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Resumen

Las políticas macroeconómicas están diseñadas para estabilizar las fluctuaciones del ciclo económico. Por lo general, las políticas fiscales y monetarias de los países industrializados han sido expansivas para responder a la debilidad de las condiciones internas. Sin embargo, las propiedades cíclicas de las políticas fiscales son un tema mucho más debatido entre los mercados emergentes. Varios académicos han atribuido estas diferencias en el comportamiento cíclico a: (a) factores asociados a un esquema institucional desmedrado que juega un rol clave en las decisiones óptimas de política, y (b) factores asociados a una integración (o acceso) débil a los mercados financieros, ya sean nacionales o internacionales. El objetivo de este artículo es evaluar empíricamente si la capacidad de los países de conducir política fiscal contracíclica depende de la calidad de sus instituciones y/o de la disponibilidad de recursos financieros en los mercados de capitales, nacionales o internacionales. Nuestra evaluación empírica entrega una interpretación más matizada a la evidencia existente: (1) los países son incapaces de conducir una política fiscal contracíclica si sus instituciones no funcionan o carecen de acceso a los mercados de crédito locales e internacionales, y (2) los factores institucionales pesan más que las variables financieras a la hora de explicar las diferencias entre las economías industrializadas y en desarrollo en cuanto al comportamiento cíclico de su política fiscal.

Abstract

Macroeconomic policies are designed to stabilize business cycle fluctuations. Usually, fiscal and monetary policies in industrial countries have been expansionary in response to weak domestic conditions. However, the cyclical properties of fiscal policies are a much more disputed issue among emerging market economies. Several researchers have attributed these differences in cyclical behavior to: (a) factors associated to a weak institutional framework that play a key role in explaining sub-optimal policy decisions, and (b) factors associated to weak integration (or access) to either domestic or international financial markets. The goal of the present paper is to empirically evaluate whether the ability of countries to conduct counter-cyclical fiscal policy is affected by the quality of their institutions and/or by the availability of financial resources either in domestic or international capital markets. Our empirical evaluation yields a more nuanced interpretation to the existing evidence: (1) countries are unable to conduct counter-cyclical fiscal policies if they have poor institutions or lack wide access to credit markets at home and abroad, and (2) institutional factors have a larger weight than financial variables in explaining the differences in cyclical behavior of fiscal policy between industrial and developing countries.

Introduction

Macroeconomic policies are designed to stabilize business cycle fluctuations. For instance, US fiscal and monetary policies have been expansionary in response to weak domestic conditions in the last years. Similar behavior has been displayed by economic policies among other industrial economies. However, the cyclical properties of macroeconomic policies —and, specially, fiscal policies— are a much more disputed issue among emerging market economies (EMEs).

In fact, several researchers have found that fiscal policies are predominantly pro-cyclical among EMEs —and, in particular, in Latin America (Hausmann and Stein, 1996; Gavin and Perotti, 1997; Gavin and Hausmann, 1998; Talvi and Végh, 2000; Lane, 2003a,b; Kaminsky, Reinhart, and Végh, 2004). Pro-cyclical fiscal policies are usually the result of governments in EMEs cutting taxes and raising expenditures during booms, while being forced to adopt contractionary policies during busts when domestic and external credit constraints become binding and stringent.

It has been argued that the ability of EMEs to adopt optimal (counter-cyclical) stabilization policies is hampered by several factors, which can be classified in two groups. The first group corresponds to factors associated to the *integration (or access) to domestic and international financial markets*. Limited access to domestic or external funds may hinder the ability of governments to pursue expansionary fiscal policies in bad times. In particular, Gavin, Hausmann, Perotti and Talvi (1996) argue that pro-cyclical fiscal policies in Latin America may be the response to the region's limited access to international capital markets in the presence of adverse shocks, thus forcing a drastic adjustment during recessions. Caballero and Krishnamurthy (2004) have claimed that the *lack of financial depth* hinders the ability of governments to implement counter-cyclical fiscal policies. They showed that governments are not able to adopt expansionary fiscal policies in bad times if they have limited access to (either domestic or external) funds and if expansionary fiscal policies worsen the quality of the country's assets.[1] In the same spirit, Riascos and Végh (2004) showed that the design of fiscal policy in developing countries is affected by the lack of a sufficiently rich menu of

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[1] Specifically, Caballero and Krishnamurthy argue that if fiscal policies lack discipline, investors will fear that governments will act irresponsibly —that is, governments may run up unmanageable budget deficits and are more likely to default. In this context, international investors will endogenously lower their valuation of the country's assets and financial depth is further reduced.

financial assets.[2] Finally, Tytell and Wei (2004) find that integration to the world capital markets has induced governments to pursue better macroeconomic policies —especially, low-inflation monetary policies.

The second group of factors that explains sub-optimal fiscal policies in EMEs is associated to theories where the *institutional framework* plays a key role. Within this group, one strand of the theory suggests that countries pursuing poor fiscal policies also have weak institutions —*i.e.* widespread corruption, lack of enforcement of property rights for investors, repudiation of contracts, and the prevalence of political institutions that do not constrain their politicians (Acemoglu, Johnson, Robinson and Thaicharoen, 2003). Weak institutions affect not only the implementation of fiscal policies but also the design of monetary policy. Huang and Wei (2006) show that the credibility effect associated to hard pegs (e.g. currency board arrangement or full dollarization) may not work in countries with weak institutions. Another strand of this literature proposes political economy explanations based on common pool problems and fragmented policymaking (Velasco, 1998; Tornell and Lane, 1999; Perotti, 2000). According to the latter, pro-cyclical fiscal policies are more intense in countries with political systems with multiple fiscal veto points and higher output volatility (Stein *et al.*, 1999; Braun, 2001; Talvi and Végh, 2005).

Recent evidence shows that macroeconomic policies could play a key role in stabilizing business cycle fluctuations in those EMEs where institutions are stronger and economic fundamentals are better (Calderón, Duncan, and Schmidt-Hebbel, 2004a,b).[3] These authors find that EMEs with institutional quality beyond certain threshold levels may be able to follow counter-cyclical fiscal policies. Specifically, they find that countries with strong institutions will be able to apply contractionary policies during booms and expansionary policies during recessions. Alesina and Tabellini (2005) and Ilzetzki (2007) have developed models with political distortions where rent-seeking governments may pursue pro-cyclical fiscal policies. Our paper complements and extends upon the recent literature by: (a) testing more comprehensively the impact of institutional quality and democracy on fiscal

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[2] Incomplete markets are socially costly as they induce substantial volatility in both private and public consumption, which would not be present otherwise. Even though developing countries may have perfect access to capital markets (in terms of non-contingent claims), the inability to borrow contingent on the state of nature will make it optimal to let the government spending co-vary positively with the business cycle.

[3] For example, Chile, Malaysia, Korea, and Thailand adopted expansionary policies during 2001-2003, a period of cyclical weakness in these economies. On the other hand, Argentina implemented a pro-cyclical fiscal policy during the same period.

policy cyclicality. We use not only different measures of the strength of the institutional framework but also we test for the impact on fiscal policy of the extent of checks and balances imposed by the number of veto players present in the executive and legislative power. (b) We simultaneously test in the fiscal policy equation the role played by credit constraints at home and abroad in affecting fiscal pro-cyclicality. (c) We jointly test for the hypotheses mentioned above for different samples and using a comprehensive battery of robustness tests.

The main goal of the present paper is to empirically evaluate whether the ability of countries to conduct counter-cyclical fiscal policy is affected by the quality of their institutions and/or by the availability of financial resources either in the local or international capital markets. We will complement and improve some of the findings of Calderón et al. (2004a, b) in the following dimensions. First, we will use a larger sample that includes not only industrial countries but also a wider sample of middle and low income economies. Second, we examine the cyclical properties not only of budget deficits and government spending but also of the different categories of both government spending and revenue. Finally, we systematically test three of hypothesis on the cyclical nature of fiscal policies:

(a) Is fiscal policy (and, specifically, government spending) asymmetric to the business cycle? Here we disentangle whether government spending behaves differently during good times and bad times, and also whether this behavior may be explained by the magnitude of the deviation from output trend.

(b) Are countries with deep financial systems and larger integration (or access) to international financial markets able to pursue counter-cyclical fiscal policies? In contrast to Caballero et al. (2004), our analysis will allow us to estimate the threshold level for country measures of financial depth and international financial integration at which fiscal policies are neutral to the cycle.

(c) Are fiscal policies in countries with strong institutions and more democratic regimes able to stabilize business cycle fluctuations? We argue that weak institutions and the presence of multiple-power groups in the fiscal process explain the inability of developing countries to apply counter-cyclical policies.

Taylor (2000) extends his monetary-policy rule to assess the cyclicality of fiscal policy, specifying a simple fiscal rule in which the budget surplus is driven by the output gap.

Chadha and Nolan (2007) derive optimal simple monetary and fiscal rules from a general-equilibrium model. Taylor (2000) and Chadha and Nolan (2007) show that simple policy rules match quite well U.S. monetary and fiscal policies during the last decades, and the latter authors also provide similar evidence for the United Kingdom.   In this paper, we will follow this approach to answer the set of questions posed above.

The present paper consists of 6 sections. Section 2 discusses the literature on fiscal policy cyclicality with emphasis on theories explaining the pro-cyclical bias of fiscal policies in developing countries. Section 3 discusses the data and the methodology used to evaluate the cyclical properties of fiscal indicators. Section 4 estimates our fiscal policy equations for samples of industries as well as developing countries. Section 5 discusses the relative importance of political vis-à-vis credit distortions in explaining the difference in the degree of cyclicality of fiscal policies between industrial and developing countries. Finally, Section 6 concludes.

2. Literature Review

Standard Keynesian arguments hold that fiscal policies should act as a stabilizing tool and should be counter-cyclical: when bad times hit, the government should increase expenditures and lower taxes to help the economy spend its way out of the recession. However, we observe that government expenditure usually behaves pro-cyclically in developing countries. Several explanations have been formulated to explain the pro-cyclicality bias of fiscal policies in developing countries. For instance, Gavin and Perotti (1997) argue that governments may not be able to use fiscal policies as stabilization tools due to stringent credit constraints that prevent them from borrowing during downturns. In addition, these governments are also usually forced to run pro-cyclical policies since they are required to repay their debt. Others have argued that political distortions may be the key factor explaining this different cyclical behavior of fiscal policy (Tornell and Lane, 1999; Talvi and Vegh, 2005; Alesina and Tabellini, 2005; Ilzetzky, 2007).

A. Cyclicality and Access to Domestic and Foreign Funds
Several papers have argued that countries may be unable to conduct counter-cyclical fiscal policies due to an inadequate *supply of credit*. Gavin, Hausman, Perotti and Talvi (1996) suggest that the inability of Latin America —and developing countries, in general— to

access international capital markets (or to tap domestic financial markets) in the event of adverse shocks forces a more pronounced pro-cyclical response of the fiscal policy. Hence, developing countries cannot borrow resources (and if so, at very high interest rates) in bad times and so have to cut spending. On the other hand, they can and will borrow more easily to increase public spending during booms (Gavin and Perotti, 1997; Catao and Sutton, 2002).

Consistent with this explanation, there is substantial evidence that capital inflows to developing countries are pro-cyclical —that is, countries tend to borrow in good times and repay in bad times (Kaminsky, Reinhart and Végh, 2004; Alesina and Tabellini, 2005). This pro-cyclical access to international capital markets by developing countries may lead to pro-cyclical fiscal policies and, hence, higher aggregate volatility. This implies that access to world capital markets is limited in bad times and that the need for fiscal adjustment is even larger. If investors raise doubts on the ability of governments to implement required adjustment, creditworthiness would weaken and further financing would disappear. In sum, pro-cyclical capital flows reinforce fiscal pro-cyclicality (Gavin, Hausmann, Perotti and Talvi, 1996; Kaminsky, Reinhart and Végh, 2004).

Caballero and Krishnamurthy (2004) consider that, in contrast to industrial economies, emerging markets are unable to pursue expansionary fiscal policies during downturns because they have limited *financial depth*.[4] In previous work, the authors model an external crisis as an event hitting an economy that lacks financial depth (Caballero and Krishnamurthy, 2001, 2002, 2003). When the country faces this *quantity financial-constraint* on its borrowing, higher government spending may crowd out private investment and, hence, may be contractionary. Caballero and Krishnamurthy (2004) point out that the contractionary effects of expansionary fiscal policies can be exacerbated if these policies lead to a deterioration of the quality of country assets. The lack of a timely fiscal adjustment would weaken investor perception about the quality of country assets through two channels: (a) *reduction of aggregate liquidity of country assets*: investors will raise the required liquidity premium and, hence, reduce the country's financial depth if public debt continues rising relative to private assets, and (b) *lower perceived quality of the government*: investors would reduce country asset valuation (and, hence, financial depth declines) if they fear that the government lacks the discipline to undertake the required fiscal adjustments.

Empirically, Caballero and Krishnamurthy find that: (a) fiscal policy is more pro-cyclical in EMEs than in industrial economies; and (b) the crowding-out effect of fiscal expansions on private investment is substantially larger in EMEs (it is even more than proportional for emerging markets during crises). In sum, the use of fiscal policy as a countercyclical policy tool is constrained by a limited financial depth.

Finally, Aguiar, Amador and Gopinath (2005) explain the pro-cyclicality of fiscal policy in developing countries through the interplay of two important features of developing countries: (a) imperfect access to financial markets, and (b) high impatience rates. In their model, both forces interact to limit the commitment of the government to its tax policy. The authors assume a small open economy model with capital where the government maximizes the utility of a population with no access to capital markets. The government provides insurance to workers against endowment shocks through taxes on labor and capital, and this insurance motive generates pro-cyclical fiscal policies.[5] If the government lacks commitment, its fiscal policy can be distortionary: gains in deviating and expropriating capital at the maximum possible rate are larger following a recession. Hence, the government has stronger incentives to tax capital in the future if the economy is in recession, thus reducing capital investment, amplifying and extending the downturn.

B. Cyclicality and Institutions

The *institutional story* focuses on the absence of strong legal and political institutions and the presence of different powerful groups in society. Tornell and Lane (1999) analyze the fiscal process in an environment where powerful groups of interest interplay in a society with weak legal and political infrastructure. In this model, the intensity of fiscal competition increases during upturns. For instance, in the event of positive temporary shocks to income (say, favorable terms of trade shocks), fiscal spending can grow more than proportionally ("*voracity effect*"). All power blocs compete for a share in fiscal revenue and they do not want to reduce their appropriation rate during upturns. Hence, the government would allow groups to even increase their appropriation rate by a larger amount and over-spend instead of saving the income windfall by running a budget surplus.

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[4] Caballero and Krishnamurthy (2004) define *financial depth* as the supply of funds available to the government and the private sector.
[5] In order to prevent capital distortions, the government taxes labor and subsidizes capital in booms.

Lane (2003b) evaluates the cyclicality of fiscal policy in OECD countries over the period 1960-98. He finds that the cyclicality of various spending categories varies significantly across countries and that variables associated to the literature of voracity effect (*i.e.* output volatility and power dispersion) explains that heterogeneity. Lane finds that the presence of multiple veto points in the process of policymaking –as proxied by Henisz' (2000) index of political constraitns– explains the pro-cyclicality in (overall and non-interest) government current expenditure, (wage and non-wage) government consumption, and public sector real wages.

Talvi and Végh (2005) build a standard optimal fiscal policy model (a la Stokey and Lucas, 1983) that incorporates a political distortion that makes it costly to run budget surpluses due to lobbyists' pressures to increase public spending. In this model, spending pressures are an increasing, convex function of the incipient surplus: spending pressures may not play a substantial role and full tax smoothing may hold if fluctuations in the tax base are small. However, political pressures will have a major impact on fiscal policy if fluctuations in the tax base are large. In short, the political distortion is more severe if the boom is larger. As a result, fiscal resources may be wasted in favor of government agencies, state-owned enterprises, provinces or states, and rent-seekers, precluding saving those resources. [6] Finally, this model predicts that high output volatility (which induces a large variability in the tax base) is the ideal environment to generate pro-cyclical fiscal policies.

Braun (2001) tests the conjectures of Talvi and Vegh (2005) by showing that industrial and developing countries may differ in the extent to which they suffer from political pressures to over-spend in good times. Using a sample of 54 countries for the period 1970-98, he finds that pro-cyclical government expenditure in developing countries can be traced to stronger prevalence of presidential regimes (compared to parliamentary regimes) and weaker law enforcement (i.e. higher corruption). Hence, fiscal resources suffer from *common*

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[6] Given this political distortion, a government that faces large (and perfectly anticipated) fluctuations in the tax based will choose to lower taxes in good times to fend off spending pressures. However, since reducing taxes in good times imposes intertemporal distortions, it will not be optimal for the government to resist all increases in public spending. Hence, an optimal policy response to positive shocks in the tax base will involve both lowering tax rates and raising spending levels. The opposite is true when the economy is hit by negative shocks to the tax base. In other words, the model predicts that, given this political distortion, second-best fiscal policy is pro-cyclical.

pool problems in weak and corrupt political systems, where more groups tend to put more pressure to overspend when fiscal resources are available.

Alesina and Tabellini (2005) developed a model in which democratic governments extract rents through direct appropriation of tax revenues or the servicing of special interest groups, and voters are unable to observe government borrowing. The interaction between the *political agency problem* and voters' imperfect information leads to demands for lower taxes or more public goods by voters during expansions, thus forcing authorities to pursue pro-cyclical myopic fiscal policies. Hence fiscal pro-cyclicality is a second-best solution to distortions caused by corruption and imperfect information. Ilzetzki (2007) extends the latter to model to all types of government (including non-democracies), combining rent-extracting governments, counter-cyclical spending on public goods, and an inverse correlation between rent-seeking and public-goods spending. Hence, pro-cyclical government spending results whenever rent-seeking motivations are sufficiently strong.[7]

Empirically, Alesina and Tabellini (2005) and Ilzetzki (2007) are mainly focused on the role of the control of corruption of the cyclicality of fiscal policies. The former uses a specification that is similar to Calderon, Duncan and Schmidt-Hebbel (2004b) by introducing interaction terms between: (a) output gap and corruption, and (b) output gap, corruption and democracy. Consistent to their model, Alesina and Tabellini find that democratic governments that control corruption can conduct counter-cyclical fiscal policies. Ilzetzki (2007) uses, on the other hand, an empirical strategy closer to Lane (2003b) where he runs a regression of country-specific correlations of government expenditure and GDP on corruption and democracy. In contrast to Alesina and Tabellini, uses the distance from the equator as an instrument for corruption and finds that the corruption is a significant predictor of the differences in cyclical behavior of fiscal policies between countries and that this effect is not exclusive among democracies.

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[7] In this model, benevolent governments value citizens' welfare but also rent extraction, and they would the choose latter when the demand for transfer payments is low (Battaglini and Coate, 2006). Hence, the demand for the transfer payment is countercyclical while the extraction of rents is pro-cyclical in this model. Ilzetzki (2007) shows that, if there are strong rent-seeking motives, the pro-cyclicality of extracted rents will outweigh the counter-cyclicality of the transfer payment.

3. Data and Methodology

3.1 The Data

In order to test our hypothesis we gather data from a large sample of industrial and developing countries for a wide array of fiscal indicators for the period 1970-2005. Our main sources of data are the IMF's International Financial Statistics (IFS) and the World Bank's World Development Indicators (WDI).

Our main fiscal indicators are the budget balance, total revenue and total expenditure of the central government. We want to test whether these fiscal indicators are pro- or counter-cyclical, and also whether there are differences between them. In addition, we collected data on tax revenues, current and capital expenditure, as well as consumption expenditure by the general government. All variables are expressed as a percentage of GDP.

The definition and sources of data for our explanatory variables are the following: *growth in real output* is proxied by the log difference of the real gross domestic product obtained from the World Bank's World Development Indicators (WDI). The data on institutions are obtained from the International Country Risk Guide (ICRG) as compiled by the PRS group. Here we use the index of political risk (0-100) that comprises indicators on government stability, socio-economic conditions, investment profile, internal conflict, external conflict, corruption, military in politics, religious tensions, rule of law, ethnic tensions, democratic accountability, and the quality of the bureaucracy. In addition, we also test for the validity of sub-indices of the ICRG index (as in Bekaert et al. 2005): (a) political institutions, (b) the quality of institutions, (c) socio-economic environment, and (d) conflict.

We use the domestic credit to private sector as a percentage of GDP as our measure of *financial depth*, which is obtained from Beck, Demirgüç-Kunt and Levine (2001). On the other hand, our *outcome measure* of financial openness involves data on foreign assets and liabilities from Lane and Milesi-Ferretti (2001, 2006). We construct the ratio of foreign liabilities as a percentage of GDP (which include stocks of liabilities in portfolio equity, foreign direct investment, debt and financial derivatives) and, for robustness purposes, the ratio of foreign assets and liabilities to GDP. Note that we also evaluate the role of equity- and loan-related foreign liabilities. While the former includes the foreign liability position in foreign direct investment and portfolio equity, the latter includes only the debt liability

position. The same calculation is performed for the ratio of foreign assets and liabilities to GDP.

On the other hand, information on *political regime characteristics* (executive recruitment, executive constraints, political participation, among others) are obtained from the Polity IV Codebook (Marshall and Jaggers, 2005). Here we use the *polity score* defined as the difference between the index of institutionalized democracy (0-10) and the index of institutionalized autocracy (0-10). This leads to an indicator, *polity*, that takes values between -10 and 10, where negative (positive) values signal an autocratic (democratic) regime.

3.2 Empirical Implementation and Estimation Strategy

Our main goal is to characterize the cyclical properties of fiscal policies of both industrial and developing countries and highlight the role of institutional quality, political regimes and access to financial resources in determining the ability of governments to conduct (optimal) counter-cyclical policies. Following recent work by Hercowitz and Strawczynski (2004), and Alesina and Tabellini (2006), our baseline policy regression equation:

$$\Delta f_{it} = \mu_i + \eta_t + \phi\, f_{i,t-1} + \alpha_i \Delta y_{it} + \mathbf{B}' X_{it} + \zeta_{it} \qquad (1)$$

where:

$$\alpha_i = \alpha_0 + \mathbf{A}' W_{it}$$

where f is the fiscal policy indicator, y represents the level of real GDP, X is a matrix of determinants of changes in the fiscal policy indicator, μ_i and η_t represent country and time effects respectively, and ζ_{it} is the stochastic error term. Also, the parameter ϕ indicates the persistence (or speed of mean reversion) of fiscal indicators, $\mathbf{B}$ is the matrix of parameters of the control variables and Δ represents the difference operator. In our regression analysis the X matrix includes the (lagged) terms of trade shocks and a war dummy. We should also point out that we allow some degree of heterogeneity in the parameter associated to output growth, α_i, in equation (1). We model the parameter α_i as a function of country characteristics comprised in the W matrix that interacts with real output growth in determining fiscal policy cyclicality.

Among the variables present in the W matrix we have measures of institutional quality following Acemoglu et al. (2003), Calderon et al. (2004b), Alesina and Tabellini (2005) and Ilzetzky (2007); political institutions (Stein et al. 1999; Braun, 2001), domestic financial

depth (Caballero et al. 2004) and the degree of integration to international financial markets (Gavin et al. 1996, Gavin and Perotti, 1997). Unlike previous empirical research, our specification includes the analysis of interactions between the output gap and some of the structural and political determinants of fiscal policies. Specifically, we model this parameter as a function of: (a) the degree of international financial integration (FO_{it}), (b) the level of domestic financial development (FD_{it}), (c) the level of institutions (IQ_{it}), and (d) the nature of the political regime (PR_{it}),

$$\alpha_i = \alpha_0 + \alpha_1 FO_{it} + \alpha_2 FD_{it} + \alpha_3 IQ_{it} + \alpha_4 PR_{it} \qquad (2)$$

That is, we assume that differences in the degree of cyclicality of macroeconomic policies across countries are attributed to differences in: (i) borrowing constraints as proxied by the degree of integration to international capital markets and the depth of domestic financial markets, (ii) the quality of institutions and the nature of political regimes, and (iii) the political regime. Combining equations (2) and (1) we obtain:

$$\Delta f_{it} = \mu_i + \eta_t + \phi\, f_{i,t-1} + \alpha_0 \Delta y_{it} + \alpha_1 \Delta y_{it} \cdot FO_{it} + \alpha_2 \Delta y_{it} \cdot FD_{it}$$
$$+ \alpha_3 \Delta y_{it} \cdot IQ_{it} + \alpha_4 \Delta y_{it} \cdot PR_{it} + \mathrm{B}' X_{it} + \zeta_{it} \qquad (3)$$

According to equation (3) fiscal policy —exemplified by the budget balance of the central government— is expected to be counter-cyclical if:

$$\frac{\partial \Delta f_{it}}{\partial \Delta y_{it}} = \alpha_0 + \alpha_1 FO_{it} + \alpha_2 FD_{it} + \alpha_3 Inst_{it} + \alpha_4 PR_{it} > 0 \qquad (4)$$

From equation (4) we can infer that the cyclical behavior of macroeconomic policy will depend on the coefficient of the output gap (α_0), and the coefficients of interactions between output gap and financial openness (α_1), the depth of local financial markets(α_2), and the quality of institutions (α_3), the nature of the political regime (α_4) as well as the levels of financial openness, financial development, institutional quality, and democracy. Ceteris paribus, the levels of the determinants of fiscal policy cyclicality, we argue that if α_0 is positive (negative), the budget balance is counter- (pro-) cyclical. Following our review of the literature in Section 2, we also argue that countries are more likely to conduct counter-cyclical fiscal policy –see inequality in equation (4)– if the country has: (i) a wider access to international capital markets ($\alpha_1 > 0$ and higher FO), (ii) deeper domestic financial markets ($\alpha_2 > 0$ and higher FD), and (iii) a stronger institutional framework ($\alpha_3 > 0$ and higher IQ). (iv) Finally, to the extent that the democracy (*i.e.* higher polity scores) involves political systems with multiple veto points in the process of policy-making, we expect that governments with more less power dispersion would run counter-cyclical policies ($\alpha_4 < 0$

and lower *PR*).   Note that if the fiscal indicator, *f*, is any category of government expenditure, then we expect that $\alpha_1 < 0$, $\alpha_2 < 0$, $\alpha_3 < 0$, and $\alpha_4 > 0$.

We proceed to estimate equation (3) for the full sample of countries as well as for the samples of industrial and developing countries using an *instrumental variables* (IV) approach. Estimation results provided by least squares (even after accounting for country- and time-effects) of the fiscal policy equation would accurately estimate equation (4) as a fiscal policy reaction function if and only if output growth, Δy, is exogenous relative to our fiscal policy indicators, Δf.   In this respect, Rigobon (2004) argues that any difference in cyclicality between industrial and developing countries inferred from least squares estimates is misleading. The difference may simply reflect different fiscal stances followed by industrial and developing countries or the fact that the shocks hitting those groups of countries are different (in nature and magnitude). In this respect, it becomes necessary to find *good* instruments for Δy.[8]

In this paper, we use a more eclectic list of instruments based on the instruments suggested in previous work.[9] We include as instruments: lagged domestic output growth, the trade-weighted average of the trading partners' GDP growth, (actual and lagged) terms of trade shocks, (actual and lagged values of) the foreign real interest rate of the base country,[10] and the legal origin (due to inclusion of the interaction of real output with finance variables).

4. Empirical Assessment

To test the cyclical properties of fiscal policy indicators, we collect annual data for 136 countries over the period 1975-2005. We run our fiscal policy regressions mainly using three indicators (budget balance, total revenue and total expenditure by the Central

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[8] For a more detailed discussion on the issue of reverse causality in the fiscal policy equation, see Jaimovich and Panizza (2007).

[9] While Rigobon (2004) uses the terms of trade as an instrument of real output, Galí and Perotti (2003) use the GDP of trading partners. Jaimovich and Panizza (2007), on the other hand, use a variation of the Galí-Perotti instrument: a real external shock that consists of the weighted average of GDP growth of the country's export partners, where the weights are given by the GDP ratio of exports of the corresponding country with its partners.

[10] Note that the base country is defined in Di Giovanni and Shambaugh (2007) as the country to which a country pegs or the country to which it would peg if it were pegged. For nonpegs, the base is determined by previous pegging history, cultural and historical ties, dominant regional economies, as well as a close reading of each currency's history.

Government), for three samples of countries (full sample of countries as well as samples of industrial economies and developing countries) and using OLS and IV techniques.

We first show our OLS and IV results for our baseline specification, as outline in equation (1), which assumes that $\alpha_i = \alpha$ and controls for persistence in fiscal policy, terms of trade shocks and the occurrence of wars. Second, we deal with the issue of asymmetries in the response of fiscal policy to output fluctuations. That is, we assume that the sensitivity of fiscal policy to output movements, as summarized by α_i, may exhibit asymmetric behavior in expansions and contractions. Third, we test the main conjecture of our paper: the degree of cyclicality of fiscal policies is affected by access to financial resources at home and abroad (*FD* and *FO*, respectively), the strength of the domestic institutional framework (*IQ*) and the political regime (*PR*) as outlined in equations (2) and (3). We also test the robustness of our results to alternative measures of the strength of the institutional framework and financial openness. Finally, we assess whether our results hold other measures of fiscal policy: tax revenue, current and capital expenditure by the central government and consumption expenditure by the general government.

Table 1 shows some sample statistics on fiscal indicators as well as their potential determinants in our policy equations. In general, we find that either measured by total expenditure by the central government or by consumption expenditure by the general government, industrial economies tend to have larger governments than developing ones. Not surprisingly, industrial economies are also more integrated to world capital markets and have deeper domestic financial markets. Finally, developing economies have weaker institutions and more autocratic regimes.

Simple correlation analysis between fiscal indicators and determinants of fiscal policy shows that: (a) countries with wider access to domestic and foreign credit tend to display higher levels of government expenditure regardless of the measure we use, (b) countries with stronger institutions tend to have higher government expenditure but also tend to run budget surpluses, and (c) countries with more power dispersion (*i.e.* higher values of polity) tend to display higher total revenue and expenditure, but show no degree of association with the budget balance (see Table 2).

4.1 Baseline regression

We present OLS and IV estimates of our baseline fiscal policy regression equation in Tables 3 and 4, respectively. Our baseline regression is estimated for three different samples and accounts for other controls variables such as episodes of war and terms of trade shocks. Note that for both least squares and IV estimates, we present pooled estimators, we control for country effects (LSDV) and, finally, we account for country and time effects.

A. Least squares (LS)

Our baseline regressions for the cyclicality of the budget balance and for the full sample of countries are reported in Table 3. Panel I of Table 3 shows the estimates of the budget balance for our three (3) samples of countries using pooled least squares, the within-group estimator, and estimates controlling for country and time-specific effects. Regardless of the sample of countries and the econometric technique used, we find that our estimates show a positive and significant coefficient for real output growth —see rows [1] through [9] in panel I of Table 1. This result reflects that output expansions would be associated with an increase in the budget balance. Economically speaking, the estimates of our baseline regression suggest that a one-standard-deviation increase in the growth rate (that is, a 6% rise using the sample of all countries) would be associated with an increase in the budget balance of 0.56% of GDP.

Regarding our control variables, we find systematic strong evidence of role of the lagged level of budget balance, thus indicating mean reversion behavior (with a half life of 1.5 years).[11] Interestingly, the budget balance rises with favorable terms-of-trade shocks in industrial countries, but not in developing ones. However, the coefficient and its level of significance decline as we control for time effects. Finally, the budget surplus declines by 1% of GDP during wars in developing countries and slightly less so (around 0.7% of GDP) in the full sample of countries. Industrial economies are only exceptionally affected by wars.

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[11] This calculation is obtained using the coefficient estimates for the full sample of countries that accounts for country and time effects.

Are there any differences in the cyclicality of budget balances between industrial and developing countries? We show that the estimates for growth in real GDP in the budget balance equations are significantly larger in industrial economies than in developing countries. A six percent rise in real output growth (*i.e.* one-standard deviation increase) would lead to a higher increase in the budget balance in industrial economies (0.85% of GDP) compared to that of developing countries (0.55% of GDP) when using the country and time effects of estimates of each group.

To disentangle what is behind the cyclical properties of budget balances, we test for the cyclical properties of total government revenue and total government expenditure separately (see panels II and III in Table 1, respectively.[12] Surprisingly, we find that the coefficient estimate of government revenue is negative and significant thus reflecting a pro-cyclical fiscal policy in this regard. However, government revenue is a-cyclical (that is, not statistically significant) for the full sample as well as for developing countries. We also find that revenues are significantly responsive to changes in the terms of trade. Although the sensitivity of terms of trade is higher in the sample of industrial economies, fluctuations in terms of trade are more volatile among developing countries. Hence, an increase in the terms of trade by one standard deviation for industrial and developing countries (i.e. 0.04 and 0.16, respectively), raises government revenue by 0.5% of GDP in industrial countries and by 1.1% of GDP in developing countries.

Government expenditure, on the other hand, follows a counter-cyclical pattern in all country groups. The coefficient of real output growth is larger in absolute value in industrial than in developing countries. A one-standard-deviation increase in real output (about 6% in the world sample) would lead to a decline of approximately 5.5% of GDP in government expenditure in industrial economies and a reduction of 1.7% of GDP in developing countries. Interestingly, positive shocks to terms of trade are associated to an increase in government spending only for developing countries. A one standard deviation increase in terms of trade in developing countries would lead to higher government expenditure by 0.8% of GDP. In sum, our findings are coherent with counter-cyclical fiscal policy, yet expenditure is more strongly counter-cyclical in industrial than in developing countries.

Instrumental variables (IV)

The results discussed above only indicate patterns of correlation between output and fiscal indicators but do not account for the likely endogeneity or reverse causality: that is, shocks to fiscal policy may have an effect on real output growth. Hence, to account for possible endogeneity bias, we instrument real output growth with lagged output growth, actual and lagged terms of trade shocks, actual and lagged growth in external demand, and actual and lagged foreign real interest rates.

The budget balance equation shows that the coefficient of real output is positive and significant for all country samples. This implies that rising growth prospects may lead to healthier fiscal balances, reflecting counter-cyclical policies. A one-standard-deviation-increase in output growth (6% in the world sample) causes an increase in the budget balance of almost 2% GDP in industrial countries, and 0.8% of GDP in developing countries. Note that the magnitude of changes in fiscal position are much larger for our IV results than for our LS results, reflecting a stronger counter-cyclical position for all country samples when controlling for potential output growth endogeneity.

When analyzing the cyclical behavior of government revenue and government expenditure, we also find striking differences with the comparative LS results. On the one hand, revenues are a-cyclical for industrial economies now whereas they were significantly counter-cyclical with the LS results. Developing country's government revenue still have no significant relationship with output movements, being a-cyclical when using either our IV or LS results. Government revenue seem to be slightly more persistent for industrial countries, and they are sensitive to changes in terms of trade for both samples.

Finally, when controlling for the likely endogeneity of output growth, we find that government expenditure is highly and significantly counter-cyclical to shocks in output growth in industrial countries. Yet, opposed to the LS results, expenditure in developing countries is a-cyclical in developing countries (*i.e.* it has a positive although not statistically different from zero coefficient estimation for output growth). A one-standard deviation increase in (world sample) of real GDP growth would lead to lower expenditure by 5% of GDP in industrial economies, and to higher government expenses by 0.6% of GDP (although the latter seem to be statistically not different from zero). Government spending

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[12] Note that the dependent variables in these regressions are expressed as a percentage of GDP and

is more persistent among industrial countries, and terms of trade shocks seem to raise government spending among developing countries.

By comparing the results reported in Tables 3 and 4, we conclude that those based on IV estimation techniques —that is, controlling for potential endogeneity bias— yield generally counter-cyclical or, at worst, a-cyclical fiscal policies. This feature, combined with the statistical superiority of IV over LS estimation, justifies reporting mostly IV results in the following sections.

Our preceding panel data estimates signal the cyclical behavior of fiscal policy for the representative country. However, as reported by Kaminsky, Reinhart and Vegh (2004), there could be substantial cross-country differences in cyclical fiscal behavior. Next, we review this conjecture by: (a) testing whether fiscal policy is asymmetric to the business cycle, and (b) evaluating whether the ability to conduct counter-cyclical fiscal behavior depends upon institutional factors or the access to domestic or foreign financing conditions (*i.e.* borrowing constraints).

4.2 Asymmetries to the business cycle

A strand of the empirical literature claims that fiscal policy may be asymmetric to the business cycle; that is, fiscal policy may behave respond differently during good times and bad times (Hercowitz *et al.* 2004). Specifically, it has been argued that macroeconomic policies in developing countries are highly pro-cyclical at times of crises (Kaminsky *et al.* 2004). To account for this asymmetry we define the indicator variable for "*good times*", $D(y_{it}^{+})$, as:

$$D(y_{it}^{+}) = 1 \ \ \text{if} \ \ dy_{it} > \overline{dy} + \sigma_{\overline{dy}}$$

where dy_{it} is the growth rate of country i at time t, $\overline{dy}$ is the world sample average of the growth rate and $\sigma_{\overline{dy}}$ is the world sample standard deviation of the growth in real GDP. Analogously, we define the indicator for "*bad times*", $D(y_{it}^{-})$, as follows:

$$D(y_{it}^{-}) = 1 \ \ \text{if} \ \ dy_{it} < \overline{dy} - \sigma_{\overline{dy}}$$

Considering these asymmetries, we extend our regression equation (2) as follows:

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in log differences.

$$\Delta f_{it} = \mu_i + \eta_t + \phi \, f_{i,t-1} + \alpha \Delta y_{it}$$
$$+ \alpha^+ D(y_{it}^+)\Delta y_{it} + \alpha^- D(y_{it}^-)\Delta y_{it} + \mathrm{B}' X_{it} + \zeta_{it} \qquad (5)$$

The inclusion of these two additional regressors allows us to test whether the cyclicality of fiscal policy is different during good times (α^+) and in bad times (α^-) compared to normal times. In particular, we want to test if the pattern of cyclicality of fiscal policy is exacerbated or attenuated during bad times. Table 5 presents the estimates of equation (5) using instrumental variables and controlling for country- and time-effects. In this context, the sensitivity of the fiscal indicator to output movements in "*good times*" and bad times are computed as:

$$E\left[\frac{\partial \Delta f_{it}}{\partial \Delta y_{it}} \,\middle|\, D(y_{it}^+) = 1 \right] = \alpha + \alpha^+ \ \text{ and } \ E\left[\frac{\partial \Delta f_{it}}{\partial \Delta y_{it}} \,\middle|\, D(y_{it}^-) = 1 \right] = \alpha + \alpha^-$$

Note that at the bottom of Table 5 we specifically compute the sensitivity of fiscal policy to real output growth in good and bad times as well as the standard error. Next, we describe the properties of our fiscal indicators during expansions and contractions of real economic activity.

Budget balance. The coefficient of real output growth is positive and significant for all country groups, thus reflecting counter-cyclical behavior in normal times. Substantial expansions or contractions in real economic activity do not appear to modify the pattern of cyclicality of budget balance, except for the behavior of budget balance in developing countries during expansions. During booms, the degree of counter-cyclicality tends to decline in developing countries. This could be attributed to the fact that governments in developing countries may ease the fiscal policy stance (by spending more) during output expansions. Interestingly, these findings for developing countries are not consistent with a borrowing constraints story, as argued by Alesina and Tabellini (2005) where we should expect fiscal policies in developing countries to be pro-cyclical during contractions.

Government revenue. Real output growth appears to be counter-cyclical in normal times, however, it tends to be strongly counter-cyclical in good times and bad times in developing countries and in the full sample of countries. In the case of industrial economies, government revenue is a-cyclical in normal times and in good times, being slightly pro-cyclical in bad times.

Government expenditure. In normal times, government expenditure is counter-cyclical in industrial economies as opposed of being a-cyclical in developing countries (i.e. the coefficient of real output growth is positive although not statistically significant). The sensitivity of government expenditure to expansions and contractions is (negative but) statistically not different from zero in industrial countries. Developing countries, in contrast, have negative and significant estimates for real output during expansions and contractions. In sum, government expenditure is counter-cyclical in industrial economies but the degree of cyclicality during expansions and/or contractions is not different from that in normal times. On the other hand, government expenditure in developing countries is a-cyclical in normal times and good times and, surprisingly, it behaves counter-cyclically in bad times.

4.3 The role of borrowing constraints and the institutional framework

This section presents the empirical assessment on the role of financial constraints and institutions on the ability of countries to run counter-cyclical policies. Using equation (3) as our empirical framework, our conjecture is that countries with wider access to capital markets and strong institutions may be able to run countercyclical fiscal policies.

To capture the role of financial openness we include the interaction between real output growth and a measure of international financial integration. Here we use the ratio of foreign liabilities to GDP as our measure of financial openness. Also, governments need not only rely on access to international financial markets (and, hence, foreign borrowing) when they could also tap domestic financial markets to get access to fresh resources to conduct counter-cyclical fiscal policies. In this respect, we include an interaction between the real output growth and the depth of local financial markets. The latter variable is measured by the amount of domestic credit (as percentage to GDP).

On the other hand, the role of the institutional framework is captured by two different variables: first, we include the ICRG index of political risk (0-100) as our measure of the level of institutional quality of the country. Among other features, this index captures: (a) the ability to carry out its declared programs, (b) socioeconomic pressures constraining government action, (c) corruption in the government, (d) political violence in the country, (e) strength of the legal system and popular observance of the law, (f) democratic accountability, and (g) the quality of the bureaucracy. Higher scores for the ICRG index

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reflect stronger institutions. Second, we include the nature of the political regime as measured by the *polity score* from the Polity IV Codebook. Recall that this variable is computed by subtracting the score of institutionalized autocracy (AUTOC) from the one of institutionalized democracy (DEMOC), with the resulting polity score ranging from **+10** (strongly democratic) to **-10** (strongly autocratic). Our intuition behind including the political regime is that democracies are usually characterized by having a larger number of veto points in the political system and a greater division of control across different political parties. That is, power is more dispersed in democracies.

It has been argued that the security of property rights will be enhanced by restricting the ability of the executive to introduce legal or constitutional changes, thus improving infrastructure investment (Henisz, 2002) and promoting growth (Henisz, 2000). However, the voracity hypothesis suggests that power dispersion may lead to sub-optimal responses to shocks by enlarging the number of veto points with effective influence over the fiscal process (Lane, 2003b).

In effect, we empirically find that our *polity* measure is highly correlated with measures of power dispersion constructed by Henisz (2000, 2002) and Beck, Clark, Groff, Keefer and Walsh (2001). The panel correlation for the full sample of countries between *polity* and the Henisz' political constraints index is 0.82, while the correlation between *polity* and Beck et al. (2001) *checks* measure is 0.75. Here we use the polity score because it has a broader coverage across countries and over time. However, when we substitute polity for either the Henisz (2002) index of political constraints or Beck et al (2001) measurement of *checks and balances* we obtain qualitatively similar results.

Tables 6 and 7 present the results of running the equation (3) using least squares and instrumental variables and controlling for country- and time-effects, respectively. Given the superiority of IV results over LS squares we will focus our discussion of the cyclicality of the budget balance, government revenue and government expenditure using our IV estimates reported in Table 7.

Budget balance. The output growth coefficient for the budget balance equation for the full sample of countries is negative and significant, thus implying a pro-cyclical behavior in countries with weak institutions and smaller access to finance. The interaction between

growth and access to (domestic and international) capital markets is positive and significant. Therefore, relaxing credit constraints may give countries fiscal space to run counter-cyclical policies. On the other hand, we find that the interaction between growth and institutions is positive and significant whereas the interaction between growth and democracy is negative and significant. This result suggests that countries may be able to run counter-cyclical policies if they have stronger institutions and do not have multiple players intervening in the fiscal process. Note that the latter findings are consistent with theories that explain pro-cyclical biases in fiscal policy due to political distortions and voracity effects.

Figure 1 depicts the response of the budget balance to a one standard deviation increase in output growth for the full sample conditional on: (a) the degree of international financial integration, (b) the depth of domestic financial markets, (c) the strength of its institutional framework, and (d) the nature of the political regime. Note that when plotting the response of the budget balance conditional on the degree of financial openness (say, figure 1.1), we keep constant the level of the other three categories (financial depth, institutional quality and the political regime) at the median value of their corresponding samples. The solid line in figure 1 shows the response of the budget balance while the dotted lines represent the 10% confidence interval.

A closer look at Figure 1 yields the following results (which are consistent for both samples): First, the budget balance is either counter- or a-cyclical in countries with low levels of financial openness. For foreign liabilities that exceed 40% of GDP (i.e. approximately the 25th percentile of the sample distribution), the budget balance is counter-cyclical. Second, the budget balance is pro-cyclical in countries with very shallow domestic financial markets (*i.e.* domestic credit lower than 10% of GDP). Note that the budget balance becomes counter-cyclical in countries with deeper financial markets. Third, the budget balance behaves pro-cyclically in countries with low to medium levels of institutional quality, while it is counter-cyclical in countries with stronger institutions. While a one-percent increase in the output rate of growth reduces the budget balance by approximately 4% of GDP in countries with weak institutions, the overall budget surplus increases by 3-4% of GDP in countries with strong institutions. Fourth, we find that, when growth expands, the budget balance rises in countries with less dispersion in power (*i.e.* less democratic regimes) and it declines in strongly countries with more power dispersion (*i.e.*

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democratic regimes), although the latter effect does seem to be statistically not different from zero. Consistent with the theories of political distortions, we find that political systems with more veto points may have smaller space to conduct counter-cyclical fiscal policies.

Finally, we should point out that:

a) The coefficient of output growth as well as the interaction terms with access to finance and institutions is not statistically significant for the sample of industrial countries. Hence, access to finance and institutions do not explain any differences in cyclical behavior of the budget balance across industrial countries. Figure 2 reports the response of the budget balance to a one-standard-deviation increase in output growth in industrial economies. In general we find that the budget balance tends to increase after a positive output shocks, thus showing a counter-cyclical behavior (i.e. consistent with the results in Table 4 for industrial countries). Furthermore, the response appears to be similar for industrial countries with different financial and institutional characteristics (see Figure 2).

b) The coefficient estimates and the response of the budget balance to output shocks conditional on financial and institutional characteristics are similar to those of the full sample of countries —compare columns [1] and [3] pf Table 7 and Figures 1 and 3. Hence, developing countries would be able to run counter-cyclical policies if they are granted wider access to domestic and foreign capital markets, and if they have stronger institutional quality and more concentrated power in their political process.

Government expenditure. We find analogous results to those of the budget balance for the full sample of countries —see column [7] of Table 7. The coefficient of output growth is positive and significant, thus indicating that government expenditure is pro-cyclical for countries with more stringent borrowing constraints, weaker institutions and more dispersed political power. We also find that the interaction terms between growth and access to (local and world) capital markets enter with a negative and significant coefficient. On the other hand, the interaction coefficient between growth and institutions is negative and statistically significant while the one between growth and the political regime is positive and significant, thus indicating that government expenditure tends to be more pro-cyclical

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in countries with weaker institutional frameworks and more veto players in the political process (*i.e.* more democratic regimes).

Figure 4 plots the response of total government expenditure to a one-standard-deviation increase in domestic output growth for the full sample of countries. The plotted response (in solid line) is conditional to changes in institutions, financial openness, financial development, and the nature of the political regime. All the details of the computation of these responses were described above.

The response of the government expenditure to growth shocks shows the following facts: (i) Countries with low degrees of financial openness –say, with foreign liabilities lower than 20% of GDP– display pro-cyclical government expenditures. In contrast, countries that are financial more open (with foreign liabilities over 60% of GDP) tend to show counter-cyclical government expenditures. (ii) Analogously, government expenditure is pro-cyclical in countries with shallow financial markets (with credit below 15-20% of GDP), and it becomes counter-cyclical as financial development deepens (for levels over 30% of GDP). (iii) Government expenditure in countries with weak to medium institutional quality exhibits a pro-cyclical pattern of behavior. On the other hand, government expenditure is counter-cyclical in countries with stronger institutions –that is, where the ICRG political risk index is greater than 70. (iv) We find that government expenditure responds counter-cyclically in strong to moderate autocratic regimes (with less dispersion of power), while it reacts pro-cyclically in countries with moderate to strong democratic regimes (with greater division of power across political parties).

Finally, we should note again that when, accounting for all these interaction terms, government expenditure becomes a-cyclical in industrial economies. The real output growth coefficient separately enters with a negative (although not statistically significant coefficient), thus hinting that government expenditure may increase if the economy is hit by a negative growth shock. This is consistent with the findings of Table 4 for industrial economies. Developing countries, on the other hand, show analogous results to those of the full sample of countries —compare patterns of correlation displayed in columns [7] and [9] of Table 7. Hence, developing countries may be able to run counter-cyclical policies if they have wider access to financial resources at home and abroad, exhibit stronger institutions and have a smaller number of veto players in the political process.

4.4 Sensitivity analysis

So far we have found that more space to conduct counter-cyclical fiscal policies –as signaled by the results for the budget balance and total government expenditure– is achieved by countries with larger access to either domestic or international capital markets, stronger institutions and less power dispersion (*i.e.* less democratic regimes).

Here we conduct a sensitivity analysis of the results reported above along several dimensions. First, we check if the hypothesis that financial openness helps governments conduct counter-cyclical policies is robust to different measures of the degree of international financial integration. Second, we test whether the ability to conduct counter-cyclical policies in countries with stronger institutions holds for different indicators of institutional quality. Third, we examine whether the findings for total revenues are driven by the cyclical behavior of tax revenues, and those for total expenditure are driven by either current expenditure, capital expenditure, or both. Finally, we investigate cyclical properties of general government consumption expenditure and compare our results to those of both total and current expenditure by the central government.

A. Sensitivity to changes in the measure of financial openness

We test whether our results reported above (Table 7) are robust to changes in our measure of financial openness. Table 8 shows IV regressions for alternative measures of financial openness: (a) equity-related foreign liabilities, (b) equity-related foreign assets and liabilities, (c) loan-related liabilities, and (d) loan-related assets and liabilities. We run regressions for the budget balance, total government revenues and government expenditure for the full sample of countries. We focus our discussion on the results for budget balance and the government expenditure.

Budget Balance. Our results for the budget balance when including the equity-related measures of financial openness –see columns [1] and [2] of Table 8– show that the budget balance has no significant relationship with real output growth. Here, output growth and its interactions with access to financing, institutions and political regimes is not statistically significant.

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On the other hand, when using the measures of loan-related financial openness the results are completely different –see columns [3] and [4] of Table 8. The coefficient of real output growth are negative and significant, thus reflecting pro-cyclical budget balances in countries with low degrees of loan-related financial openness –holding constant the other characteristics. The interaction terms between output growth and financial depth are positive and significant, and the same holds for the ones between output growth and institutions. On the other hand, the interaction terms between output growth and the political regime are positive and significant. These results are still consistent with our findings that countries with weak access to domestic capital markets, weak institutions and high dispersion of power would be unable to have counter-cyclical budget balances.

The interaction terms between output growth and loan-related financial openness measures are positive and significant –as opposed to those between growth and equity-related financial openness that are not statistically significant. Therefore, counter-cyclical budget balances would be mainly driven by countries with greater access to syndicated loans in international capital markets.

Government Expenditure. Our estimates for the coefficient of real output growth are positive and significant for all alternative measures of financial openness. This suggests that government expenditure is pro-cyclical in countries with low degrees of financial openness (ceteris paribus, the level of institutional quality, financial development, and the political regime). Interestingly, the coefficient estimates for the interaction terms between real output growth and financial development are negative and significant for all four measures, and the same holds for the interaction between real output growth and institutions. This implies that countries with greater access to local financial markets and stronger institutions have more scope to conduct counter-cyclical fiscal policies. Again, the interaction terms between the political regime and real output growth are positive and significant, thus indicating the weaker capacity of more democratic regimes (*i.e.* regimes with more power dispersion) to conduct counter-cyclical macroeconomic policies.

The interaction terms between output growth and financial openness exhibit the following pattern: (a) coefficients fail to be statistically significant for both equity-related foreign liabilities and equity-related foreign assets plus liabilities. (b) Coefficients are negative and significant (as expected) for both loan-related liabilities and loan-related assets plus

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liabilities. This implies that the impact of financial openness on the ability to conduct counter-cyclical fiscal policies is mainly driven by access to bank-related loans and short-term loans.

Let us now assess the changes in the cyclical properties of government expenditure at low and high levels of loan-related foreign liabilities (holding the other three country characteristics –financial depth, institutions, and political regimes– constant at median sample values). At low levels of financial openness (10th percentile of the developing-country distribution), the responsiveness of government expenditure to output changes is positive, significant, and close to 0.56, which reflects pro-cyclical government expenditures. On the other hand, countries that exhibit high financial openness (90th percentile in the distribution of loan-related foreign liabilities) show a negative and significant relationship between government expenditure and output changes (equal to -1.49), reflecting counter-cyclical expenditures for these countries. Note that the same holds true when simulating the responsiveness of government expenditure to output, conditional on low and high values of loan-related financial assets and liabilities (0.35 vs. -1.32, respectively).

B. Sensitivity to changes in the measure of institutions

Table 9 presents IV estimates of regression equation (3) where we replace the ICRG index of political risk with each of the 4 sub-indices that comprise it: (a) political institutions (*Pol1*), (b) quality of institutions (*Pol2*), (c) socio-economic environment (*Pol3*), and (d) conflict (*Pol4*).[13] We conduct these new regressions for the budget balance, total government revenues and government expenditure for the full sample of countries. The results are comparable to those reported for the overall ICRG index in columns [1], [4] and [7] of Table 7.

Budget Balance. Real output growth enters with a negative coefficient in the budget balance equations —columns [1] through [4] of Table 9— but it is significantly negative only when accounting for conflict (*Pol4*). The interaction term between real output and political regime loses statistical significance in all budget balance regressions, whereas the interaction terms between output growth and the measures of access to domestic and foreign

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[13] Note that these sub-indices include the following categories: (a) *Pol1*: military in politics and democratic accountability, (ii) *Pol2*: corruption, rule of law, and bureaucratic quality, (iii) *Pol3*: government stability, socio-economic conditions and investment profile, and (iv) *Pol4*: internal conflict, external conflict, religious tensions, and ethnic tensions.

financing lose significance in most cases. Budget balances are persistent processes with significant tendencies towards mean reversion and they tend to decline by 0.6-0.8 percent per annum during wars. The interaction term between real output growth and institutions continues to be positive and significant for all the ICRG sub-indices considered in the current analysis, with the strength of political institutions (*Pol1*) and the strength of government institutions (*Pol2*) having the larger influence on the degree of cyclicality. Our estimates still indicate that budget balances may be counter-cyclical in countries with strong institutions.

Government Expenditure. We now turn to the analysis of the cyclical behavior of the government expenditure to changes in the measurement of institutions —see columns [9] through [12] of Table 9. We observe that the coefficient of real output growth is positive and significant in the case of *Pol3* and *Pol4* indices, thus indicating that government expenditure may be pro-cyclical in countries with weak institutions, disperse power, and low access to domestic and foreign capital markets. The interaction coefficient between output growth and access to (domestic and foreign) financing is negative and significant in most cases (except for *Pol2*), thus providing evidence that restricted access to credit may reinforce the pro-cyclicality government expenditure. The interaction term between real output growth and the political regime is positive but significant only when controlling for *Pol2* and *Pol4*. Hence, there is some evidence that countries with wider dispersion of power (*i.e.* multiple veto players in the political process) may be unable to run counter-cyclical fiscal policies. Also, government expenditure is a mean-reverting process and tends to increase with positive terms of trade shocks. Finally, the interaction coefficient between real output growth and the difference sub-indices of institutions are negative and significant –with the exception of the index of political institutions (*Pol1*) which is negative and not statistically significant. This result implies that for three of the four sub-indices of institutions we find results that are consistent with our aggregate ICRG index of political risk: countries with strong institutions use government expenditure as a counter-cyclical policy tool.

Economically speaking, we compute the degree of cyclicality of total government expenditure for low and high levels of institutions, as reflected by the 10th and 90th percentile of the developing-country sample for the different sub-indices of the ICRG Political Risk Index, while holding constant the degree of financial openness, the depth of

financial markets, and the political regime at the median sample values. For all 4 sub-indices we find that government expenditure is either a-cyclical (*Pol1*) or pro-cyclical (*Pol2* through *Pol4*) in countries with weak institutions, and that government expenditure becomes highly counter-cyclical in countries with strong institutions. For instance, the output coefficient of our government expenditure equation is 0.102 at low levels of the quality of institutions (*Pol2*) and 0.40 at low levels of socio-economic environment (*Pol3*). At high levels of *Pol2* and *Pol3*, the degree of cyclicality of government expenditure is -0.71 and -1.07, respectively, reflecting the ability of governments to conduct counter-cyclical fiscal policy when institutions are robust.

C. Investigating the cyclical properties of tax revenues, current and capital expenditures

So far our results suggest that once we account for the role of institutions and access to financial resources (at home and/or abroad): (a) countries with stringent borrowing constraints and weak institutions are unable to run counter-cyclical fiscal policies. That is, budget balances and government expenditures are pro-cyclical in these countries. (b) In most cases, government revenues do not show any systematic pattern of cyclicality. That is, the ratio of government revenues to GDP is at best a-cyclical.

This sub-section tests whether these results hold for particular categories of revenue and expenditure undertaken by the central government. Specifically, we test: (a) whether the results for central government total revenues holds also for tax revenues, which could be more sensitive to cyclical movements in output than non-tax revenue, and (b) whether the findings for government expenditure holds for current and capital expenditure. Table 10 presents our IV estimates for the baseline regression of tax revenues, current expenditure, and capital expenditure (comparable to the preceding results in Table 4).

Baseline regression. Surprisingly, we find that tax revenues are counter-cyclical in the full samples of countries as well as in developing countries, whereas tax revenues are pro-cyclical in industrial economies –see columns [1]-[3] of Table 10. Tax revenues are persistent processes with the speed of mean reversion being faster in industrial economies. Positive terms of trade shock also raises budget balances in developing countries.

Current expenditure is a-cyclical in the full sample of countries and in developing countries while it is counter-cyclical in industrial economies –see columns [4]-[6] of Table 10. Current

expenditure in industrial countries is as persistent as that in developing countries. During wars, current expenditure is higher by 2.5% of GDP. On the other hand, capital expenditure is counter-cyclical in industrial economies while it is pro-cyclical in developing countries and in the full sample of countries –see columns [7]-[9] of Table 10. Finally, positive terms of trade shocks are related to higher capital expenditure in developing countries.

Table 11, on the other hand, includes to the baseline regression of tax revenue, current expenditure and capital expenditure, the interaction terms between real output growth and access to (domestic and foreign) credit, institutional quality and the political regime. These results are comparable to the results in Table 7.

Tax revenues. The sensitivity of tax revenues to output growth is negative and significant for industrial economies, thus reflecting pro-cyclicality of tax revenues for weak institutions and smaller access to credit supply at home and abroad. When analyzing the interactions between output growth and institutions as well as borrowing constraints, we find that: the interaction between output growth and the depth of local financial markets is the only statistically significant variable. The positive coefficient for this interaction signals that countries with greater access to local financial markets may run counter-cyclical fiscal policies. Ceteris paribus, the sensitivity of tax revenues to output is equal to -0.75 in industrial countries with low financial depth (10th percentile), and it is 0.14 in industrial countries with high financial depth (90th percentile).

On the other hand, the coefficient of real output growth is positive and not statistically significant for developing countries. All interaction terms between real output growth and institutions, the political regime, and access to credit supply at home and abroad are statistically not different from zero. This implies that the coefficient of tax revenues to GDP is a-cyclical across developing nations.

Current expenditure. Real output growth enters with a negative (although not significant sign) in industrial economies while it is positive and significant for developing countries, thus indicating that current expenditure is pro-cyclical in developing countries with weak institutions and low access to finance.

The interaction between output growth and financial openness is the only significant coefficient for the regression of industrial countries. The negative coefficient for this interaction term suggests that higher financial openness broadens industrial countries' scope to incur in counter-cyclical current expenditure. On the other hand, all interaction terms for real output growth (both with institutions and access to finance variables) are statistically significant for the full sample of countries as well as in developing countries. Hence, countries with strong institutions, deep local financial markets, and high degrees of financial integration are able to use current expenditure counter-cyclically (see figure 5).

Economically speaking, using the regression for developing countries and the selected percentiles of institutions and access to finance from the distribution of developing countries, we find the following results: (a) Current government expenditure is pro-cyclical (0.44) in countries with weak institutions (10th percentile) and counter-cyclical (-1.5) in countries with strong institutions (90th percentile). (b) In countries with low access to international and domestic finance (10th percentile), the sensitivity of current government expenditure to real output growth is negative and small (-0.03 and -0.01, respectively). When access to finance domestically and abroad is high (90th percentile), current government expenditure is highly pro-cyclical –that is, -1.08 and -1.13, respectively. (c) Current government expenditure is more likely to be counter-cyclical in countries with lower power dispersion (-0.98) and it may become pro-cyclical in strongly democratic regimes –that is, more power dispersion in the political process (0.29).

We also find that current expenditure to GDP rises as the economy faces favorable terms-of-trade shocks and during wars. Economically speaking, a one standard deviation increase in the terms of trade leads to higher current expenditure by 0.8% of GDP. Current expenditure rises, on average, by 3% of GDP during times of war.

Capital expenditure. Real output growth as well as its interactions with institutions and measures of access to finance (domestically and abroad) has non-significant effects on capital expenditure in industrial countries. This suggests that the ratio of capital expenditure to GDP is a-cyclical in industrial countries. Curiously, positive terms-of-trade shocks lead to a reduction in capital expenditure among industrial economies.

In contrast, real output growth enters with a positive and significant coefficient for capital expenditure in developing countries, whereas the interactions between output growth and institutional quality, and between output growth and measures of access to finance domestically and abroad are all negative and statistically significant. Again, the interaction with the political regime is positive and significant. Consistent with the results already found for current government total and current expenditure, we find the following in the event of a positive shock to growth (see figure 6): (a) Countries with low international financial integration and shallow financial markets display pro-cyclical capital expenditure behavior. For high financial openness, capital expenditure behaves a-cyclically –that is, shows no significant response. On the other hand, the response of capital expenditure is counter-cyclical in countries with deeper financial markets. (b) Capital expenditure responds pro-cyclically in countries with weak institutions and counter-cyclically in countries with strong institutions. (b) (c) Counter-cyclical responses in capital expenditure are also observed in countries with lower power dispersion in the political process (*i.e.* less democratic regimes).

An economic interpretation of the responsiveness of capital expenditure conditional to borrowing constraints, institutions and political regimes (holding the other categories constant) yields the following results: (i) the sensitivity of capital expenditure to changes in output is higher than that of current expenditure. (ii) The degree of pro-cyclicality of capital expenditure in countries with weak institutions is 4.02, while it is -3.24 for countries with strong institutions (10th and 90th percentile, respectively). (iii) Capital expenditure declines more than proportionally to a reduction in growth (2.31) in countries with low financial openness (10th percentile), and it increases more than proportionally (-1.69) in countries with high financial openness (90th percentile). The same holds for countries with shallow and deep local financial markets (1.81 vs. -1.41, respectively).

D. Cyclicality of general government consumption expenditure
So far we have analyzed total revenue and expenditure by the central government. Now we focus on consumption expenditure by the general government (GG), which is used by Fatas and Mihov (2003, 2006) as the indicator of fiscal policy. The use of this variable not only responds to greater data availability but also because it is easily comparable across

countries.[14] Table 12 reports the IV regression estimates for GG consumption expenditure measures.

Baseline regression. Columns [1]-[3] of Table 12 reports the results of our baseline equation where we do not include the interaction terms. The results are generally very similar to those reported for central government expenditure –see the comparable results in Tables 3 and 4. Here, we find that consumption expenditure is more persistent in industrial economies than in developing countries. Consumption expenditure increases after a surge in terms of trade for both samples, whereas it increases in times of war only in developing countries. The coefficient of real output growth is negative and significant in all country groups, and it is larger in absolute value in industrial countries -see columns [1]-[3] of Table 12.

Augmented regression. Now we report the augmented specification, consistent with equation (3) and comparable with the results for central government expenditure reported in Tables 6 and 7. When we include interactions with institutional quality, financial openness and financial depth, we observe that the coefficient of output is negative and significant in industrial countries while it is positive and significant for developing countries –see columns [4]–[6] in Table 12. The interaction terms of output growth with institutional quality and financial openness are negative and significant in developing countries and not significantly different from zero in industrial economies. However, interactions output growth and political regime are significant and negative in industrial countries and positive in developing countries. Consumption expenditure by the general government exhibits significant differences as the latter results show between country groups.

Figure 7 depicts the response of the general government consumption expenditure to a one standard deviation increase in growth conditional to one country at a time (say, financial openness) while holding the others (say, financial depth, institutional quality and the political regime) constant at their median sample values. We again find that, first, in response to a growth change, consumption expenditure reacts pro-cyclically (counter-cyclically) in countries with weak (strong) institutions. Second, general government consumption expenditure displays a pro-cyclical behavior in countries with low financial openness and low financial depth, and it is counter-cyclical in countries with high financial

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[14] Fatas and Mihov (2006) also point out that this is not a perfect measure of fiscal policy since it

openness and deeper local capital markets. Finally, consumption expenditure tends to react counter-cyclically in more autocratic regimes.

5. Discussion

We discussed the cyclical properties of central government budget balances as well as of taxes and expenditures of central and general governments in Section 4. We can summarize the results as follows: first, countries with strong institutions, a high degree of international financial integration, and deep financial markets are able to run counter-cyclical fiscal balances, central government expenditure, and general government consumption expenditure. Second, our main results hold for current and capital government expenditure, with the output elasticity of capital expenditure being larger than that of the current expenditure.

In this section, we use our regression estimates to explain the differences in cyclical behavior of fiscal policies between: (a) industrial and developing countries, and (b) six developing regions and industrial economies. Specifically, we want to estimate the relative contribution of institutional factors (as proxied by the ICRG political risk index) and credit constraints (say, approximated by financial openness and financial depth) to explain the differences in cyclical properties of budget balances and government expenditures.

A. Methodology

We denote the estimated cyclical response of the fiscal indicator to movements in output as $\widehat{\alpha}_G^{f,y}$ for the country group G and, differentiating regression equation (4), we explain the differences in the cyclical nature of fiscal policies between industrial (*IND*) and developing areas (*DEV*) as follows:

$$\widehat{\alpha}_{IND}^{f,y} - \widehat{\alpha}_{DEV}^{f,y} = \widehat{\alpha}_1 \left(\overline{FO}^{IND} - \overline{FO}^{DEV} \right) + \widehat{\alpha}_2 \left(\overline{FD}^{IND} - \overline{FD}^{DEV} \right)$$
$$+ \widehat{\alpha}_3 \left(\overline{IQ}^{IND} - \overline{IQ}^{DEV} \right) + \widehat{\alpha}_4 \left(\overline{PR}^{IND} - \overline{PR}^{DEV} \right) \qquad (6)$$

where we evaluate these differences in access to financing at home and abroad as well as institutions and political regimes at the median values of the corresponding sample of countries. Figure 8 reports the relative contribution of access (to domestic and foreign)

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does not include transfers.

financing, institutional factors, and political regimes in explaining the different degrees of responsiveness of fiscal policies to output changes. That is,

$$1 = \frac{\widehat{\alpha}_1 \left(\overline{FO}^{IND} - \overline{FO}^{DEV} \right)}{\widehat{\alpha}_{IND}^{f,y} - \widehat{\alpha}_{DEV}^{f,y}} + \frac{\widehat{\alpha}_2 \left(\overline{FD}^{IND} - \overline{FD}^{DEV} \right)}{\widehat{\alpha}_{IND}^{f,y} - \widehat{\alpha}_{DEV}^{f,y}}$$
$$+ \frac{\widehat{\alpha}_3 \left(\overline{IQ}^{IND} - \overline{IQ}^{DEV} \right)}{\widehat{\alpha}_{IND}^{f,y} - \widehat{\alpha}_{DEV}^{f,y}} + \frac{\widehat{\alpha}_4 \left(\overline{PR}^{IND} - \overline{PR}^{DEV} \right)}{\widehat{\alpha}_{IND}^{f,y} - \widehat{\alpha}_{DEV}^{f,y}} \tag{7}$$

We will conduct this analysis using the estimated coefficients $\widehat{\alpha}_k$ (k=1,2,3,4) of the full sample of countries for the different fiscal indicators. For instance, we use the coefficient estimates of regression [1] of Table 7 for the full sample of countries that includes interactions with financial openness, financial depth, institutional quality and the political regime when analyzing the differences in the cyclical behavior of budget balances. In addition, we will calculate the sources of variation of cyclical behavior for the different types of government expenditure.[15] In sum, figure 8 will depict the relative contribution of access to financing and institutional factors to explain differences in cyclicality between industrial economies and developing areas,

$$\widehat{\varphi}_k = \frac{\widehat{\alpha}_k \left(\overline{X}_k^{IND} - \overline{X}_k^{DEV} \right)}{\widehat{\alpha}_{IND}^{f,y} - \widehat{\alpha}_{DEV}^{f,y}}$$

where $k = 1$ denotes financial openness, k=2 refers to the depth of local financial markets, k= 3 represents the indicator of institutional quality, and k=4 refers to the political regime. Again, we evaluate these differences at the median levels of the different groups.

B. Results

One of the recurring results of the literature is that while industrial countries tend to conduct counter-cyclical fiscal policies, developing countries do not. Developing countries are said to be unable to conduct counter-cyclical policies. Several papers have argued that these differences are due to political distortions or limited access to capital markets, as discussed in Section 2.

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[15] For total expenditure by the central government we use regression [7] in Table 7, while we use regressions [4] and [7] in Table 11 for the analysis of current and capital expenditure. Finally, we use the coefficient estimates of regression [4] in Table 12 for consumption expenditure by the general government.

Figure 8 shows the relative contribution of institutional determinants and credit constraints to explain what is behind the differences in the cyclical behavior of fiscal policy between industrial and developing areas using several indicators. We compute these differences for the budget balance of the central government as well as for total, current and government expenditure by the central government and, finally, consumption expenditure by the general government. Also, in addition to depicting the difference in cyclical behavior between industrial economies and the group of developing countries, we also report the difference (relative to industrial economies) of the different geographic areas in the developing world —such as Latin America and the Caribbean (AMER), East Asia and the Pacific (EAP), Eastern Europe and Central Asia (ECA), Middle East and North Africa (MENA), South Asia (SA) and Sub-Saharan Africa (SSA).[16]

From our regression analysis we find that: first, the predicted differences in cyclicality between developing areas and industrial economies are the smallest in East Asia and the largest in South Asia and Sub-Saharan Africa. Second, differences in the degree of cyclicality between industrial countries and developing areas in capital expenditure are larger than those in current expenditure, whereas the smallest differences in cyclicality are observed in consumption expenditure.

When looking at the relative contribution of the determinants to fiscal policy cyclicality we find that adopting political system with a larger number of veto players (that is moving from autocracies to democracies) may lead to losing the ability to conduct counter-cyclical policies. On the other hand, we have that institutional factors explain a great deal of the differences in cyclical behavior of budget balances between industrial and developing countries, while financial openness and financial depth explain a smaller share of the predicted differences (see Figure 8). Finally, note that the largest relative contribution of institutions across regions is achieved by EAP and MENA.[17] The contribution of financial development, on average, is larger than the one of financial openness.

For all types of government expenditures, we find that when we control for the nature of the political regime, we find that again politico-institutional determinants of the fiscal

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[16] Appendix I shows the group of countries that comprises each of the geographic regions.

[17] Note that these calculations implicitly signal that the distance of these two regions with respect to the frontier (as proxied by the level of institutions for industrial economies) is the largest among developing regions.

cyclicality explain the main bulk of the differences between developing regions and industrial economies –especially in MENA, LAC and EAP. Note again that the contribution of financial openness is very small (see figure 8). Finally, we should note that the results obtain in Figure 8 is consistent with the findings in Alesina and Tabellini (2005) where politico-institutional determinants of cyclical fiscal policy outweigh the credit constraint arguments in explaining differences across regions.

6. Concluding Remarks

In this paper we have evaluated the cyclical properties of fiscal policies in the world, and separately in industrial and developing economies. We confirm some of the findings of the literature (summarized by Perotti, 2007): (a) budget balances are counter-cyclical (pro-cyclical) in industrial economies (developing countries), (b) they are driven by the cyclical behavior of government expenditure, (c) capital expenditure is more sensitive to movements in output than current expenditure.

However, our approach allows much more comprehensive and nuanced interpretation of the cyclical properties of fiscal policy than the preceding literature. First, we follow Calderón, Duncan, and Schmidt-Hebbel (2004a, b) in allowing the degree of cyclicality to depend on the level of institutional quality of each country. In addition, we also include the nature of the political regime and measures of access to finance domestically and abroad to affect the degree of cyclicality of fiscal policies. We control for terms of trade changes and the occurrence of internal and external wars. Third, we conduct a battery of robustness tests of our results using alternative measures of financial openness and institutions in three different samples for different government revenue and expenditure categories and instrumenting for the likely endogeneity of explanatory variables.

Second, our results show that countries are unable to conduct counter-cyclical fiscal policies if: (a) the lack wide access to domestic and foreign sources of financing, (b) they exhibit lower levels of institutional quality, and (c) they have multiple veto points in the political process —and, specially, in the fiscal process (which is a usual feature of more democratic regimes). These results are consistent with the notions that political distortions and market failures may explain the pro-cyclical bias of fiscal policies in many developing countries.

Finally, our estimation results allow the decomposition of the significant differences observed in the cyclicality of fiscal policies in between industrial and developing countries. We find that institutional factors dominate; they roughly explain the largest share of the country-group differences in fiscal policy cyclicality. Financial openness, on the other hand, explains only a negligible share of the latter differences, while financial depth is a more significant source of variation.

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Appendix I
Sample of Countries

We gather annual information for 136 countries over the period 1975-2005. Due to the unavailability of some central government fiscal data and the set of determinants in our fiscal policy equations, we have a maximum effective sample of 105 countries for the Central Government Budget Balance, Revenue and Expenditure regressions while we have an effective sample of 133 countries for the General Government Consumption Expenditure regressions.

Our sample of 136 countries can be classified as:

Industrial economies (23): Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, The Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States
Latin America and the Caribbean (22): Argentina, The Bahamas, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay, Venezuela
East Asia and the Pacific (12): China, Hong Kong, Indonesia, Republic of Korea, Malaysia, Mongolia, Papua New Guinea, The Philippines, Singapore, Taiwan, Thailand, Vietnam
Eastern Europe and Central Asia (18): Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Poland, Romania, Russian Federation, Serbia, Slovak Republic, Slovenia, Turkey, Ukraine
Middle East and North Africa (20): Algeria, Bahrain, Cyprus, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, United Arab Emirates, Republic of Yemen
South Asia (5): Bangladesh, India, Nepal, Pakistan, Sri Lanka
Sub-Saharan Africa (36): Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Democratic Republic of Congo, Republic of Congo, Cote d'Ivoire, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe

Table 1
Sample Statistics
Annual data, 1970-2005

Variables	All Countries	Industrial Countries	Developing Countries	Sample of Countries by Income		
				Low	Middle	High
Fiscal variables (% of GDP, logs)						
Budget balance	-0.031	-0.034	-0.031	-0.047	-0.028	-0.027
	(0.06)	(0.05)	(0.06)	(0.06)	(0.04)	(0.07)
Total revenue	3.155	3.372	3.056	2.880	3.059	3.386
	(0.43)	(0.31)	(0.45)	(0.50)	(0.38)	(0.34)
Tax revenue	2.875	3.284	2.706	2.618	2.743	3.182
	(0.53)	(0.39)	(0.48)	(0.52)	(0.36)	(0.55)
Total expenditure	3.233	3.455	3.143	3.043	3.152	3.445
	(0.42)	(0.29)	(0.43)	(0.47)	(0.37)	(0.34)
Current expenditure	3.035	3.361	2.883	2.771	2.891	3.329
	(0.47)	(0.32)	(0.45)	(0.48)	(0.39)	(0.38)
Capital expenditure	1.188	0.790	1.373	1.373	1.370	0.896
	(0.77)	(0.65)	(0.75)	(0.87)	(0.71)	(0.69)
General government consumption	2.664	2.907	2.606	2.526	2.641	2.875
	(0.40)	(0.23)	(0.41)	(0.41)	(0.39)	(0.32)
Output growth						
Real GDP	0.033	0.028	0.034	0.030	0.034	0.033
(in log differences)	(0.06)	(0.02)	(0.07)	(0.06)	(0.07)	(0.04)
Access to credit supply						
Foreign liabilities	4.068	4.219	4.031	4.000	4.074	4.182
(% of GDP, logs)	(1.19)	(0.97)	(1.23)	(1.35)	(0.98)	(1.27)
Foreign assets and liabilities	4.579	4.821	4.520	4.257	4.541	5.016
(% of GDP, logs)	(1.03)	(0.94)	(1.04)	(1.18)	(0.82)	(0.99)
Domestic credit to private sector	3.287	4.253	3.051	2.545	3.303	4.184
(% of GDP, logs)	(0.96)	(0.56)	(0.88)	(0.81)	(0.71)	(0.59)
Institutions and Political Regime						
ICRG Index of Political Risk	61.367	84.239	55.750	49.454	57.863	78.795
(It takes values between 0 and 100)	(17.36)	(8.72)	(14.02)	(11.33)	(13.69)	(13.86)
Polity Score	0.862	9.511	-1.042	-3.059	0.606	7.258
(It takes values between -10 and 10)	(7.61)	(2.50)	(7.02)	(5.63)	(7.44)	(6.18)

Note: The numbers in parenthesis reported below the averages are standard deviations. The classification of countries according to their levels of income follows the methodology of the World Bank World Development Report

Table 2
Simple Correlation Analysis
Correlation between different fiscal indicators and determinants
Annual data, 1975-2005

Variables	Budget Balance	Revenue (% GDP, logs) Total	Tax	Expenditure (% GDP, logs) Total	Current	Capital	GG Consumption (% GDP, logs)
Output							
Real GDP (*in log differences*)	0.094	-0.073	-0.030	-0.105	-0.114	0.128	-0.104
Access to credit supply							
Financial openness (% of GDP, logs)							
Foreign liabilities	-0.011	0.215	0.172	0.234	0.282	0.007	0.123
Foreign assets and liabilities	0.098	0.367	0.167	0.337	0.354	0.000	0.236
Equity-related Foreign liabilities	0.087	0.097	0.331	0.152	0.209	-0.119	0.132
Equity-related Foreign assets and liabilities	0.135	0.225	0.316	0.242	0.314	-0.153	0.239
Loan-related Foreign liabilities	-0.075	0.210	0.151	0.244	0.280	0.024	0.090
Loan-related Foreign assets and liabilities	0.060	0.359	0.125	0.338	0.336	0.062	0.209
Financial development (% of GDP, logs)							
Domestic credit to private sector	0.065	0.291	0.343	0.283	0.379	-0.206	0.330
Institutions and Political Regime							
Institutions							
ICRG Index of Political Risk	0.132	0.342	0.464	0.290	0.392	-0.332	0.290
ICRG1: Index of political institutions	0.030	0.405	0.496	0.391	0.469	-0.291	0.355
ICRG2: Index of quality of institutions	0.081	0.429	0.495	0.388	0.500	-0.315	0.392
ICRG3: Index of socioeconomic environment	0.160	0.252	0.316	0.191	0.264	-0.217	0.237
ICRG4: Index of conflict	0.136	0.200	0.381	0.154	0.256	-0.335	0.129
Nature of the political regime							
Polity Score	0.002	0.191	0.429	0.229	0.328	-0.369	0.135

Table 3 *(con't)*
Cyclicality of Fiscal Policy: Baseline Regression

Dependent Variable: Fiscal Indicator (as percentage of GDP, in log differences)
Estimation: Least Squares (Annual data, 1970-2005)

Variable		Real Output (log difference)	Fiscal Indicator (lagged level)	Terms of trade shocks (lagged level)	War Dummy (1 if war)	Country / Observations	Country Effects	Time Effects	R**2
II. Government revenue									
All countries	[1]	-0.056	-0.037 **	0.076 **	-0.010	96	No	No	0.030
		(0.08)	(0.01)	(0.04)	(0.01)	2329			
	[2]	-0.084	-0.209 **	0.080 **	-0.001	96	Yes	No	0.025
		(0.08)	(0.02)	(0.03)	(0.01)	2329			
	[3]	-0.071	-0.220 **	0.074 **	-0.004	96	Yes	Yes	0.155
		(0.08)	(0.02)	(0.03)	(0.01)	2329			
Industrial economies	[4]	-0.235 **	-0.023 **	0.069	-0.019	23	No	No	0.038
		(0.08)	(0.01)	(0.06)	(0.01)	747			
	[5]	-0.373 **	-0.117 **	0.108 *	-0.007	23	Yes	No	0.029
		(0.08)	(0.01)	(0.06)	(0.01)	747			
	[6]	-0.436 **	-0.145 **	0.113 **	-0.005	23	Yes	Yes	0.184
		(0.11)	(0.02)	(0.05)	(0.01)	747			
Developing countries	[7]	-0.015	-0.046 **	0.074 **	-0.006	73	No	No	0.035
		(0.09)	(0.01)	(0.04)	(0.01)	1582			
	[8]	-0.038	-0.231 **	0.077 **	0.000	73	Yes	No	0.031
		(0.09)	(0.03)	(0.03)	(0.01)	1582			
	[9]	-0.046	-0.233 **	0.065 *	-0.001	73	Yes	Yes	0.174
		(0.09)	(0.03)	(0.04)	(0.01)	1582			

Table 3
Cyclicality of Fiscal Policy: Baseline Regression
Dependent Variable: Fiscal Indicator (as percentage of GDP, in log differences)
Estimation: Least Squares (Annual data, 1970-2005)

Variable		Real Output (log difference)	Fiscal Indicator (lagged level)	Terms of trade shocks (lagged level)	War Dummy (1 if war)	Country / Observations	Country Effects	Time Effects	R**2
I. Budget Balance									
All countries	[1]	0.104 **	-0.216 **	-0.006	-0.005 *	105	No	No	0.124
		(0.02)	(0.03)	(0.01)	(0.00)	2450			
	[2]	0.102 **	-0.348 **	-0.002	-0.007 **	105	Yes	No	0.121
		(0.02)	(0.04)	(0.01)	(0.00)	2450			
	[3]	0.092 **	-0.360 **	-0.008	-0.007 **	105	Yes	Yes	0.240
		(0.02)	(0.04)	(0.01)	(0.00)	2450			
Industrial economies	[4]	0.186 **	-0.082 **	0.059 **	0.001	23	No	No	0.074
		(0.04)	(0.02)	(0.02)	(0.00)	748			
	[5]	0.216 **	-0.141 **	0.058 **	0.000	23	Yes	No	0.070
		(0.04)	(0.04)	(0.02)	(0.00)	748			
	[6]	0.140 **	-0.119 **	0.033	0.002	23	Yes	Yes	0.191
		(0.05)	(0.03)	(0.03)	(0.00)	748			
Developing countries	[7]	0.097 **	-0.267 **	-0.008	-0.007 **	82	No	No	0.159
		(0.02)	(0.04)	(0.01)	(0.00)	1702			
	[8]	0.088 **	-0.440 **	-0.002	-0.010 **	82	Yes	No	0.155
		(0.02)	(0.05)	(0.01)	(0.00)	1702			
	[9]	0.090 **	-0.471 **	-0.007	-0.010 **	82	Yes	Yes	0.309
		(0.02)	(0.05)	(0.01)	(0.00)	1702			

Table 3 *(con't)*
Cyclicality of Fiscal Policy: Baseline Regression

Dependent Variable: Fiscal Indicator (as percentage of GDP, in log differences)
Estimation: Least Squares (Annual data, 1970-2005)

Variable		Real Output (log difference)	Fiscal Indicator (lagged level)	Terms of trade shocks (lagged level)	War Dummy (1 if war)	Country / Observations	Country Effects	Time Effects	R**2
III. Government expenditure									
All countries	[1]	-0.298 **	-0.047 **	0.056 *	-0.008	105	No	No	0.043
		(0.07)	(0.01)	(0.03)	(0.01)	2534			
	[2]	-0.382 **	-0.203 **	0.050 *	0.009	105	Yes	No	0.035
		(0.07)	(0.02)	(0.03)	(0.01)	2534			
	[3]	-0.324 **	-0.204 **	0.054 *	0.007	105	Yes	Yes	0.185
		(0.07)	(0.02)	(0.03)	(0.01)	2534			
Industrial economies	[4]	-0.958 **	-0.043 **	-0.081 *	-0.019 **	23	No	No	0.223
		(0.09)	(0.01)	(0.05)	(0.01)	755			
	[5]	-1.134 **	-0.113 **	-0.047	-0.006	23	Yes	No	0.182
		(0.09)	(0.02)	(0.05)	(0.01)	755			
	[6]	-0.897 **	-0.075 **	0.036	-0.003	23	Yes	Yes	0.363
		(0.11)	(0.03)	(0.05)	(0.01)	755			
Developing countries	[7]	-0.214 **	-0.056 **	0.061 *	-0.001	82	No	No	0.044
		(0.08)	(0.01)	(0.04)	(0.01)	1779			
	[8]	-0.296 **	-0.230 **	0.052 *	0.014	82	Yes	No	0.039
		(0.08)	(0.02)	(0.03)	(0.01)	1779			
	[9]	-0.280 **	-0.233 **	0.047	0.013	82	Yes	Yes	0.195
		(0.08)	(0.03)	(0.03)	(0.01)	1779			

*Note: ** (*) indicates that the variable is significant at the 5 (10) percent level. Number in parenthesis are the autocorrelation and heteroskedasticity consistent standard errors.*

Table 4
Cyclicality of Fiscal Policy: Baseline Regression, Instrumental Variables

Dependent Variable: Fiscal Indicator (as percentage of GDP, in log differences)
Estimation: Instrumental Variables (Annual data, 1970-2005)   1/

Variable		Real Output (log difference)	Fiscal Indicator (lagged level)	Terms of trade shocks (lagged level)	War Dummy (1 if war)	Country / Observations	Country Effects	Time Effects
I. Budget Balance								
All countries	[1]	0.131 **	-0.130 **	-0.004	-0.003	103	No	No
		(0.04)	(0.02)	(0.01)	(0.00)	2294		
	[2]	0.209 **	-0.229 **	-0.002	-0.003	103	Yes	No
		(0.05)	(0.02)	(0.01)	(0.00)	2294		
	[3]	0.139 **	-0.239 **	-0.006	-0.003	103	Yes	Yes
		(0.05)	(0.03)	(0.01)	(0.00)	2294		
Industrial economies	[4]	0.330 **	-0.087 **	0.050 **	0.005	25	No	No
		(0.07)	(0.02)	(0.02)	(0.01)	691		
	[5]	0.408 **	-0.150 **	0.046 **	0.005	25	Yes	No
		(0.08)	(0.03)	(0.02)	(0.01)	691		
	[6]	0.313 **	-0.119 **	0.035	0.004	25	Yes	Yes
		(0.13)	(0.03)	(0.02)	(0.01)	691		
Developing countries	[7]	0.094 **	-0.142 **	-0.006	-0.005	81	No	No
		(0.04)	(0.02)	(0.01)	(0.00)	1603		
	[8]	0.137 **	-0.261 **	-0.003	-0.005	81	Yes	No
		(0.06)	(0.03)	(0.01)	(0.00)	1603		
	[9]	0.137 **	-0.316 **	-0.007	-0.005	81	Yes	Yes
		(0.06)	(0.04)	(0.01)	(0.00)	1603		
II. Government revenue								
All countries	[1]	0.170	-0.026 **	0.084 **	-0.009	95	No	No
		(0.12)	(0.01)	(0.02)	(0.01)	2192		
	[2]	0.114	-0.162 **	0.090 **	0.001	95	Yes	No
		(0.16)	(0.02)	(0.02)	(0.01)	2192		
	[3]	0.332 *	-0.164 **	0.084 **	0.003	95	Yes	Yes
		(0.17)	(0.02)	(0.02)	(0.01)	2192		
Industrial economies	[4]	-0.006	-0.023 **	0.072 *	0.003	22	No	No
		(0.13)	(0.01)	(0.04)	(0.02)	691		
	[5]	-0.214	-0.116 **	0.107 **	0.014	22	Yes	No
		(0.14)	(0.02)	(0.04)	(0.02)	691		
	[6]	0.053	-0.120 **	0.144 **	0.006	22	Yes	Yes
		(0.29)	(0.03)	(0.05)	(0.02)	691		
Developing countries	[7]	0.267	-0.034 **	0.084 **	-0.005	73	No	No
		(0.16)	(0.01)	(0.02)	(0.01)	1501		
	[8]	0.254	-0.173 **	0.088 **	0.003	73	Yes	No
		(0.20)	(0.02)	(0.02)	(0.01)	1501		
	[9]	0.361	-0.167 **	0.075 **	0.005	73	Yes	Yes
		(0.22)	(0.02)	(0.02)	(0.01)	1501		
III. Government expenditure								
All countries	[1]	-0.032	-0.039 **	0.049 **	-0.007	103	No	No
		(0.13)	(0.01)	(0.02)	(0.01)	2384		
	[2]	-0.572 **	-0.197 **	0.047 **	0.002	103	Yes	No
		(0.17)	(0.02)	(0.02)	(0.01)	2384		
	[3]	-1.36E-04	-0.175 **	0.048 **	0.009	103	Yes	Yes
		(0.19)	(0.02)	(0.02)	(0.01)	2384		
Industrial economies	[4]	-1.107 **	-0.051 **	-0.064 *	-0.017	22	No	No
		(0.13)	(0.01)	(0.04)	(0.02)	699		
	[5]	-1.503 **	-0.128 **	-0.016	-0.008	22	Yes	No
		(0.15)	(0.01)	(0.04)	(0.02)	699		
	[6]	-0.825 **	-0.083 **	0.047	-0.011	22	Yes	Yes
		(0.26)	(0.02)	(0.04)	(0.02)	699		
Developing countries	[7]	0.199	-0.045 **	0.054 **	0.003	81	No	No
		(0.16)	(0.01)	(0.02)	(0.01)	1685		
	[8]	-0.309	-0.213 **	0.049 **	0.009	81	Yes	No
		(0.21)	(0.02)	(0.02)	(0.01)	1685		
	[9]	0.096	-0.195 **	0.042 *	0.013	81	Yes	Yes
		(0.24)	(0.02)	(0.02)	(0.01)	1685		

*Note: ** (*) indicates that the variable is significant at the 5 (10) percent level. Number in parenthesis are the autocorrelation and heteroskedasticity consistent standard errors.*
1/ We instrument real output growth with lagged values of real output growth, current and lagged terms of trade changes, current and lagged growth in external demand, current and lagged changes in foreign interest rates.

Table 5

Cyclicality of Fiscal Policy: Identifying asymmetric behavior in fiscal policy   1/

Dependent Variable: Fiscal Indicator (as percentage of GDP, in log differences)

Estimation: Instrumental Variables (Annual data, 1970-2005)   2/

Variable	Budget Balance			Revenue			Expenditure		
	All [1]	Industrial [2]	Developing [3]	All [4]	Industrial [5]	Developing [6]	All [7]	Industrial [8]	Developing [9]
Real Output	0.223 *	0.301 **	0.331 *	0.845 **	0.028	1.151 *	0.598	-0.695 **	1.065
(in log differences)	(0.13)	(0.14)	(0.18)	(0.43)	(0.34)	(0.69)	(0.47)	(0.30)	(0.76)
Real Output x Output Drop	-0.178	-0.099	-0.316	-1.012 *	-0.609	-1.410	-1.086 *	-0.694	-1.700 *
(in log differences)	(0.17)	(0.25)	(0.25)	(0.59)	(0.54)	(0.94)	(0.64)	(0.51)	(1.04)
Real Output x Output Rise	-0.126	-0.126	-0.190 *	-0.724 **	-0.389	-0.895 **	-0.660 **	-0.032	-0.932 *
(in log differences)	(0.08)	(0.14)	(0.12)	(0.28)	(0.27)	(0.43)	(0.31)	(0.27)	(0.49)
Fiscal indicator, lagged	-0.243 **	-0.116 **	-0.333 **	-0.162 **	-0.123 **	-0.165 **	-0.168 **	-0.078 **	-0.184 **
(% of GDP, in log differences)	(0.03)	(0.03)	(0.04)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Terms of trade, lagged	-0.007	0.033	-0.009	0.077 **	0.136 **	0.066 **	0.037 *	0.038	0.025
(in logs)	(0.01)	(0.02)	(0.01)	(0.02)	(0.05)	(0.03)	(0.02)	(0.04)	(0.03)
War Dummy	-0.004	0.005	-0.005	0.001	0.007	0.003	0.006	-0.011	0.010
(Dummy = 1 if internal or external war)	(0.00)	(0.01)	(0.00)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)

Table 6

Cyclicality of Fiscal Policy: The Role of Institutions, Financial Openness, Financial Development and the Political Regime

Dependent Variable: Fiscal Indicator (as percentage of GDP, in log differences)
Estimation: Least Squares (Annual data, 1970-2005)

Variable	Budget Balance			Revenue			Expenditure		
	All	Industrial	Developing	All	Industrial	Developing	All	Industrial	Developing
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Real Output	-0.315 **	-0.033	-0.295 **	0.458	-1.117 *	0.527	0.994 **	1.133 *	0.774 **
(in log differences)	(0.09)	(0.36)	(0.10)	(0.33)	(0.71)	(0.42)	(0.29)	(0.72)	(0.36)
Real Output x Financial Openness	0.036 **	0.042	0.049 **	0.005	-0.017	-0.049	0.029	-0.087	0.020
(FO: Foreign liabilities as % GDP, logs)	(0.01)	(0.03)	(0.02)	(0.06)	(0.07)	(0.08)	(0.05)	(0.07)	(0.06)
Real Output x Financial Depth	0.017	0.059	-0.004	-0.021	0.259 **	-0.020	-0.112 *	-0.356 **	-0.055
(FD: Dom. Credit to Private Sector as % GL	(0.02)	(0.06)	(0.02)	(0.07)	(0.12)	(0.09)	(0.07)	(0.12)	(0.08)
Real Output x Institutional Quality	0.004 **	-0.002	0.004 **	-0.009 **	-0.004	-0.006	-0.021 **	-0.008	-0.019 **
(IQ: ICRG Index of Political Risk)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)
Real Output x Democracy	-0.001	0.006	-0.001	0.020 **	0.010	0.021 **	0.019 **	0.027	0.021 **
(Democracy: Polity Score)	(0.00)	(0.01)	(0.00)	(0.01)	(0.02)	(0.01)	(0.01)	(0.03)	(0.01)
Fiscal indicator, lagged	-0.360 **	-0.142 **	-0.457 **	-0.200 **	-0.121 **	-0.217 **	-0.206 **	-0.115 **	-0.233 **
(% of GDP, in log differences)	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)
Terms of trade, lagged	-0.006	0.055 **	-0.006	0.104 **	0.104 **	0.100 **	0.088 **	-0.041	0.091 **
(in logs)	(0.01)	(0.02)	(0.01)	(0.02)	(0.04)	(0.02)	(0.02)	(0.04)	(0.02)
War Dummy	-0.009 **	-0.002	-0.012 **	-0.003	-0.012	-0.001	0.015	-0.001	0.019
(Dummy = 1 if internal or external war)	(0.00)	(0.01)	(0.00)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)
No. Countries	95	23	72	88	23	65	95	23	72
No. Observations	2130	677	1453	2016	676	1340	2194	684	1510
R**2	0.250	0.213	0.315	0.161	0.184	0.183	0.208	0.357	0.216
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: ** (*) indicates that the variable is significant at the 5 (10) percent level. The number in parenthesis represent the autocorrelation and heteroskedasticity consistent standard errors.

Table 7

Cyclicality of Fiscal Policy: The Role of Institutions, Financial Openness, Financial Development and the Political Regime (IV Estimates)

Dependent Variable: Fiscal Indicator (as percentage of GDP, in log differences)

Estimation: Instrumental Variables (Annual data, 1970-2005) 1/

Variable	Budget Balance			Revenue			Expenditure		
	All [1]	Industrial [2]	Developing [3]	All [4]	Industrial [5]	Developing [6]	All [7]	Industrial [8]	Developing [9]
Real Output	-2.061 **	-0.126	-1.552 *	2.557	-5.557 *	2.172	11.431 **	-0.532	8.041 **
(in log differences)	(0.87)	(1.89)	(0.83)	(2.74)	(3.40)	(3.11)	(3.93)	(3.67)	(3.36)
Real Output x Financial Openness	0.174 **	0.027	0.132 *	-0.220	-0.040	-0.215	-0.953 **	-0.017	-0.661 **
(FO: Foreign liabilities as % GDP, logs)	(0.08)	(0.04)	(0.08)	(0.27)	(0.09)	(0.31)	(0.36)	(0.09)	(0.31)
Real Output x Financial Depth	0.133 **	0.074	0.090	-0.221	0.586 **	-0.195	-0.811 **	-0.301	-0.567 **
(FD: Dom. Credit to Private Sector as % GDP	(0.06)	(0.16)	(0.06)	(0.24)	(0.30)	(0.28)	(0.27)	(0.31)	(0.25)
Real Output x Institutional Quality	0.017 **	-0.001	0.014 **	-0.016	0.040	-0.012	-0.087 **	0.008	-0.066 **
(IQ: ICRG Index of Political Risk)	(0.01)	(0.02)	(0.01)	(0.01)	(0.03)	(0.02)	(0.03)	(0.04)	(0.02)
Real Output x Democracy	-0.023 **	0.008	-0.015 *	0.035	-0.051	0.030	0.135 **	-0.003	0.087 **
(Democracy: Polity Score)	(0.01)	(0.03)	(0.01)	(0.02)	(0.05)	(0.02)	(0.05)	(0.06)	(0.03)
Fiscal indicator, lagged	-0.250 **	-0.164 **	-0.292 **	-0.145 **	-0.121 **	-0.155 **	-0.135 **	-0.128 **	-0.168 **
(% of GDP, in log differences)	(0.03)	(0.03)	(0.04)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)
Terms of trade, lagged	-0.002	0.055 **	-0.005	0.117 **	0.114 **	0.116 **	0.087 **	-0.031	0.091 **
(in logs)	(0.01)	(0.02)	(0.01)	(0.02)	(0.04)	(0.03)	(0.03)	(0.04)	(0.03)
War Dummy	-0.009 **	0.005	-0.009 **	0.000	0.014	-0.002	0.025 *	-0.001	0.019
(Dummy = 1 if internal or external war)	(0.00)	(0.01)	(0.00)	(0.01)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)
No. Countries	90	22	68	83	22	61	90	22	68
No. Observations	1983	624	1359	1882	624	1258	2051	632	1419
R**2	0.146	0.188	0.143	0.135	0.084	0.172	0.253	0.347	0.269
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

1/ We instrument real output growth with lagged values of real output growth, current and lagged terms of trade changes, current and lagged growth in external demand, current and lagged changes in foreign interest rates.

Note: ** (*) indicates that the variable is significant at the 5 (10) percent level. The number in parenthesis represent the autocorrelation and heteroskedasticity consistent standard errors.

Figure 1
Response of the Budget Balance to a one standard deviation increase in Output
Full Sample of Countries

1.1. Conditional on the degree of financial openness
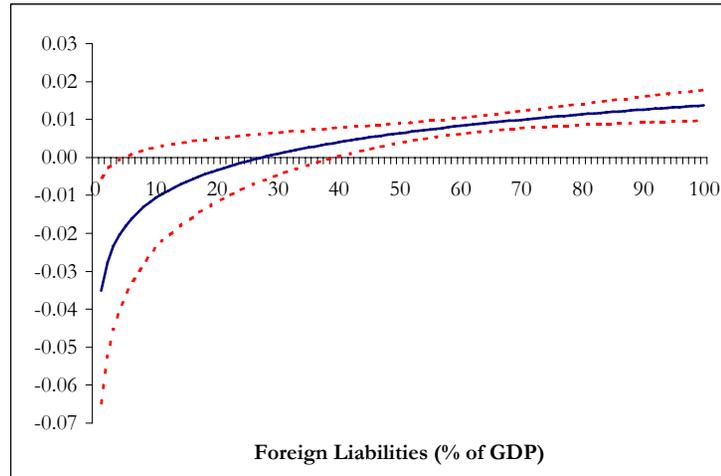
1.2. Conditional on the level of financial development
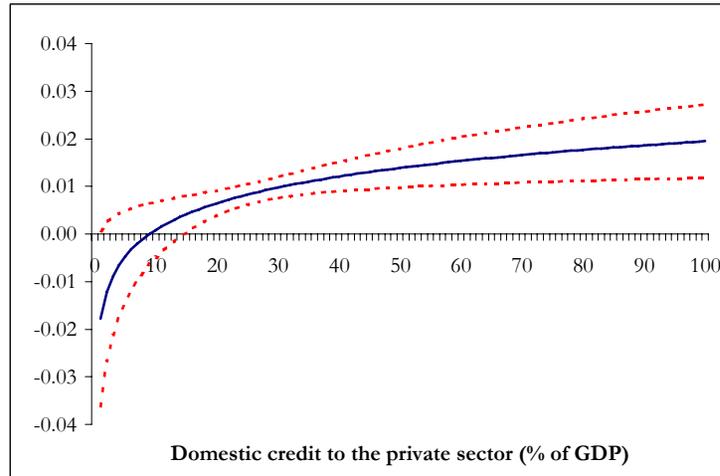
1.3. Conditional on the level of institutions
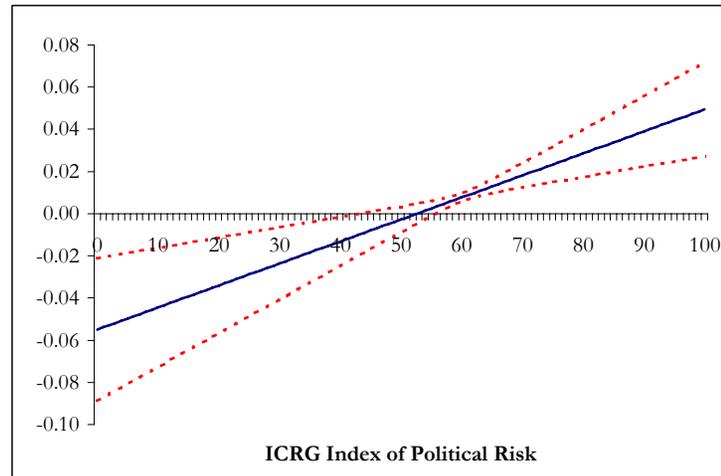
1.4. Conditional on the political regime
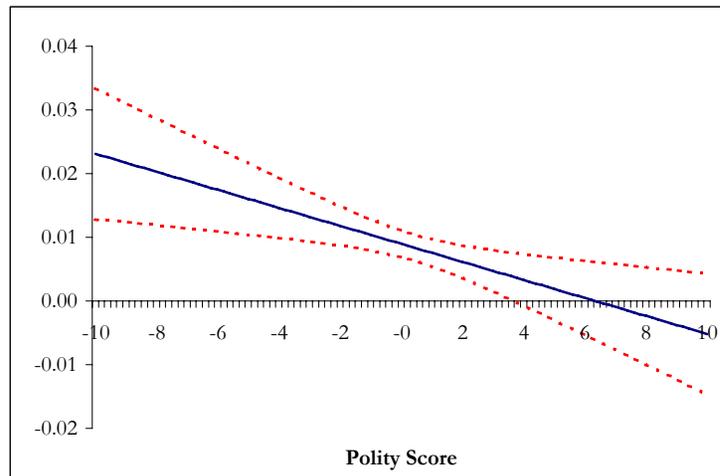
Note: The response of the budget balance is calculated using the coefficient estimates for the full sample of countries in Table 7. Each panel calculates the reponse of the fiscal variable conditional on one dimension (say, financial openness) while keeping the other three dimensions (here, institutions, financial depth and political regimes) constant at their median values for the full sample of countries. The dotted lines represent the confidence interval at the 10 percent level.

Figure 2
Response of the Budget Balance to a one standard deviation increase in Output
Sample of Industrial Countries

2.1. Conditional on the degree of financial openness
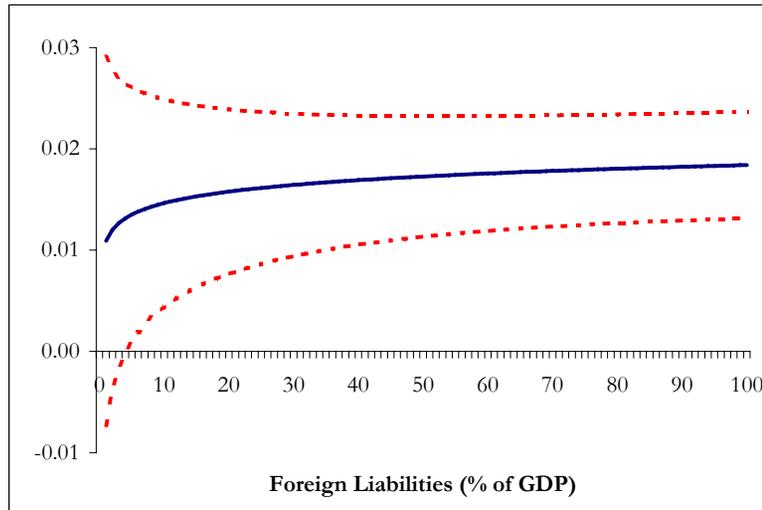
Foreign Liabilities (% of GDP)

2.2. Conditional on the level of financial development

Domestic credit to the private sector (% of GDP)

2.3. Conditional on the level of institutions

ICRG Index of Political Risk
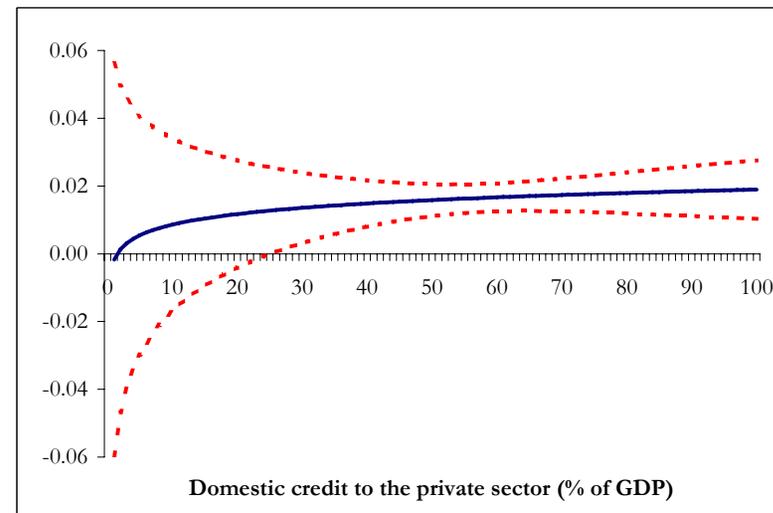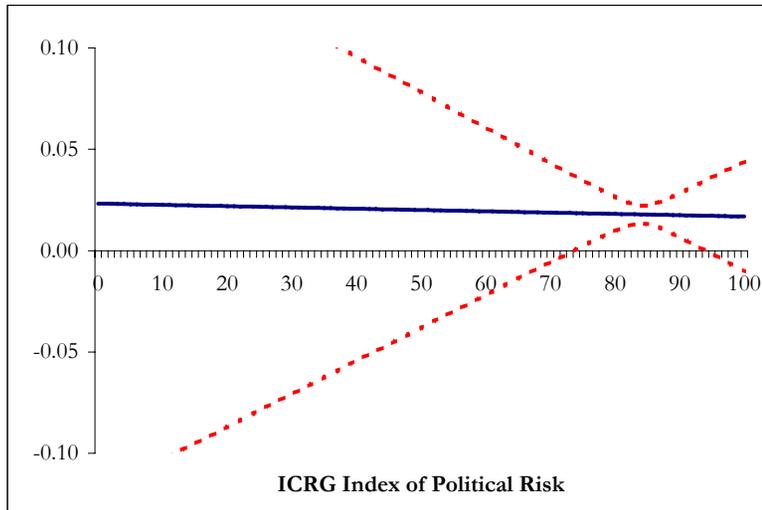
2.4. Conditional on the political regime

Polity Score
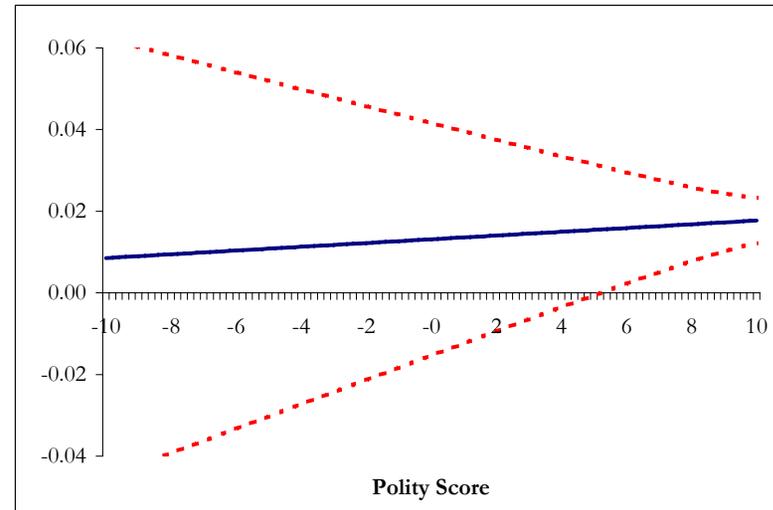
Note: The response of the budget balance is calculated using the coefficient estimates for the sample of industrial countries in Table 7. Each panel calculates the reponse of the fiscal variable conditional on one dimension (say, financial openness) while keeping the other three dimensions (here, institutions, financial depth and political regimes) constant at their median values for the sample industrial countries. The dotted lines represent the confidence interval at the 10 percent level.

Figure 3
Response of the Budget Balance to a one standard deviation increase in Output
Sample of Developing Countries

3.1. Conditional on the degree of financial openness
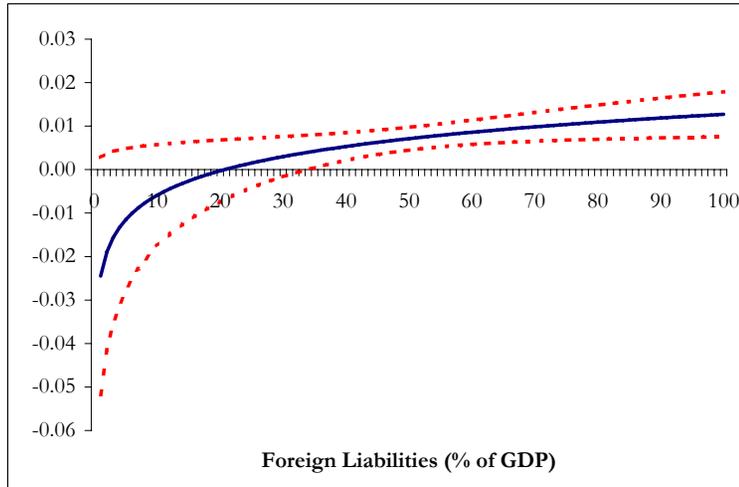
Foreign Liabilities (% of GDP)

3.2. Conditional on the level of financial development

Domestic credit to the private sector (% of GDP)

3.3. Conditional on the level of institutions

ICRG Index of Political Risk
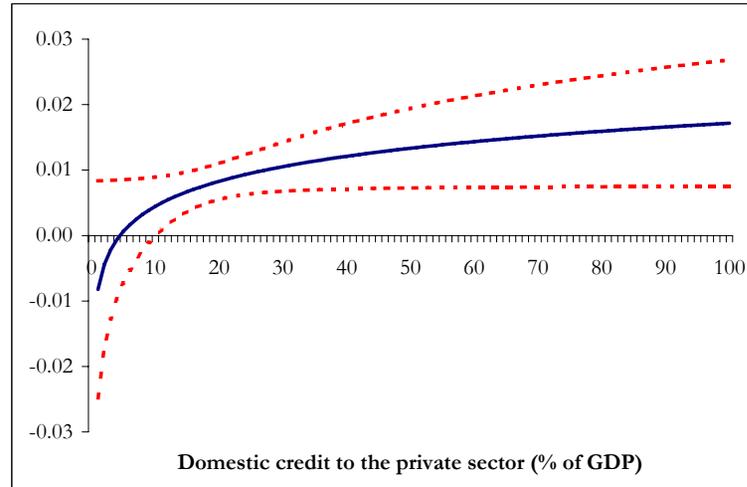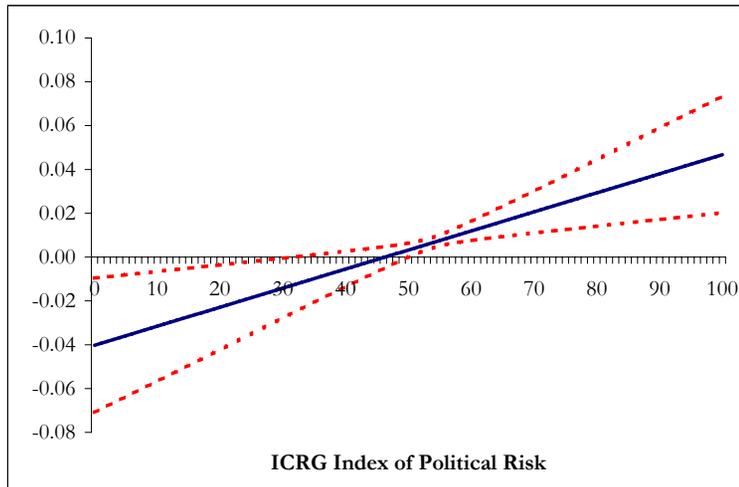
3.4. Conditional on the political regime

Polity Score
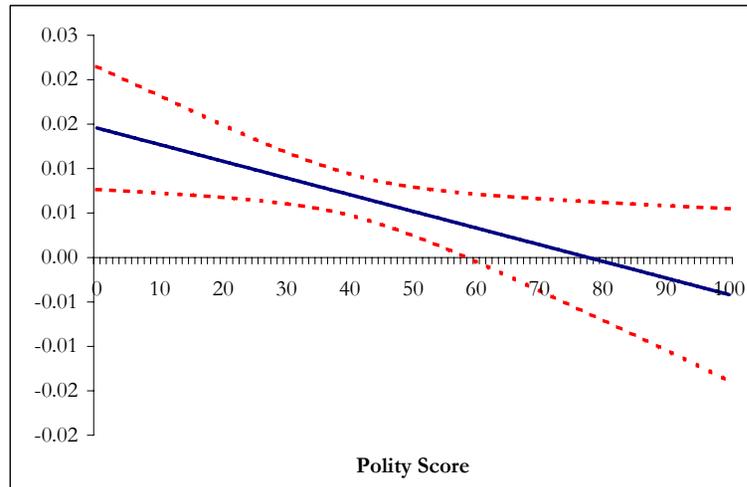
Note: The response of the budget balance is calculated using the coefficient estimates for the sample of developing countries in Table 7. Each panel calculates the reponse of the fiscal variable conditional on one dimension (say, financial openness) while keeping the other three dimensions (here, institutions, financial depth and political regimes) constant at their median values for the sample of developing countries. The dotted lines represent the confidence interval at the 10 percent level.

Table 8

Cyclicality of Fiscal Policy: Sensitivity to different measures of financial openness

Dependent Variable: Fiscal Indicator (as percentage of GDP, in log differences)
Full sample of countries, Annual data (1970-2005)
Estimation: Instrumental Variables 1/

	Budget Balance				Revenue				Expenditure			
	Financial Openness Measures				*Financial Openness Measures*				*Financial Openness Measures*			
	Equity-related Foreign		*Loan-related Foreign*		*Equity-related Foreign*		*Loan-related Foreign*		*Equity-related Foreign*		*Loan-related Foreign*	
	Foreign Liabilities	*Foreign Assets and Liabilities*	*Foreign Liabilities*	*Foreign Assets and Liabilities*	*Foreign Liabilities*	*Foreign Assets and Liabilities*	*Foreign Liabilities*	*Foreign Assets and Liabilities*	*Foreign Liabilities*	*Foreign Assets and Liabilities*	*Foreign Liabilities*	*Foreign Assets and Liabilities*
Variable	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Real Output	-0.904	-0.634	-2.398 **	-1.968 **	6.188 **	6.458 **	3.114	3.447	9.336 **	7.715 **	12.590 **	11.030 **
(in log differences)	(0.79)	(0.74)	(0.98)	(0.83)	(2.55)	(2.57)	(2.72)	(2.56)	(3.02)	(2.78)	(4.23)	(3.41)
Real Output x Financial Openness	-0.029	-0.015	0.189 **	0.186 **	0.083 *	0.132 *	-0.276	-0.361	0.108	0.169	-0.987 **	-0.928 **
(FO: Foreign liabilities as % GDP, logs)	(0.03)	(0.03)	(0.08)	(0.08)	(0.05)	(0.08)	(0.25)	(0.28)	(0.07)	(0.11)	(0.37)	(0.33)
Real Output x Financial Depth	0.111	0.074	0.167 **	0.097 **	-0.896 **	-0.967 **	-0.274	-0.213	-1.112 **	-0.976 **	-0.942 **	-0.661 **
(FD: Dom. Credit to Private Sector as % GL	(0.10)	(0.10)	(0.07)	(0.05)	(0.38)	(0.40)	(0.26)	(0.18)	(0.38)	(0.38)	(0.31)	(0.20)
Real Output x Institutional Quality	0.012	0.009	0.021 **	0.016 **	-0.056 **	-0.059 **	-0.020	-0.020	-0.106 **	-0.089 **	-0.101 **	-0.086 **
(IQ: ICRG Index of Political Risk)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.03)	(0.03)	(0.03)	(0.02)
Real Output x Democracy	-0.012	-0.008	-0.027 **	-0.019 **	0.079 **	0.081 **	0.038 *	0.035 *	0.141 **	0.112 **	0.148 **	0.117 **
(Democracy: Polity Score)	(0.01)	(0.01)	(0.01)	(0.01)	(0.03)	(0.03)	(0.02)	(0.02)	(0.05)	(0.04)	(0.05)	(0.04)
Fiscal indicator, lagged	-0.232 **	-0.233 **	-0.243 **	-0.259 **	-0.163 **	-0.165 **	-0.144 **	-0.141 **	-0.166 **	-0.173 **	-0.134 **	-0.139 **
(% of GDP, in log differences)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)
Terms of trade, lagged	-0.001	-0.001	-0.002	-0.002	0.106 **	0.106 **	0.115 **	0.114 **	0.073 **	0.074 **	0.084 **	0.082 **
(in logs)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)
War Dummy	-0.007 *	-0.006 *	-0.010 **	-0.009 **	0.013	0.013	0.002	0.003	0.028 *	0.023 *	0.026 *	0.024 *
(Dummy = 1 if internal or external war)	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)
No. Countries	90	90	90	90	83	83	83	83	90	90	90	90
No. Observations	1983	1983	1983	1983	1882	1882	1882	1882	2051	2051	2051	2051
R**2	0.138	0.157	0.136	0.144	0.125	0.121	0.090	0.086	0.084	0.086	0.108	0.092
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

1/ We instrument real output growth with lagged values of real output growth, current and lagged terms of trade changes, current and lagged growth in external demand, current and lagged changes in foreign interest rates.

Note: ** (*) indicates that the variable is significant at the 5 (10) percent level. The number in parenthesis represent the autocorrelation and heteroskedasticity consistent standard errors.

Table 9

Cyclicality of Fiscal Policy: Sensitivity to different measures of institutions

Dependent Variable: Fiscal Indicator (as percentage of GDP, in log differences)
Full sample of countries, Annual data (1970-2005)
Estimation: Instrumental Variables   1/

	Budget Balance				Revenue				Expenditure			
	ICRG Political Risk Sub-Indexes				*ICRG Political Risk Sub-Indexes*				*ICRG Political Risk Sub-Indexes*			
	Political Institutions	*Quality of Institutions*	*Socio-economic Environment*	*Index of Conflict*	*Political Institutions*	*Quality of Institutions*	*Socio-economic Environment*	*Index of Conflict*	*Political Institutions*	*Quality of Institutions*	*Socio-economic Environment*	*Index of Conflict*
Variable	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Real Output	-0.714	-0.726	-1.084	-1.333 *	0.697	0.794	3.209	0.406	2.432	2.879	5.654 *	7.119 **
(in log differences)	(0.58)	(0.51)	(0.78)	(0.69)	(2.24)	(1.96)	(2.76)	(2.29)	(2.35)	(1.98)	(3.05)	(2.99)
Real Output x Financial Openness	0.077	0.086	0.119	0.107 *	-0.066	-0.066	-0.345	-0.038	-0.227	-0.287	-0.564 *	-0.564 **
(FO: Foreign liabilities as % GDP, logs)	(0.06)	(0.06)	(0.08)	(0.06)	(0.26)	(0.24)	(0.31)	(0.25)	(0.26)	(0.24)	(0.33)	(0.28)
Real Output x Financial Depth	0.072	0.072	0.088 *	0.150 **	-0.091	-0.042	-0.252	-0.090	-0.351 *	-0.341	-0.468 **	-0.848 **
(FD: Dom. Credit to Private Sector as % GI	(0.06)	(0.06)	(0.06)	(0.07)	(0.23)	(0.22)	(0.22)	(0.27)	(0.22)	(0.22)	(0.22)	(0.31)
Real Output x Institutional Quality	0.039 *	0.028 **	0.022 *	0.019 **	-0.034	-0.060 **	-0.051	-0.002	-0.106	-0.112 **	-0.112 **	-0.089 **
(IQ: ICRG Index of Political Risk)	(0.02)	(0.01)	(0.01)	(0.01)	(0.06)	(0.03)	(0.04)	(0.02)	(0.08)	(0.03)	(0.05)	(0.03)
Real Output x Democracy	-0.010	-0.005	-0.004	-0.010	0.021	0.024 *	0.027 *	0.012	0.029	0.027 *	0.032	0.062 **
(Democracy: Polity Score)	(0.01)	(0.00)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)
Fiscal indicator, lagged	-0.237 **	-0.239 **	-0.245 **	-0.242 **	-0.149 **	-0.150 **	-0.142 **	-0.150 **	-0.166 **	-0.165 **	-0.159 **	-0.148 **
(% of GDP, in log differences)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Terms of trade, lagged	0.001	0.000	-0.001	0.000	0.116 **	0.119 **	0.117 **	0.118 **	0.072 **	0.076 **	0.083 **	0.079 **
(in logs)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
War Dummy	-0.006 *	-0.007 *	-0.007 *	-0.008 *	-0.005	-0.003	0.001	-0.006	0.009	0.013	0.014	0.016
(Dummy = 1 if internal or external war)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
No. Countries	90	90	90	90	83	83	83	83	90	90	90	90
No. Observations	1983	1983	1983	1983	1882	1882	1882	1882	2051	2051	2051	2051
R**2	0.152	0.149	0.126	0.096	0.112	0.116	0.088	0.112	0.124	0.119	0.088	0.090
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

1/ We instrument real output growth with lagged values of real output growth, current and lagged terms of trade changes, current and lagged growth in external demand, current and lagged changes in foreign interest rates.

Note: ** (*) indicates that the variable is significant at the 5 (10) percent level. The number in parenthesis represent the autocorrelation and heteroskedasticity consistent standard errors.

Table 10

Cyclicality of Fiscal Policy: Baseline regression for tax revenue, current and capital expenditure

Dependent Variable: Fiscal Indicator (as percentage of GDP, in log differences)

Estimation: Instrumental Variables (Annual data, 1970-2005)   1/

Variable	Tax Revenue			Current Expenditure			Capital Expenditure		
	All [1]	Industrial [2]	Developing [3]	All [4]	Industrial [5]	Developing [6]	All [7]	Industrial [8]	Developing [9]
Real Output	0.635 **	-1.284 **	0.571 **	-0.267	-1.037 **	-0.009	0.823 *	-1.715 **	1.642 **
(in log differences)	(0.23)	(0.42)	(0.24)	(0.21)	(0.25)	(0.29)	(0.45)	(0.64)	(0.57)
Fiscal indicator, lagged	-0.451 **	-0.959 **	-0.195 **	-0.154 **	-0.153 **	-0.152 **	-0.201 **	-0.062 **	-0.243 **
(% of GDP, in log differences)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)
Terms of trade, lagged	0.063 **	0.095	0.058 **	0.017	0.048	0.011	0.106 **	-0.250	0.128 **
(in logs)	(0.02)	(0.07)	(0.02)	(0.02)	(0.04)	(0.03)	(0.05)	(0.18)	(0.06)
War Dummy	-0.002	0.064 *	0.003	0.019 *	-0.009	0.025 *	-0.051 *	0.033	-0.039
(Dummy = 1 if internal or external war)	(0.01)	(0.04)	(0.01)	(0.01)	(0.02)	(0.01)	(0.03)	(0.11)	(0.03)
No. Countries	104	82	22	87	22	65	87	22	65
No. Observations	2366	702	1664	2184	699	1485	2166	699	1467
R**2	0.328	0.870	0.141	0.173	0.410	0.158	0.184	0.149	0.216
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

1/ We instrument real output growth with lagged values of real output growth, current and lagged terms of trade changes, current and lagged growth in external demand, current and lagged changes in foreign interest rates.

*Note: ** (*) indicates that the variable is significant at the 5 (10) percent level. The number in parenthesis represent the autocorrelation and heteroskedasticity consistent standard errors.*

Table 11

Cyclicality of Fiscal Policy: Tax revenue, current and capital Expenditure

Dependent Variable: Fiscal Indicator (as percentage of GDP, in log differences)

Estimation: Instrumental Variables (Annual data, 1970-2005) 1/

Variable	Tax Revenue			Current Expenditure			Capital Expenditure		
	All [1]	Industrial [2]	Developing [3]	All [4]	Industrial [5]	Developing [6]	All [7]	Industrial [8]	Developing [9]
Real Output	2.557	-5.557 *	2.172	9.067 **	-0.796	6.219 *	30.231 **	-18.472	24.213 **
(in log differences)	(2.74)	(3.40)	(3.11)	(3.57)	(3.46)	(3.23)	(7.73)	(19.54)	(7.09)
Real Output x Financial Openness	-0.220	-0.040	-0.215	-0.766 **	-0.195 **	-0.508 *	-2.481 **	0.207	-1.938 **
(FO: Foreign liabilities as % GDP, logs)	(0.27)	(0.09)	(0.31)	(0.33)	(0.08)	(0.29)	(0.71)	(0.37)	(0.65)
Real Output x Financial Depth	-0.221	0.586 **	-0.195	-0.683 **	-0.034	-0.492 **	-1.919 **	0.568	-1.419 **
(FD: Dom. Credit to Private Sector as % GDP, logs)	(0.24)	(0.30)	(0.28)	(0.25)	(0.28)	(0.24)	(0.56)	(1.68)	(0.53)
Real Output x Institutional Quality	-0.016	0.040	-0.012	-0.069 **	0.005	-0.052 **	-0.219 **	0.208	-0.193 **
(IQ: ICRG Index of Political Risk)	(0.01)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.05)	(0.19)	(0.05)
Real Output x Democracy	0.035	-0.051	0.030	0.109 **	0.023	0.071 **	0.306 **	-0.335	0.200 **
(Democracy: Polity Score)	(0.02)	(0.05)	(0.02)	(0.04)	(0.05)	(0.03)	(0.09)	(0.27)	(0.07)
Fiscal indicator, lagged	-0.145 **	-0.121 **	-0.155 **	-0.117 **	-0.153 **	-0.126 **	-0.207 **	-0.057	-0.238 **
(% of GDP, in log differences)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.04)	(0.03)
Terms of trade, lagged	0.117 **	0.114 **	0.116 **	0.041 *	-0.020	0.047 *	0.146 **	-0.314 *	0.188 **
(in logs)	(0.02)	(0.04)	(0.03)	(0.03)	(0.04)	(0.03)	(0.07)	(0.19)	(0.07)
War Dummy	0.000	0.014	-0.002	0.034 **	0.004	0.028 *	0.002	-0.059	-0.020
(Dummy = 1 if internal or external war)	(0.01)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.04)	(0.13)	(0.04)
No. Countries	83	22	61	80	22	58	80	22	58
No. Observations	1882	624	1258	1928	632	1296	1914	632	1282
R**2	0.135	0.084	0.172	0.064	0.354	0.130	0.102	0.174	0.145
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

1/ We instrument real output growth with lagged values of real output growth, current and lagged terms of trade changes, current and lagged growth in external demand, current and lagged changes in foreign interest rates.

Note: ** (*) indicates that the variable is significant at the 5 (10) percent level. The number in parenthesis represent the autocorrelation and heteroskedasticity consistent standard errors.

Figure 4
Response of the Government Expenditure to a one standard deviation increase in Output
Full Sample of Countries

4.1. Conditional on the degree of financial openness
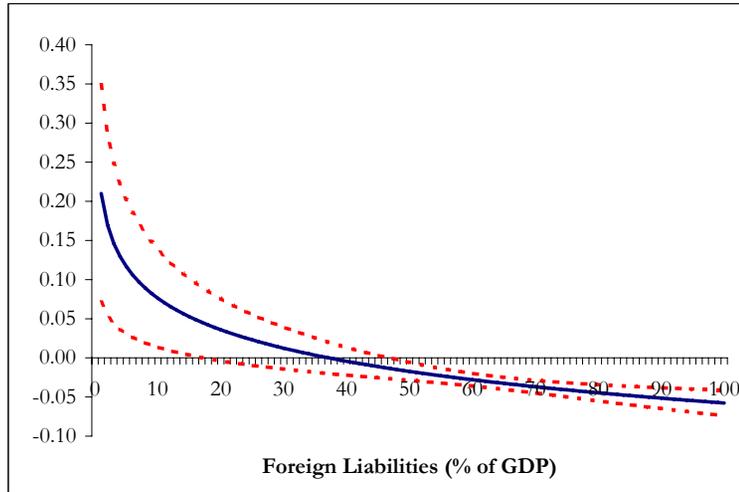
Foreign Liabilities (% of GDP)

4.2. Conditional on the level of financial development

Domestic credit to the private sector (% of GDP)

4.3. Conditional on the level of institutions

ICRG Index of Political Risk
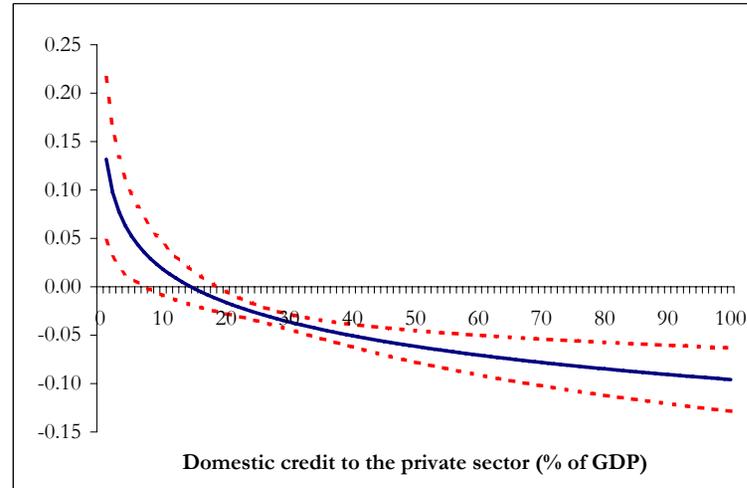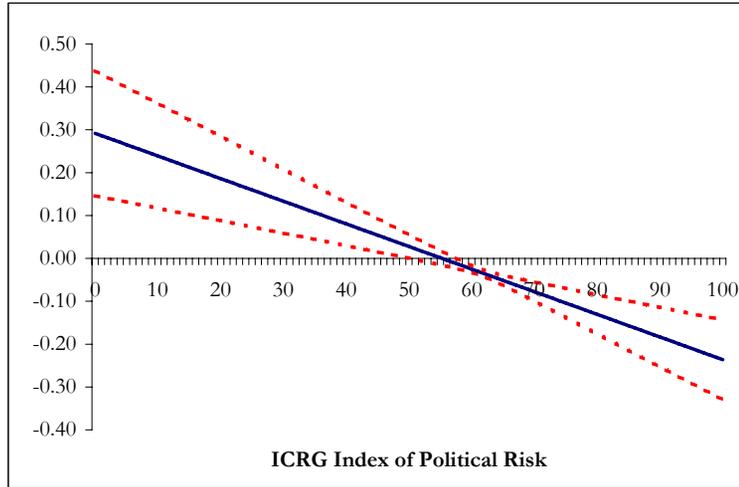
4.4. Conditional on the political regime

Polity Score

Note: The response of the government expenditure is calculated using the coefficient estimates for the full sample of countries in Table 7. Each panel calculates the reponse of the fiscal variable conditional on one dimension (say, financial openness) while keeping the other three dimensions (here, institutions, financial depth and political regimes) constant at their median values for the full sample of countries. The dotted lines represent the confidence interval at the 10 percent level.

Figure 5

Response of the CG Current Expenditure to a one standard deviation increase in Output
Full Sample of Countries

5.1. Conditional on the degree of financial openness
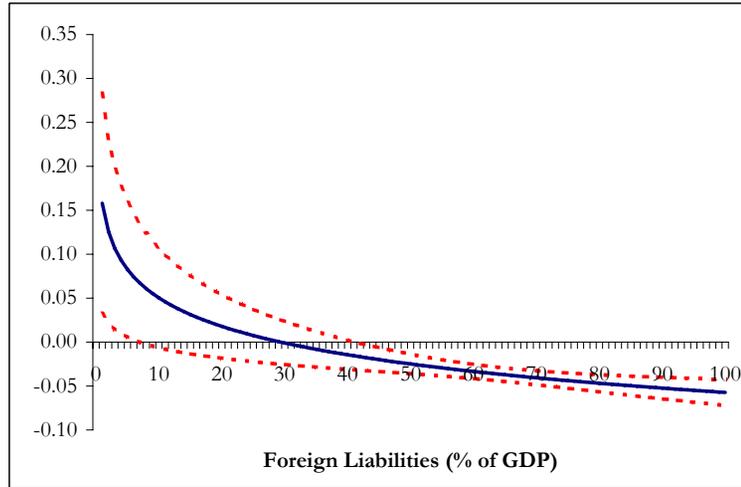
Foreign Liabilities (% of GDP)

5.2. Conditional on the level of financial development

Domestic credit to the private sector (% of GDP)

5.3. Conditional on the level of institutions

ICRG Index of Political Risk
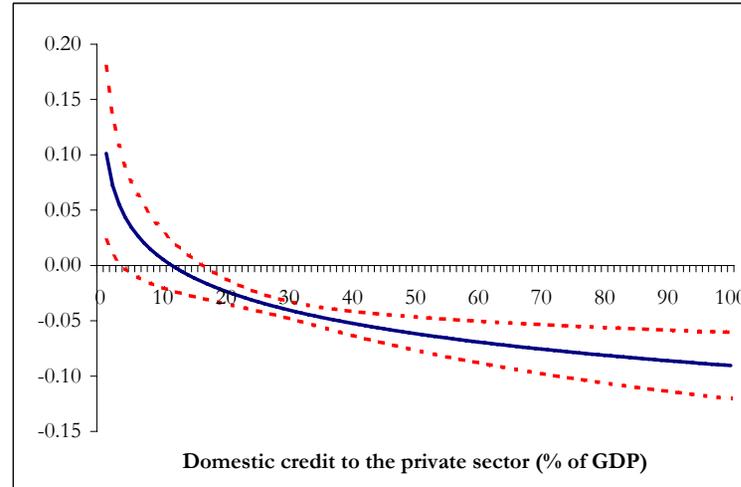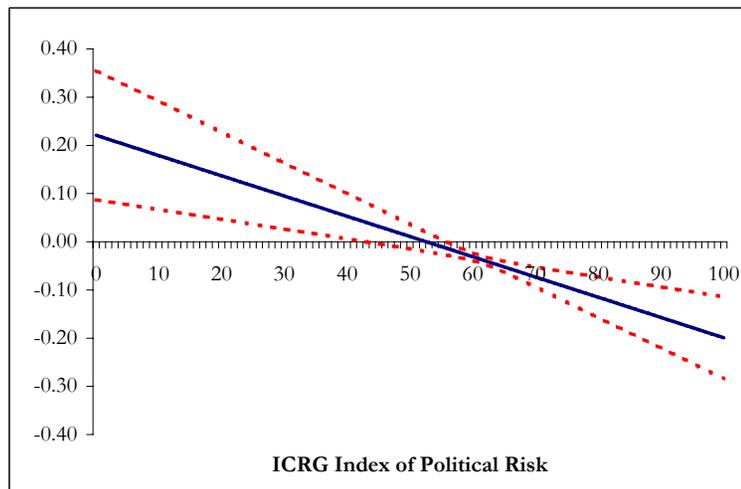
5.4. Conditional on the political regime

Polity Score
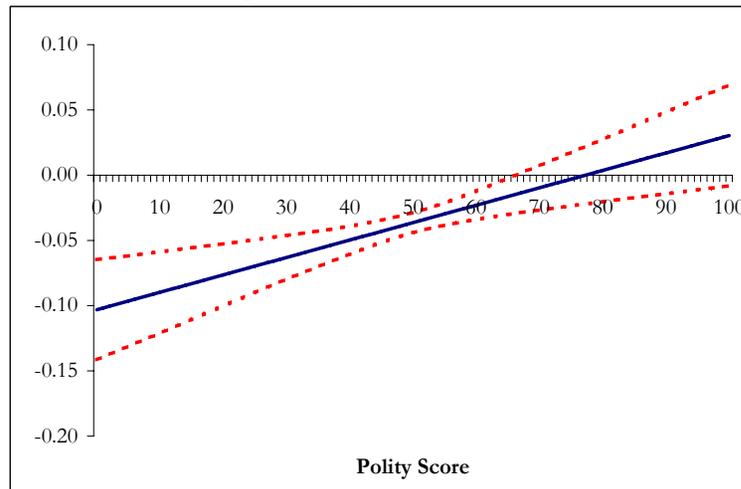
Note: The response of the current expenditure is calculated using the coefficient estimates for the full sample of countries in Table 11. Each panel calculates the reponse of the fiscal variable conditional on one dimension (say, financial openness) while keeping the other three dimensions (here, institutions, financial depth and political regimes) constant at their median values for the full sample of countries. The dotted lines represent the confidence interval at the 10 percent level.

Table 12

Cyclicality of Fiscal Policy: The behavior of general government consumption expenditure

Dependent Variable: General Government Consumption Expenditure (as percentage of GDP, in log differences)

Estimation: Instrumental Variables (Annual data, 1970-2005) 1/

Variable	Baseline			Augmented		
	All	Industrial	Developing	All	Industrial	Developing
	[1]	[2]	[3]	[4]	[5]	[6]
Real Output	-0.325 **	-0.406 **	-0.375 **	6.744 **	-8.128 **	6.204 **
(in log differences)	(0.14)	(0.16)	(0.17)	(2.46)	(2.42)	(2.44)
Real Output x Financial Openness	..	..	..	-0.615 **	-0.066	-0.582 **
(FO: Foreign liabilities as % GDP, logs)				(0.21)	(0.06)	(0.21)
Real Output x Financial Depth	..	..	..	-0.590 **	0.555 **	-0.541 **
(FD: Dom. Credit to Private Sector as % GDP, logs)				(0.23)	(0.21)	(0.24)
Real Output x Institutional Quality	..	..	..	-0.045 **	0.072 **	-0.041 **
(IQ: ICRG Index of Political Risk)				(0.01)	(0.02)	(0.02)
Real Output x Democracy	..	..	..	0.091 **	-0.086 **	0.080 **
(Democracy: Polity Score)				(0.03)	(0.04)	(0.02)
Fiscal indicator, lagged	-0.194 **	-0.090 **	-0.201 **	-0.206 **	-0.163 **	-0.217 **
(% of GDP, in log differences)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
Terms of trade, lagged	0.061 **	0.118 **	0.060 **	0.078 **	0.022	0.078 **
(in logs)	(0.01)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)
War Dummy	0.037 **	-0.012	0.037 **	0.037 **	-0.004	0.038 **
(Dummy = 1 if internal or external war)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
No. Countries	132	22	110	109	22	87
No. Observations	3649	719	2930	2852	656	2196
R**2	0.153	0.480	0.152	0.272	0.377	0.281
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes

See footnote in Table 11.

Figure 6
Response of the CG Capital Expenditure to a one standard deviation increase in Output
Full Sample of Countries

6.1. Conditional on the degree of financial openness
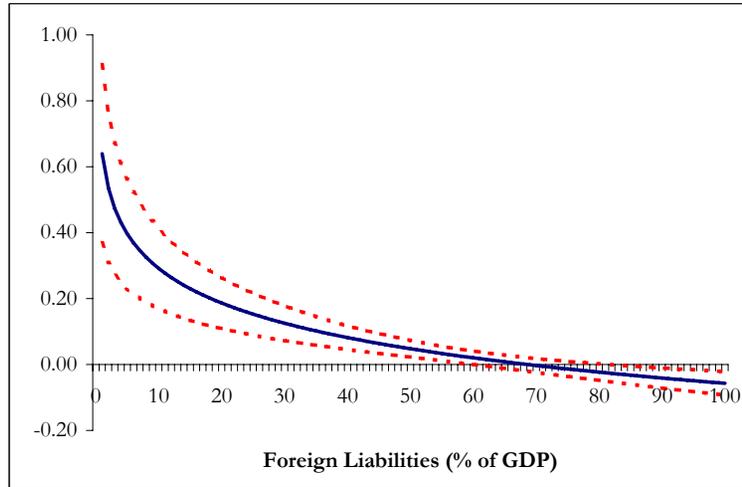
Foreign Liabilities (% of GDP)

6.2. Conditional on the level of financial development

Domestic credit to the private sector (% of GDP)

6.3. Conditional on the level of institutions

ICRG Index of Political Risk
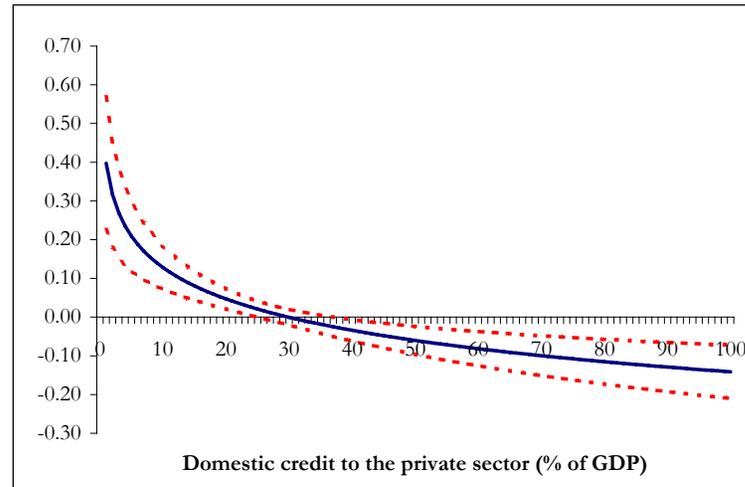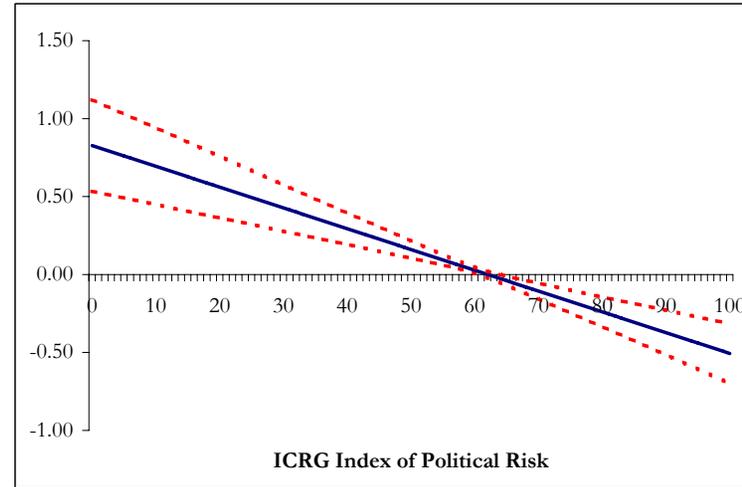
6.4. Conditional on the political regime

Polity Score
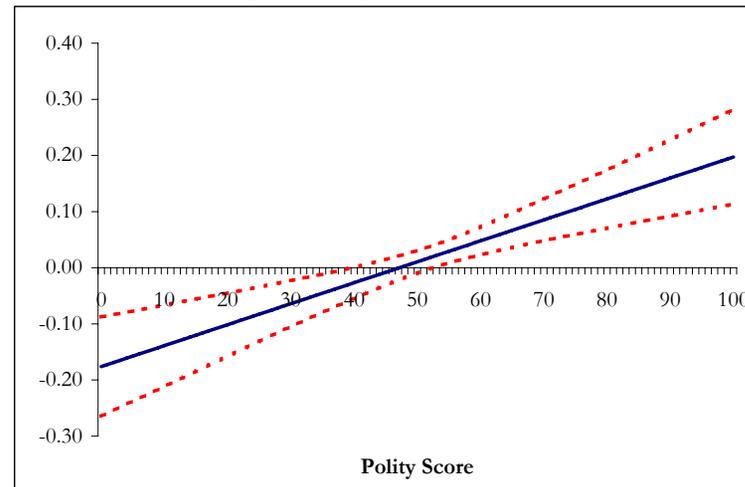
Note: The response of the capital expenditure is calculated using the coefficient estimates for the full sample of countries in Table 11. Each panel calculates the reponse of the fiscal variable conditional on one dimension (say, financial openness) while keeping the other three dimensions (here, institutions, financial depth and political regimes) constant at their median values for the full sample of countries. The dotted lines represent the confidence interval at the 10 percent level.

Figure 7

Response of the GG Consumption Expenditure to a one standard deviation increase in Output

Full Sample of Countries

7.1. Conditional on the degree of financial openness
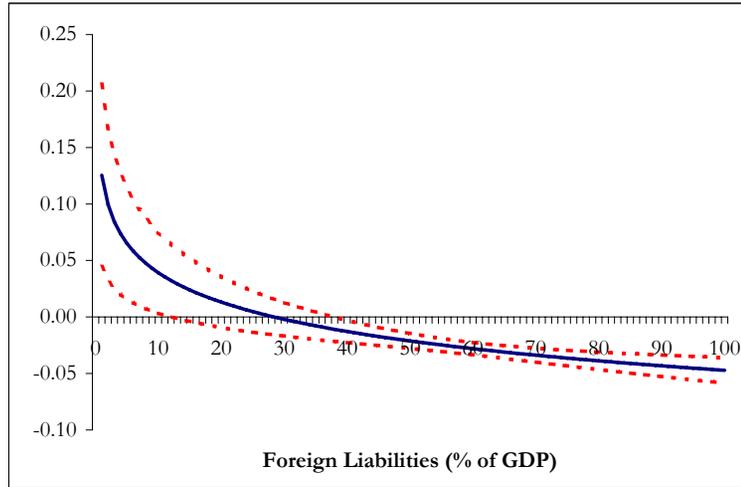
Foreign Liabilities (% of GDP)

7.2. Conditional on the level of financial development

Domestic credit to the private sector (% of GDP)

7.3. Conditional on the level of institutions

ICRG Index of Political Risk
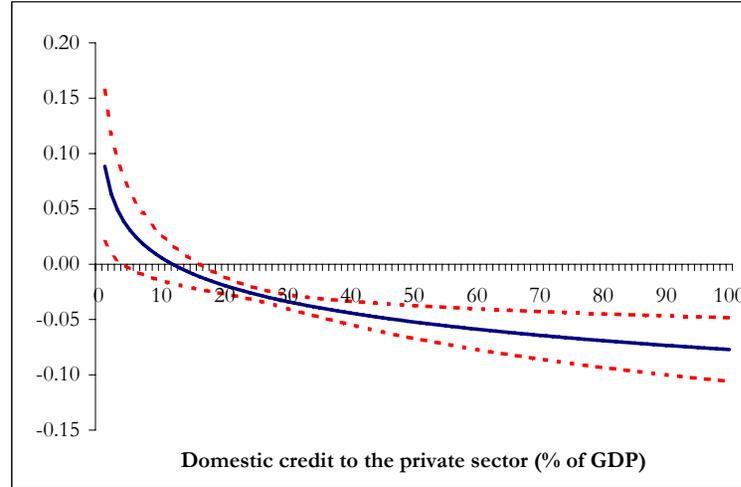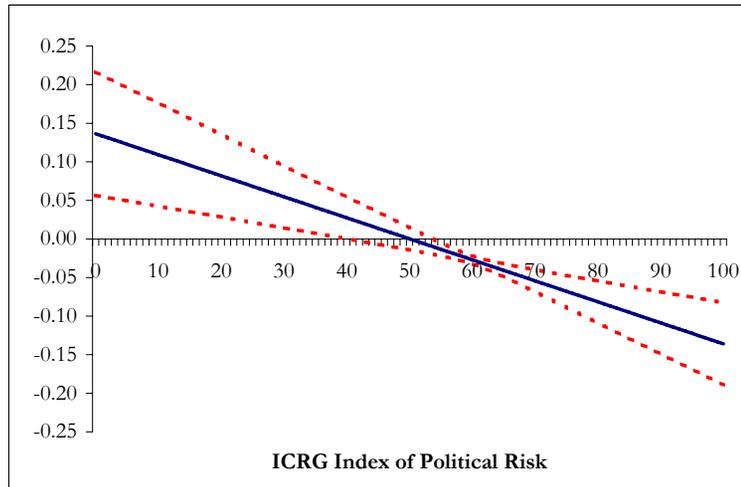
7.4. Conditional on the political regime

Polity Score
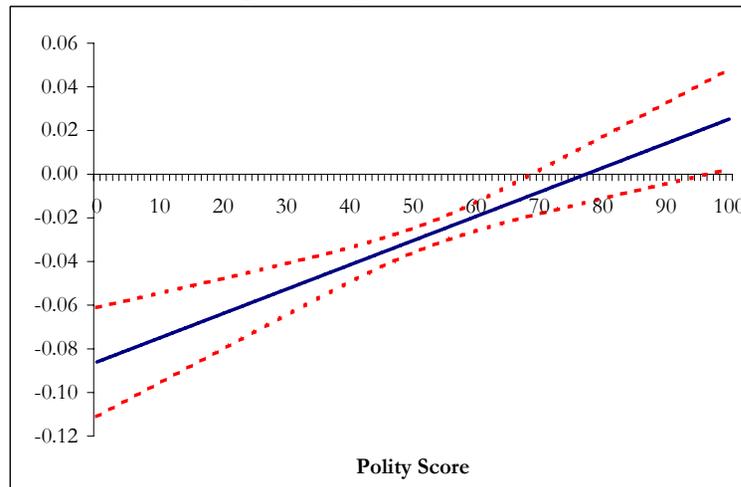
Note: The response of the GG consumption expenditure is calculated using the coefficient estimates for the full sample of countries in Table 12. Each panel calculates the reponse of the fiscal variable conditional on one dimension (say, financial openness) while keeping the other three dimensions (here, institutions, financial depth and political regimes) constant at their median values for the full sample of countries. The dotted lines represent the confidence interval at the 10 percent level.

Figure 8
Explaining differences in cyclical behavior of fiscal policies
in developing areas compared to industrial economies

8.1. Budget balance

Financial openness · Financial development · Institutions · Political regime

8.2. Government expenditure

Financial openness · Financial development · Institutions · Political regime

8.3. Current expenditure

Financial openness · Financial development · Institutions · Political regime

8.4. Capital expenditure

Financial openness · Financial development · Institutions · Political regime

8.5. GG Consumption Expenditure
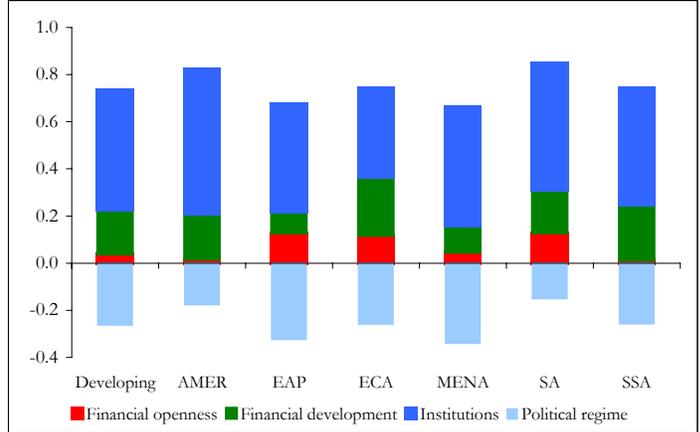
Financial openness · Financial development · Institutions · Political regime

Figure 9
Explaining differences in cyclical behavior of fiscal policies
in developing areas compared to industrial economies

9.1. Budget balance
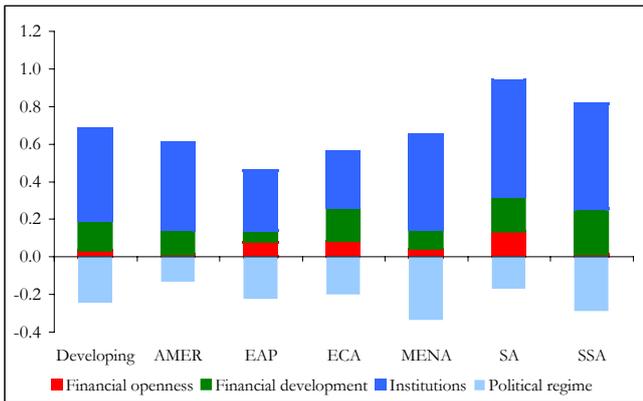
9.2. Government expenditure
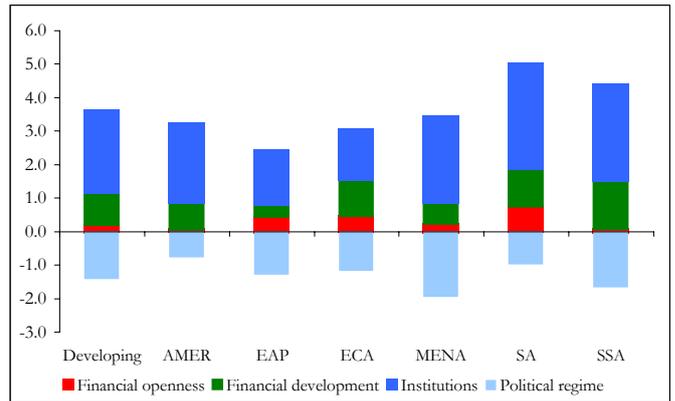
9.3. Current expenditure
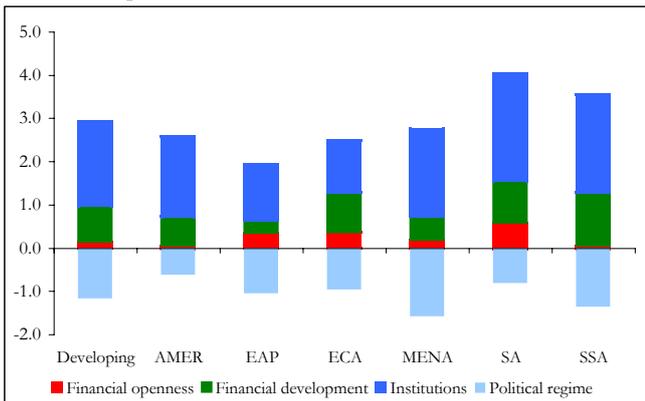
9.4. Capital expenditure
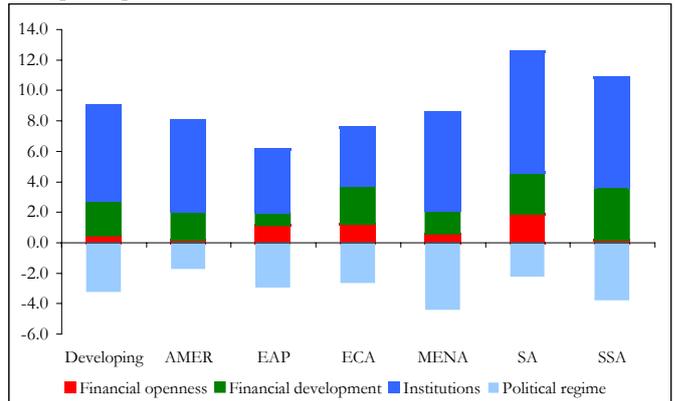
8.5. GG Consumption Expenditure
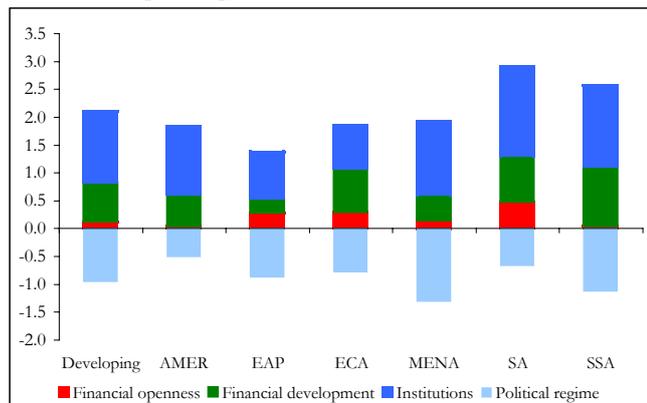
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