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Sovereign debt composition and time-varying public finance sustainability [☆]

António Afonso ^{a,c,*}, João Tovar Jalles ^{b,c}^a ISEG/UL – Universidade de Lisboa, R. Miguel Lupi 20, 1249-078 Lisbon, Portugal^b Centre for Globalization and Governance, Nova School of Business and Economics, Campus Campolide, Lisbon 1099-032 Portugal^c REM – Research in Economics and Mathematics, UECE – Research Unit on Complexity and Economics, R. Miguel Lupi 20, 1249-078 Lisbon, Portugal

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ABSTRACT

We compute time-varying responses of the sovereign debt ratio to primary budget balances for 13 advanced economies between 1980 and 2012, and assess how fiscal sustainability reacts to different characteristics of government debt. We find that the sustainability time-varying coefficient increases and countries become more fiscally sustainable if they contract a higher share of long-term public debt, if more debt is held by the central bank or if it is easily marketable in capital markets.

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1. Introduction

“In countries with fiscal space, the budget could also do more to support aggregate demand. Many countries lack this fiscal space and, of course, how much countries can do to support demand will depend on individual country circumstances.” In *Act Now, Act Together*, IMF 2016².

When assessing fiscal sustainability, studies traditionally use: either the intertemporal government budget constraint, via cointegration analysis of government spending and revenues, and debt stationarity; or use fiscal reaction functions of

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* Corresponding author at: REM – Research in Economics and Mathematics, UECE – Research Unit on Complexity and Economics, R. Miguel Lupi 20, 1249-078 Lisbon, Portugal.

E-mail addresses: aafonso@iseg.utl.pt (A. Afonso), joaojalles@gmail.com (J. Tovar Jalles).

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² <https://blog-imfdirect.imf.org/2016/04/13/act-now-act-together/#more-12280>

primary balances to government debt (see, for instance, [Camarero, Carrion-i-Silvestre, & Tamarit, 2014](#); and [Afonso & Jalles, 2016](#)).

However, fiscal reaction functions usually consider overall government debt without considering its composition or set of possible characteristics. In fact, several features of sovereign debt can provide relevant information to capital markets and to investors when pricing both new debt issuances and secondary market transactions. Moreover, the possibility that fiscal sustainability is also a time-varying reality is important and a scarcely an issue previously addressed in the related literature.

In addition, the relevance of potential negative spill over effects of so-called debt crisis is paramount, both for policy makers, financial intermediaries, and capital market participants. In fact, problems in paying interests and/or repaying existing debt, or issuing new debt, as one usually witnesses in sovereign debt crisis, have as consequence dropping bond prices in the secondary market, and rising yields and risk premium. Under extreme distress, default and debt restructuring events can in some cases occur, since markets tend to perceive a given country's sovereign debt position (and its future path) as unsustainable.³

For instance, [Dell'Erba, Hausmann, and Panizza \(2013\)](#) report that debt composition matters for sovereign bond yield spreads, while [Kim \(2015\)](#) shows that long-term government debt ends up being less expensive than short-term debt, and it implies a higher limit for debt issuance without default. As [Ostry, Ghosh, Kim, and Qureshi \(2010\)](#) put it, what constitutes a safe level of sovereign debt or ample fiscal space is very difficult to pin down precisely in practice, and can never be established through some mechanical rule or thresholds.

We add two contributions to the literature: first, we compute a set of time-varying fiscal responses of the debt-to-GDP ratio to primary budget balances for a sample of 13 advanced countries, which we take as a measure of fiscal space or of the degree of fiscal sustainability. Second, we assess how these time-varying so-called sustainability coefficients react to several composition features and characteristics of government debt, notably in terms of currency denomination, maturity, and the holders of the sovereign debt (type of lender). This is important since there is a strict relationship between the notion of fiscal space and government bond yields (spreads) which are directly linked to risk perception and features of financial volatility dynamics ([Ribeiro, Cermeno, & Curto, 2016](#)).

Finally, to the best of our knowledge, we have not seen this approach in the literature in the context of time varying fiscal sustainability. Indeed, we estimate a measure of fiscal space or of the degree of fiscal sustainability through time, which we think brings added value to the analysis.

The remainder of the paper is organised as follows. Section 2 is a brief literature review. Section 3 describes the underlying data and the empirical methodology used. Section 4 presents and discusses our main results. The last section concludes.

2. Literature review

Several papers have used a so-called fiscal reaction function to assess, in a forward-looking way, if larger primary surplus today lead to a reduction in the future level of debt (see notably [Afonso, 2008](#); [Bohn, 1998](#); [Canzoneri, Cumby, & Diba, 2001](#); [Weichenrieder & Zimmer, 2015](#), whose evidence points to the lack of adherence to the idea that price level may be determined via the intertemporal government budget constraint).

In addition, the idea that fiscal policy may have a relevant role, at least as important as monetary policy, in determining the price level was put forward notably by the so-called Fiscal Theory of the Price Level (FTPL), proposed notably by [Leeper \(1991\)](#), [Sims \(1994\)](#) and [Woodford \(1994, 1995\)](#). This discussion goes back to [Sargent and Wallace \(1981\)](#), and to the controversy of using rules to control the nominal interest rate, which may lead to price level indeterminacy. However, several authors argued against such theoretical possibility, notably [McCallum \(2001\)](#), and [Buiter \(2002\)](#).

In this context the hypothesis that the government may autonomously decide on the budget balance and government debt (a so-called non-Ricardian regime), influencing the determination of the price level, while the monetary authority would, rather unorthodoxly, set endogenously the money supply and taking the price level from the government budget constraint. If that were true, several implications for the potential lack of debt sustainability and upward pressure on sovereign yields would be a concern, playing a role notably in sovereign credit notations. Therefore, understanding to what extent the magnitude of the responses of the government, via its budgetary decisions, take full account of sovereign debt developments, is paramount.

The literature has resorted to two approaches to test empirically for the FTPL:

- i) A backward-looking approach ([Bohn, 1998](#)) which would imply that, in a Ricardian regime, an increase in the (lagged) level of debt would result in a higher primary surplus today;
- ii) A forward-looking approach ([Canzoneri et al., 2001](#)) which would imply that, in a Ricardian regime, a larger primary surplus today would lead to a reduction in the future level of debt.

³ According to [Laeven and Valencia \(2012\)](#), 67 episodes of sovereign debt crisis occurred in the period 1970–2012.

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