

# The effects of public debt management on macroeconomic equilibrium: An analysis of the Brazilian economy<sup>☆</sup>

Cleomar Gomes da Silva<sup>a,b,\*</sup>, Manoel Carlos de Castro Pires<sup>c</sup>,  
Fábio Henrique Bittes Terra<sup>a</sup>

<sup>a</sup> *Institute of Economics-Federal University of Uberlândia (IE-UFU), Brazil*

<sup>b</sup> *CNPQ Associate Researcher, Brazil*

<sup>c</sup> *IPEA and Ministry of Finance, Brazil*

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## Abstract

The aim of this paper is to study the effects of public debt management on yield curve spreads in Brazil, in order to see possible impacts on the country's economic activity. State space models, together with Kalman Filter estimators, are used for the period ranging from June 2002 to February 2012. The results indicate that increases in the issuance of fixed rate linked bonds lead to increases on yield spreads and the longer the maturity, the longer the effect. The opposite occurs when there is an increased issuance of floating rate linked bonds. Therefore, a change in the structure of the Brazilian public debt is not neutral on the yield curve, with possible impacts on the country's macroeconomic balance.

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## Resumo

O objetivo deste artigo é analisar os efeitos da administração da dívida pública sobre os spreads dos títulos públicos brasileiro, a fim de pensar em possíveis impactos sobre a atividade econômica. Para isso, utiliza-se a metodologia do Filtro de Kalman para o período compreendido entre junho de 2002 e fevereiro de 2012. Os resultados indicam que aumentos da emissão de títulos prefixados podem elevar o *spread* e que esse efeito é maior nos vencimentos mais longos. Efeito contrário ocorre com o aumento da emissão

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\* Corresponding author at: Institute of Economics-Federal University of Uberlândia (IE-UFU), Brazil.

*E-mail addresses:* [cleomargomes@ie.ufu.br](mailto:cleomargomes@ie.ufu.br) (C.G. da Silva), [manoel.pires@fazenda.gov.br](mailto:manoel.pires@fazenda.gov.br) (M.C. de Castro Pires), [fbterra@ie.ufu.br](mailto:fbterra@ie.ufu.br) (F.H. Bittes Terra).

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dos títulos indexados. Desta maneira, uma mudança na estrutura de financiamento da dívida pública não é neutra sobre a curva de juros, podendo impactar a condução da política monetária e o equilíbrio macroeconômico.

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*Palavras chave:* Gestão da Dívida Pública; Políticas Fiscal e Monetária; Filtro de Kalman

## 1. Introduction

There is no doubt every country needs funding to foster economic growth and development. However, such funding needs to be sustainable and it has to be closely in line with the government's fiscal and monetary policies. That is why managing public debt is so crucial. According to [Agell and Persson \(1989\)](#) “*public debt management can be defined as the government's (including the central bank) choice regarding the composition of the outstanding stock of all the securities entering the liability side of its balance sheet*”.

In order to use public debt as part of an economic policy strategy, authorities can change a country's debt portfolio and, as consequence, they can alter the demand for financial assets, which are not perfect substitutes. Therefore, an effective public debt management is able to modify interest rate yield spread premiums and opportunity costs in financial decision-making. As a result, investors are provided with better information with which they can plan their investments and create new portfolios that, consequently, may affect economic activity as a whole.

A great amount of economic literature has dealt with the research related to public debt management in a quite controversial way. For instance, the so-called Ricardian Equivalence theory points out that public debt is neutral with respect to consumption and, as result, with respect to macroeconomic dynamics, so long as agents allocate their savings in order to have a permanent income over their entire lifetimes. In other words, a larger public debt leads to more savings in the present period, because individuals expect to pay higher taxes in the future, which results in no effect in economic activity. On the other hand, [Tobin \(1963\)](#) argues that economic activity can be influenced by public debt management, as authorities can “*determine the size and the maturity structure of debt held by the private sector and, given imperfect substitutability of assets along the maturity spectrum, this will normally influence the shape of the yield curve*” ([Filardo et al., 2012](#)).

From an empirical point of view, public debt administration has been used as an economic policy instrument aiming at different ends, such as the conduct of monetary policy, the public deficit financing, or even to provide hedge to those who borrow in foreign currency. The Operation Twist, which began in 1961, is one of the most well-known actions aimed at affecting US economy through public debt management. In that case, the Federal Reserve tried to compensate its higher short-term interest rate by shortening the maturity of the bonds to achieve lower premiums at the long end of the yield curve. At that time, the focus was to avoid a deeper recession, improving the economy and bringing down unemployment rate. The management of public debt has also been used to fight the consequences of the recent global financial crisis. By means of the Quantitative Easing program and the revival of the Operation Twist, the US Fed provided last resort liquidity to the financial system, and also stimulated aggregate demand.

As for the Brazilian case, the country has been through several changes in its debt management since the mid 2000s. Three measures can be highlighted: (i) the reduction of securities linked to the Selic benchmark interest rate and to the exchange rate; (ii) the lengthening of the country's debt maturity; (iii) the issuance of external debt bonds denominated in Reais. The purpose of the Brazilian government is twofold. On the one hand, it is trying to reduce the exposure of its public debt to adverse circumstances coming from either exchange rate devaluations or sudden interest rate hikes. On the other hand, there has been a search for more efficient economic policies, which still suffer with problems from the hyperinflation period of the late 1980s.

This paper analyses the effects of public debt management in Brazil on the country's yield spread premiums. In other words, we examine the responsive behavior of bondholders to changes in the composition of the public debt. It is this paper's assumption that changes in the gap between the yields on short-term and long-term bonds affect individual investment behavior and, as result, affect economic activity. In order to reach this objective, we make use of state space models, together with Kalman Filter estimators, for the period ranging from June 2002 to February 2012. The results indicate that increases in the issuance of fixed rate linked bonds lead to increases on yield spreads and the longer the maturity, the longer the effect. The opposite outcome occurs when there is an increased issuance of floating rate linked

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