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Government solvency and financial markets: Dynamic panel estimates for the European Monetary Union

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ABSTRACT

We assess government solvency in the European Monetary Union (EMU), controlling for the interaction of fiscal policy with financial markets. We find a positive interaction, reflecting market-based pressures for fiscal improvement, and significant debt stabilization efforts, weakened in the post-EMU era.

1. Introduction

The debt sustainability condition, which is founded on the government's Intertemporal Budget Constraint (IBC), excludes the possibility that the government runs Ponzi schemes.[1] The intuition is that nobody would be willing to lend a government that is expected to continuously issue new debt in order to finance current interest payments. Hence, lenders' expectations regarding the fiscal outlook are inherent in the IBC framework, yet they are not considered in the empirical literature.

Research mostly examines the factors that influence financial markets' expectations, such as anticipated debt developments and economic perspectives (Codogno et al., 2003). However, from a reverse causation, financial markets can have an impact on public debt dynamics; first, through the implicit interest rate on government debt, reflecting investors' requested risk premia. Second, through the impact on economic performance of an "animal spirits" effect.[2] Lack of confidence in existing policies could lead to economic cycle fluctuations, hampering the debt to output ratio stabilization effort. Financial markets' expectations on public debt dynamics are vital for re-financing government liabilities, reflecting the willingness to hold public debt; hence, one expects a discretionary fiscal policy response to such expectations.

In this paper, we investigate government solvency in EMU, controlling for fiscal policy interaction with financial markets. We examine whether fiscal policy has been responding to the perceptions of its lenders regarding future debt developments and whether this response has an impact on debt stabilization efforts by enhancing primary surpluses; a positive primary balance response to adverse debt developments is a sufficient condition for fiscal sustainability (Bohn, 1998, 2007).

2. Empirical specification

We study the fiscal reaction function in EMU by augmenting the standard linear specification initiated by Bohn (1998),

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[1] The empirical literature focused initially on the stationarity and cointegration properties of the fiscal data (Hamilton and Flavin, 1986); the most recent literature on fiscal sustainability focuses on fiscal reaction function estimations (Bohn, 1998, 2007).

[2] Akerlof and Schiller (2009) analyze the importance of Keynesian "animal spirits" for economic fluctuations.

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incorporating a proxy for financial markets' expectations on debt developments. We tackle the omitted variable bias problem that may be present in a static model by including an autoregressive part of the dependent variable, since the adjustment of fiscal behavior does not in practice take place within one time period (Clayes, 2006).

Therefore, we specify the following linear dynamic model:

$$s_{it} = \beta_1 s_{it-1} + \beta_2 b_{it-1} + \beta_3 h_{it} + \beta_4 og_{it} + u_{it} \quad (1)$$
$$u_{it} = \varepsilon_{it} + v_i$$

where, u_{it} is the overall disturbance term, ε_{it} are idiosyncratic shocks, v_i, are the unobserved individual fixed effects for country $i = 1, 2, \ldots, N$, s_{it}, is the cyclically adjusted primary balance to output ratio that represents discretionary fiscal policy actions, and s_{it-1} is its lagged value.[3] The remaining regressors are the (start-of-period) gross debt to output ratio (b_{it-1}), financial markets' perceptions on the fiscal outlook as proxied by the government bond yield differential *vis a vis* a reference bond yield ($h_{it} = i_{it} - i_t^*$, where i_t^* is the German Bund yield in the EMU case), and the output gap (og_{it}), obtained via the Hodrick–Prescott filter (with $\lambda = 100$) and capturing the cyclical reaction of fiscal policy.[4]

3. Estimation methodology and results

For an unbalanced EMU-10 panel data set for the period 1988–2009,[5] we estimate Eq. (1) by the one-step System GMM estimator (Blundell and Bond, 1998), which mitigates the problem of weak instruments in the case of persistent time series, such as the fiscal data, and allows to explicitly account for the endogeneity of the output gap. Due to the large time dimension of the panel, we control for the instrument proliferation that may weaken the performed identification tests by restricting and collapsing the instrument set (Roodman, 2009).[6] Temporal effects, capturing potential cross sectional dependence are included in all model specifications, though they are not reported.[7]

Table 1 presents the one-step System GMM panel estimates that are robust to heteroskedasticity and arbitrary patterns of autocorrelation. Columns 1 and 2 indicate that, controlling for the fiscal policy interaction with financial markets, and for the effects of the cycle, strengthens the fiscal solvency conclusion. Both the debt ratio coefficient and the bond yield spreads coefficient are positive and significant; this points to fiscal sustainability in EMU over the period examined, and to a positive impact of financial markets on discretionary fiscal policy actions. Fiscal policy inertia is also present, with the persistence parameter being highly significant, as well as an a-cyclical fiscal policy reaction (see also, Golinelli and Momigliano, 2009). In Column 3, we relax the strict exogeneity assumption of the bond yield spreads, allowing for weakly exogenous spreads.[8] The sign and the significance of the coefficient estimates are robust to the specification change and hence, we adopt thereafter this assumption, which is supported by the Difference-in-Hansen test.

Furthermore, nonlinearities in the fiscal policy response to financial markets are evident, when we consider a linear break of the bond yield spread at the 80 basis points (b.p.). Fiscal policy in EMU seems to react to increased pressures from financial markets, reflected in widening bond yield spreads (Column 4). However, under various specifications, the nonlinear response of the primary balance to a growing debt ratio is not significant (Column 5).

We examine the latter result by distinguishing the fiscal response between two country groups with higher and lower debt ratios; the former group includes countries with an average debt ratio exceeding the 60% Maastricht debt ratio threshold over the period examined, namely Belgium, Greece, Italy, Ireland, Austria and the Netherlands. Results indicate a strong debt stabilization effort in the lower debt country group, whereas, in higher debt countries, policymakers do not seem to respond to debt derailments over the period examined (Column 6). Concerning the interaction with financial markets, only the most indebted countries seem to undertake discretionary fiscal action to address financial markets' expectations regarding debt developments (Column 7). On the other hand, fiscal policy in the lower debt country group does not seem to interact with financial markets. This probably indicates that financial markets' concerns regarding the sustainability of public finances in less indebted countries are less pronounced.

Table 2 presents the fiscal reaction function panel estimates for the post-EMU era (1998–2009). Columns 1 and 2 indicate that when we account for weakly exogenous bond yield spreads, there is a statistically significant interaction of fiscal policy with financial markets after EMU formation.[9] Member states respond nonlinearly to the increased risk premia requested by financial markets, while the broad fiscal policy interaction with financial markets stems mostly from countries with higher debt ratios (Columns 3 and 4). In this period, EMU member states do not seem to meet the sufficient condition for fiscal sustainability since the debt stabilization effort is significantly weaker and not statistically significant (see also, Golinelli and Momigliano, 2009).

4. Conclusions

We find a positive and significant EMU fiscal policy reaction to financial markets' perceptions regarding debt developments, indicating a market-based pressure for improvement in fiscal balances, as well as a significant debt stabilization effort in EMU over the period 1988–2009. However, this finding stems from the prudent fiscal behavior of the less indebted countries in EMU, whereas high debt countries seem to undertake lower scale, discretionary measures in order to mitigate the increased borrowing costs caused by financial markets' adverse perceptions on the fiscal outlook. Debt stabilization effort seems to be absent in the post-EMU era, while fiscal policy interaction with financial markets is strengthened. The results point to important policy implications for the role of financial markets in the broader policy mix.

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[3] "Exogenous" fiscal shifts can also be captured by the narrative method (Favero et al., 2011; Ramey, 2011).

[4] Standard limitations of the single equation approach compared to multi-equation modeling (see, Favero et al., 2011) refer to not fully capturing country heterogeneity or endogenous interactions. However, our estimation approach meets sufficiently many of these concerns.

[5] The EMU panel includes Belgium, Italy, Spain, France, Greece, Portugal, Ireland, Finland, Austria and the Netherlands. Fiscal and output data are taken from the AMECO database and the European Commission (General Government Data), and 10-year government bond yield data from Datastream.

[6] The instruments employed are the $t-2$ and $t-3$ lags of the debt ratio, the primary balance ratio and the output gap. We reduce the gaps in the unbalanced panel by employing the forward orthogonal deviations transform, which can perform better than the first differences transform in System GMM (see Hayakawa, 2009 and Roodman, 2009).

[7] We incorporate time dummies for the years that could influence fiscal policy behavior (i.e. 1996 for the Stability and Growth Pact and 2008, 2009 for the international economic crisis).

[8] We employ one lag of the variable as instrument.

[9] The p-value for the Difference-in-Hansen test for the null hypothesis of a strictly exogenous bond yield spread is $p = 0.058$.