poverty Centre Working Paper*, n.46, 2008.
- MENDONÇA, D.; MARÇAL, E.; HOLLAND, M. Is fiscal policy effective in Brazil? An empirical analysis. *Working paper series, São Paulo School of Economics*, 2016.
- MOSTAFA, J.; SOUZA, P.; MONTEIRO VAZ, F. Efeitos econômicos do gasto social no Brasil. In: CASTRO, Jorge Abrahão et al. (Ed.). *Perspectivas da política social no Brasil*. Brasília: Ipea, 2010.
- NERI, M.; VAZ, F.; SOUZA, P. Efeitos macroeconômicos do programa Bolsa Família: uma análise comparativa das transferências sociais. In: CAMPELLO, T.; NERI, M. (Orgs). *Programa Bolsa Família: uma década de inclusão e cidadania*. Brasília: IPEA, 2013.
- NIEHUES, J. Social Spending Generosity and Income Inequality: A Dynamic Panel Approach. *Forschungsinstitut zur Zukunft der Arbeit Institute for the Study of Labor. Discussion Paper*, n.5178, 2010.
- OCAMPO, J.; ARTEAGA, N. Social protection systems in Latin America: An assessment. *Social Protection Department ILO Regional Office for Latin America and the Caribbean. Extension of Social Security. Working Paper*, n. 52, 2016.
- ORAIR, R. Investimento público no Brasil: trajetórias e relação com o regime fiscal. *Texto para discussão – Instituto de Pesquisa Econômica Aplicada (IPEA)*, n.2215, 2016.
- ORAIR, R.; GOBETTI, S. Resultado primário e contabilidade criativa: reconstruindo as estatísticas fiscais acima da linha do governo geral. *Texto para discussão – IPEA*, n.2288, 2017.
- ORAIR, R.; SIQUEIRA, F.; GOBETTI, S. Política fiscal e ciclo econômico: uma análise baseada em multiplicadores do gasto público. *XXI Prêmio do Tesouro Nacional*, 2016.
- OSPINA, M. The Effect of Social Spending on Income Inequality: An Analysis for Latin American Countries. *Documentos de Trabajo Economía y Finanzas. Centro de Investigaciones Económicas y Financieras (CIEF) - Universidad Eafit*, n.10-03, 2010.
- PEREIRA, A.; SAGALÉS, O. Long-term effects of fiscal policies in Portugal. *College of William and Mary - Working Paper*, n.35, 2009.
- PEREIRA, M.; WEMANS, L. Output effects of fiscal policy in Portugal: a Structural VAR approach. *Banco de Portugal. Economic Bulletin*, 2013.

- PERES, M. Os efeitos dinâmicos da política fiscal sobre a atividade econômica: um estudo para o caso brasileiro. *Dissertação de Mestrado – Universidade de Brasília*, 2006.
- PERES, M.; ELLERY, R. Efeitos dinâmicos dos choques fiscais do governo central no PIB. *Pesquisa e Planejamento Econômico*, v.39, n.2, p.159–206, 2009.
- PEROTTI, R. Estimating the effects of fiscal policy in OECD countries. *IGIER Working Paper*, n.276, 2004.
- PEROTTI, R. In search of the transmission mechanism of fiscal policy. *NBER Macroeconomics Annual*, v.22, 2007.
- PIRES, M. Controvérsias recentes sobre multiplicadores fiscais. *Anais do VII Encontro Internacional da Associação Keynesiana Brasileira*, 2011.
- PIRES, M. Política fiscal e ciclos econômicos no Brasil. *Economia Aplicada*, v.18, n.1, p.69-90, 2014.
- PIRES, M.; BORGES, B. A Despesa Primária do Governo Central: estimativas e determinantes no período 1986-2016. *Estudos Econômicos*, v.49, n.2, p.209-234, 2019.
- RAMEY, V. Identifying Government Spending Shocks: It's All In the Timing. *Quarterly Journal of Economics*, v.126, n.1, p.1-50, 2011.
- RAMEY, V.; ZUBAIRY, S. Government Spending Multipliers in Good Times and in Bad: Evidence from US Historical Data. *Journal of Political Economy*, v. 126, no. 2, p.850-901, 2018.
- REEVES, A.; BASU, S.; MCKEE, M.; MEISSNER, C.; STUCKLER, D. Does investment in the health sector promote or inhibit economic growth? *Globalization and Health*, v.43, n.9, 2013.
- RESENDE, C. Impulso fiscal: Uma abordagem de multiplicadores fiscais com aplicação para a economia brasileira. *Dissertação de Mestrado. Escola de Economia de São Paulo. Fundação Getúlio Vargas*, 2019.
- RESTREPO, J. How big are fiscal multipliers in Latin America? *IMF Working Paper*, n.17, 2020.
- ROMER, C.; ROMER, D. Transfer Payments and the Macroeconomy: The Effects of Social Security Benefit Increases, 1952-1991. *American Economic Journal: Macroeconomics*, v.8, n.4, p.1-42, 2016.
- SANCHES, M.; CARVALHO, L. A contribuição da política fiscal para a crise brasileira recente: uma análise baseada em multiplicadores de despesas primárias do governo central no período 1997-2018. *Working Paper FEA/USP*, n.35, 2019.
- SANCHÉZ, Á.; PÉREZ, A. Government Social Expenditure and Income Inequalities in the European Union. *Review of Public Economics*, v.227, n.4, p.133-156, 2018.
- SILVA, R.; CARVALHO, V.; RIBEIRO, A. How Large are Fiscal Multipliers? A Panel-Data VAR Approach for the Euro Area. *FEP Working Papers*, n.500, 2013.
- SIMS, C. Macroeconomics and reality. *Econometrica*, n.48, p.1-48, 1980.
- SOARES, F.; RIBAS, R.; OSÓRIO, R. Avaliando o Impacto do Programa Bolsa Família: uma Comparação com Programas de Transferência Condicionada de Renda de Outros Países. *International Poverty Centre, IPC evaluation note*, n.1, 2007.
- SOUZA, A. Políticas de distribuição de renda no Brasil e o Bolsa Família. *Escola de Economia de São Paulo (FGV). Textos para discussão*, n.281, 2011.

SPIILIMBERGO, A.; SYMANSKI, S.; SCHINDLER, M. Fiscal multipliers. Technical report. *IMF Staff Position Note*, IMF, 2009.

TENHOFEN, J.; WOLFF, G.; HEPPKE-FALK, K. The Macroeconomic Effects of Exogenous Fiscal Policy Shocks in Germany: A Disaggregated SVAR Analysis. *Journal of Economics and Statistics (Jahrbuecher fuer Nationaloekonomie und Statistik)*, v.230, n.3, p.328-355, 2010.

TUPY, I.; TOYOSHIMA, S. Impactos dos Programas Governamentais de Transferência de Renda sobre a Economia do Vale do Jequitinhonha. *XVIII Encontro Regional de Economia*, 2013.

ULU, M. The effect of government social spending on income inequality in OECD: a panel data analysis. *International Journal of Economics Politics Humanities and Social Sciences*, v.1, n.3, 2018.

VAZQUEZ, J. DODSON, B.; VULOVIC, V. The Impact of Tax and Expenditure Policies on Income Distribution: Evidence from a Large Panel of Countries. *International Center for Public Policy Working Paper Series*, n.77, 2012.

WAGLE, U. How much do social protections matter to poverty and inequality? An insight from Asian experiences. *Global Social Policy*, p. 1–31, 2016.