Is fiscal policy always counter- (pro-) cyclical? The role of public debt and fiscal rules

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**ABSTRACT**

We investigate the reaction of fiscal policy to the business cycle in a panel of 56 developed, emerging and developing economies over 1990–2011. While we strengthen the established finding that fiscal policy is counter-cyclical, additional outcomes emerge from this study. We reveal a non-linear response of fiscal policy to the business cycle, conditional upon the outstanding debt stock. Interestingly, when the public debt-to-GDP ratio goes beyond our endogenously estimated threshold of 87\%, fiscal policy turns pro-cyclical. To tackle this effect, we explore the role of fiscal rules (FR). We unveil heterogeneous impacts among FR, as only some of them may mitigate fiscal policy procyclicality in high-debt contexts.

1. Introduction

In response to the economic crisis, many central banks around the world adopted measures of quantitative easing, involving, among others, credit easing and low interest rates. Then, given the limited room available for monetary policy measures, the debate focused on the relevance of fiscal policy to cope with the detrimental effects of the crisis (Andersen, 2009; DeLong et al., 2012). Indeed, in addition to automatic stabilizers designed to dampen the downsides of the crisis, governments made use of wide bail-out packages aimed at putting the economy back on track and restore growth (Detragiache and Ho, 2010; ECB, 2010; Doraisami, 2011; Tagkalakis, 2013). However, the large fiscal stimuli implemented by many developed and emerging market economies triggered outsized increases in public debt.\textsuperscript{1}

Unsurprisingly, several strands of literature aim at evaluating the consequences of these high public debt ratios. For example, Reinhart and Rogoff (2010) and Cecchetti et al. (2011), among others, emphasize the possibility of high public debt threshold in relation with economic growth. In the same vein, e.g. Iizetzi et al. (2013) and Nickel and Tudyka (2014), reveal lower fiscal multipliers above a certain public debt-to-GDP ratio. These studies point to the existence of complex effects in high public debt contexts.

Extending these works, our goal is to assess the impact of public debt on the cyclicity of fiscal policy. According to Blanchard et al. (2013), in the current context of rising debt, investors worry about a higher risk of default and require higher returns on government bonds (because of higher risk premia), making more difficult for governments to service their debt, and thus leaving less space for stabilization fiscal policies.\textsuperscript{2} Few studies provide an econometric assessment of these effects. Focusing on emerging market economies (EME), early evidence by IMF (2003) suggests that the response of the primary surplus to the economic cycle weakens as the debt-to-GDP ratio rises, and simply stops when debt exceeds 50\% of GDP. In an analysis close to ours, Egert (2012) shows that the reaction of fiscal policy to the cycle becomes pro-cyclical in OECD countries above a certain debt threshold.

Taking stock of this literature, we perform an econometric analysis on a panel of 56 developed, emerging and developing countries over the period 1990–2011. Preliminary findings show that fiscal policy is counter-cyclical for the countries in our sample, coherent with previous evidence on strong counter-cyclical fiscal policy in advanced economies (Gavin and Perotti, 1997; Gali and Perotti, 2003; Lane, 2003a; Aghion and Marinescu, 2007), and, more recently, even in developing coun-

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\textsuperscript{3} Alesina and Ardagna (2009) state that after the large reduction in government deficits of the nineties and early new century, public finances in the OECD are back in the deep red. This finding is also supported by Tagkalakis (2013), who argues that the deterioration of the fiscal position led to a substantial increase in the debt-to-GDP ratio in many OECD countries since the beginning of the crisis, roughly by 30 percentage points. For a discussion of public debt dynamics in emerging and developing economies, see Hausmann and Panizza (2010).

\textsuperscript{4} For example, Baldaci et al. (2009) show that during banking crises expansionary fiscal policies are difficult to implement because of funding constraints in countries with limited fiscal space.

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tried that graduated from pro-cyclical (Kaminsky et al., 2004; Talvi and Végh, 2005; Alessina et al., 2008) to counter-cyclical fiscal policies (Frankel et al., 2013; Végh and Vuletin, 2014). Building on this evidence, our main results are twofold.

First, public debt is found to significantly affect the cyclicality of fiscal policy. GMM-system estimations with polynomial interactive terms show that fiscal policy turns from counter- to pro-cyclical for high public debt-to-GDP ratios. Next, for a closer look at these effects, we draw upon the method of Coricelli et al. (2008), and provide GMM-based estimations at different exogenous levels of public debt; we confirm that fiscal policy is counter-cyclical for a public debt ratio below 54%, but becomes pro-cyclical when public debt is above 74%. Altogether, estimations support potential nonlinear effects of debt on the cyclicality of fiscal policy after controlling for the endogeneity bias. Finally, these findings are confirmed when estimating threshold effects based on Hansen’s (1999) technique: fiscal policy becomes pro-cyclical when the public debt-to-GDP ratio is above the endogenously-estimated value of 87%. Overall, consistent with the recent findings of Egert (2012) for OECD countries, the cyclicality of fiscal policy is subject to important nonlinearities driven by the public debt, as it switches from counter- to pro-cyclical when public debt is high.3

Second, we look for a potential mechanism to correct for, or at least mitigate, these detrimental effects.4 As stated by Kumar et al. (2009) and Schaechter et al. (2012), a key response to the fiscal legacy of the crisis is for fiscal authorities to strengthen their fiscal frameworks, particularly through the adoption of Fiscal Rules (FR). The proponents of FR highlight their capacity of imposing effective restrictions to prevent governments from running excessive deficit and piling up unsustainable debt levels; for example, Tapsoba (2012) reveals that FR have significant disciplinary effects on fiscal balances.5 However, the extent to which FR may effectively provide enough fiscal space for conducting counter-cyclical fiscal policies is subject to controversies.6

Echoing early contributions from the 1990s, Lane (2003a) and Fatas and Mihov (2006), among others, find that tighter FR yield more procyclical fiscal policies (i.e. a “pro-cyclical bias”, arising from FR limiting considerably the discretion of policymakers). More optimistic results emerge from Debrun et al. (2008) and Aymus-i-Casals et al. (2009), who show that properly-designed FR may reduce procyclicality in EU; this also seems to be the case in developing countries, but only for some types of FR (Bova et al., 2014; Guerguil et al., 2016). Consequently, as emphasized by Ghosh et al. (2011) or Perotti (2013), despite the presence of FR, some developed and emerging countries continue experiencing difficulties in stabilizing their economies.

Drawing upon the two-stage method of Ahigton and Marinescu (2007), we show that most FR enhance by themselves the counter-cyclicality of fiscal policy, a result consistent with some of the findings of Bova et al. (2014) and Guerguil et al. (2016). More importantly, we unveil that the effect of FR at high public debt-to-GDP ratios (i.e. above the previously-estimated threshold of 87%) is complex, and crucially depends on the type of FR at work: some FR, including expenditure, debt or supranational FR, have no significant effect when public debt is high. Moreover, FR with escape clause are harmful for stabilization in high debt contexts (as they make fiscal policy even more pro-cyclical), contrary to deficit rules that make fiscal policy less pro-cyclical. Remarkably, some types of FR, such as golden rules or national rules, support stabilization in high-debt contexts, by offsetting the detri-mental impact of high public debt (national rules), and even restoring a counter-cyclical fiscal policy (golden rules). Consequently, much caution is needed in the design of FR aimed at dampening the constraint imposed by high public debt when counter-cyclical fiscal policies need to be implemented, particularly regarding the type of FR.

Our findings present important implications from a policy perspec-tive. Indeed, several contributions, including Lane (2003b) or Thornton (2008) insist on the virtuous features of counter-cyclical fiscal policies, including smoothing government spending, or avoiding negative demand shocks or the overheating of the economy. In a context of high public debt, however, fiscal policy is shown to turn pro-cyclical. Our analysis emphasizes a possible way to mitigate these detrimental effects, and even restore counter-cyclical fiscal policies in such high debt contexts, through resorting to appropriate fiscal rules.

The paper proceeds as follows. Section 2 makes some methodolog-ical considerations and details the data. Section 3 shows that fiscal policy is counter-cyclical in our sample of countries. Section 4 emphasizes the effect of public debt on the cyclicality of fiscal policy. Section 5 focuses on the effect of fiscal rules on the cyclicality of fiscal policy, in the context of high public debt. Finally, Section 6 discusses policy implications and conclusions.

### 2. Methodological considerations and data

#### 2.1. Methodological considerations

To measure the cyclicality of fiscal policy, we draw upon previously-cited work on the cyclicality of fiscal policy and consider the following model

\[ PFR_t = \alpha + \beta PFR_{t-1} + \delta Y^*_t + \sum_{k=1}^m \phi_k X_{k,t} + \eta_t + \varepsilon_t. \]  

(1)

\[ PFR_t \] is the measure of fiscal policy, with subscripts \( i \) and \( t \) denoting respectively the individual and time dimensions of the panel, and \( Y^*_t \) measures the business cycle. Thus, the coefficient of interest is \( \delta \), showing that fiscal policy is counter- (pro-) cyclical if \( \delta > 0 \) (0<0) and statistically significant, while acyclical or neutral otherwise. To seize the potential persistence of fiscal policy, we include its lagged measure \( PFR_{t-1} \) in Eq. (1); this also allows tackling a possible omitted variable bias (Clayes, 2006). Finally, parameters \( \phi_k \) account for the influence of the \( K \) variables from vector \( X_{k,t} \) that encompass time-varying country-
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