

Fiscal Policy and Financial Stability

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Abstract

We examine the interdependence between financial stability and fiscal sustainability. In one direction, financial crises are typically associated with a rapid climb in public debt. In the other direction, fiscal volatility can be a contributory factor in generating financial instability. Furthermore, in relation to cyclical stabilisation, we show that boom-bust cycles in the financial system can induce procyclicality in fiscal behaviour. Finally, we address the implications for optimal policy design.

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1 Introduction

This paper has three aims. First, we provide an overview to the inter-connections between financial stability and fiscal policy. Second, we report econometric work on the impact of financial boom-bust fluctuations on the fiscal cycle. Third, we address the some policy implications of the interplay between financial stability and fiscal stability.

The global financial crisis that has now segued into an international sovereign debt crisis provides considerable motivation for a study of this topic. In terms of direct linkages, the crisis has shown that banking system bailouts can impose a heavy fiscal cost. More broadly, the financial crisis has had the biggest adverse output effect in those countries running large current account deficits and experiencing credit booms during the pre-crisis years (Lane and Milesi-Ferretti 2011). In turn, these output declines directly feed into a deterioration in the fiscal position.

Moreover, the scale of financial imbalances during the pre-crisis years is significantly correlated with the decline in fiscal balances during the crisis, even controlling for the variation in GDP outcomes (Benetrix and Lane 2010). Similarly, 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 the other direction, there are also negative feedback loops at work by which a weak sovereign can induce instability in the financial sector. These concerns are at the heart of the current European debt crisis.

While much of the recent focus has been on the implications of financial crises for fiscal policy, it is also important to gain a better understanding of the role played by financial factors in determining fiscal outcomes during “normal” times. In particular, there is a concern that financial cycles can induce fiscal procyclicality, aggravating macroeconomic imbalances and weakening the underlying capacity of the government to effectively respond upon the occurrence of a financial crisis. Accordingly, we provide empirical evidence on the impact of financial volatility on fiscal cyclicality.

The third part of the paper addresses some normative issues. The fiscal vulnerability to banking crises reinforces the importance of designing crisis avoidance measures and cost-effective crisis resolution mechanisms that can minimise taxpayer risk. In addition, the risk of a financial crisis reinforces the importance of ensuring a safe level for steady-state public debt and avoiding pro-cyclical fiscal behaviour. To this end, we address how the design of

formal fiscal frameworks should take into account the impact of the financial cycle on the fiscal cycle.

The structure of the rest of the paper is as follows. Section 2 covers the impact of financial instability on fiscal positions, while Section 3 looks at the reverse impact of a weak sovereign on the financial sector. We turn to the econometric evidence concerning the impact of financial fluctuations on fiscal cyclicity in Section 4. The normative implications for policy design are discussed in Section 5, while Section 6 concludes.

2 The Impact of Financial Instability on Fiscal Policy

Even before the current crisis, it was well understood that a financial crisis can generate severe fiscal stress. In part, this relates to the direct fiscal cost of bailing out a troubled banking sector, as in Chile in the early 1980s or Ireland in the current crisis. In part, as is emphasised in Reinhart and Rogoff (2009), the adverse impact of a banking crisis indirectly generates fiscal weakness through the negative impact of depressed output and expenditure levels on fiscal revenues and the growth in fiscal transfers, such as unemployment benefits.¹

Based on the database compiled by Caprio et al (2005), Honohan (2008) reports the estimated fiscal costs for a large sample of systemic financial crises. The key statistics are reported in Table 1. Financial crises carry a high fiscal cost, with a median of 15.5 percent of GDP and a top quartile of 27.7 percent.

Using this database, Honohan and Klingebiel (2003) show that fiscal costs are very sensitive to the nature of the policy response to a financial crisis. In particular, lenient and accomodating policies raise the fiscal costs of resolving a banking crisis. Their econometric analysis show that some factors that significantly raise the fiscal cost include unlimited deposit guarantees, open-ended liquidity support, repeated recapitalizations, debtor bail-outs and regulatory forbearance. Based on the regression analysis, these authors find that avoiding such policies could have limited average fiscal costs in their sample to about one per cent of GDP, which is little more than a tenth of what was actually experienced. In the other direction, a country that might adopt all of these listed policies could incur fiscal costs in excess of 60 per cent of GDP.

Such interventions may be conditionally optimal in certain circumstances. In general, the long-term horizon of the government means that it may be better able to withstand

¹Afonso et al (2010) also find that financial stress is associated with a decline in the fiscal position.

short-term declines in the market value of assets than a stand-alone bank and the government may also more fully internalise the systemic and economy-wide risks associated with disorderly failures in the banking system. However, an optimal fiscal strategy should fully recognise that the adoption of contingent liabilities increases sovereign risk. Moreover, a forward-looking fiscal strategy would run a sufficiently-prudent fiscal position during normal times in order to enable fiscal interventions during periods of financial distress without threatening fiscal sustainability.

Claessens et al (2011) note that the direct fiscal costs of banking resolution policies have so far been relatively limited during the current crisis, albeit with some obvious exceptions. Rather, the larger size of banking systems relative to GDP compared to previous episodes has plausibly constrained policy choices, with the avoidance of mechanisms that carry larger upfront fiscal costs (such as the creation of asset management companies). Furthermore, it is plausible also that the implementation of explicit debt forgiveness programmes for indebted households and firms have also been discouraged, for fear that an increase in upfront banking losses would add to fiscal stress.

However, even in cases where upfront fiscal costs have not been incurred, the sovereign position has been adversely affected by the onset of banking crises. First, taking the lessons from the 1930s, most governments sought to offset the macroeconomic impact of the financial crisis through expansionary activist fiscal and monetary policies. The slow pace of recovery among the advanced economies has meant that structural fiscal deficits remain at an elevated level in many cases, with an attendant rapid climb in the level of public debt. Second, financial markets are concerned that fiscal authorities are exposed to tail risks in the banking system. Over time, undeclared losses in banking systems may be uncovered and may induce governments to commit resources for recapitalisation and/or make good on government guarantees on various types of bank funding. More generally, the advanced economies remain vulnerable to negative macroeconomic shocks, which may further raise the level of non-performing loans.

These concerns are especially acute in the euro area. A basic problem is that it is not clear how faster output growth can be feasibly achieved in the highly-indebted member countries. In particular, some traditional policy instruments such as currency devaluation or country-specific loosening of monetary policy are not available to the individual member countries. Moreover, the room for fiscal expansion has been exhausted in several member countries. Furthermore, there is widespread concern that the price deflation that is required

to generate competitiveness-enhancing real devaluation raises the real burden of nominal debt obligations. Against these negative factors, membership of the euro area has provided some supports during the crisis. First, the sizeable interest rate reductions carried out by the ECB in 2008 and 2009 provided significant relief to debtors. Second, ECB liquidity operations provided a stabilising type of official cross-border capital flow that partly offset private capital outflows from the peripheral member countries. The ultimate speed of recovery under these unique conditions remains the subject of intense debate, with the tail risk from the most pessimistic projections weighing heavily on sovereign positions.

In the design of bailout policies, the current EU/IMF strategy is to lend funds to national governments for the specific purpose of providing extra capital for national banking systems. Extra capital can allow banks to more freely recognise problem loans and absorb the losses associated with deleveraging. Moreover, it is hoped that a wide capital buffer will assure depositors and wholesale markets that these banking systems have sustainable balance sheets, thereby stabilising the funding situation.

However, these benefits come at the price of adding to the level of gross government debt. If markets are simultaneously concerned with the health of the sovereign, this may prove to be an expensive strategy. Moreover, to the extent that the banks ultimately rely on the national sovereign as a fiscal backstop, this approach may not even resolve the banking crisis, if increased sovereign vulnerability overrides the positive impact of an extra capital cushion.

In similar vein, Acharya et al (2010) develop a model in which a government-funded bank bailout can backfire through two channels. First, the associated expansion in sovereign debt implies a higher future tax burden, deterring economy-wide investment and thereby reducing future bank profits. Second, the extra debt issuance reduces the value of existing bonds held by the financial sector.

Accordingly, there is an intense debate about alternative designs for bailout packages (see also Honohan 2011). Within a European context, it is argued that the mutual stake of both creditor and debtor countries in preserving financial stability means that the EFSF should absorb banking-sector risk rather than simply make loans to programme countries. This can be achieved through a range of mechanisms. Most directly, these include the direct purchase of equity stakes in problem banks and the provision of stop-loss asset insurance schemes. Alternatively, the repayment terms on loans to national governments could be made contingent on variables that are correlated with the performance of the banking

sector. For instance, GDP-indexed bonds would have that property to the extent that projected bank losses are inversely related to output growth.

Along another front, the sovereign cost of resolving a banking crisis is alleviated if bank bondholders absorb some of the losses. While subordinated bondholders have accepted significant writedowns in the Irish case, it seems that there was serious discussion of also writing down the value of some non-guaranteed senior bonds as part of the IMF/EU negotiations (see also Lane 2011). While the legal tradition in Ireland has been to view senior bonds as *pari passu* with depositors, it seems that there may be legal options to break that link. For instance, in situations in which the scale of State capital injections exceeds the pre-crisis level of capital, it may be possible to argue that senior bondholders should have no legitimate expectation of full repayment.

However, no agreement was reached for restructuring the non-guaranteed senior bonds. It seems that international policymakers ultimately took the view that the restructuring of senior debt would create a new precedent that could severely disrupt bank funding markets. However, the counter-argument is that a set of objective criteria could be developed that would clearly delimit the scenarios under which some types of senior debt should be written down, thereby limiting the scope for contagion. Indeed, the working document of European Commission (2011) identifies a range of possible criteria, even if the scope of the European Commission report is restricted to the design of future bank bond contracts, rather than to altering the payoffs on existing bank debt. Moreover, to the extent that the restructuring of senior bank bonds improves the sovereign fiscal position, it might even be a calming influence on sovereign debt markets.

3 The Impact of Fiscal Policy on Financial Stability

As was noted above, one mechanism by which sovereign risk contributes to financial instability is through a deterioration in the capacity of the government to inject new capital or provide guarantees to the banking system. In addition, there are several other channels by which fiscal policy may have an adverse impact on financial stability.

An important linkage is that banks are a major holder of government bonds. If these bonds are held in the “trading book”, declines in the market value of sovereign bonds generate mark-to-market losses for banks. Even if bonds are held in the “bank book” on the premise that the bonds will be held to maturity, banks are exposed to default risk.

Accordingly, bank capital is threatened by prospective losses on holdings of sovereign debt. This risk is elevated if banks do not hold a diversified portfolio of sovereign debt but rather over-weight the sovereign of their home government.

A further linkage is through the vulnerability of banking systems to financial repression measures. Reinhart and Sbrancia (2011) exhaustively document that governments have often turned to financial repression to fund fiscal positions during periods of sovereign distress. Increases in asset taxes or new regulations that direct banks to increase holdings of sovereign debt will induce extra banking losses or increase the risk profile of financial-sector balance sheets.

More broadly, pro-cyclical fiscal policies can amplify macroeconomic volatility, which in turn increases the likelihood of financial crises through leverage cycle effects and other mechanisms. During upturns, the borrowing capacity of households and firms can be enhanced by tax cuts and increases in fiscal transfers. Conversely, debt repayment capacity during downturns can be compromised by fiscal austerity measures that cut disposable incomes. In addition, fiscal procyclicality can boost asset prices and contribute to positive comovements between output and inflation and between output and the real exchange rate, which further amplify the leverage cycle.²

Taken together, the interplay between fiscal instability and financial instability also raise the possibility of multiple equilibria in financial markets. If market sentiment holds that sovereign risk is low, this boosts the financial position of the banking system which in turns is a positive factor for fiscal sustainability. Conversely, an adverse shift in market sentiment concerning the public finances is a negative factor for the banking system. In turn, the induced decline in the rating of the banking sector reinforces the negative sentiment vis-a-vis the sovereign, creating a negative feedback loop.

The two-way interactions between the fiscal position and financial stability underline the importance of a prudential approach to fiscal policymaking. In the next section, we empirically investigate one dimension of this inter-relationship by examining the sensitivity of fiscal outcomes to fluctuations in some key financial variables.

²Afonso and Sousa (2009) provide some evidence on the impact of fiscal shocks on asset prices.

4 Financial Cyclicity and Fiscal Cyclicity

There is a very extensive empirical literature that studies the cyclical behaviour of fiscal policy (Lane 2003 provides one example in the initial phase of this literature). A major theme in this literature is that fiscal policy is often pro-cyclical or, at the very least, is less counter-cyclical than might seem desirable from a stabilization perspective.

This literature has typically defined cyclicity in terms of the GDP cycle and uses some version of the output gap as the key cyclical indicator. However, studies such as Eschenbach and Schuknecht (2004) and Girouard and Price (2004) have shown that fiscal outcomes are also influenced by financial-system indicators such as real estate and stock market indices. The logic is that high asset prices are associated with a positive wealth effect that raises expenditure levels and thereby boost revenues, even controlling for the level of output. In addition, there is a direct positive effect through transactions taxes in asset markets and capital gains taxes. Accordingly, a financial boom will lead to a revenue boom, while a financial bust will be associated with a revenue bust.

If the financial boom-bust cycle leads to extra revenue volatility, a baseline neoclassical model would suggest that the government should run larger fiscal surpluses during financial booms in order to tolerate greater fiscal deficits during financial busts. The work cited above suggests that in many cases the revenue windfalls during the good years are used to finance extra public spending rather than to pay down debt. Anecdotally, this seems to have played a role in the current crisis – the revenue decline in countries such as Ireland and Spain was far greater than that predicted by the GDP cycle, but the boom-time revenues were used to support extra spending rather than to accumulate large surpluses.

In what follows, we report the econometric evidence generated by Benetrix and Lane (2011), who study the impact of the financial boom-bust cycle on fiscal cyclicity for a sample of 52 advanced and emerging economies. The data availability is very good for OECD member countries but a more limited range of fiscal data is also available from the IMF for the broader group of countries. (The data set is described in the appendix).

While the traditional focus in the fiscal cyclicity literature has been on output cycles, financial fluctuations are also relevant in determining fiscal outcomes. One basic mechanism is that tax revenues are sensitive to the level of domestic spending, in addition to the level of domestic production. Accordingly, an expansion in the current account deficit that finances an increase in domestic absorption may be associated with a revenue windfall,

while a current account reversal may conversely feed into a revenue decline.

In addition, the fiscal position may be influenced by the sectoral composition of domestic activity. If a financial boom is associated with a reallocation of activity towards tax-rich sectors, then the fiscal balance may improve. In the other direction, the unwinding of a financial boom may induce a decline in revenues, even for a given level of production.

Most directly, the United Kingdom and United States were heavily reliant on the high profitability and high labour incomes in the financial services industry as a source of tax revenue during the pre-crisis period. In the Irish and Spanish cases, the pre-crisis credit boom financed a strong relative expansion in construction-related sectors which were major generators of tax revenues. More broadly, rising asset prices feed into higher revenues through capital gains taxes and the wealth effect on consumption levels. Furthermore, the level of turnover in asset markets is typically increasing in the level of asset prices, such that the revenues from transactions taxes also grow. Accordingly, the financial crisis disproportionately affected fiscal positions, due to the sharp decline in these extraordinary sources of tax revenue.

The importance of asset prices and wealth shocks for tax revenues has been documented for a panel of countries by Eschenbach and Schuknecht (2004). In the Irish case, Addison-Smyth and McQuinn (2009) calculate a substantial tax windfall from the 2002-2007 housing boom in Ireland that was fuelled by capital inflows. More generally, Morris et al (2009) show that revenue windfalls are more likely when output is growing strongly, such that revenue surprises tend to amplify the normal cyclical variation in revenues.

Accordingly, the optimal fiscal balance is not just a function of the output gap but also should incorporate the temporary nature of the extra tax revenues that may be generated by unbalanced growth episodes in which asset prices are growing quickly and/or high-income sectors grow disproportionately quickly. Under such conditions, a larger fiscal surplus is appropriate in view of temporary nature of the windfall revenues and risk of “sudden stops” in activity level in such sectors.

As indicated above, one particular type of risk relates to cyclical drivers that are prone to “sudden stops.” Most obviously, activity levels that are driven by a combination of rising asset prices and a credit boom are typically characterised by a boom-bust cycle in which rising collateral values stimulate new credit-financed investment projects that deliver a sustained expansion phase until a trigger event lead to a revision in expectations and a sustained decline in investment that is amplified by a fall in collateral values and an increase

in the cost of credit (see, amongst others, Geanakoplos 2009). During the expansion phase, the reversal risk may be low for a given planning period but is cumulatively large over a longer horizon. For this reason, the fiscal strategy should take into account macroeconomic risks over a range of horizons, not just vis-a-vis the next annual budget cycle.

To investigate the impact of financial volatility on fiscal cyclicity, we estimate the following fiscal equation

$$FISCAL_t = \alpha + \beta CYCLE_t + \gamma Z_t + \lambda DEBT_{t-1} + \rho FISCAL_{t-1} + \varepsilon_t. \quad (1)$$

where *FISCAL* is the fiscal variable of interest. The *CYCLE* variable captures the cyclical state of production - we try different measures in our empirical work. The coefficient β captures the responsiveness of the fiscal variable to the output cycle. In the case where the fiscal variable of interest is the government balance, $\beta > 0$ indicates a countercyclical pattern, while $\beta < 0$ a procyclical one. The Z_t vector comprise two financial variables that are included individually or jointly, as additional regressors. These are the current account balance and the growth in private credit, both scaled by GDP. In addition, we include the lagged level of the public debt (*DEBT*), since a positive relation between the stock of public debt and the primary fiscal balance is typically required to support non-explosive debt dynamics.³ We also include the lag of the fiscal variable, since fiscal variables typically exhibit considerable persistence.

In terms of cyclical measures, we first use the deviation of output from its trend value (expressed as percentage point deviations). The output trend is obtained as the projected value from a regression of output on linear and quadratic trends.⁴ Second, we use the deviation of absorption from its trend.⁵ As with output, the absorption trend is obtained from a regression model where absorption is defined as the difference between gross national income and the current account surplus.

Table 2 examines the behaviour of the general government balance for the full sample of advanced and emerging countries. Columns (1)-(4) show the OLS estimates of all our alternative specifications. In column (1), we see that the fiscal balance is mildly countercyclical vis-a-vis the output cycle and that, as expected, it is increasing in the level of

³See Bohn (1998), Ballabriga and Martinez-Mongay (2002), Galí and Perotti (2003), Wyplosz (2006) and Fatás and Mihov (2010).

⁴An alternative could have been the use of output gap. However, these data are not available for the full time span.

⁵Dobrescu and Salman (2011) also look at the impact of absorption cycles on fiscal outcomes.

outstanding public debt. In relation to the sensitivity to financial factors, a more positive current account balance is in fact associated with a more positive fiscal balance and this result is significant at the 10 percent level. In column (2), we consider credit growth as the financial factor and this variable is positive and significant at the 5 percent level. In column (3), we enter both financial variables jointly and each is individually significant at the 5 percent level. Finally, we combine the current account and output into the absorption measure in column (4). Under this specification, the fiscal balance is acyclical vis-a-vis the absorption cycle, while still showing a significantly positive association with credit growth.

This set of results confirms the sensitivity of the fiscal cycle to financial factors. In particular, credit growth has a significantly positive impact on the fiscal balance. In relation to the current account, columns (1) and (3) show a positive comovement pattern, which is not the expected pattern under the hypothesis that a current account deficit improves tax revenues which in turn feeds into a superior fiscal balance. However, it is striking that the fiscal balance is acyclical in respect of the absorption cycle in column (4).

A standard concern in the estimation of fiscal equations is the potential endogeneity problem, by which the output cycle is affected by the fiscal balance (see Gavin and Perotti 1997, Gali and Perotti 2003, Lane 2003, Jaimovich and Panizza 2007 and Fatas and Mihov 2010, among others). In addition, the “twin deficits” hypothesis suggests that the current account balance may be affected by the fiscal balance. To guard against these potential problems, we estimate instrumental variables versions of the previous empirical specifications in columns (5) to (8).

Our strategy is to treat output and the current account as endogenous variables. We instrument output or absorption with trade-weighted averages of rest-of-the world values for these variables, which is similar to Gali and Perotti (2003), Lane (2003) and Jaimovich and Panizza (2007). Following Lane and Milesi-Ferretti (2011), we instrument the current account balance with the oil price (multiplied by the net oil trade position), since the oil price is a major source of exogenous fluctuations in trade balances. We test the significance of these instruments for the first-stage regression to make sure that these do not suffer from the “weak instruments” problem. The F-statistic for the joint significance of the instruments in the first-stage regression as well as the Cragg-Donald Wald F statistic indicate that these instruments perform well. In addition, the Kleibergen-Paap rk statistic indicates that these are sufficiently strong instruments and span the endogenous regressors. Columns (5) to (8) of Table 2 show that the previous results are consistent across empirical strategies. The

main difference is that the coefficients for the output cycle and the current account are larger and more significant when these models are estimated using instrumental variables.

Tables 3 and 4 repeat the previous analysis but provide separate estimates advanced and emerging market subsamples. Table 3 shows that the advanced-country results are fairly similar to the full-sample results, even if the current account balance is not significant in column (1).

In contrast, the results for the emerging market subsample in Table 4 are quite different. Most important, the credit growth variable is nowhere significant for the emerging market group, while the current account balance is only significant in the IV estimates in columns (5) and (7). In relation to the other regressors, the fiscal balance is not significantly associated with the lagged level of the public debt for the emerging markets sample.

Table 5 focuses on the advanced country group and estimates different versions of the specifications reported in columns (3) and (7) of Table 3. Here, we use alternative fiscal measures. Columns (1) and (2) consider a real general government balance index measure as the dependent variable.⁶⁷ The main differences are that the current account is now statistically zero in the OLS estimation in column (1) and the lagged level of debt is also statistically insignificant.

Columns (3)-(4) and (5)-(6) provide estimate for revenues and government expenditure respectively. As expected, revenues are strongly procyclical vis-a-vis the output cycle, while government spending is acyclical. In terms of the OLS estimates, a striking finding is that both revenues and expenditures are significantly negatively associated with the current account balance. That is, an expansion in the current account deficit is associated with growth in both revenues and public spending. Since both revenues and public spending move in the same direction and the coefficient on public spending is larger in absolute terms, this is consistent with the zero or positive impact on the fiscal balance that was found in columns (1)-(2).

The positive impact of a current account deficit on revenues is consistent with the sensitivity of taxation to the level of domestic spending, which is boosted by a current account

⁶A common approach in the literature is to take the general government balance scaled by GDP as the endogenous variable. However, since we use the GDP and absorption deviations from trend as the explanatory variables, potential mechanical effects may arise between this and the denominator of the dependent variable. Using an unscaled version of the fiscal balance avoids this potential problem.

⁷See data appendix for further details on this and the rest of the alternative fiscal variables.

deficit. The positive impact on public spending supports the view that governments are more likely to spend such revenue windfalls rather than to accumulate a larger surplus. Moreover, the greater elasticity of spending than revenue is consistent with the “voracity effect” phenomenon whereby fluctuations in revenue trigger larger fluctuations in spending (Tornell and Lane 1999).

In relation to credit growth, this variable is not individually significant in columns (3)-(6). Accordingly, while credit growth was significantly positive in columns (1)-(2), the mechanisms by which credit growth affect the fiscal balance are not stable across the individual revenue and expenditure components.

Finally, columns (7) and (8) use the cyclically-adjusted general government balance as the fiscal indicator. Here, the output cycle does not affect the dynamics of this variable. In addition, there is no statistically significant link between this fiscal measure and the current account balance. However, the credit variable is significantly positive. The sensitivity of the cyclically-adjusted balance to credit growth suggests that this fiscal measure is not a robust measure of the underlying fiscal position and should be further corrected for the impact of the financial cycle.

In summary, the econometric evidence supports a role for fiscal factors in driving the cyclical behaviour of fiscal policy. In relation to the current account, there is evidence of procyclicality, with a current account deficit associated with a revenue windfall but an even greater increase in public spending. In relation to credit growth, it seems that faster credit growth is associated with larger fiscal surpluses. While this counter-cyclical pattern may provide some macroeconomic stabilisation, an approach that focuses only on the output cycle might mistakenly attribute a credit-driven improvement in the cyclically-adjusted fiscal balance as a permanent increase in the underlying structural fiscal position.

5 Some Policy Guidelines

The importance of the two-way interplay between fiscal policy and financial stability suggests that the framework for macroeconomic and financial-sector policies should fully recognise this interdependence.

In one direction, the vulnerability of the fiscal position to financial instability reinforces the importance of improved regulation of the financial sector, both in order to reduce the probability of future crises and to improve the resilience of the financial system upon the

occurrence of a crisis. The literature on financial sector reform that has been spawned by the recent crisis is vast and I do not propose to review it here in any great detail.

In terms of implementation, the cross-border coordination issues are especially important in Europe in view of the very high level of cross-border financial interdependence within the euro area and across the broader European financial system (see also Allen et al 2011). From a macro-prudential perspective, an analytical challenge is to assess the vulnerabilities embodied in net cross-border capital flows, especially in respect of cross-border flows associated with the banking sector. In addition, the potential for cross-border contagion means that a European-level deposit insurance scheme and bank resolution framework are superior to the current country-by-country systems. A European-level framework for deposit insurance and bank resolution would facilitate rapid and effective intervention into failing cross-border banks, reduce uncertainty and strengthen market discipline. Furthermore, ex ante agreement on burden sharing in the event of financial distress would provide extra incentives to ensure comprehensive regulation of banks with significant cross-border activities.

In the other direction, the vulnerability of the financial system to sovereign distress can be reduced through a series of measures. For instance, Allen et al (2011) advocate a steady-state system in which banking regulation recognises that sovereign debt can be risky, such that risk weights are applied and diversification requirements are imposed on banks that hold sovereign debt. Moreover, the financial-sector uncertainty in Europe surrounding the resolution of sovereign debt crises can be mitigated by the adoption of a more systemic resolution mechanism that more clearly identifies the roles of private-sector creditors and official agencies in achieving fiscal sustainability.

In relation to fiscal policy, there are several reforms that warrant consideration. First, in terms of the cyclical conduct of fiscal policy, the analysis in the preceding section suggests that the assessment of the cyclical fiscal stance should be broadened to take into account the volatility of financial factors in addition to the output cycle. In this way, even if aggregate output is measured as being close to its potential level, surges in tax revenues from financial booms would be banked rather than used to boost public spending in a non-sustainable manner. In turn, this would facilitate greater fiscal counter-cyclicality upon a reversal in financial conditions.

Second, as is further explored in Lane (2010), there is a case for a more activist role for fiscal policy in preventing the emergence of financial imbalances. This is especially the

case of countries operating under a fixed exchange rate or inside a monetary union, in view of the lack of an independent monetary instrument. For instance, Summers (1988) and Blanchard (2007) provide several justifications for fiscal interventionism to limit external imbalances. In general, individual decisions by debtors and creditors on the accumulation of debt liabilities cannot fully take into account the systemic risks that a function of the economy-wide aggregate balance sheet and the correlations in investment decisions across all types of entities.

In relation to surplus positions, Summers (1988) argued that private-sector agents failed to internalise the full social return on additions to the domestic capital stock and the adverse terms of trade impact of an excessive level of net exports. On the deficit side, large net capital inflows squeeze the domestic traded sector and capacity losses in exporting are difficult to reverse.

In similar vein, Blanchard (2007) postulates that rigidities in nominal wages and prices may mean that there is excessive volatility in employment in response to swings in the level of domestic demand. Second, financial constraints mean that a contraction in tradables output during a period of high domestic expenditure may not be easily reversed once the economy needs to make the transition towards greater net exports. Third, high net inflows may increase the risk of a sudden stop and the attendant risk of financial distress.

An important message from Blanchard (2007) is that optimal fiscal intervention may not necessarily alter the scale of the current account position - rather, the policy focus should be on mitigating the associated distortions. For instance, if there is a temporary surge in domestic consumption, rigidities in prices and wages may lead to an excessive increase in employment in the nontraded sector: this can be offset by a reduction in government spending on nontradables, even if this intervention has no impact on the current account deficit.

Indeed, Blanchard shows that in some cases the optimal fiscal response may actually result in a larger current account deficit. Under conditions in which financial constraints mean that it is damaging to tolerate a contraction in traded-sector output, the optimal policy to a temporary increase in domestic consumption is to reduce government purchases of nontradables and increase government purchases of tradables. This would successfully limit the undesirable contraction of the tradables sector, even if it generates an enlarged current account deficit. However, if the main distortionary impact of a current account deficit relates to the enhanced risk of a sudden stop in capital flows, the optimal fiscal

policy indeed involves a reduction in the current account deficit.

The government can target the current account balance via a number of fiscal instruments. First, a government that wishes to narrow a current account deficit could run a more positive fiscal balance. Second, even at an unchanged fiscal balance, a reduction in government absorption can improve the external balance. Third, even at an unchanged budget balance, tilting the schedule for particular types of taxes can mimic a real depreciation and improve the external position.

In relation to the sensitivity of the external balance to fiscal policy, it is noteworthy that the empirical evidence indicates a robust relation between government spending and the real exchange rate. At medium- and long-term horizons, the cointegration analysis of Ricci et al (2008) and Galstyan and Lane (2009) shows that a sustained decline in government consumption (relative to trading partners) is associated with real depreciation. Furthermore, the evidence for Europe from VAR analyses is that a discretionary negative shock to government spending is associated with real depreciation (Beetsma et al 2008, Benetrix and Lane 2009a).⁸ ⁹ Consistent with this pattern, Benetrix and Lane (2009b) show that a relative decline in government spending is associated with a relative contraction in the size of the nontraded sector and an improvement in the trade balance. Similar results for the trade balance are also reported by Lane and Perotti (1998) and Beetsma et al (2008). Finally, Lane and Milesi-Ferretti (2002) estimate that the net external position is significantly affected by the relative level of public debt, in support of the “twin debts” hypothesis.

In relation to the destabilising impact of a domestic credit boom, fiscal intervention may take the form of counter-cyclical taxes on property transactions. In addition, tilting the schedule for particular types of taxes can alter the timing and sectoral composition of consumption and investment decisions and thereby limit surges in domestic spending (Calmfors 2003).

⁸Beetsma et al (2008) consider an EU14 sample, whereas Benetrix and Lane (2009) provide evidence for an EMU11 group (the founding members of EMU, with the exception of Luxembourg).

⁹It is striking that some studies (Monacelli and Perotti 2009, Ravn et al 2009) find the opposite pattern (a decline in government spending being associated with real appreciation) for a sample consisting of the United States, United Kingdom, Canada and Australia. However, Benetrix and Lane (2009) argue that likely reflects a data pattern for this group of floating-currency countries by which the same type of economic news that induces a government to engage in fiscal expansion also leads to a sell off in the currency market.

Of course, the implementation problems are quite substantial in terms of correctly identifying the emergence of financial imbalances and working out the optimal timing and scale of policy interventions. However, the current crisis has underlined the high costs of a “do nothing” attitude towards the management of imbalances. Moreover, in relation to the feasibility of targeting financial imbalances, the observed persistent nature of such imbalances over several years means that timing lags do not provide a prohibitive objection. While such interventions may be hard to implement in relation to minor imbalances, these may be worth pursuing in tackling larger-scale, persistent imbalances.

In order for fiscal policy to be helpful in external adjustment or as a preventive measure to forestall unsustainable imbalances, it must be the case that fiscal policy can be effectively deployed. In this regard, there are several concerns.

First, if fiscal policy is to be effective as a stabilisation instrument, the long-term fiscal position must be clearly sustainable. Otherwise, interventions that raise the fiscal deficit may lead to concerns among investors and taxpayers, with an attendant increase in funding risk and the size of the risk premium.

Second, an important potential limitation is whether fiscal interventions can be timed correctly. While the scale and duration of the current crisis has provided conditions under which discretionary fiscal interventions have been viable in many countries, there is a long-standing concern that the cumbersome and time-consuming nature of the fiscal process means that it is difficult to effectively deploy fiscal policy for stabilisation purposes.

Third, various political distortions may act against a stabilising role for fiscal policy. There is considerable evidence that the discretionary component of fiscal policy is procyclical in many countries (see, amongst others, Lane 2003 and Alesina et al 2008). If fiscal policy is not stabilising vis-a-vis the domestic business cycle, it may be similarly difficult to implement fiscal measures that seek to “lean against the wind” vis-a-vis the external account.

Finally, there is a risk that the occurrence of a financial crisis may also compromise a government’s ability to borrow. Accordingly, an alternative approach is to accumulate a dedicated rainy-day fund that would be invested in liquid assets. In turn, such liquidity may prove useful in dealing with the fallout from a banking crisis and/or reduce the risk of a crisis by providing assurance to investors. Along these lines, Lane (1998) advocated the establishment of a rainy-day fund upon Ireland’s entry into EMU in order to provide some liquid funding in the event of a subsequent banking crisis. In the Irish case, no

such rainy-day fund was established. However, the significant assets of National Pensions Reserve Fund (NPRF), which was established in 2001 to pre-fund the costs of an ageing population, have been extensively redirected towards the recapitalisation of the domestic banking system, thereby limiting the scale of gross government borrowing. However, the long-term investment horizon of the NPRF meant that it was not especially liquid and a large equity portfolio had to be sold in order to accommodate the directed investments in the domestic banks.

The implementation of a formal fiscal framework may help improve fiscal effectiveness. A central element in such a framework is the specification of numerical fiscal rules. The over-riding principle in designing fiscal rules should be to preserve medium-term fiscal sustainability by ensuring that the level of public debt converges on a “safe” low steady-state level. In addition, fiscal policy can be insulated from pro-cyclical pressures by a set of rules that require the government to achieve a target structural balance over the cycle. A through-the-cycle target provides the flexibility to address major recessions or (in the other direction) overheating episodes, which may require extra fiscal measures beyond the automatic stabilisers that are part of the passive cyclical component of the budget.

Fiscal rules are more effective if the setting of fiscal policy incorporates a role for an independent fiscal council that can monitor compliance with the rules. Furthermore, an independent fiscal council can make other contributions. First, such a council can play a role in identifying the cyclical state of the economy and the distribution of macroeconomic risk factors. Second, given the macroeconomic environment, it could make recommendations concerning the overall budgetary stance that would be consistent with medium-term fiscal sustainability. Third, it could make an ex-post evaluation of the conduct of fiscal policy over the preceding year.

However, as is emphasised in Calmfors and Wren-Lewis (2011), an independent fiscal council is only sustainable and effective if its role is fully supported by the political system. Otherwise, a government may be tempted to neutralise an independent council (for instance by reducing its budget or replacing its staff) if it dislikes the fiscal opinions that it provides. In addition, the effectiveness of such an independent agency depends on the clarity of its mandate and its capacity to act in an autonomous fashion - accordingly, the final design of the fiscal framework in the coming weeks will be critically important.

Taken together, these considerations reinforce the importance of a well-designed institutional framework for the conduct of fiscal policy. While the literature on independent fiscal

councils has largely focused on output stabilisation, such a council could also assess the appropriate fiscal stance in guarding against risks that may be embedded in the financial system.

In a different context, Levine (2011) and Barth et al (2012) advocate a similar-type independent council for the evaluation of financial regulation. Labelled the “Sentinel”, this agency would be independent of both the political system and financial markets, with its sole responsibility being to provide a critical assessment of financial-sector policies. To be effective, the Sentinel would have to have the power to obtain any information necessary for evaluating the state of financial regulation.

Accordingly, a dual set of independent agencies to provide rigorous monitoring of fiscal policy and financial regulation may have the potential to help deliver superior policy outcomes. At least for smaller economies where the available expertise is quite limited, an open question is whether these different roles might be successfully performed by a combined, single independent council.

6 Conclusions

This paper has covered four main dimensions of the complex set of inter-relations between fiscal policy and financial stability. First, we have reviewed the ways in which financial crises can induce fiscal weakness. Second, in the other direction, we have shown how a weak sovereign position can undermine the health of the financial system. Third, we have reported econometric evidence that financial volatility can generate fiscal procyclicality. Fourth, we have argued that these effects require policy reforms to weaken the link between financial crises and the fiscal position.

The optimal conduct of fiscal policy is especially important for countries operating under a fixed exchange rate or inside a monetary union. Accordingly, it is not surprising that the current debate about the relation between financial stability and fiscal policy is most intense in the context of the current European crisis. However, emerging markets have been the epicenter of previous financial crises and the historical record suggests that the risk of a future financial crisis in fast-growing emerging economies is non-trivial, despite the many reforms that have taken place over the last fifteen years. Accordingly, the lessons from the current crisis should be fully absorbed by policymakers everywhere, in view of the potential for sub-optimal fiscal conduct to amplify the high costs of financial crises.

Data Appendix

The dataset covers the period 1980-2007 and includes annual data for 52 countries. It is composed of 22 advanced countries and 30 emerging market economies. The former group is formed by Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom and United States. The latter group includes Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Estonia, Hong Kong, Hungary, India, Indonesia, Israel, Korea, Latvia, Lithuania, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Russia, Singapore, Slovak Republic, Slovenia, South Africa, Thailand, Turkey and Venezuela.

Fiscal Variables

The fiscal balance measure used in Tables 2-4 is the general government balance scaled by GDP. The source of these data varies across groups of countries. For the advanced country set, we use data from the OECD Economic Outlook (OECD EO), with the exception of Switzerland. For this we use the IMF World Economic Outlook, since it has better coverage than the OECD EO. For the emerging market economies group, we combine different sources. For China, Israel and Korea we use the OECD EO. For Chile, Egypt, India, Indonesia, Malaysia, Pakistan, Peru, Philippines, Singapore, South Africa, Thailand and Venezuela we use the World Bank World Development Indicators (WDI). For Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic and Slovenia we use the Annual Macro-Economic database from the European Commission (AMECO). For Turkey and Russia we use the Forecasts and Annual Indicators from the European Bank for Reconstruction and Development (EBRD). In addition, we fill missing data points for Czech Republic and Hungary using EBRD data. For Argentina, Brazil, Colombia and Mexico we use the Latin American and Caribbean Macro Watch Data Tool from the Inter-American Development Bank (IDB). In addition, we use this source to improve the series in Chile and Venezuela. Finally, Hong Kong's general government balance was obtained from national sources.

For the advanced country group, we also use alternative fiscal measures. These include the real general government balance, real general government revenues relative to trend, real general government expenditure relative to trend and the cyclically-adjusted general

government balance scaled by GDP. The source of the data is the OECD EO.

The real balance is the logarithm of an index number taking value 100 in 1990. Its growth rate is constructed as the weighted difference between the growth rates of revenues and expenditure, with the weights being revenues/(revenues + expenditure) and expenditure/(revenues + expenditure), respectively. Real revenues and expenditure are measured as deviations from trend. To obtain real measures we used GDP prices as the deflator. In order to obtain deviations from trend we take the residuals of a linear regression model regressing each of these variables on a linear and quadratic trends.

Explanatory Variables

We use two alternative measures for the business cycle: real GDP relative to trend and real absorption relative to trend. The source of the former is the World Bank WDI. The latter is constructed as the difference between nominal GDP and net exports. The source of the latter is the IMF Direction of Trade Statistics (DOTS). We deflate nominal absorption using GDP prices. Our regression models use GDP and absorption relative to trend. As in the case of revenues and expenditure, these are the residuals of regression models using linear and quadratic trends as explanatory variables.

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 scaled by GDP. The source for this variable is database on Financial Structure by Beck et al (2010). Debt is the debt to GDP ratio obtained from the Historical Public Debt Database from Abbas et al (2010) at the IMF.

Instruments

We instrument the cycle measures using the trade-weighted rest-of-the-world counterparts. For real GDP, we use the weighted average of other countries real GDP. To construct the weights, we use bilateral trade data from the IMF DOTS database. The instrument for real absorption is constructed in the same fashion. We also instrument the current account balance. For this variable we use the oil trade balance, obtained from the IMF as the instrument.

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Table 1: The Fiscal Cost of Financial Crises

Statistic	%GDP
Mean	19.1
Median	15.5
Top Quartile	27.7
Bottom Quartile	10.0
Cases	78

Note: Based on Honohan (2008).

Table 2: General government balance. Full sample.

BAL(t)	OLS				IV			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP(t)	0.10*** (0.03)	0.07** (0.03)	0.10*** (0.03)		0.18*** (0.05)	0.10** (0.04)	0.19*** (0.05)	
ABS(t)				0.02 (0.03)				0.03 (0.03)
CA(t)	0.09* (0.05)		0.11** (0.05)		0.26*** (0.05)		0.26*** (0.05)	
CRE(t)		1.07** (0.47)	1.39** (0.53)	1.07** (0.46)		1.03*** (0.31)	1.63*** (0.33)	1.05*** (0.32)
DEBT(t)	0.02** (0.01)	0.02*** (0.01)	0.02** (0.01)	0.02*** (0.01)	0.01*** (0.00)	0.02*** (0.00)	0.01*** (0.00)	0.02*** (0.00)
BAL(t-1)	0.71*** (0.06)	0.70*** (0.07)	0.68*** (0.06)	0.72*** (0.07)	0.67*** (0.03)	0.69*** (0.03)	0.63*** (0.03)	0.71*** (0.03)
CONS.	-1.32*** (0.37)	-2.29*** (0.59)	-2.40*** (0.61)	-2.21*** (0.59)	-1.17*** (0.26)	-2.33*** (0.37)	-2.50*** (0.38)	-2.23*** (0.39)
Obs.	968	943	943	943	950	927	927	927
R^2	0.60	0.59	0.60	0.59				
Countries	52	51	51	51	52	51	51	51

Notes: Robust standard errors in parenthesis. Statistical significance is reported as follows: * significant at 10%, ** significant at 5% and *** significant at 1%. These models are estimated with data for the 1980-2007 period. BAL is general government balance scaled by GDP. GDP and ABS are two alternative cycle measures. GDP is real GDP relative to trend while ABS is real absorption (defined as GDP minus net exports) relative trend. To construct these deviations from trend we take the residuals of OLS models regressing each cycle measure on a linear and quadratic trends. CA is current account balance, CRE is private credit and DEBT is the outstanding level of public debt (all three are scaled by GDP). The IV versions reported in columns (5)-(8) treat the cycle measures and the current account balance as endogenous variables. The former are instrumented with the trade-weighted average of other countries cycle measures, the latter is instrumented with the oil trade balance scaled by GDP.

Table 3: General government balance. Advanced countries.

BAL(t)	OLS				IV			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP(t)	0.14** (0.06)	0.13*** (0.04)	0.17*** (0.06)		0.14* (0.08)	0.06 (0.08)	0.15* (0.08)	
ABS(t)				0.05 (0.03)				-0.03 (0.07)
CA(t)	0.08 (0.07)		0.12* (0.06)		0.23*** (0.06)		0.21*** (0.06)	
CRE(t)		0.79** (0.33)	1.27*** (0.37)	0.65* (0.36)		0.61* (0.32)	1.37*** (0.38)	0.51 (0.31)
DEBT(t)	0.02** (0.01)	0.03*** (0.01)	0.02** (0.01)	0.02*** (0.01)	0.02*** (0.01)	0.02*** (0.00)	0.02*** (0.00)	0.02*** (0.00)
BAL(t-1)	0.83*** (0.03)	0.81*** (0.03)	0.76*** (0.03)	0.84*** (0.04)	0.80*** (0.04)	0.84*** (0.04)	0.75*** (0.04)	0.87*** (0.04)
CONS.	-1.61*** (0.52)	-2.59*** (0.68)	-2.90*** (0.67)	-2.34*** (0.68)	-1.26*** (0.31)	-2.31*** (0.47)	-2.77*** (0.48)	-2.08*** (0.46)
Obs.	574	562	562	562	556	546	546	546
R^2	0.73	0.73	0.74	0.72				
Countries	22	22	22	22	22	22	22	22

Notes: Robust standard errors in parenthesis. Statistical significance is reported as follows: * significant at 10%, ** significant at 5% and *** significant at 1%. These models are estimated with data for the 1980-2007 period. BAL is general government balance scaled by GDP. GDP and ABS are two alternative cycle measures. GDP is real GDP relative to trend while ABS is real absorption (defined as GDP minus net exports) relative trend. To construct these deviations from trend we take the residuals of OLS models regressing each cycle measure on a linear and quadratic trends. CA is current account balance, CRE is private credit and DEBT is the outstanding level of public debt (all three are scaled by GDP). The IV versions reported in columns (5)-(8) treat the cycle measures and the current account balance as endogenous variables. The former are instrumented with the trade-weighted average of other countries cycle measures, the latter is instrumented with the oil trade balance scaled by GDP.

Table 4: General government balance. Emerging markets.

BAL(t)	OLS				IV			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP(t)	0.08*** (0.02)	0.06* (0.03)	0.08*** (0.03)		0.22*** (0.06)	0.11** (0.05)	0.23*** (0.07)	
ABS(t)				0.02 (0.03)				0.04 (0.04)
CA(t)	0.08 (0.07)		0.08 (0.07)		0.31*** (0.08)		0.32*** (0.08)	
CRE(t)		-0.58 (1.77)	-0.68 (1.72)	-0.07 (1.52)		-0.96 (1.03)	-1.44 (1.11)	0.08 (0.98)
DEBT(t)	0.01 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
BAL(t-1)	0.50*** (0.11)	0.51*** (0.13)	0.51*** (0.12)	0.52*** (0.13)	0.47*** (0.04)	0.49*** (0.04)	0.48*** (0.05)	0.51*** (0.04)
CONS.	-0.74 (0.54)	-0.41 (1.21)	-0.31 (1.19)	-0.55 (1.13)	-0.90** (0.44)	-0.43 (0.65)	-0.04 (0.70)	-0.82 (0.77)
Obs.	394	381	381	381	394	381	381	381
R^2	0.39	0.36	0.38	0.36				
Countries	30	29	29	29	30	29	29	29

Notes: Robust standard errors in parenthesis. Statistical significance is reported as follows: * significant at 10%, ** significant at 5% and *** significant at 1%. These models are estimated with data for the 1980-2007 period. BAL is general government balance scaled by GDP. GDP and ABS are two alternative cycle measures. GDP is real GDP relative to trend while ABS is real absorption (defined as GDP minus net exports) relative trend. To construct these deviations from trend we take the residuals of OLS models regressing each cycle measure on a linear and quadratic trends. CA is current account balance, CRE is private credit and DEBT is the outstanding level of public debt (all three are scaled by GDP). The IV versions reported in columns (5)-(8) treat the cycle measures and the current account balance as endogenous variables. The former are instrumented with the trade-weighted average of other countries cycle measures, the latter is instrumented with the oil trade balance scaled by GDP.

Table 5: Alternative fiscal measures. Advanced countries.

	BALANCE		REVENUES		EXPENDITURE		CABAL/GDP	
	OLS (1)	IV (2)	OLS (3)	IV (4)	OLS (5)	IV (6)	OLS (7)	IV (8)
GDP(t)	0.18*** (0.06)	0.18** (0.09)	0.53*** (0.10)	0.48*** (0.10)	0.05 (0.08)	-0.11 (0.10)	5.03 (3.75)	-5.01 (5.81)
CA(t)	0.11 (0.08)	0.23*** (0.07)	-0.08* (0.04)	0.01 (0.07)	-0.13*** (0.04)	-0.11 (0.07)	0.04 (0.03)	0.04 (0.05)
CRE(t)	1.30*** (0.45)	1.44*** (0.41)	-0.36 (0.32)	-0.17 (0.38)	0.12 (0.40)	0.32 (0.42)	0.82*** (0.27)	0.65** (0.30)
DEBT(t)	0.02 (0.01)	0.01 (0.01)	0.02*** (0.00)	0.02** (0.01)	-0.02** (0.01)	-0.02*** (0.01)	0.02** (0.01)	0.02*** (0.00)
FISCAL(t-1)	0.75*** (0.03)	0.73*** (0.05)	0.53*** (0.05)	0.56*** (0.04)	0.61*** (0.04)	0.60*** (0.04)	0.79*** (0.03)	0.82*** (0.03)
CONS.	1.12*** (0.13)	1.24*** (0.21)	-0.01* (0.00)	-0.01 (0.01)	0.01* (0.01)	0.01** (0.01)	-2.21*** (0.55)	-1.92*** (0.40)
Obs.	555	539	555	539	555	539	554	538
R^2	0.68		0.61		0.44		0.72	
Countries	22	22	22	22	22	22	22	22

Notes: Robust standard errors in parenthesis. Statistical significance is reported as follows: * significant at 10%, ** significant at 5% and *** significant at 1%. These models are estimated with data for the 1980-2007 period. BALANCE is real general government balance. REVENUES is real revenues relative to trend and EXPENDITURE is real expenditure relative to trend. CABAL/GDP is cyclically-adjusted general government balance scaled by GDP. GDP is real GDP relative to trend. Deviations from trend are the residuals of OLS models regressing each variable of interest on a linear and quadratic trends. CA is current account balance, CRE is private credit and DEBT is the outstanding level of public debt (all three are scaled by GDP). The IV versions treat the GDP and the current account balance as endogenous variables. The former is instrumented with the trade-weighted average of other countries GDP, the latter is instrumented with the oil trade balance scaled by GDP.