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*Revised version of paper prepared for The European Debt Crisis: Background and Perspectives conference, Copenhagen, April 13/14 2012. We thank the editors, referees and conference participants for helpful comments.
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Abstract

For the set of EMU member countries, we examine cyclical patterns in fiscal outcomes. We find that there is significant time variation in fiscal cyclicality, with an improvement in the wake of the Maastricht Treaty but a deterioration after the creation of EMU. Furthermore, we show that the fiscal cycle is affected by the financial cycle in addition to the output cycle. The lessons for the current reforms of European economic and fiscal governance are manifest.

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1 Introduction

National-level fiscal policy is the main stabilisation instrument to deal with country-specific shocks for a member of a currency union. In this way, the coherence of a monetary union depends on the cyclical conduct of fiscal policy by the member states. Counter-cyclical fiscal policies should contribute to macroeconomic stability, whereas pro-cyclicality in fiscal policies acts to amplify cross-country differences in macroeconomic positions.

In the context of the euro area, it is important to understand the cyclical behaviour of fiscal policy during the pre-crisis period for several reasons. First, it is important to understand the role of national fiscal policies in the divergent macroeconomic outcomes that have been an important factor in the euro crisis. Second, insufficient fiscal counter-cyclicality in the pre-crisis period may have limited the capacity of member countries to manage the crisis with countervailing expansionary policies, due to the lack of fiscal space. Third, it is important to take a broad view of cyclicality in understanding fiscal performance during the pre-crisis period, since financial cycles can be a source of fiscal volatility even when measured output gaps are small.

Accordingly, our goal in this paper is to estimate the cyclical behaviour of fiscal policy among the set of countries that form the euro area. In particular, we ask whether the cyclical behaviour of fiscal policy has shifted over time, since the elimination of the devaluation option under monetary union should have increased the desirability of running counter-cyclical fiscal policies. To this end, we allow for two structural breaks in the data - the passing of the Maastricht Treaty in 1992 and the actual formation of monetary union in 1999. The Maastricht Treaty imposed limitations on the degree of exchange rate flexibility for those countries that aimed to qualify for euro membership, so that we expect that it may have influenced the cyclical conduct of fiscal policy, whereas joining the euro in 1999 made the loss of exchange rate flexibility irreversible in the context of monetary union. Furthermore, an innovation in our work is to allow the financial cycle to affect fiscal outcomes, in addition

to the output cycle.

While our main focus is on fiscal cyclicality, we also allow for structural breaks in the relation between the fiscal balance and the outstanding stock of public debt. This is an important relation, since the responsiveness of the fiscal balance to the debt stock is an important criterion in the context of debt sustainability (Bohn 1998). If monetary union is accompanied by enhanced incentives to maintain debt sustainability, we may expect this adjustment mechanism to have strengthened in the wake of the Maastricht Treaty and the creation of the euro. In contrast, if fiscal discipline is weak and free-rider effects inside a monetary union are strong, the feedback effect may have declined during this period.

In terms of the fiscal framework established by the Maastricht Treaty and continued in the form of the "first-generation" Stability and Growth Pact (SGP) that applied until 2005, there was relatively little guidance as to the cyclical conduct of fiscal policy. Rather the focus was on avoiding excessive deficits (above 3 percent of GDP), with some secondary attention also paid to reducing high debt levels. Accordingly, the SGP had little short-term relevance for countries operating inside its limits; moreover, the lack of cyclical flexibility in the first-generation SGP meant that it was ignored by Germany and France during the 2002-2003 downturn. In turn, this episode triggered the 2005 reform of the SGP. While the "second-generation" SGP recognised the importance of cyclical fluctuations in fiscal outcomes, its primary focus remained on avoiding excessive deficits, with less attention paid to whether fiscal balances were cyclically appropriate even for countries inside the limit.

Our paper is most closely related to the contributions by Galí and Perotti (2003), Fatás and Mihov (2010) and Ribeiro (2009).[1] Galí and Perotti (2003) estimated the impact of the Maastricht Treaty on the cyclical behaviour of fiscal policy, using a panel of advanced countries over the 1980-2002 period and showed that the cyclically-adjusted fiscal balance became more countercyclical after the Maastricht Treaty. However, since their sample ended

[1] Annett (2006) and Turrini (2008) also make related contributions.

in 2002, these authors were unable to differentiate between the impact of the Maastricht Treaty and EMU membership.

Fatás and Mihov (2010) report country-by-country estimates of the impact of EMU on the cyclical behaviour of fiscal policy for each member of the euro area in the 1970-2007 period. In an alternative specification, these authors also estimate the effect of the Maastricht Treaty on fiscal cyclicality. However, they do not run regressions in which the impact of both the Maastricht Treaty and EMU membership are simultaneously tested. Moreover, the country-by-country estimation approach generates a heterogeneous set of estimates, such that it is difficult to draw a conclusion concerning the average impact of EMU on the cyclical behaviour of fiscal policy. In addition, the country-by-country approach is less efficient than panel estimation, to the extent that there is a common pattern in the cyclical behaviour of fiscal policy across the member countries.

Ribeiro (2009) focuses on the impact of the Maastricht Treaty and the different generations of the Stability and Growth Pact and its reform in 2006 on average fiscal outcomes. As we do here, he takes a panel of eleven euro area countries and data for the 1980-2007 period. His findings are that neither the Maastricht Treaty nor the Stability and Growth Pact produced a significant reduction in the fiscal deficit level. In terms of fiscal cyclicality, he also finds support for the Maastricht Treaty being associated with more countercyclical policies; however, he finds no statistically significant effects for SGP, therefore concluding that it failed to enforce countercyclical fiscal policies.

We go beyond the existing literature by providing panel estimates for eleven EMU countries and examining a range of measures of the fiscal balance. We study cyclicality in both the aggregate general government balance and its cyclically-adjusted version. This sheds light on the distinct behavior of the automatic stabilisers and the component of discretionary fiscal policy that is endogenous to the cycle versus the cyclically-exogenous component of

discretionary fiscal policy.[2] In addition, we also study the aggregate and cyclically-adjusted measures of the primary balance, in view of the predetermined influence of the outstanding debt stock on debt interest payments and the key role played by the primary balance in debt sustainability.

Traditionally, the predominant focus in the fiscal cyclicality literature has been on how fiscal variables co-move with the output cycle. In an extended specification, we allow for fiscal outcomes to be affected by the financial cycle in addition to the output cycle.[3] The deterioration in fiscal positions that has accompanied the global financial crisis has highlighted the sensitivity of fiscal outcomes to financial factors. For instance, Bénétrix and Lane (2010) show that the decline in fiscal balances during the crisis was significantly correlated with the the scale of financial imbalances during the pre-crisis years, even controlling for the variation in GDP outcomes. In particular, the scale of current account deficits and credit growth during the pre-crisis period are strongly correlated with the subsequent adverse fiscal developments. In related work, Bénétrix and Lane (2011) examine the relation between the financial cycle and the fiscal cycle for a wide sample of advanced economies but do not investigate the time variation in this relation for the set of EMU member countries.

The structure of the rest of the paper is the following. Section 2 explains the empirical specifications that we investigate. We report the baseline empirical work in Section 3 and then expand the analysis to allow for the financial cycle in Section 4. Section 5 concludes.

[2]See Blanchard (1993), Mohr and Morris (2007) and Fatás and Mihov (2010) on the pros and cons of aggregate versus cyclically-adjusted measures of the fiscal balance.

[3]There has been considerable research on the two-way inter-connections between financial crises and fiscal crises (Lane 2011). For instance, taking a broad sweep of the historical evidence, one of the most striking stylized facts uncovered by Reinhart and Rogoff (2009) is that public debt levels grow rapidly in the wake of a banking crisis. In related fashion, Honohan and Klingebiel (2003) document the mechanisms by which a banking crisis can generate a high fiscal burden. In the other direction, there are also negative feedback loops at work by which a weak sovereign can induce instability in the financial sector. For instance, Reinhart and Sbrancia (2011) highlight that financially-challenged sovereigns often turn to financial repression measures. Our focus is more narrow by focusing on the relation between the financial cycle and the fiscal cycle during "normal" times rather than looking at crisis dynamics.

2 Baseline Empirical Specifications

An extensive literature has examined the behaviour of fiscal variables over the output cycle (see Bayoumi and Eichengreen 1995, Gavin and Perotti 1997 and Lane 2003 for early contributions).

In line with the existing literature, we study the cyclical patterns of fiscal policy by estimating

$$FISCAL_{it} = \alpha_i + \beta CYCLE_{it} + \lambda DEBT_{it-1} + \rho FISCAL_{it-1} + \varepsilon_{it} \quad (1)$$

where $FISCAL$ is the fiscal indicator under consideration, $CYCLE$ is the measure of the business cycle (given by the percentage point deviations of GDP from its quadratic trend) and $DEBT$ is the lagged debt-GDP ratio.[4] We estimate the fiscal rule in equation (1) for a panel of eleven EMU countries and data for the 1980-2007 period. The eleven countries consist of the "early joiners" (the original members plus Greece that joined in 2001), with the exception of the tiny state of Luxembourg. The inclusion of the country fixed effects in equation (1) means that the focus is on within-country time series variation in fiscal outcomes.

Since our interest is on how the discretionary and automatic non-discretionary components respond to changes in the business cycle, we study both the overall general government balance and its cyclically-adjusted version.[5] Accordingly, the interpretation of β above depends on the fiscal indicator in question. In the case of the aggregate fiscal balance, β captures both the responsiveness of the automatic stabilizers and the endogenous shifts in discretionary fiscal policy. The latter includes both general expenditure changes but also changes to the tax code and transfer programmes, which have the effect of altering the sensi-

[4] This specification imposes that fiscal variables respond symmetrically to above-trend and below-trend deviations in output. We investigated alternative specifications but did not find evidence of cyclical asymmetries for this sample period.

[5] We focus on the realised values for the fiscal variables and ex-post measures of the output cycle. A related literature explores the differences between ex-ante fiscal plans and ex-post fiscal outcomes and real-time and ex-post estimates of the output cycle. See, amongst others, Cimadomo (2008) and Beetsma and Giuliodori (2010).

tivity of the automatic stabilisers to the output cycle. In relation to the cyclically-adjusted fiscal balance, the impact of the automatic stabilisers is netted out, to the extent that the cyclical adjustment is cleanly done (no easy matter).

The coefficient β captures the responsiveness of the fiscal variable in question to the business cycle, with $\beta > 0$ indicating a countercyclical pattern and $\beta < 0$ a procyclical one. In most of our specifications, the fiscal indicator is a government balance measure scaled by GDP. Accordingly, there is some terminological ambiguity about the meaning of cyclicality for such a ratio. For instance, a constant government balance to GDP ratio over the cycle may be termed acyclical in a descriptive sense but is procyclical in terms of underlying dynamics, with revenue gains during upswings used to finance spending increases or tax cuts and revenue declines during downturns inducing spending cuts or tax rate hikes. For clarity, this paper will use the former terminology. Thus, we say that the government balance is acyclical if its ratio to GDP is constant, which implies $\beta = 0$ in the equation above. When there is a proportionally greater increase in government expenditure relative to the raise in revenues during an economic upturn, β will be negative and we term this a procyclical fiscal policy.

Fiscal sustainability concerns are important for the study of fiscal cyclicality. In addition, unsustainable debt dynamics will reduce the fiscal space available for the conduct of fiscal policy. To take these into account, the above fiscal rule includes the outstanding level of government debt scaled by GDP ($DEBT$) as an additional explanatory variable. A positive value of λ supports non-explosive debt dynamics (this interpretation is cleanest when the fiscal indicator is the government primary balance but applies a fortiori in relation to the overall government balance).[6] Finally, our baseline specification includes the lagged dependent variable as an explanatory variable to account for the significant persistence in fiscal positions.

[6]See also Bohn (1998), Ballabriga and Martinez-Mongay (2003), Galí and Perotti (2003), Wyplosz (2006) and Fatás and Mihov (2010).

In order to study how the European integration process may have influenced fiscal cyclicality we allow for two structural breaks at the time of the Maastricht Treaty in 1992 and euro membership in 1999. To this end, we estimate an augmented version of the previous fiscal equation that includes period dummies and interaction terms with all the explanatory variables

$$\begin{aligned} FISCAL_{i,t} &= \alpha_{1i} + \alpha_2 MT_{it} + \alpha_3 EMU_{it} \\ &+\beta_1 CYCLE_{it} + \beta_2 \left(MT_{it} * CYCLE_{it}\right) + \beta_3 \left(EMU_{it} * CYCLE_{it}\right) \\ &+\lambda_1 DEBT_{it-1} + \lambda_2 \left(MT_{it} * DEBT_{it-1}\right) + \lambda_3 \left(EMU_{it} * DEBT_{it-1}\right) \\ &+\rho_1 FISCAL_{it-1} + \rho_2 \left(MT_{it} * FISCAL_{it-1}\right) + \rho_3 \left(EMU_{it} * FISCAL_{it-1}\right) + \varepsilon_{it} \end{aligned} \quad (2)$$

where the Maastricht Treaty effect is captured by the MT period dummy variable that takes value 1 in 1992-2007 and 0 otherwise, while euro membership is captured by the EMU period dummy taking the value 1 in 1999-2007 and 0 otherwise for the founding members (the EMU effect for Greece begins in 2001).[7]

Accordingly, α_2 captures the change in the average level of the fiscal indicator after the signing of the Maastricht Treaty, while α_3 allows for an additional intercept shift during the EMU period. Similarly, coefficients β_2 and β_3 show the changes in fiscal cyclicality in those subperiods, while λ_2 and λ_3 capture the different effects on the relation between the outstanding debt level and the fiscal balance. In addition, it is possible that the intrinsic dynamics of the fiscal indicators may have been affected by these institutional reforms, as captured by the coefficients ρ_2 and ρ_3.

A general concern in the literature dealing with fiscal cyclicality is the possibility of the

[7] Although the Maastricht Treaty entered into force on the 1st of November 1993, we take 1992 as part of the post-Maastricht Treaty period. The reason for this choice is that negotiations finished in 1991 and the Treaty was signed on February 1992. Taking this into account, it is reasonable to assume that countries started taking fiscal actions in 1992.

output cycle being endogenously determined by the fiscal indicator (see Gavin and Perotti 1997, Galí and Perotti 2003, Lane 2003, Jaimovich and Panizza 2007 and Fatás and Mihov 2010 amongst others). To guard against this potential problem, Table 2 reports versions of these models estimated by instrumental variables (IV). We treat the GDP cycle as an endogenous regressor and instrument it with two exogenous variables: the share of manufacturing in total GDP and the trade-weighted average of rest-of-the-world GDP cycles. The former instrument is also used in Lane and Milesi-Ferretti (2011), while the latter is implemented in Bénétrix and Lane (2011), Galí and Perotti (2003), Lane (2003) and Jaimovich and Panizza (2007).[8]

3 Baseline Empirical Results

Table 1 reports the OLS estimates of equations (1)-(2) for the overall general government balance and the cyclically-adjusted general government balance. For the overall balance, column (1) shows the estimates for equation (1), while column (2) introduces the MT dummy and column (3) includes both the MT dummy and the EMU dummy. Columns (4)-(6) report the corresponding specifications for the cyclically-adjusted balance.

Across the specifications, Table 1 shows a striking pattern in the cyclical behaviour of fiscal policy. Taken together, the estimates show that the fiscal balance did not vary with the output cycle in the 1980-1991 period, with acyclicality in the ratio of the fiscal balance to GDP meaning that fiscal policy was effectively procyclical since stronger tax revenues during expansionary phases did not feed into larger surpluses. In line with the previous literature, columns (2)-(3) and columns (5)-(6) show that there was significant increase in the countercyclicality of the fiscal balance from 1992 onwards in the wake of the Maastricht Treaty.

[8]We assessed the validity of these instruments by performing several tests. Among the most important there is the Kleibergen-Paap rk test of underidentification, the Cragg-Donald for weak identification and the Hansen J test for overidentification. These tests suggest that it is appropriate to instrument the GDP cycle with the share of manufacturing in total GDP and the trade-weighted average of rest-of-the-world GDP cycles.

This is consistent with an interpretation by which governments relied more on fiscal policy to manage the cycle, given the constraints imposed on monetary policy by the EMU membership requirements. However, columns (3) and (6) show that the improvement in countercyclicality was largely reversed once countries actually joined the monetary union. This deterioration in the cyclical conduct of fiscal policy during 1999-2007 was a destabilising pattern, since the lack of fiscal counter-cyclicality contributed to macroeconomic divergences within the euro area and made the monetary union more vulnerable to the large-scale downturn that occurred from 2008 onwards.

A second result inTable 1 is that the positive association between the outstanding level of public debt and the fiscal balance strengthened in the wake of the Maastricht Treaty. This is consistent with a greater focus on debt sustainability as countries sought to meet the debt criteria for euro membership. However, the interaction between the stock of debt and the EMU dummy is not significant in relation to aggregate measures of the fiscal balance.

Table 2 reports the IV estimates. The general pattern of results is similar to Table 1, with the fiscal balance becoming more counter-cyclical and more responsive to the outstanding debt stock after 1992. However, while still negative, the interaction between the EMU dummy and the output cycle is not significant. Furthermore, the IV approach finds a significant pattern by which the cyclically-adjusted fiscal balance moved negatively with the output cycle during the 1980-1991 period.

Our focus is on the member countries of the euro area. In order to check whether any shifts in fiscal behaviour after 1992 and 1999 merely reflect common patterns across all advanced economies rather than European institutional changes, we estimated equation (2) for eleven non-EMU advanced countries. Table 3 shows that all interaction terms between the period dummies and the explanatory variables are statistically zero, so that there were not structural breaks in the fiscal behaviour of other advanced economies. This supports the interpretation that MT and EMU dummies reflect shifts in the European institutional

framework that primarily affected the EMU group of countries.

In addition to the aggregate fiscal balance, it is important to examine how the primary balance responds to changes in the business cycle. First, the primary balance is controllable by the government, whereas the debt interest payments are driven by the outstanding stock of debt and the level of interest rates. Second, the primary balance is a key conceptual variable in the analysis of debt dynamics. Third, cyclicality in debt interest payments may be influenced by cyclicality in interest rates, whereas the non-interest component reflects government decisions over spending and taxation. We consider both the aggregate primary balance and the cyclically-adjusted primary balance.

So far, we have focused on fiscal variables that are scaled by GDP. This could have the limitation of shifts in the fiscal ratio being driven by movements in the GDP denominator, rather than in the fiscal measures. This is especially problematic since the output cycle is a key regressor. Taking this into account, we also examine an alternative index of the fiscal balance that is not scaled by GDP. Specifically, we construct the fiscal balance index $RBAL$, which is the logarithm of an index number normalised to 100 in 1990. Its growth rate is the weighted difference between the growth rates of revenues and expenditure, where the weights are revenues/(revenues + expenditure) and expenditure/(revenues + expenditure) respectively.

Tables 4 reports OLS and IV estimates for the specification described in equation (1) for the aggregate primary balance, the cyclically-adjusted primary balance and the fiscal balance index, while Table 5 reports the corresponding estimates for the specification in equation (2). The results for the baseline specification in Table 4 show that the primary balance was countercyclical on average over the 1980-2007 period, whereas the cyclically-adjusted primary balance was procyclical. These results are significant in the IV estimates in columns (4)-(5), even if they are not significant in the OLS estimates in columns (1)-(2). The difference in results between the overall primary balance and the cyclically-adjusted primary balance can

be attributed to the impact of the automatic stabilisers on the former measure. Table 4 also shows significant feedback from the outstanding debt stock to the different measures of the primary balance (and to the $RBAL$ index), which is necessary for debt sustainability.

Table 5 shows the results for equation (2). As was the case in Tables 1-2, the different measures of the primary balance became more counter-cyclical and also more responsive to the outstanding debt stock after the Maastricht Treaty. In addition, the OLS estimates in columns (1)-(2) show a significant reversal in fiscal cyclicality after 1999, even if this interaction effect is not significant in the IV estimates in columns (4)-(5). The results for the $RBAL$ index are quite similar.

Furthermore, the results in columns (1)-(2) and (4)-(5) of Table 5 show a significant decline in the responsiveness of the primary fiscal balance to the outstanding debt stock after 1999. In relation to debt sustainability, this was an adverse development since a weak elasticity of the primary balance to the debt stock means that there is little downward pressure on high debt ratios.

So far, we have narrowly focused on the relation between the output cycle and fiscal outcomes. In the next section, we expand the analysis to also include a role for the financial cycle in driving fluctuations in fiscal positions.

4 The Financial Cycle and the Fiscal Cycle

Simple measures of the output cycle are not sufficient to capture all sources of fiscal volatility. For instance, Eschenbach and Schuknecht (2004) and Girouard and Price (2004) show that asset price cycles influence fiscal outcomes. A striking finding from these studies is that asset price booms do not only raise revenues from asset-related taxes but also lead to generalised revenue growth, due to the wealth effect of increasing asset values on consumption. In related fashion, recent contributions have examined the role of the current account balance

in influencing the fiscal cycle. Both Dobrescu and Salman (2011) and Lendvai et al (2011) emphasise that a current account deficit should improve revenues from indirect taxes, since net capital inflows finance a higher level of domestic expenditure.

In addition to the current account, domestic financial variables may also influence fiscal outcomes. For instance Bénétrix and Lane (2010) find that pre-crisis credit growth is a strong indicator of the scale of fiscal deterioration during the 2008-2009 crisis period. The interpretation is that credit expansion may have fuelled additional revenue growth during the pre-crisis period, which then melted away when the credit cycle went into reverse.

Domestic credit growth may affect fiscal outcomes through several channels. First, the positive impact of credit growth on domestic asset and property prices improves revenues through the direct and indirect channels highlighted by Eschenbach and Schuknecht (2004), Girouard and Price (2004) and Addison-Smyth and McQuinn (2010). Second, credit growth may fuel a greater volume of asset market turnover, which raises revenues from transactions taxes. Third, if credit growth is associated with a shift in the composition of production towards the construction sector and other nontradables, this may alter the composition of the tax base to the extent sectors differ in the distribution of income between wages and profits and in composition of spending between taxable domestic spending and non-taxed exports. Fourth, credit growth may be associated with inflation and/or real exchange rate appreciation (an increase in the relative price of nontradables) and thereby raise revenues, since tax systems are not fully inflation-indexed.[9]

We prefer to focus on domestic credit growth rather than other domestic financial indicators, such as asset price indices (housing prices or equity prices). First, the credit data are far more widely available and more easily comparable across countries.[10] Second, as is

[9]We also investigated specifications in which the real exchange rate and inflation were allowed to have an independent impact on fiscal outcomes but these variables were not systemically significant.

[10]Although the availability of housing price indices is improving, the cross-country coverage is still relatively low and there are differences in the scope and definition of these indices. Stock market development varies widely across countries and over time, such that the representativeness of national equity price indices as a domestic financial indicator is open to question.

documented by Claessens et al (2011), credit growth is highly correlated with house prices and equity prices, so that it may be a good general proxy variable. Third, credit growth may be more easily targeted by policymakers than asset prices. Fourth, the relation between credit growth and macroeconomic variables may be more stable than the relation between asset prices and macroeconomic variables.

Our goal is to examine whether it is important to additionally include financial variables as drivers of the fiscal balance. To this end, we estimate the following fiscal equation

$$FISCAL_{it} = \alpha_i + \beta CYCLE_{it} + \gamma Z_{it} + \lambda DEBT_{it-1} + \rho FISCAL_{it-1} + \varepsilon_{it}, \qquad (3)$$

where Z_t is a vector comprising two financial variables that are included individually or jointly as additional regressors. These are the current account balance and the growth in private domestic credit, both scaled by GDP.[11] Since both are derived from underlying stock positions, we consider the current account balance and credit growth as stationary variables, even if these may be quite persistent. Taking into account that the output cycle is always included in the specification, these variables should only be important if financial factors have additional fiscal effects, over and beyond their influence on output dynamics.

As in the previous section, we initially focus on the general government balance and its cyclically-adjusted version. Table 6 reports the OLS and IV estimates of equation (3) for the overall general government balance, while Table 7 shows the results for the cyclically-adjusted government balance.[12] As before, the GDP cycle is instrumented with the share of manufacturing added value in total output and the trade-weighted average of GDP in main trading partners. We also treat the current account as a potentially endogenous variable, where the main instruments are the two-year lag of the real exchange rate and the oil price (multiplied by the net oil trade position).[13]

[11] That is, credit growth is measured as the change in the credit/GDP ratio between $t-1$ and t.

[12] The results are quite similar for the primary balance measures.

[13] As in Lane and Milesi-Ferretti (2012), we include the latter instrument since the oil price is a major

In relation to the financial variables, Tables 6-7 show that faster domestic credit growth is significantly associated with improvements in the overall fiscal balance and the cyclically-adjusted fiscal balance, in both the OLS and IV estimates. In contrast, the current account balance is not individually significant in Tables 6-7. A possible contributory factor is the strong correlation between international capital flows and domestic credit growth during this period, such there is little additional explanatory power in adding the current account to the specification (Lane and McQuade 2012).

Since the specification controls for the output cycle, the fiscal impact of domestic credit growth is over and above any indirect impact through its influence on output dynamics. The sensitivity of the fiscal balance to domestic credit growth underlines the importance of taking a broad view of fiscal cyclicality, since the output cycle is not the only factor driving variation in fiscal outcomes.

Following the previous section, we estimate an augmented version of model that allows for structural breaks in relation to the Maastricht Treaty and euro membership

$$\begin{aligned} FISCAL_{i,t} &= \alpha_{1i} + \alpha_2 MT_{it} + \alpha_3 EMU_{it} \\ &+\beta_1 CYCLE_{it} + \beta_2 \left(MT_{it} * CYCLE_{it}\right) + \beta_3 \left(EMU_{it} * CYCLE_{it}\right) \\ &+\lambda_1 DEBT_{it-1} + \lambda_2 \left(MT_{it} * DEBT_{it-1}\right) + \lambda_3 \left(EMU_{it} * DEBT_{it-1}\right) \\ &+\gamma_1 Z_{it} + \gamma_2 (MT_{it} * Z_{it}) + \gamma_3 (EMU_{it} * Z_{it}) \\ &+\rho_1 FISCAL_{it-1} + \rho_2 \left(MT_{it} * FISCAL_{it-1}\right) + \rho_3 \left(EMU_{it} * FISCAL_{it-1}\right) + \varepsilon_{it} \end{aligned} \quad (4)$$

where γ_2 and γ_3 capture the shifts in the relation between the financial cycle and the fiscal cycle.

Table 8 reports estimates for the overall fiscal balance and the cyclically-adjusted balance,

source of exogenous fluctuations in the terms of trade, with the effect depending on each country's net trade position in oil.

with columns (1)-(2) showing the OLS estimates and columns (3)-(4) the IV estimates. Once we allow for time-varying coefficients, it is striking that the significant role for domestic credit growth in driving fiscal outcomes is concentrated in the EMU period (1999-2007), whereas it is insignificant for the 1980-1991 and 1992-1997 periods. As in Tables 6-7, there is no evidence of a significant independent relation between the current account and the fiscal balance in Table 8. While we do not have an explanation for the shift in the relation between domestic credit growth and fiscal outcomes, this is an important challenge for future research in this area.

5 Conclusions

This paper has empirically examined the cyclical patterns in fiscal policy over 1980 to 2007 for the set of EMU member countries. A particular focus has been on time variation in fiscal cyclicality, in line with major shifts in the European institutional environment (the Maastricht Treaty, the launch of EMU). An important extension has been to also allow the financial cycle as well as the output cycle to affect fiscal outcomes.

The patterns in the data provide important lessons. First, the improvement in the conduct of fiscal policy in the wake of the Maastricht Treaty does indicate that fiscal reform is possible and does suggest that the institutional environment can assist in promoting better fiscal outcomes. However, the deterioration in the cyclical conduct of fiscal policy after the launch of the euro and the weaker feedback from the outstanding debt stock to the fiscal balance suggests that the incentives to run stabilising fiscal policies were weak during the first decade of EMU. In relation to the financial cycle, the additional influence of domestic credit growth on fiscal outcomes underlines the case for taking a broad view of cyclical patterns in fiscal policy and the difficulties in assessing the true structural fiscal position at any point in time.

In overall terms, insufficiently-countercyclical fiscal patterns during the pre-crisis years

(for instance, the failure to run sufficiently-large surpluses during boom periods) was surely a contributory factor to the subsequent crisis, in view of the limited fiscal space associated with the emergence of large fiscal deficits in some countries and the vulnerabilities associated with high accumulated debt stocks in other countries (Lane 2012a).

In relation to the current reforms of European economic and fiscal governance, one key message is that improving the cyclical conduct of fiscal policy for EMU member countries is an important policy objective; in related fashion, ensuring that the primary balance is sufficiently responsive to drift in the level of public debt is also a key target. In addition, there is a clear linkage between the monitoring of financial indicators and fiscal surveillance, in view of the sensitivity of the fiscal cycle to the financial cycle (Lane 2010, 2012b).

These general principles are embedded in the Fiscal Compact Treaty and the European Commission's "excessive imbalances" procedures. For instance, the focus in the new fiscal framework is on the structural balance rather than on the overall balance, so that there will be much closer monitoring of the distinction between the cyclical conduct of fiscal policy and the average fiscal balance over the cycle, where the latter is what matters for debt sustainability. Moreover, the tighter "debt brake" controls provide new institutional support for ensuring that fiscal balances are sufficiently responsive to the outstanding stock of public debt. In addition, the broad perspective on economic and financial stability that is embodied in the "excessive imbalances" setup provides a conceptual framework in which fiscal policy can be interpreted in the context of the financial cycle as well as the output cycle. Finally, while these are important steps in the right direction, effective implementation will be a major challenge for policy makers in the coming years.

Data Appendix

We construct a balanced panel of eleven EMU countries for the period 1980 to 2007. The countries considered are Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal and Spain. The non-EMU sample used in Table 3 is formed by Australia, Canada, Denmark, Iceland, Japan, New Zealand, Norway, Sweden, Switzerland, United Kingdom and United States.

Fiscal balance data were obtained from the OECD Economic Outlook. The source of real GDP is the World Bank World Development Indicators while data for the debt to GDP ratio was obtained from Abbas et al (2010). The current account balance is scaled by GDP and the source is the IMF World Economic Outlook. Private credit is private credit by deposit money banks and other financial institutions. This is scaled by GDP. The source for this variable is Beck et al (2010).

We instrument the cycle measures using the trade-weighted rest-of-the-world counterparts. For real GDP, we use the weighted average of the real GDP of trading partners. To construct the weights, we use bilateral trade data from the IMF Direction of Trade Statistics. The second instrument for the GDP cycle is the share of manufacturing added value in total output. The source for these data is the United Nations, National Accounts Main Aggregates Database. The instruments for the current account balance are oil trade balance and the logarithm of the two-years lagged value of the real effective exchange rate. The latter is computed vis-à-vis other EMU countries. The source for this variable is the European Commission.

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Table 1: General Government Balance and Cyclically-Adjusted General Government Balance. OLS estimates.

	(1) BAL	(2) BAL	(3) BAL	(4) CABAL	(5) CABAL	(6) CABAL
CYCLE	0.07	0.002	0.002	-0.01	-0.11	-0.12
	(0.07)	(0.09)	(0.08)	(0.06)	(0.07)	(0.07)
DEBT(t-1)	0.03***	0.01*	0.01*	0.02***	-0.01	-0.004
	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)
FISCAL(t-1)	0.84***	0.78***	0.75***	0.82***	0.74***	0.72***
	(0.05)	(0.10)	(0.11)	(0.05)	(0.08)	(0.09)
MT		-0.66	-2.15**		-0.94	-2.10**
		(0.84)	(0.91)		(0.68)	(0.79)
MTxCYCLE		0.15***	0.27***		0.19***	0.24***
		(0.05)	(0.07)		(0.03)	(0.04)
MTxDEBT(t-1)		0.02	0.03*		0.03*	0.03**
		(0.02)	(0.01)		(0.01)	(0.01)
MTxFISCAL(t-1)		-0.01	-0.14		-0.03	-0.13
		(0.10)	(0.14)		(0.09)	(0.12)
EMU			1.94**			1.50**
			(0.76)			(0.59)
EMUxCYCLE			-0.23**			-0.13*
			(0.08)			(0.07)
EMUxDEBT(t-1)			-0.01			-0.01
			(0.01)			(0.01)
EMUxFISCAL(t-1)			0.15			0.14
			(0.14)			(0.13)
Obs.	293	293	293	292	292	292
R^2	0.74	0.75	0.76	0.72	0.74	0.75

Note: Panel estimates with fixed effects taking 11 EMU countries using data for the 1980-2007 period. Robust standard errors in parenthesis. The statistical significance of the coefficients is denoted as follows: * significant at 10%, ** significant at 5% and *** significant at 1%. BAL and CABAL are general government balance and cyclically-adjusted general government balance, respectively. Both fiscal balance measures are scaled by GDP. CYCLE is GDP relative to trend. To construct these deviations from trend, we take the residuals of OLS models regressing GDP on a linear and quadratic trends. DEBT(t-1) is the outstanding level of government debt scaled by GDP. FISCAL(t-1) is the lagged value of the government balance being considered. MT is dummy variable taking value 1 for the 1992-2007 period and zero otherwise. EMU is a dummy variable taking value 1 for the 1999-2007 period in EMU member countries and zero otherwise. For Greece, however, it takes value 1 from 2001 onwards.

Table 2: General Government Balance and Cyclically-Adjusted General Government Balance. Instrumental variables estimates.

	(1) BAL	(2) BAL	(3) BAL	(4) CABAL	(5) CABAL	(6) CABAL
CYCLE	0.05	-0.02	-0.01	-0.14	-0.18*	-0.18**
	(0.08)	(0.09)	(0.09)	(0.08)	(0.08)	(0.08)
DEBT(t-1)	0.03***	0.01*	0.01*	0.02***	-0.01	-0.00
	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)
FISCAL(t-1)	0.84***	0.81***	0.78***	0.83***	0.76***	0.73***
	(0.05)	(0.07)	(0.07)	(0.05)	(0.09)	(0.09)
MT		-1.15	-2.64**		-1.31	-2.44**
		(0.88)	(0.87)		(0.77)	(0.83)
MTxCYCLE		0.33***	0.36**		0.28***	0.32**
		(0.08)	(0.14)		(0.08)	(0.10)
MTxDEBT(t-1)		0.02	0.03**		0.03*	0.04**
		(0.01)	(0.01)		(0.02)	(0.01)
MTxFISCAL(t-1)		-0.08	-0.21		-0.04	-0.14
		(0.10)	(0.14)		(0.10)	(0.12)
EMU			2.15*			1.63**
			(0.97)			(0.70)
EMUxCYCLE			-0.12			-0.12
			(0.21)			(0.17)
EMUxDEBT(t-1)			-0.01			-0.01
			(0.01)			(0.01)
EMUxFISCAL(t-1)			0.16			0.17
			(0.18)			(0.14)
Obs.	293	293	293	292	292	292

Note: Panel estimates with fixed effects taking 11 EMU countries using data for the 1980-2007 period. Robust standard errors in parenthesis. The statistical significance of the coefficients is denoted as follows: * significant at 10%, ** significant at 5% and *** significant at 1%. BAL and CABAL are general government balance and cyclically-adjusted general government balance, respectively. Both fiscal balance measures are scaled by GDP. CYCLE is GDP relative to trend. To construct these deviations from trend, we take the residuals of OLS models regressing GDP on a linear and quadratic trends. DEBT(t-1) is the outstanding level of government debt scaled by GDP. FISCAL(t-1) is the lagged value of the government balance being considered. MT is dummy variable taking value 1 for the 1992-2007 period and zero otherwise. EMU is a dummy variable taking value 1 for the 1999-2007 period in EMU member countries and zero otherwise. For Greece, however, it takes value 1 from 2001 onwards. GDP cycle is instrumented with the share of manufacturing added value in total output and the trade-weighted average of main trade partners GDP cycle.

Table 3: General Government Balance and Cyclically-Adjusted General Government Balance. Non-EMU countries.

	(1) BAL (OLS)	(2) CABAL (OLS)	(3) BAL (IV)	(4) CABAL (IV)
CYCLE	0.19**	0.06	0.09	0.02
	(0.07)	(0.05)	(0.18)	(0.09)
DEBT(t-1)	0.06**	0.04**	0.06**	0.05**
	(0.02)	(0.02)	(0.03)	(0.02)
FISCAL(t-1)	0.72***	0.80***	0.74***	0.80***
	(0.05)	(0.08)	(0.04)	(0.08)
MT	1.44	1.13	1.48	1.34
	(1.51)	(1.22)	(1.26)	(1.19)
MTxCYCLE	0.08	0.02	0.12	0.22
	(0.13)	(0.08)	(0.29)	(0.20)
MTxDEBT(t-1)	-0.03	-0.02	-0.03	-0.03
	(0.04)	(0.03)	(0.03)	(0.03)
MTxFISCAL(t-1)	-0.05	-0.004	-0.05	-0.08
	(0.08)	(0.07)	(0.12)	(0.12)
EMU	1.64	0.96	1.82*	0.98
	(1.04)	(0.82)	(0.83)	(0.67)
EMUxCYCLE	-0.001	0.02	0.23	0.14
	(0.18)	(0.15)	(0.34)	(0.54)
EMUxDEBT(t-1)	-0.01	-0.01	-0.02	-0.01
	(0.02)	(0.01)	(0.01)	(0.01)
EMUxFISCAL(t-1)	0.16	0.001	0.11	-0.04
	(0.11)	(0.14)	(0.12)	(0.30)
Obs.	287	280	287	280
R^2	0.75	0.72		

Note: Panel estimates with fixed effects for 11 non-EMU countries. These are Australia, Canada, Denmark, Iceland, Japan, New Zealand, Norway, Sweden, Switzerland, United Kingdom and United States. The considered period is 1980-2007. Robust standard errors in parenthesis. The statistical significance of the coefficients is denoted as follows: * significant at 10%, ** significant at 5% and *** significant at 1%. BAL and CABAL are general government balance and cyclically-adjusted general government balance, respectively. Both fiscal balance measures are scaled by GDP. CYCLE is GDP relative to trend. To construct these deviations from trend, we take the residuals of OLS models regressing GDP on a linear and quadratic trends. For the IV models, GDP cycle is instrumented with the share of manufacturing added value in total output and the trade-weighted average of main trade partners GDP cycle. DEBT(t-1) is the outstanding level of government debt scaled by GDP. FISCAL(t-1) is the lagged value of the government balance being considered. MT is dummy variable taking value 1 for the 1992-2007 period and zero otherwise. EMU is a dummy variable taking value 1 for the 1999-2007 period and zero otherwise.

Table 4: Alternative Fiscal Indicators.

	(1) PB (OLS)	(2) CAPB (OLS)	(3) RBAL (OLS)	(4) PB (IV)	(5) CAPB (IV)	(6) RBAL (IV)
CYCLE	0.09	-0.03	0.08	0.13*	-0.11*	0.04
	(0.07)	(0.06)	(0.07)	(0.07)	(0.06)	(0.09)
DEBT(t-1)	0.04***	0.03***	0.03***	0.04***	0.03***	0.03***
	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
FISCAL(t-1)	0.70***	0.67***	0.78***	0.68***	0.68***	0.79***
	(0.04)	(0.04)	(0.07)	(0.05)	(0.05)	(0.05)
Obs.	293	292	293	293	292	293
R^2	0.69	0.66	0.63			

Note: Panel estimates with fixed effects taking 11 EMU countries using data for the 1980-2007 period. Robust standard errors in parenthesis. The statistical significance of the coefficients is denoted as follows: * significant at 10%, ** significant at 5% and *** significant at 1%. PB and CAPB are government primary balance and cyclically-adjusted primary balance, respectively. Both fiscal balance measures are scaled by GDP. RBAL is a real general government balance index. CYCLE is GDP relative to trend. To construct these deviations from trend, we take the residuals of OLS models regressing GDP on a linear and quadratic trends. DEBT(t-1) is the outstanding level of government debt scaled by GDP. FISCAL(t-1) is the lagged value of the government balance being considered. GDP cycle is instrumented with the share of manufacturing added value in total output and the trade-weighted average of main trade partners GDP cycle.

Table 5: Alternative Fiscal Indicators.

	(1) PB (OLS)	(2) CAPB (OLS)	(3) RBAL (OLS)	(4) PB (IV)	(5) CAPB (IV)	(6) RBAL (IV)
CYCLE	0.02	-0.13*	-0.03	0.001	-0.20**	-0.004
	(0.07)	(0.06)	(0.10)	(0.07)	(0.06)	(0.14)
DEBT(t-1)	0.04***	0.02***	0.003	0.03***	0.02**	0.001
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
FISCAL(t-1)	0.68***	0.63***	0.65***	0.73***	0.65***	0.56***
	(0.08)	(0.06)	(0.09)	(0.05)	(0.07)	(0.09)
MT	-2.83**	-2.75**	1.29	-3.39***	-3.26***	-37.98
	(1.08)	(1.11)	(46.74)	(0.77)	(1.01)	(45.19)
MTxCYCLE	0.36***	0.29***	0.33***	0.37*	0.32**	0.31***
	(0.08)	(0.06)	(0.09)	(0.17)	(0.13)	(0.08)
MTxDEBT(t-1)	0.04**	0.05**	0.04**	0.05***	0.05***	0.05***
	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)
MTxFISCAL(t-1)	-0.30**	-0.27**	-0.01	-0.38*	-0.31**	0.08
	(0.13)	(0.11)	(0.10)	(0.19)	(0.13)	(0.10)
EMU	3.04**	2.61**	-49.86	3.28**	2.92**	-53.75
	(1.09)	(1.06)	(61.19)	(1.04)	(1.08)	(55.52)
EMUxCYCLE	-0.35***	-0.18*	-0.22*	-0.10	-0.10	0.03
	(0.10)	(0.09)	(0.11)	(0.22)	(0.18)	(0.16)
EMUxDEBT(t-1)	-0.04**	-0.04**	-0.03	-0.05**	-0.05**	-0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
EMUxFISCAL(t-1)	0.38**	0.36*	0.11	0.34	0.40*	0.12
	(0.16)	(0.18)	(0.13)	(0.21)	(0.18)	(0.12)
Obs.	293	292	293	293	292	293
R^2	0.72	0.70	0.66			

Note: Panel estimates with fixed effects taking 11 EMU countries using data for the 1980-2007 period. Robust standard errors in parenthesis. The statistical significance of the coefficients is denoted as follows: * significant at 10%, ** significant at 5% and *** significant at 1%. PB and CAPB are government primary balance and cyclically-adjusted primary balance, respectively. Both fiscal balance measures are scaled by GDP. RBAL is a real general government balance index. CYCLE is GDP relative to trend. To construct these deviations from trend, we take the residuals of OLS models regressing GDP on a linear and quadratic trends. DEBT(t-1) is the outstanding level of government debt scaled by GDP. FISCAL(t-1) is the lagged value of the government balance being considered. MT is dummy variable taking value 1 for the 1992-2007 period and zero otherwise. EMU is a dummy variable taking value 1 for the 1999-2007 period in EMU member countries and zero otherwise. For Greece, however, it takes value 1 from 2001 onwards. GDP cycle is instrumented with the share of manufacturing added value in total output and the trade-weighted average of main trade partners GDP cycle.

Table 6: General Government Balance and the Financial Cycle.

	(1) (OLS)	(2) (OLS)	(3) (OLS)	(4) (IV)	(5) (IV)	(6) (IV)
CYCLE	0.09	0.07	0.09	0.05	0.05	0.05
	(0.08)	(0.07)	(0.07)	(0.07)	(0.08)	(0.07)
CA	0.06		0.09	0.04		0.08
	(0.06)		(0.06)	(0.06)		(0.07)
DCRE(t,t-1)		0.03*	0.05*		0.03*	0.05*
		(0.02)	(0.02)		(0.02)	(0.03)
DEBT(t-1)	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
FISCAL(t-1)	0.83***	0.82***	0.80***	0.84***	0.82***	0.81***
	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)
Obs.	293	293	293	293	293	293
R^2	0.74	0.74	0.75			

Note: Panel estimates with fixed effects taking 11 EMU countries using data for the 1980-2007 period. Robust standard errors in parenthesis. The statistical significance of the coefficients is denoted as follows: * significant at 10%, ** significant at 5% and *** significant at 1%. CYCLE is GDP relative to trend. To construct these deviations from trend, we take the residuals of OLS models regressing GDP on a linear and quadratic trends. CA is the current account balance and DCRE is the percentage point difference in private credit scaled by GDP. DEBT(t-1) is the outstanding level of government debt scaled by GDP. FISCAL(t-1) is the lagged value of the government balance being considered. GDP cycle is instrumented with the share of manufacturing added value in total output and the trade-weighted average of main trade partners GDP cycle. CA is instrumented with the oil trade balance scaled by GDP and with the logarithm of the two-years lagged real effective exchange rate index vis-à-vis other EMU countries.

Table 7: Cyclically-adjusted General Government Balance and the Financial Cycle.

	(1) (OLS)	(2) (OLS)	(3) (OLS)	(4) (IV)	(5) (IV)	(6) (IV)
CYCLE	0.004	-0.02	-0.002	-0.13*	-0.15**	-0.15**
	(0.06)	(0.06)	(0.06)	(0.07)	(0.07)	(0.07)
CA	0.04		0.07	-0.01		0.04
	(0.05)		(0.05)	(0.06)		(0.07)
DCRE(t,t-1)		0.03**	0.04*		0.04**	0.05**
		(0.01)	(0.02)		(0.02)	(0.02)
DEBT(t-1)	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)
FISCAL(t-1)	0.81***	0.81***	0.79***	0.84***	0.81***	0.80***
	(0.04)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)
Obs.	292	292	292	292	292	292
R^2	0.72	0.72	0.73			

Note: Panel estimates with fixed effects taking 11 EMU countries using data for the 1980-2007 period. Robust standard errors in parenthesis. The statistical significance of the coefficients is denoted as follows: * significant at 10%, ** significant at 5% and *** significant at 1%. CYCLE is GDP relative to trend. To construct these deviations from trend, we take the residuals of OLS models regressing GDP on a linear and quadratic trends. CA is the current account balance and DCRE is the percentage point difference in private credit scaled by GDP. DEBT(t-1) is the outstanding level of government debt scaled by GDP. FISCAL(t-1) is the lagged value of the government balance being considered. GDP cycle is instrumented with the share of manufacturing added value in total output and the trade-weighted average of main trade partners GDP cycle. CA is instrumented with the oil trade balance scaled by GDP and with the logarithm of the two-years lagged real effective exchange rate index vis-à-vis other EMU countries.

Table 8: Fiscal Cyclicality, The Financial Cycle and the European Integration Process.

	(1) BAL (OLS)	(2) CABAL (OLS)	(3) BAL (IV)	(4) CABAL (IV)
CYCLE	0.05	-0.12	0.06	-0.10
	(0.12)	(0.09)	(0.09)	(0.08)
CA	0.10	0.06	0.21	-0.08
	(0.12)	(0.10)	(0.13)	(0.12)
DCRE(t,t-1)	0.03	0.05	0.09	0.01
	(0.03)	(0.03)	(0.06)	(0.06)
DEBT(t-1)	0.01	-0.01	0.001	0.004
	(0.01)	(0.01)	(0.01)	(0.02)
FISCAL(t-1)	0.68***	0.67***	0.67***	0.75***
	(0.10)	(0.08)	(0.08)	(0.12)
MT	-2.32**	-2.22**	-3.23**	-2.43**
	(0.94)	(0.89)	(1.11)	(1.00)
MTxCYCLE	0.25***	0.26***	0.34**	0.25*
	(0.05)	(0.03)	(0.15)	(0.13)
MTxCA	-0.05	-0.05	-0.03	0.17
	(0.05)	(0.05)	(0.13)	(0.14)
MTxDCRE(t,t-1)	-0.04	-0.04	-0.09	-0.002
	(0.04)	(0.04)	(0.06)	(0.06)
MTxDEBT(t-1)	0.03**	0.04***	0.05*	0.03
	(0.01)	(0.01)	(0.02)	(0.02)
MTxFISCAL(t-1)	-0.08	-0.07	-0.12	-0.20
	(0.13)	(0.10)	(0.15)	(0.14)
EMU	0.94	0.91	1.99**	1.43*
	(0.92)	(0.78)	(0.77)	(0.68)
EMUxCYCLE	-0.21*	-0.12	-0.37**	-0.28**
	(0.10)	(0.09)	(0.12)	(0.10)
EMUxCA	0.07	0.10	0.03	0.10
	(0.08)	(0.07)	(0.13)	(0.12)
EMUxDCRE(t,t-1)	0.12**	0.06*	0.12**	0.07**
	(0.05)	(0.03)	(0.05)	(0.03)
EMUxDEBT(t-1)	-0.003	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)
EMUxFISCAL(t-1)	0.04	0.02	0.09	0.04
	(0.17)	(0.18)	(0.18)	(0.18)
Obs.	293	292	293	292
R^2	0.77	0.76		

Note: Panel estimates with fixed effects taking 11 EMU countries using data for the 1980-2007 period. Robust standard errors in parenthesis. The statistical significance of the coefficients is denoted as follows: * significant at 10%, ** significant at 5% and *** significant at 1%. BAL and CABAL are general government balance and cyclically-adjusted general government balance, respectively. CYCLE is GDP relative to trend. To construct these deviations from trend, we take the residuals of OLS models regressing GDP on a linear and quadratic trends. CA is the current account balance and DCRE is the percentage point difference in private credit scaled by GDP. DEBT(t-1) is the outstanding level of government debt scaled by GDP. FISCAL(t-1) is the lagged value of the government balance being considered. GDP cycle is instrumented with the share of manufacturing added value in total output and the trade-weighted average of main trade partners GDP cycle. CA is instrumented with the oil trade balance scaled by GDP and with the logarithm of the two-years lagged real effective exchange rate index vis-à-vis other EMU countries.

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