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# Budget deficits, government debt, and long-term interest rates in Japan



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### ABSTRACT

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This study analyzes the relationship between budget deficits, government debt, and interest rates using Japanese data. Employing the event study methodology, we find that the directions, declarations, and implicit suggestions by Japanese prime ministers regarding economic countermeasures are considered by market participants as signals for future fiscal expansion. In addition, the probability that the 10-year Japanese Government Bond (JGB) yields increase by these statements correlates with the monthly increments in the leading index of business conditions and the number of newly issued bonds in the relevant supplementary budgets. Moreover, by estimating the reduced form equations for the long-term interest rates derived in the neoclassical framework, we find that a percentage point increase in both the projected/current deficit-to-GDP ratio and projected/current primary-deficit-to-GDP ratios raises real 10-year interest rates by 26–34 basis points. However, the increases in the projected are found to be more significant than those in the current. Furthermore, we find that the current government debt to GDP ratio only raises the rates by 1.2 basis points at most. These results suggest that the projected deficit is important than the current deficit and that budget deficits have larger effects than government debt, which are consistent with Feldstein (1986). Finally, on the basis of a factorial decomposition based on an estimation result in the current deficit case, we estimate that the real budget deficit in 2008 causes an approximately 2–3% increase in the JGB yields, which depresses the real GDP by 0.39–0.63 percentage points in 2008, on the basis of the

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preceding literature on private investment. *J. Japanese Int. Economies xxx (xx) (2014) xxx–xxx*. School of Policy Studies, Kwansei Gakuin University, 2-1, Gakuen, Sanda, Hyogo 669-1337, Japan.

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## 1. Introduction

Traditionally, an increase in budget deficits or government debt is said to raise interest rates. Nevertheless, the 10-year Japanese Government Bond (JGB, hereafter) yields have remained steady at 2% or less since 1997, even though long-term debt at the central and local government levels increased from ¥492 trillion at the end of FY 1997 to about ¥819 trillion at the end of FY 2009; that is, from 96% to 172% of Japan's GDP.<sup>1,2</sup>

Do budget deficits and government debt have any effect on real interest rates in Japan? Contrary to expectations, few studies have investigated this issue in reference to Japan. Moreover, these studies are not based on the vast body of pre-existing literature that challenged this traditional proposition empirically for developed countries, particularly the US. Recently, [Doi and Ihori \(2009\)](#) pointed out the possibility of future tax hikes as the cause of low interest rates. However, this study does not analyze the point statistically.

The purpose of this study is to re-analyze the effect of budget deficits and government debt on real long-term interest rates in Japan using academic wisdom accumulated from previous studies. Looking at the huge body of previous literature followed by the seminal study of [Plosser \(1982\)](#), we classify these studies into two categories based on their conclusions. The first category of literature concludes that no significantly positive relationship exists between budget deficits or government debt and interest rates, and attributes the discussion to the Ricardian equivalence proposition. For example, [Plosser \(1982, 1987\)](#) and [Evans \(1987\)](#) revealed that fiscal variables do not significantly affect long-term interest rates, following an analysis based on a vector autoregression (VAR) macroeconometric model embedded with a rational expectations model of the term structure of interest rates. However, [Elmendorf and Mankiw \(1999\)](#) pointed out the poor fitness and robustness in these studies, and [Feldstein \(1986\)](#) and [Gale and Orszag \(2002\)](#) suspected that the VAR projection fails to incorporate information regarding, for example, scheduled and legislated future tax reduction. Thus, recently, the VAR method has rarely been employed in this field, although some improvement has been made in this methodology.<sup>3</sup>

The second category of literature emphasizes that it is not the current, but rather the expected budget deficit or government debt that affects current real long-term interest rates. This stream of studies can be further classified into two divisions: (1) those that conduct event analyses of news reports or announcements regarding budget projections (e.g., [Wachtel and Young, 1987](#); [Thorbecke, 1993](#); [Quigley and Porter-Hudak, 1994](#)) and (2) those that use published forecasts of budget deficits as a proxy for market expectations (e.g., [Feldstein, 1986](#); [Laubach, 2003](#); [Engen and Hubbard, 2004](#)). Both divisions of studies show that there exists a significantly positive relationship between projected budget deficits or government debt and current real long-term interest rates.<sup>4</sup>

As mentioned previously, the preceding Japanese case studies did not refer to or draw upon the previous literature. [Nakazawa \(2002\)](#) estimates how significantly long-term interest rates respond to increases in government debt by employing the VAR methodology, which has rarely been used in recent years. [Nakazato et al. \(2003\)](#) estimate various types of reduced form equations, but do not pay

<sup>1</sup> Incidentally, the gross debt-to-GDP ratio is stated as 194.1% in the *OECD Economic Outlook 89*.

<sup>2</sup> According to the Nikkei NEEDS Financial QUEST database, the 10-year JGB yields exceeded two percentage points for only 13 days (12/30/98, from 2/2/99 to 2/15/99, except 2/9/99 (nine business days in total), 8/30/99, 5/10/06, and 5/15/06).

<sup>3</sup> [Miller and Russek \(1996\)](#) tried to overcome the defects using variance decomposition.

<sup>4</sup> See [Cohen and Garnier \(1991\)](#), [Elmendorf \(1993\)](#), [Kitchen \(2002\)](#), as well as [Canzoneri et al. \(2002\)](#) for the published forecast approach, and [Elmendorf \(1996\)](#) and [Kitchen \(1996\)](#) for event studies. See [Barth et al. \(1991\)](#) and [Gale and Orszag \(2002\)](#) for excellent surveys of both category studies.

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