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Current Expenditure Upswings in Good Times and Capital Expenditure Downswings in Bad Times?

New Evidence from Developing Countries

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Abstract[*]

This paper studies the cyclical properties of two key expenditure categories (current and public investment spending) during the different phases of the business cycle (good times and bad times). Anecdotal evidence suggests that policymakers usually cannot resist the temptation of spending more on current expenditure in good times, but only pick capital expenditures to adjust during bad times. The paper answers the following questions: do current and capital expenditures react to the business cycle? If so, by how much, and why? In a sample of more than 100 developing countries and 30 developed countries observed between 1980 and 2014, a new empirical regularity specific to developing countries is identified: upswings are associated with increases in current primary expenditures (e.g., wages, transfers) only, while public investment falls and current spending remains acyclical during downturns. Evidence is also presented that this asymmetrical response is more pronounced in countries where incumbent politicians face shorter time horizons and weak institutions. Other type of factors traditionally discussed in the literature (limited creditworthiness, fiscal rules, and tax base volatility) have limited explanatory power.

JEL classifications: D72, E32, E62, H50
Keywords: Cyclicality, Public spending, Fiscal asymmetry, Developing countries

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1. Introduction

There is a large theoretical and empirical literature documenting the procyclicality of fiscal policy in developing countries. At the theoretical level scholars have identified economic determinants such as imperfect access to credit markets, and political distortions that tend to generate a procyclical bias in fiscal policy (Alesina, Campante and Tabellini, 2008; Talvi and Végh, 2005; Tornell and Lane, 1999). Empirically, the literature has advanced in documenting procyclicality of different dimensions of fiscal policy, including fiscal balances and total expenditures (Kaminsky, Reinhart and Végh, 2004; Gavin and Perotti, 1997), tax rates (Végh and Vuletin, 2015), as well as addressing important methodological (reverse causality) problems (Ilzetzki and Végh, 2008; Jaimovich and Panizza, 2007; Rigobón, 2004).

However, there are still some important gaps in this literature, particularly when it comes to studying the behavior of key components of public expenditure. First, scholars have often overlooked the distinction between good and bad times, capturing only average effects of GDP movements (output gaps) on fiscal policy.[1] Identifying asymmetrical fiscal responses is important for policy purposes: if certain expenditure items increase in good times but do not fall in bad times, such asymmetries could undermine fiscal sustainability (Balassone and Kumar, 2007) and may also help explain biases in the composition of public spending, or why specific spending categories are losing ground relative to others (Izquierdo, 2016). Secondly, while the cyclical properties of aggregate expenditures are well known, evidence on the cyclicality of specific expenditure components is still relatively thin.[2] Since different public spending items are associated with diverse fiscal multipliers (Auerbach and Gorodnichenko, 2012; Riera-Crichton, Végh and Vuletin, 2015; Ilzetzki, Mendoza and Végh, 2013) and redistributive features (Lustig, 2017; Goñi, López and Servén, 2011), understanding whether procyclicality is rooted in one or another budget category can provide insights to important policy debates about the macroeconomic and distributive effects of fiscal policy in general and the design of fiscal adjustment strategies in particular (IMF, 2015; Easterly and Servén, 2003). For example, Calderon, Easterly and Servén

[1] The literature on fiscal asymmetry is almost exclusively concentrated on OECD countries (Balassone and Francese, 2004; Hercowitz and Strawczynski, 2004). Exceptions include Carneiro and Garrido (2015) and Balassone and Kumar (2007) for developing countries in general, and Clements, Faircloth and Verhoeven (2007) and Gavin and Perotti (1997) for Latin America in particular.

[2] See Arze del Granado, Gupta and Hadjdenberg (2013) and Akitoby et al. (2006) for important exceptions. While the former looks at the cyclicality of social (education, health) expenditures, the latter distinguishes between short and long-term reactions of different expenditures items to GDP, including capital and current spending.

(2003) review the evidence on fiscal adjustment episodes in Latin American countries through the 1990s and conclude that the cutback in public investment contributed to a decline in economic growth that, from an intertemporal perspective, may have proven a suboptimal fiscal adjustment strategy. More recently, research on spending multipliers indicates that when output is below potential, fiscal adjustments through public investment are three times more harmful to growth than adjustments trough public consumption expenditures: after two years, a one-dollar cut in public consumption (investment) reduces output by $0.4 ($1.3) (Izquierdo et al., 2016).

While from an economic standpoint it would be advisable to keep certain expenditure categories either countercyclical or at least, acyclical, political conditions and incentives may distort optimal policy decisions. A first best scenario likely calls for current expenditure to remain acyclical (except for automatic stabilizers such as unemployment insurance), growing at the rate of trend GDP, while capital expenditure and automatic stabilizers work countercyclically. However, as argued by an important political economy tradition, *institutions* may prove too weak to prevent special interests from exploiting the budget common pool during good times (Talvi and Végh, 2005; Tornell and Lane 1999; Velasco, 1997). In addition, *preferences* of those in charge of implementing fiscal policy over different budget components may vary, affecting incumbents' choices of which policy instruments to protect or expand during different phases of the cycle. For example, due to their different production technology, public spending components vary in their degree of *visibility* to voters, and hence, affect an incumbent's political payoffs differently (Rogoff, 1990). While consumption spending provides immediate payoffs, the benefits of public investment infrastructure often take more time to materialize. In the presence of short political time horizons, the temptation to bias such choice toward visible spending categories may prove irresistible. Moreover, in times of economic adjustment, capital expenditure cuts may prove to be more politically palatable than cuts in current expenditure, as the costs of cutting investment are harder for voters to perceive in bad times.

In this paper, we study the cyclical properties of two important expenditure categories (current and public investment spending) during the different phases of the business cycle to answer the following questions: what type of expenditures expand during upswings, what gets adjusted during downturns, by how much, and why? In a sample of more than 100 developing and emerging economies and 30 advanced countries observed between 1980 and 2014, we identify a new empirical regularity specific to developing countries: upswings are associated with increases

in current primary expenditures (e.g., wages, transfers) only, while public investment falls and current spending remains acyclical during downturns. We find no evidence of such asymmetrical behavior in advanced economies. We show that such fiscal asymmetrical response in developing countries is consistent with a political economy argument: incumbent politicians have stronger incentives to increase (decrease) current (capital) spending in good (bad) times in the presence of short political time horizons, and weak institutions provide the necessary means to achieve this policy equilibrium. Other types of factors traditionally found in the literature (limited creditworthiness, budget institutions, and tax base volatility) have limited explanatory power.

Our paper contributes to the literature on fiscal policy cyclicality in several ways. Empirically, we identify a new regularity regarding the asymmetrical behavior of two major budget categories (current and public investment spending) for a large sample of emerging and developing economies. While fiscal asymmetry in developing countries has been studied in the past, extant studies have concentrated on either total (Carneiro and Garrido, 2015; Balassone and Kumar, 2007) or social spending such as education and health (Arze del Granado, Gupta and Hadjdenberg, 2013). Previous research that has looked at the cyclical behavior of current/capital spending has not addressed whether procyclicality originates specifically in good or bad times (Akitoby et al., 2006), or has done so for only a subset of economies (oil-exporting countries) in the context of studying exchange rate dynamics (Arezki and Imsail, 2013).

While traditional explanations are a good starting point to uncover the reasons why policymakers pursue procyclical fiscal policies in general, they cannot fully account for the *composition* of the fiscal asymmetry in particular: that is, a policy pattern in which public investment gets adjusted during bad times, and current spending is boosted during good times. For example, imperfect access to international credit markets during bad times may leave governments with no choice but to cut spending, but it remains unclear which specific budget categories should bear the brunt of fiscal adjustment. To the extent that the multiplier of capital expenditure is larger than that of current expenditure, it may be beneficial to protect or expand capital expenditure to sustain aggregate demand. Moreover, while weak institutions should facilitate interest group lobbying that would push public expenditures upwards during good times, there is no clear-cut answer about which components are subject to such procyclical pressures. Thus, our second contribution is to test a political economy mechanism that could account for the results we observe.

We put forward the hypothesis that political time horizons are an important determinant of fiscal asymmetrical behavior. Politicians facing shorter time horizons are more likely to engage in asymmetric fiscal behavior, because of the variation in political payoffs associated with each spending component. Vis-à-vis current expenditures, the costs of cutting investment are harder for voters to perceive in bad times; and vis-à-vis capital spending, the benefits of providing current expenditures in good times are more immediate (Rogoff, 1990). While Rogoff's hypothesis that public spending shifts towards more visible current expenditures has been tested before in the context of the study of fiscal policy decisions around elections (Vergne, 2009; Katsimi and Sarantides, 2012; Gupta, Liu and Mulas Granados, 2016), we argue it can also shed light on the decision to adapt fiscal policy to changing economic circumstances. Finally, by focusing on policymaker's incentives in relation to their time or planning horizons, we contribute to an empirical literature emphasizing the intertemporal dimension of economic policymaking in general (Jalles, Mulas Granados and Tavares, 2017; Tommasi, Scartascini and Stein, 2014), and fiscal policy in particular (Besley and Case, 1995 and 2003; Crain and Oakley, 1995; Nogare and Ricciuti, 2011).

The paper is organized as follows. Section 2 reviews previous contributions on the political economy of procyclical spending, highlights key limitations, and briefly develops a new political mechanism that could account for asymmetrical fiscal responses. Section 3 presents the data and empirical strategy, and Section 4 presents stylized facts regarding fiscal asymmetry in developing countries and contrasting evidence among advanced economies. Section 5 traces the determinants of asymmetrical fiscal behavior, including the role of political time horizons. Section 6 goes a step further by testing the argument against plausible alternative explanations, and adds a number of robustness checks. Conclusions follow.

2. Literature Review: Economics, Institutions, and Political Incentives

As argued in the introduction, the literature on fiscal procyclicality has advanced greatly on both theoretical and empirical grounds over the last twenty years. Starting with Gavin and Perotti (1997) seminal contribution, first-generation studies tended to focus on the economic causes of procyclicality. In this line of research, developing countries find it hard to follow countercyclical policy because they lack access to international credit during recessions, suggesting that any explanation of procyclical behavior needs to take into account credit constraints or limited

creditworthiness (Riascos and Végh, 2003; Gavin et al., 1996). In addition to credit constraints, tax base volatility has also been associated with procyclical biases (Talvi and Végh, 2005). However, the problem with these type of economic explanations lies in the inability to provide answers to the following: why can't countries self-insure by accumulating fiscal resources in good times? Why would lenders not provide funds to countries if they were convinced that borrowing would help smooth out the cycle in the first place? To answer these questions, the literature turned to the political arena.

Political economy explanations of procyclicality build on the idea that fiscal decisions are the result of political processes that involve diverse actors with varied interests. These interactions take place mainly between politicians and voters, and between politicians that represent diverse interests or constituencies. In this tradition, scholars have identified two types of political distortions that tend to generate a procyclical bias in fiscal policy: cooperation and principal agent problems (Alesina, Campante and Tabellini, 2008; Talvi and Végh, 2005; Tornell and Lane, 1999). A classic example of a cooperation problem is the well-known common pool problem (Ostrom, 1990). In fiscal policy, the common pool is the budget that political players draw upon (financed from a general tax fund) to generate concentrated benefits (such as targeted public policies). Tornell and Lane (1999) develop a model in which multiple political groups compete for a share of the common pool, leading to a "voracity effect": a more than proportional increase in spending in response to shocks, such as a terms of trade windfall. Similarly, Talvi and Végh (2005) advance a model in which abundant fiscal resources create pressures to increase public spending. What factors determine the intensity of the voracity effect, and hence, the level of procyclicality in practice?

First, the number of actors drawing from the common pool has been found to be a relevant determinant of the voracity effect. The pressure to overspend during upturns increases as the number of groups increases. Braun (2001) and Lane (2003) find evidence consistent with this hypothesis for developing and OECD countries respectively: as the number of political veto players increases, fiscal policy becomes more procyclical. In addition to fragmentation, polarization has also been hypothesized as a key determinant of procyclicality (Humphreys and Sandbu, 2007; Ilzetzki, 2011; Woo, 2009). The intuition is that as the preferences over the desired distribution of public spending between political groups diverge (or more generally, the deeper the

division prevalent among the groups), the greater will be the incentive of policymakers to spend too much while in power, leading to procyclical fiscal policies.

Against this backdrop, the quality of political and fiscal institutions has been argued to provide credible mechanisms to tone down political pressures from taking place, and thus, act as an "antidote" against procyclical biases in public spending. For example, Frankel, Végh and Vuletin (2012) show that institutional frameworks characterized by the protection of property rights, the control of corruption, higher bureaucratic quality, and a strong law and order tradition have allowed developing countries to "graduate" from procyclicality in the past decade. Using alternative proxies for institutional quality, Céspedes and Velasco (2014) find evidence consistent with Frankel et al. (2012) in a sample of 60 resource-rich countries, and Alesina, Campante and Tabellini (2008) show that measures of corruption are positively correlated with procyclical fiscal policy.[3]

Finally, a recent wave of studies that build on insights from the budget institutions literature has taken a deeper look at specific institutional features that could be beneficial in containing procyclical biases.[4] Bova, Carcenac and Guerguil (2014) focus on "second generation" fiscal rules (such as the use of cyclically adjusted fiscal targets or well-defined escape clauses) and find that these have contributed to less procyclicality in the developing world. In an event study analysis, Cordes et al. (2015) present evidence that fiscal policy tends to be countercyclical in the years following the introduction of expenditure rules across emerging economies. Based on a review of the experience of G-20 economies with fiscal consolidation, IMF (2014) shows strong budget institutions to have contributed in preserving public investment from budget cuts in the aftermath of the global financial crisis.

The literature reviewed above focuses on understanding the macro determinants of fiscal procyclicality, and provides different explanations as to why aggregate public spending is more procyclical in some countries than others. However, this literature does not explain why certain expenditure components could be more (or less) procyclical. While from an economic standpoint it would be advisable to keep certain expenditure categories either acyclical (e.g., public wages)

[3] This literature in turn draws on a large body of scholarship linking political institutions to fiscal outcomes in general (Persson and Tabellini, 2003).

[4] Budget institutions refer to the set of rules, procedures and practices according to which budgets are drafted, approved, and implemented. They include fiscal rules, transparency rules, and procedural rules (Alesina and Perotti, 1995).

or given the size of fiscal multipliers in recessions, countercyclical (e.g., investment), political incentives may distort optimal policy decisions.

As argued by Rogoff (1990) and a long-standing tradition in the political budget cycle literature, politicians have incentives to bias fiscal policy towards expenditures that are favored by voters, regardless of the state of economy (see Drazen, 2000, and Franzese and Long Jusko, 2006 for reviews). Public spending components differ in their production technology: public investment decided at time *t*, only becomes visible and productive at time *t+1*, while current expenditures are observed by voters contemporaneously (Rogoff, 1990; Vergne, 2009). In this sense, current expenditures are immediately visible by voters and hence of more direct political value to politicians. In addition, and vis-à-vis current expenditures, the costs of cutting investment are harder for voters to perceive in bad times so politicians may find it easier to cut capital expenditures during downturns.[5] The assumption that current spending provides immediate political benefits and that payoffs to public investment only materialize with a lag means that *political time horizons* should matter in shaping the response of fiscal policy to economic shocks. In particular, this paper puts forward the hypothesis that politicians who discount future payoffs more heavily will be less likely to protect public investment during bad times and more likely to expand current expenditures during good times, and tests the argument against several alternative explanations. Before doing that, we first turn to documenting the asymmetrical behavior of expenditure policy in developing countries.

3. Data and Estimation

This study uses data from over 100 emerging and developing countries, spanning six different regions (Latin America and the Caribbean, Sub-Saharan Africa, Middle East and North Africa, Developing Europe, Asia, and the Commonwealth of Independent States) and also presents contrasting evidence for 30 advanced economies. We measure public investment using *gross fixed capital formation* of the general government (i.e., central plus subnational governments), and use alternative definitions in the robustness section.[6] We measure (primary) current primary expenditures as "expense" minus interest payments, and when available, decompose this category

[5] Current voters with sufficiently low levels of altruism could be in favor of capital expenditure cuts rather than current expenditure cuts, something that future generations could oppose (Izquierdo and Kawamura, 2016).
[6] Gross public fixed capital formation is measured by the total value of acquisition less disposals of fixed assets plus certain specified expenditure on services that adds to the value of non-produced assets

as the sum of: i) compensation of employees, ii) use of goods and services, iii) social transfers (social security benefits and other social benefits), and if) other current expenditures.

We use data on real GDP series and the Hodrick-Prescott (HP) filtering technique to estimate output gaps, setting the lambda parameter to 100. Following previous literature,[7] our main controls include the lagged fiscal balance as a percent of GDP, the log difference in the terms of trade, the lagged level of spending (current, capital, respectively) as a share of GDP, and the log of real GDP per capita. The lagged fiscal balance captures available fiscal space to run countercyclical policy, the rate of change in the terms of trade captures the effects of external shocks on fiscal policy, and the lagged level of spending is included to capture the notion that the growth rate of spending could depend on previous spending levels. Table A.1 in the Appendix provides the list of countries included in our study, and Table A.2 presents the sources and descriptive statistics of the variables used in the empirical analysis.

Our estimation strategy consists of regressing the log *difference* of real spending on output gap *levels* and selected control variables. The empirical model for the analysis is as follows:

$$\Delta G_{it} = \alpha + \beta_1 PosOG + \beta_2 NegOG + \sum \gamma' x_{it} + \mu_i + \theta_t + \varepsilon_{it}$$

Where *G* is the log of real government expenditure category (investment, current) for country *i* at time *t*, $\beta_1$and β_2 are the coefficients measuring the degree of cyclicality of public spending across the different states of the business cycle: good times are defined as those periods when the output gap is positive ($PosOG$), and bad times when the output gap is negative ($NegOG$), *x* is a vector of control variables, μ_i is a country fixed effect, θ_t a time effect, and the overall error term is given by ε. The cyclicality of different spending components is determined by looking at the sign and size of β coefficients: if $\beta < (>) 0$, spending is countercyclical (procyclical). When output is below (above) potential, a positive and statistically significant β coefficient means spending is decreasing (increasing). A non-statistically significant coefficient provides evidence of acyclical spending. In addition to testing the hypotheses that β_1 and β_2 are significantly different from zero individually, we also report the *p*-value from a (Wald) test of the joint hypothesis that β_1 and β_2 are both *simultaneously* equal to 0. Failure to reject this hypothesis provides indication that asymmetrical fiscal responses are not present in the data.

[7] See Gavin and Perotti (1997); Jaimovich and Panizza (2007); Arze del Granado, Gupta and Hadjdenberg (2013) and Klemm (2014).

Our choice of dependent variable follows Kaminsky, Reinhart and Végh (2004), who advise against using spending as a proportion of GDP on the left-hand side, since such indicator does not provide an unambiguous reading of the cyclical stance of fiscal policy, and call for extreme caution when drawing conclusions on policy cyclicality based on such indicator (or similar endogenous ones). In turn, the distinction between good and bad times based on observed levels of the output gap draws on the standard approach to capture fiscal asymmetry in the specialized literature (Balassone and Kumar, 2007; Clements, Faircloth and Verhoeven, 2007; Arze del Granado, Gupta and Hadjdenberg, 2013).[8] Finally, we estimate equation 1 using different econometric methods: fixed effects (FE), difference Generalized Methods of Moments (GMM), and instrumental variables (IV). When using difference GMM, the output gap is instrumented with both "internal" (past values of the endogenous regressor) and "external" instruments.[9] In the latter case, we instrument the output gap of country *i* with the export-weighted output gap of the country's major trading partners.[10]

3. Results

3.1 Stylized Facts

Table 1 reports our baseline results (without control variables). The specifications in columns 1 and 2 account for country fixed effects (without and with time effects, respectively), and columns 2 and 3 report results of Difference-GMM estimations (using internal and external instruments, respectively). Across all models, an asymmetrical fiscal response can be verified: during downturns, investment spending is reduced: in response to a 1 percentage point widening in the negative output gap, real investment spending decreases by up to 2.2 percent, but current expenditures remain acyclical. During upswings, only current expenditures increases are observed: the growth in real spending associated with a 1 percentage point increase in the positive output gap ranges between 0.7 percent and 2 percent. We formally test for the presence of fiscal asymmetry by looking at the joint hypothesis that *POS OG* and *NEG OG* coefficients are the same.

[8] The literature on energy price shocks and GDP movements in the United States presents alternative specifications and tests for empirically examining asymmetries (Kilian and Vigfusson, 2011). See Medina (2016) for an application in the fiscal domain..

[9] We generally use the first and second lag of the positive/negative output gap as instruments.

[10] In particular, we consider a fixed set of trading partners (Canada, China, Japan, India, United States and members of the European Union), and when needed, add country-specific partners to explain at least 60 percent of a country's exports.

With the exception of column 2, we can reject at the 5 percent level of significance the hypothesis that β_1 and β_2 are jointly equal to 0, we thus conclude that fiscal asymmetry is present in both expenditure categories. Table A.3 presents results using an instrumental variable (IV) strategy, in which similar results can be obtained, and report the related Durbin-Wu-Hausman (DWH) test.

Table 1. Baseline Specification

Dependent variable	*Investment spending*				*Current spending*			
	(1) FE	(2) FE	(3) Diff-GMM	(4) Diff-GMM	(5) FE	(6) FE	(7) Diff-GMM	(8) Diff-GMM
Pos *OG*	0.255	0.035	1.255	0.855	**0.892*** **	**0.744** **	**2.081*** **	**1.975** **
	(0.327)	(0.348)	(1.000)	(0.980)	**(0.293)**	**(0.288)**	**(0.755)**	(0.816)
Neg *OG*	**1.220** **	**1.189** **	**2.116*** **	**2.188*** **	0.350	0.380	0.688	0.805
	(0.509)	**(0.503)**	**(0.779)**		(0.343)	(0.377)	(0.944)	(1.007)
POS OG=NEG OG=0 p value (Wald test)	0.03	0.06	0.0006	0.001	0.002	0.006	0.0004	0.0003
Observations	2,906	2,906	2,798	2,668	2,174	2,174	2,063	1,959
Year effects	N	Y	Y	Y	N	Y	Y	Y
R-squared	0.005	0.031			0.010	0.053		
Number of countries	107	107	107	103	111	111	110	105
AR(1) test			0.000	0.000			0.000	0.000
AR(2) test			0.452	0.407			0.838	0.860
Hansen test			0.993	0.99			0.956	0.962

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

3.2 Robustness Checks

Table 2 adds several standard controls to the baseline specification: the lagged fiscal balance (LFB), growth in the terms of trade (TOT), the lagged share of spending (investment, current) on GDP (LEXP), and the level of economic development, as measured by (the log of) GDP per capita (GDPpc). While the magnitude and level of significance of the cyclical coefficients are somewhat reduced, the key result remains unchanged: while current expenditure growth reacts positively in good times—but does not fall in bad times—the opposite holds for real capital expenditure growth—i.e., capital expenditure falls in bad times, but it does not increase in good times. To establish the validity of GMM estimators, we rely on two diagnostics tests (see Roodman, 2006). We first report autocorrelation of order 1 and 2 in the first differenced residuals: they suggest that

the former is present but the latter is not, consistent with the identifying assumption of no serial correlation in the error term. We also report *p*-values of the Hansen test statistic.[11]

Table 2. Additional Controls

Dependent variable	*Investment spending*			*Current spending*		
	(1)	(2)	(3)	(4)	(5)	(6)
	FE	Diff-GMM	Diff-GMM	FE	Diff-GMM	Diff-GMM
Pos *OG*	0.729	1.680	1.696	**0.935*** **	**1.088*** **	**1.131*** **
	(0.560)	(1.497)	(1.210)	**(0.289)**	**(0.273)**	**(0.285)**
Neg *OG*	**1.537****	**2.346***	**1.618***	0.092	0.179	0.203
	(0.628)	**(1.277)**	**(0.959)**	(0.505)	(0.425)	(0.432)
LBAL	0.271	-0.694***	-0.529**	0.113	0.181*	0.184*
	(0.233)	(0.157)	(0.206)	(0.094)	(0.097)	(0.098)
DTOT	0.000	-0.003	0.000	-0.000	-0.000	0.001
	(0.000)	(0.002)	(0.001)	(0.000)	(0.001)	(0.001)
LEXP	-2.947***	-12.946***	-12.830***	-0.703***	-0.270***	-0.300***
	(0.722)	(3.058)	(2.902)	(0.229)	(0.087)	(0.104)
GDPpc	-0.029***	-0.040	-0.005	-0.008	-0.007*	-0.011*
	(0.010)	(0.037)	(0.020)	(0.006)	(0.004)	(0.006)
POS OG=NEG OG=0 p value (Wald test)	0.006	0.001	0.001	0.002	0.0002	0.0002
Observations	2,057	1,954	1,846	2,042	2,042	1,933
R-squared	0.098			0.086		
Number of countries	102	102	98	106	106	101
AR(1) test		0.0107	0.00155		0.000395	0.000694
AR(2) test		0.523	0.309		0.289	0.288
Hansen test		0.602	0.990		1.000	1.000

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Is this type of behavior unique or specific to emerging and developing countries? As shown by Table 3, the coefficients for the output gap are individually statistically insignificant for both spending categories in the sample of advanced economies, pointing to evidence of acyclicality in these types of economies. In addition, we fail to reject the hypothesis that β_1 and β_2 are both equal to 0, providing further evidence that asymmetry is not present in this sample. Thus, in what follows we focus our discussion on developing countries exclusively, as the result of acyclicality across developed countries was unchanged in all subsequent estimations.

[11] While in the case of current expenditure these values are implausibly high, in the case of investment spending column 2 suggests that they are high enough (but below 0.8) to support the joint validity of the instruments used.

Table 3. Advanced Economies

Dependent variable	*Investment spending*		*Current spending*	
	(1)	(2)	(4)	(5)
	FE	Diff-GMM	FE	Diff-GMM
Pos *OG*	0.420	0.594	-0.177	0.016
	(0.628)	(0.783)	(0.411)	(0.424)
Neg *OG*	0.910	0.538	0.070	0.155
	(0.626)	(0.840)	(0.485)	(0.483)
LBAL	0.833***	-0.417	0.377**	0.491***
	(0.149)	(0.666)	(0.175)	(0.134)
DTOT	0.001	0.001	-0.002	0.001
	(0.001)	(0.003)	(0.001)	(0.002)
LEXP	-3.264***	-21.643***	-0.474***	-0.072*
	(0.759)	(3.041)	(0.114)	(0.042)
GDPpc	-0.055	-0.572**	-0.023**	-0.032**
	(0.045)	(0.255)	(0.010)	(0.015)
POS OG=NEG OG=0 p value (Wald test)	0.06	0.5	0.89	0.91
Observations	609	586	660	660
R-squared	0.137		0.229	
Number of countries	23	23	30	30
AR(1) test		0.126		0.0146
AR(2) test		0.370		0.166
Hansen test		1.00		1.00

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In Table 4, we test the robustness of our results to changes in the definition of good and bad times. This time we redefine for each country good (bad) times as those years with output gaps above (below) the median gap for the time period under analysis (1980-2014). Again, when output gaps are below (above) the median, public investment (current expenditure) growth is negative (positive), but current expenditures (public investment) does not fall (increase). A similar result is obtained by looking at a second alternative definition of good and times, such as separating between "extreme" recessions and expansions (see Appendix Table A4).[12]

[12] An extreme recession (expansion) is defined as a year in which the output gap is below (above) the 25th (75th) percentile.

Table 4. Alternative Definition of Good and Bad Times

Dependent variable	*Investment spending*			*Current spending*		
	(1)	(2)	(3)	(4)	(5)	(6)
	FE	Diff-GMM	Diff-GMM	FE	Diff-GMM	Diff-GMM
OG > median	0.274	-3.052	-1.780	**0.888*** **	**1.860*** **	**1.845*** **
	(0.328)	(2.170)	(1.943)	**(0.289)**	**(0.495)**	**(0.491)**
OG < median	**1.204** **	**4.422***	**4.727***	0.359	0.471	0.520
	(0.504)	**(2.685)**	**(2.668)**	(0.343)	(0.696)	(0.729)
Observations	2,906	2,798	2,798	2,174	2,063	1,959
R-squared	0.005			0.010		
Number of countries	107	107	107	111	110	105
AR(1) test		0.000	0.000		0.000	0.000
AR(2) test		0.509	0.498		0.672	0.678

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5 disentangles primary current spending to its main components: wages and salaries, goods and services, social transfers, and other current expenditures. There is evidence that two components are driving the overall results: wages and salaries and especially, social transfers. Note that these are expenditure categories where "visibility" is particularly salient, providing suggestive evidence of the explanatory potential of exploiting differences in production technologies among expenditure categories and associated political incentives. In contrast, there are no consistent patterns in the remaining categories of primary expenditures such as goods and services and "other" current expenses.

Table 5. Disaggregating Current Expenditures into Its Main Components

Dependent variable	Wages and Salaries			Goods and Services			Social Transfers			Other current expenditures		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(7)	(8)	(9)
	FE	Diff-GMM	Diff-GMM	FE	Diff-GMM	Diff-GMM	FE	Diff-GMM	Diff-GMM	FE	Diff-GMM	Diff-GMM
Pos *OG*	0.863***	1.871***	1.965***	0.472	1.286	0.987	4.834**	8.853***	8.333**	0.513	0.905	1.898
	(0.291)	(0.592)	(0.525)	(0.513)	(0.898)	(0.926)	(2.090)	(3.392)	(3.428)	(0.795)	(0.969)	(1.438)
Neg *OG*	0.173	0.401	0.407	0.449	0.692	1.029	-1.537	-2.034	-2.580	1.189	1.293	1.303
	(0.279)	(0.350)	(0.322)	(0.653)	(0.778)	(0.807)	(2.662)	(3.388)	(3.452)	(0.863)	(1.303)	(1.778)
Observations	1,911	1,807	1,714	1,812	1,220	1,186	577	537	537	1,432	1,343	1,271
Year effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
R-squared	0.058			0.029			0.095			0.033		
Number of countries	104	104	98	100	72	70	40	40	40	84	84	79
AR(1) test		0.000	0.003		0.000	0.001		0.027	0.057		0.027	0.057
AR(2) test		0.098	0.664		0.165	0.484		0.196	0.249		0.196	0.249

Robust standard errors in parentheses

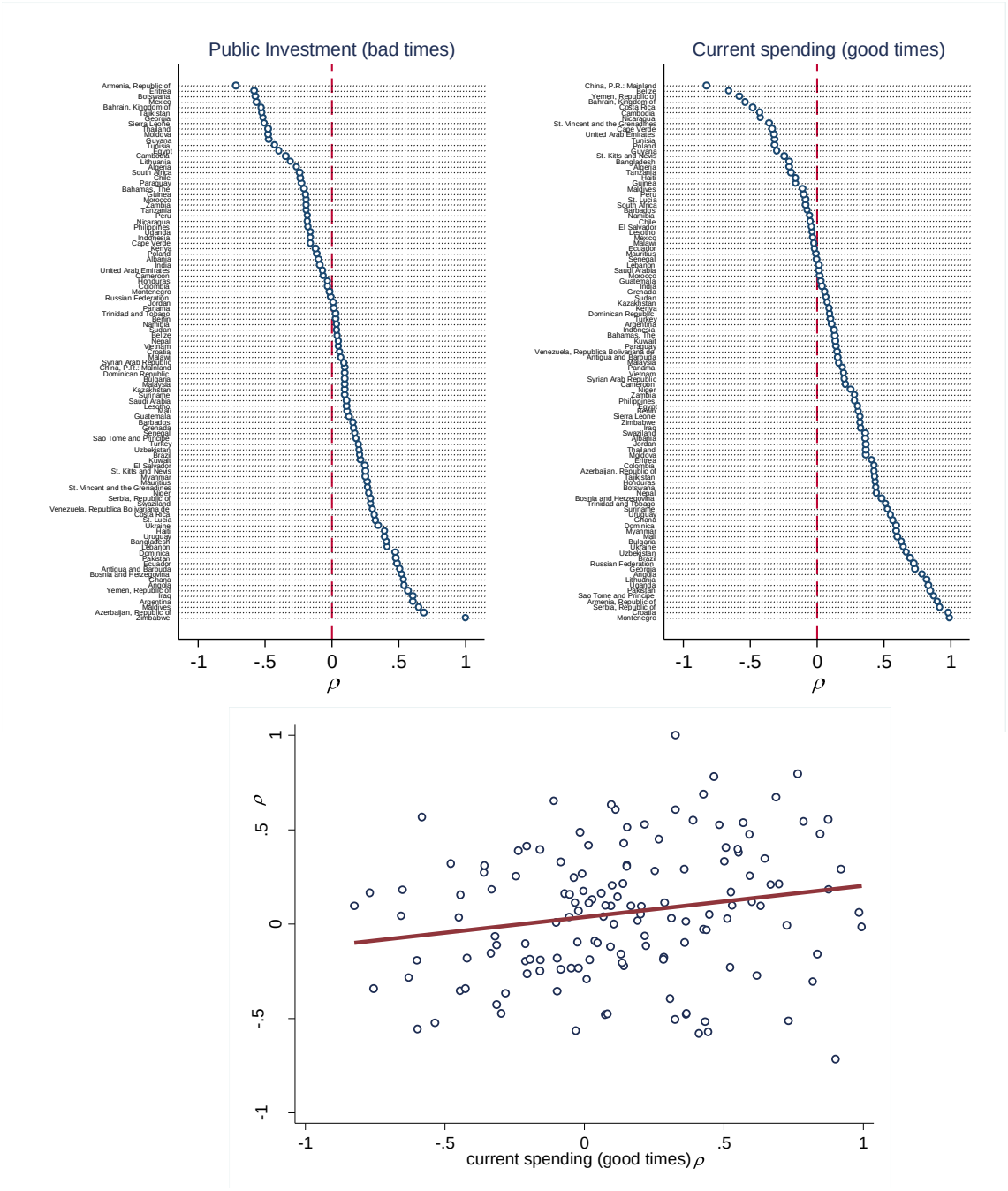
*** p<0.01, ** p<0.05, * p<0.1

3.4 Results on a Country-by-Country Basis

So far we have documented pooled panel estimates that provide "average" effects of the cyclical behavior of **expenditures**. Following Kaminsky, Reinhart and Végh (2004), this section exploits cross-country variation by presenting correlations of the cyclical components of output and spending across different states of the business cycle. Figure 1 present results from this exercise.[13] What stands out at first sight is the high level of heterogeneity in the behavior of fiscal policy. When it comes to the cyclicality of investment spending during bad times, 60 percent of developing countries show a positive correlation between GDP and capital expenditure, indicating that when output is below potential, government spending on investment tends to *decrease*. This share is slightly higher (66 percent) in the case of current spending during good times, in which a positive correlation indicates that when output is above potential, government spending tends to *increase.* As shown by the bottom panel of Figure 1, both phenomena are positively correlated, indicating that expenditure decisions on different components are somewhat interdependent, as countries that show procyclical behavior of current expenditure in good times tend to coincide with those countries that show procyclical behavior of capital expenditure in bad times. Appendix Figure A1 shows variation at the regional level in both dimensions.

[13] The following figures show country by country correlations of the cyclical components of spending and GDP conditional on the state of the business cycle (positive vs negative output gap).

Figure 1. Country Correlations (ρ) between Cyclical Components of Government Expenditure and GDP



4. Determinants of Fiscal Asymmetry

The previous section identified a new empirical regularity that pertains exclusively to developing countries: spending procyclicality affects both current and capital expenditures, but in different ways: good times are associated with current expenditure increases, but no investment spending changes; while in bad times, public investment falls and current spending remains acyclical. This section explores factors associated with this asymmetrical behavior. As discussed in Section 3, the empirical literature presents four key determinants of procyclicality levels: credit constraints, tax base variability, institutional quality, and budget institutions.[14] We measure each factor using the following indicators:

- *Credit constraints*: We use the financial openness index (*FOI*) from Chinn and Ito (2006) and an alternative indicator, Standard and Poor's sovereign credit risk ratings (*S&P*) which is available for a much smaller sample of countries, in which the letter-based system is converted to numerical scale.[15]
- *Tax base variability*: The variability is proxied by output volatility, defined by the average of a five-year rolling window of the standard deviation of real GDP growth (*VOL*).
- *Institutional quality*: We create a composite index of four different measures from the International Country Risk Guide (ICRG): the extent of corruption, the degree of law and order, bureaucratic quality, and the risks of expropriation/repudiation of contracts (*IQ*). As argued by Keefer and Knack (2007), this is a measure that captures the vulnerability of the state to special interests capture and the likelihood of rent seeking incentives.
- *Budget institutions*: Based on the IMF's fiscal rules database (Schaechter et al., 2012), we introduce a dummy variable indicating whether debt, expenditure,

[14] In addition, the latest commodity price cycle has renewed interest in estimating the direct impact of external price shocks on fiscal positions. See Medina (2016) for evidence across Latin America and Céspedes and Velasco (2014) across a broader sample of commodity exporting countries. In this paper, we control for the change in the terms of trade across all of our specifications (with the exception of Table 1). The fact that the terms of trade are not significant is probably the result of their effect on the business cycle, which is already included in the regression.

[15] We attribute numbers from 0 to 7 to S&P's letter-based system: SD (In default or in breach of an imputed promise); C (highly vulnerable to nonpayment); B (vulnerable to nonpayment); BB (less vulnerable, ongoing uncertainty); BBB (adequate protection parameters); A (strong payment capacity); AA (very strong payment capacity); AAA (highest quality rating).

balanced budget, or revenue rule is in place (*FR*). Alternatively, we draw on the Dabla Norris et al. (2010) quality of budget institutions index (*BI*) available for 72 developing countries, measuring the existence of top-down procedural arrangements, degree of transparency, and budget comprehensiveness, among other dimensions of the budget process (planning, approval, execution).[16]

Yet, none of these factors directly explain why would policymakers favor current expenditure increases during good times, and adjust on the investment side during bad times. Thus, we introduce a measure of politician's time horizons to test whether political incentives matter in shaping such asymmetrical response:

- *Political time horizons*: We use the number of years left in current term (*YLT*) from the Database of Political Institutions (DPI) (Cruz, Keefer and Scartascini, 2015) as an ex ante measure of incumbent's political horizon, or the length of time policymakers have left in their term before the next election. Politicians facing shorter time horizons have more incentives to bias expenditure policy towards visible (current expenditure) items during good times, and face fewer incentives to protect expenditure items whose political payoffs materialize at later stages (public investment). Since this argument is based on the possibility of losing power through competitive elections, we only include democracies in the following analysis.[17]

To test for the effects of each of these variables on the cyclicality of spending, we use a variant of equation 1 in which we interact the different stages of the business cycle with each of the relevant factors under analysis. Since, as shown in Section 2, the asymmetry we identify is robust to alternative estimation methods, we present results from fixed effects specifications throughout the rest of the paper. Table 6 reports results from introducing such interactions one at a time until all interactions are present.

[16] We thank Era Dabla Norris for kindly sharing this data with us. At each of the budgetary stages, the authors identify five cross-cutting categories: i) top-down procedures, ii) rules and controls, iii) sustainability and credibility, iv) comprehensiveness and v) transparency.

[17] That is, countries that score seven on the DPI's legislative and executive indices of electoral competitiveness. The highest score on each index (7) is assigned to countries in which multiple parties compete in elections and no party receives more than 75 percent of the vote (see Cruz, Keefer and Scartascini, 2015 for definitions).

Table 6. Determinants of Spending Cyclicality (fixed effects)

Dependent variable	*Investment spending*					*Current spending*				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Pos *OG*	0.989	0.763	0.702	0.714	0.650	**1.459****	**4.496*****	**4.493****	**4.359****	**0.036***
	(0.646)	(0.648)	(0.693)	(0.686)	(0.696)	**(0.673)**	**(1.451)**	**(1.731)**	**(1.675)**	**(0.019)**
Neg *OG*	**4.089*****	**7.500*****	**7.082****	**7.048****	**5.955**	0.448	0.463	0.441	0.413	0.580
	(1.085)	**(2.555)**	**(2.922)**	**(2.884)**	**(3.660)**	(0.420)	(0.484)	(0.530)	(0.537)	(0.487)
Neg OG*YLT	**-0.625***	**-0.893****	**-0.943****	**-0.954****	**-0.955****					
	(0.368)	**(0.355)**	**(0.401)**	**(0.408)**	**(0.402)**					
Neg OG*IQ		-7.083	-7.468*	-7.318	-6.435					
		(4.576)	(4.290)	(4.426)	(4.287)					
Neg OG*FOI			1.510	1.530	1.695					
			(2.535)	(2.541)	(2.553)					
Neg OG*FR				-0.072	-0.189					
				(1.564)	(1.586)					
Neg OG*VOL					0.132					
					(0.329)					
Pos OG*YLT						**-0.263**	**-0.463***	**-0.456***	**-0.492***	**-0.465****
						(0.196)	**(0.255)**	**(0.252)**	**(0.248)**	**(0.213)**
Pos OG*IQ							**-5.676*****	**-6.272***	**-5.530***	**-5.043***
							(2.126)	**(3.145)**	**(3.018)**	**(2.993)**
Pos OG*FOI								0.396	0.693	1.061
								(0.866)	(0.843)	(0.857)
Pos OG*FR									-0.889*	-0.605
									(0.477)	(0.473)
Pos OG*VOL										0.000
										(0.001)
Other controls?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year effects?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1095	952	896	896	896	1095	895	840	840	840
R-squared	0.201	0.193	0.207	0.207	0.208	0.302	0.310	0.317	0.320	0.339
Number of countries	72	59	59	59	59	73	58	58	58	58

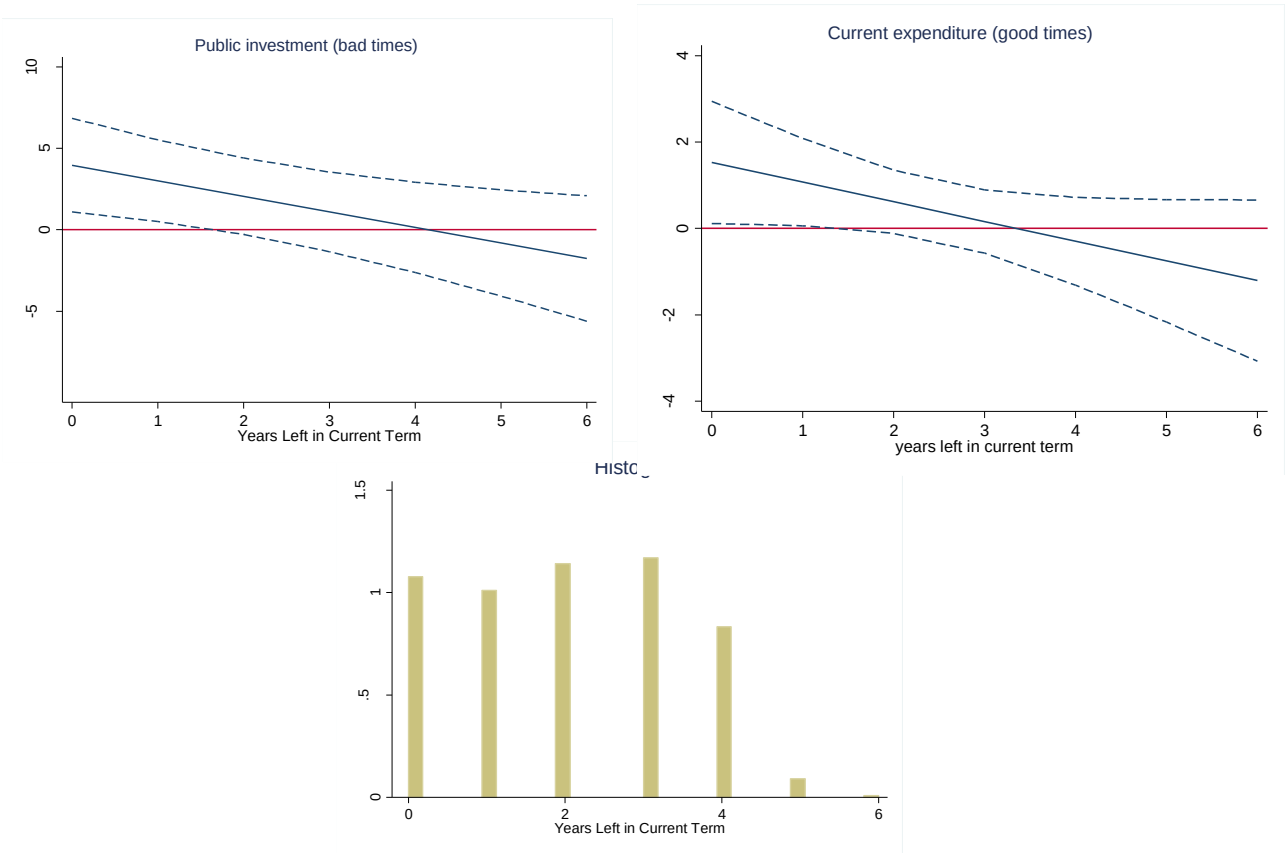
Robust standard errors in parentheses. Note: Constant, YLT, IQ, FOI, VOL, and other controls not reported

*** p<0.01, ** p<0.05, * p<0.1

The main result Table 6 shows is that the level of procyclicality of public spending is larger when time horizons are shorter. Using coefficients from Model 5, Figure 2 shows that the procyclical response of public investment during bad times is 4 times larger during election years (t=0) than in the "middle" of a term (t=2), where no significant evidence of procyclicality can be found beyond that point (as the 95 percent confidence interval does not exclude zero). A similar pattern is obtained in the case of current expenditures, when marginal effects are drawn from coefficients in Model 8, while holding the rest of variables at mean values. The bottom panel of Figure 2 indicates that the sample includes many observations on both sides of this threshold. Thus,

the effect is not an artifact of the rarity of observations above t=2. Furthermore, in the Appendix we show that our results are not being driven by election years (t=0). Even after introducing dummies for electoral cycles, the YLT–gap interactions retain both magnitude and statistical significance in all specifications (see Appendix Table A5).

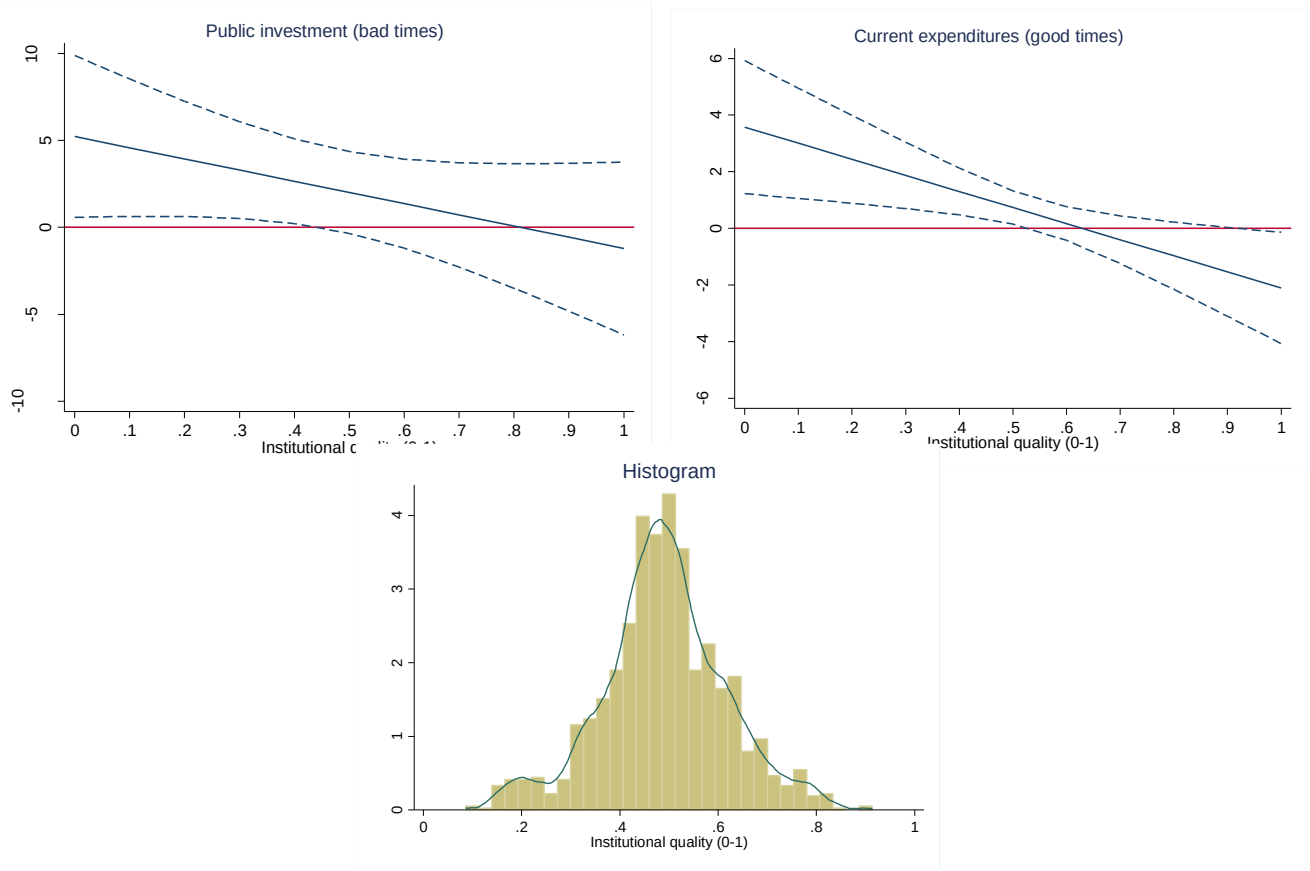
Figure 2. Effects of Output Gap on Public Spending, Conditional on Time Horizons



Secondly, with respect to other "classical" determinants of procyclicality, we find evidence consistent with previous literature regarding the importance of institutional factors in ameliorating procyclical responses. In the case of public investment, Columns 1-4 show the magnitude of procyclicality during bad times declines as institutional quality improves. For the case of current expenditures, Columns 5-8 of Table 6 show that the interaction of institutional quality and the output gap is negative and statistically significant across all specifications. Using coefficients from Models 5 and 10, Figure 3 shows that countries above median IQ (0.48) are able to protect this type of expenditure during bad times (no significant evidence of procyclicality can be found when

countries surpass this threshold) and those countries with relatively lower institutional quality are the ones boosting current spending during good times. The bottom panel of Figure 3 indicates that the diminishing effect is not artifact of the scarcity of observations above median IQ. Finally, we find weak or no evidence that (two different measures of) credit constraints, output volatility, the strength of budget institutions, and the presence of fiscal rules significantly affecting the behavior of public spending over the cycle (see Appendix Figure A2).

Figure 3. Effects of Output Gap on Public Investment and Current Spending, Conditional on Institutional Quality



5. Alternative Explanations

The results in Table 6 provide novel evidence that political time horizons have a significant effect on the cyclicality of public expenditures during both good and bad times. This section further illustrates the robustness of this result and addresses several additional country characteristics that could account for the results we observe. First, estimations above abstract from the possible

endogeneity of elections, in which incumbent politicians can affect their time left in power. Thus, in Table 7, Column 1, we remove countries without exogenous elections, and in Column 2, we restrict the sample to presidential systems in which elections are more likely to proceed on a fixed schedule and not called by the incumbent.[18] Results are robust to these changes: the magnitude of the interaction remains large and statistically significant at conventional levels, although precision drops in the case of current spending cyclicality.

Second, the tendency to increase current expenditures during upswings and cut public investment in bad times could in principle be consistent with the median voter model of redistributive politics, in which the demand for higher current expenditures (e.g., transfers) increases with the level of inequality (Meltzer and Richards, 1981). To account for this possibility, Column 3 interacts the different states of the business cycle with the Gini index (*GINI*) available through The Standardized World Income Inequality Database (SWIID). While inequality does not affect the relationship between public investment and the output gap in bad times, higher levels of inequality do augment procyclical responses in current spending during good times. However, the effects of time horizons are robust to controlling for the interaction of inequality and the output gap.

Third, an alternative explanation draws on the effects of demographic change (such as population aging) on the composition of government expenditures (Jäger and Schmidt, 2016; Sanz and Velázquez, 2007; Razin, Sadka and Swagel, 2002). Building on experimental research which find the elderly to discount future payoffs more heavily than working-age people (Harrison, Lau and Williams, 2002; Read and Read, 2004), the argument is that a rising fraction of elderly people reduces the overall demand for durable public goods, and hence, public investment should decline as the voting power of senior citizens increases (Jäger and Schmidt, 2016). Note that while this explanation focuses on the long run relationship between the *level* of public investment and demographics, it may also affect short-term decisions, such as *changes* in government spending that are the focus of this study. Thus, to explore this possibility and proxy (although imperfectly) for the relative voting power of elderly citizens, we use the proportion of total population aged 65 and older (*POP>65*), available from World Development Indicators (WDI). Column 4 shows that

[18] An election is exogenous if it occurs in a country with constitutionally determined election intervals and where the election occurs at the fixed interval or within the expected year of the constitutionally fixed term. It is operationalized using the *finittrm* variable in the DPI. For regime type or government form classification (presidential, parliamentary, etc.), also see the DPI.

this variable does not exhibit a significant influence on the extent of procylicality of either expenditure type.

Table 7. Time Horizons or Other Determinants? (fixed effects)

Panel A: Investment Spending							
	(1) Exogenous elections	(2) Presidential democracies	(3) Inequality	(4) Old vs young	(5) Age of democracy	(6) Party Age	(6) Programmatic parties
Neg *OG*	7.071**	8.130***	7.323	5.778*	8.105**	7.282**	6.987**
	(2.882)	(2.730)	(8.394)	(2.906)	(3.395)	(2.745)	(2.823)
Neg OG*YLT	**-0.973****	**-0.875****	**-0.880****	**-0.775***	**-0.938****	**-0.952****	**-0.931****
	(0.408)	**(0.396)**	**(0.438)**	**(0.424)**	**(0.425)**	**(0.418)**	**(0.396)**
Neg OG*GINI			-0.028				
			(0.172)				
Neg OG*POP>65				0.214			
				(0.150)			
Neg OG*P>AGE					-0.055		
					(0.066)		
NEG OG*PARTY AGE						-0.034	
						(0.024)	
Neg OG*PROG							-0.718
							(1.539)
Other controls?	Y	Y	Y	Y	Y	Y	Y
Year effects?	Y	Y	Y	Y	Y	Y	Y
Observations	893	638	755	896	895	873	895
R-squared	0.207	0.257	0.243	0.212	0.208	0.200	0.210
Number of countries	59	43	55	59	58	58	59
Panel B: Current Spending							
	(1) Exogenous elections	(2) Presidential democracies	(3) Inequality	(4) Old vs young	(5) Age of democracy	(6) Party Age	(6) Programmatic parties
Pos *OG*	4.379**	4.418*	1.289	4.689**	4.632***	2.834***	4.362***
	(1.675)	(2.220)	(2.022)	(1.829)	(1.666)	(0.615)	(1.634)
Pos OG*YLT	**-0.485***	**-0.578***	**-0.293***	**-0.460***	**-0.543****	**-0.398****	**-0.485****
	(0.249)	**(0.329)**	**(0.167)**	**(0.234)**	**(0.261)**	**(0.194)**	**(0.235)**
Pos OG*GINI			**0.097****				
			(0.038)				
Pos OG*POP>65				-0.059			
				(0.035)			
Pos OG*P>AGE					-0.028		
					(0.030)		
Pos OG*PARTY AGE						-0.001	
						(0.011)	
Pos OG*PROG							-0.127
							(0.896)
Other controls?	Y	Y	Y	Y	Y	Y	Y
Year effects?	Y	Y	Y	Y	Y	Y	Y
Observations	837	556	698	839	840	815	839
R-squared	0.320	0.323	0.323	0.320	0.324	0.332	0.320
Number of countries	58	39	54	57	58	57	58

Robust standard errors in parentheses. Note: Constant, YLT, IQ, FOI, VOL, and other controls and interactions not reported
*** p<0.01, ** p<0.05, * p<0.1

Fourth, prior research on the political budget cycle points to the age of democracy (Brender and Drazen, 2005), the age of political parties (Hanusch and Keefer, 2014), and their organization (whether parties are programmatic or clientelistic) to matter in shaping fiscal policy decisions (Keefer and Vlaicu, 2008; Keefer, 2007). To examine the effects of these variables, we draw on the Database of Political Institutions and include i) the average age of the largest four political parties in a country, based on the number of seats they have in the legislature (*PARTYAGE*), ii) the number of years of continuous competitive elections (*AGE*), and iii) a dummy variable indicating whether parties are programmatic (*PROG*) based on their orientation with respect to economic policy issues: the chief executive's party is considered programmatic if it's coded as Right, Left or Center, and 0 otherwise. Columns 5-7 show none of these variables to be significantly affecting expenditure patterns over the business cycle. In contrast, the time horizon-output gap interactions retain both their magnitude and significance in all three specifications. The Appendix presents two final robustness checks: i) a placebo test in which the dependent variable is the growth rate in *interest payments*. Given the relatively fixed/inflexible nature of this expenditure component, it should not be affected by political incentives, and that is indeed what Table A6 Colum 1 shows. In Column 2, the use of an alternative measure of public investment is included (the net acquisition of non-financial assets, or NANFA). Consistent with previous findings, the growth rate in NANFA is negative when output is below potential, but as the number of years left in the current term increases, the degree of cyclicality of investment is significantly reduced.

6. Conclusion

Twenty years after Gavin and Perotti's seminal contribution, the literature on fiscal cyclicality is still growing on several fronts. From a theoretical point of view, existing research continues to identify political distortions as key factor behind procyclical biases and design institutional mechanisms to alleviate them. On the empirical side, as new data for developing countries becomes available, identification issues have been addressed, and specification refinements have led scholars to uncover important policy patterns beyond the typical stylized fact that "fiscal policy in developing (developed) countries is mostly procyclical (countercyclical)."

In an attempt to move this literature forward, we identify a new empirical regularity regarding the reaction of government expenditures to business cycles in a large panel of emerging and developing countries: economic upswings are associated with real current spending increases,

and downswings are accompanied by reductions in real public investment spending. This behavior is absent in developed countries and traditional explanations of procyclicality cannot fully account for these results. Thus, we also identify a new determinant of asymmetrical fiscal responses: the length of time policymakers have left in their term before the next election. In the presence of short political time horizons, fiscal asymmetrical responses with a bias against (towards) public investment (current spending) are exasperated, given variation in the political payoffs of each spending component. While the hypothesis that time horizons matter for shaping fiscal policy outcomes has a long pedigree in political economy research,[19] this paper is to the best of our knowledge one of the first attempts to empirically approximate this mechanism in the context of the cyclical properties of two major spending components.

Overall, the result on fiscal asymmetry is relevant for the current policy debate about the contribution of fiscal policy to equitable growth in developing countries. Previous research suggests that procyclical and volatile fiscal policy negatively affect economic growth (Woo, 2011; 2009), exacerbate macroeconomic volatility (Fatas and Mihov, 2003; 2012), and hamper attempts at protecting the most vulnerable groups during recessions (Hicks and Wodon, 2001; Ravallion, 2002). Thus, measures to contain procyclical biases in fiscal policy can be beneficial for improving long-term economic performance and social welfare. However, the discussion of policy alternatives is usually restricted to options such as the strengthening of fiscal frameworks, such as anchoring fiscal policy in terms of fiscal rules that target structural (as opposed to actual) fiscal balances (Frankel, 2011; Kumar and Ter-Minassian, 2007). Our results suggest that one needs to look at deeper determinants or conditions as well, usually beyond the fiscal rules domain, such as broad institutional and political features shaping politician's incentives and behavior, and thus, policy outcomes.

The analysis here raises questions for future research. One is to examine specific institutions that tend to extend political time horizons. For example, do incumbents that can stand for re-election behave differently than lame-duck politicians? Another avenue is to study the implications of short run policy responses for the composition of public expenditures in the long run: is the cyclical asymmetrical reaction contributing to the secular decline in the share of public investment over total spending? The asymmetric behavior uncovered is particularly important

[19] On theory, see Persson and Svensson (1989), Tabellini and Alesina, (1990), and Besley and Case (1995), among others, and Persson and Tabellini (2000) and Drazen (2000) for reviews.

because policies that are procyclical for current expenditure in good times and for capital expenditures in bad times, may lead throughout time to changes in the composition of public spending, with a bias against capital expenditure (Izquierdo, 2016). Finally, beyond the golden fiscal rule debate, should governments think about other public expenditure composition rules to safeguard public investment from budget cuts or limit the expansion of current spending during good times? These questions are of general policy interest, and will contribute to further develop the analysis on the determinants and consequences of fiscal cyclicality in developing countries.

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Appendix

Table A1. List of Countries Included in the Analysis

Advanced economies	Common Wealth of Independent States	Developing Asia	Developing Europe	Latin America and the Caribbean	Middle East and North Africa	Sub-Saharan Africa
Australia	Armenia, Republic of	Bangladesh	Albania	Antigua and Barbuda	Afghanistan, Islamic Republic of	Angola
Austria	Azerbaijan, Republic of	Bhutan	Bosnia and Herzegovina	Argentina	Algeria	Benin
Belgium	Belarus	Brunei Darussalam	Bulgaria	Bahamas, The	Bahrain, Kingdom of	Botswana
Canada	Georgia	Cambodia	Croatia	Barbados	Egypt	Cameroon
China, P.R.: Hong Kong	Kazakhstan	China, P.R.: Mainland	Hungary	Belize	Iraq	Cape Verde
Czech Republic	Kyrgyz Republic	Fiji	Lithuania	Bolivia	Jordan	Eritrea
Estonia	Moldova	India	Macedonia, FYR	Brazil	Kuwait	Ghana
Finland	Russian Federation	Indonesia	Montenegro	Chile	Lebanon	Guinea
Germany	Tajikistan	Kiribati	Poland	Colombia	Mauritania	Kenya
Iceland	Turkmenistan	Lao People's Democratic Republic	Serbia, Republic of	Costa Rica	Morocco	Lesotho
Israel	Ukraine	Malaysia		Dominica	Pakistan	Malawi
Italy	Uzbekistan	Maldives		Dominican Republic	Qatar	Mali
Japan		Mongolia		Ecuador	Saudi Arabia	Mauritius
Korea, Republic of		Myanmar		El Salvador	Sudan	Namibia
Luxembourg		Nepal		Grenada	Syrian Arab Republic	Niger
Netherlands		Papua New Guinea		Guatemala	Tunisia	Sao Tome and Principe
New Zealand		Philippines		Guyana	United Arab Emirates	Senegal
Singapore		Samoa		Haiti	Yemen, Republic of	Sierra Leone
Slovak Republic		Solomon Islands		Honduras		South Africa
Switzerland		Sri Lanka		Jamaica		South Sudan
United Kingdom		Thailand		Mexico		Swaziland
United States		Tonga		Nicaragua		Tanzania
		Vanuatu		Panama		Uganda
		Vietnam		Paraguay		Zambia
				Peru		Zimbabwe
				Uruguay		
				Venezuela		

Table A2. Descriptive Statistics and Sources

Variable	Obs	Mean	Std Dev.	Min	Max	Source
Real growth in public investment (%)	2906	0.04	0.34	-4.10	3.95	World Economic Outlook, October 2015, IMF
Real growth in current expenditures (%)	2174	0.05	0.16	-1.49	3.47	World Economic Outlook, October 2015, IMF
Positive Output Gap	3885	0.01	0.02	0.00	0.30	World Economic Outlook, October 2015, IMF
Negative Output Gap	4270	-0.01	0.02	-0.45	0.00	World Economic Outlook, October 2015, IMF
Fiscal balance/GDP	2682	-0.02	0.07	-1.51	1.22	World Economic Outlook, October 2015, IMF
Terms of trade	3482	109.97	53.66	7.56	673.87	World Economic Outlook, October 2015, IMF
Public investment/GDP	3070	0.07	0.06	-0.21	0.67	World Economic Outlook, October 2015, IMF
Current expenditures/GDP	2304	0.21	0.11	-0.03	1.85	World Economic Outlook, October 2015, IMF
Log GDP per capita	4257	7.72	2.42	0.20	11.79	World Development Indicators, WB
Financial openess index (normalized)	3481	0.39	0.34	0.00	1.00	Chinn and Ito (2006)
Credit Ratings	915	3.11	1.05	0.00	6.00	Standard and Poor's
Output volatility	3457	3.62	3.77	0.00	57.81	World Economic Outlook, October 2015, IMF
Institutional quality (normalized)	2465	0.48	0.14	0.08	0.91	International Country Risk Guide (ICRG)
Fiscal rules	4096	0.13	0.34	0.00	1.00	IMF Fiscal rules database
Years left in current term	2935	2.09	1.50	0.00	7.00	Database of Political Institutions
Gini coefficient	2186	40.43	9.01	17.46	67.21	World Development Indicators, WB
Population above 65 years/total population	4187	5.33	3.27	0.70	19.73	World Development Indicators, WB
Age of democracy	3671	11.47	9.57	1.00	66.00	Database of Political Institutions (DPI)
Party age	2903	27.50	23.43	1.00	183.00	Database of Political Institutions (DPI)
Programmatic party	3663	0.56	0.50	0.00	1.00	Database of Political Institutions (DPI)

In Table A3, We instrument the domestic output gap with the output gap of trading partners, weighted by their share of exports. The IV-FE fails to reject the null of the DWH test in seven out of eight cases.

Table A3. Instrumental Variables Fixed Effects

Dependent variable	*Investment spending*		*Current spending*	
	(1)	(2)	(3)	(4)
			IV-FE	
Pos *OG*	3.355	-3.476	2.661**	-0.255
	(2.509)	(4.682)	(1.162)	(1.923)
Neg *OG*	1.063	15.042**	-0.407	3.562
	(3.177)	(6.092)	(1.595)	(3.433)
Year effects	N	Y	N	Y
Observations	2,772	2,772	2,065	2,065
Number of countries	103	103	106	106
DWH test *p* -value (Pos *OG*)	0.01	0.50	0.06	0.96
DWH test *p* -value (Neg *OG*)	0.4	0.07	0.42	0.3071

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A4. Alternative Definition of Good and Bad Times

Dependent variable	*Investment spending*			*Current spending*		
	(1)	(2)	(3)	(4)	(5)	(6)
	FE	Diff-GMM	Diff-GMM	FE	Diff-GMM	Diff-GMM
OG > 75th pct	0.256	-3.155	-1.960	0.904***	1.702***	1.771***
	(0.308)	(2.128)	(1.626)	(0.275)	(0.439)	(0.529)
OG < 25th pct	1.218**	4.829*	3.110*	0.485	0.605	0.767
	(0.492)	(2.778)	(1.620)	(0.342)	(0.682)	(0.725)
Observations	2,906	2,798	2,333	2,174	2,063	1,734
R-squared	0.005			0.011		
Number of countries	107	107	107	111	110	110
AR(1) test		0.000	0.000		0.000	0.000
AR(2) test		0.459	0.720		0.704	0.942

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A5. Time Horizons or Elections?

Dependent variable	*Investment spending*		*Current spending*	
Neg *OG*	2.796**	8.085**		
	(1.153)	(3.551)		
Neg OG*election	-0.564	-2.205		
	(1.996)	(2.711)		
Neg OG*YLT		**-1.322***		
		(0.682)		
Pos *OG*			0.780**	4.586**
			(0.313)	(1.808)
Pos OG*election			0.450	-0.174
			(0.416)	(0.392)
Pos OG*YLT				**-0.530***
				(0.277)
Year effects	Y	Y	Y	Y
Other controls?	Y	Y	Y	Y
Observations	1,106	896	1,058	840
Number of countries	73	59	74	58

Robust standard errors in parentheses

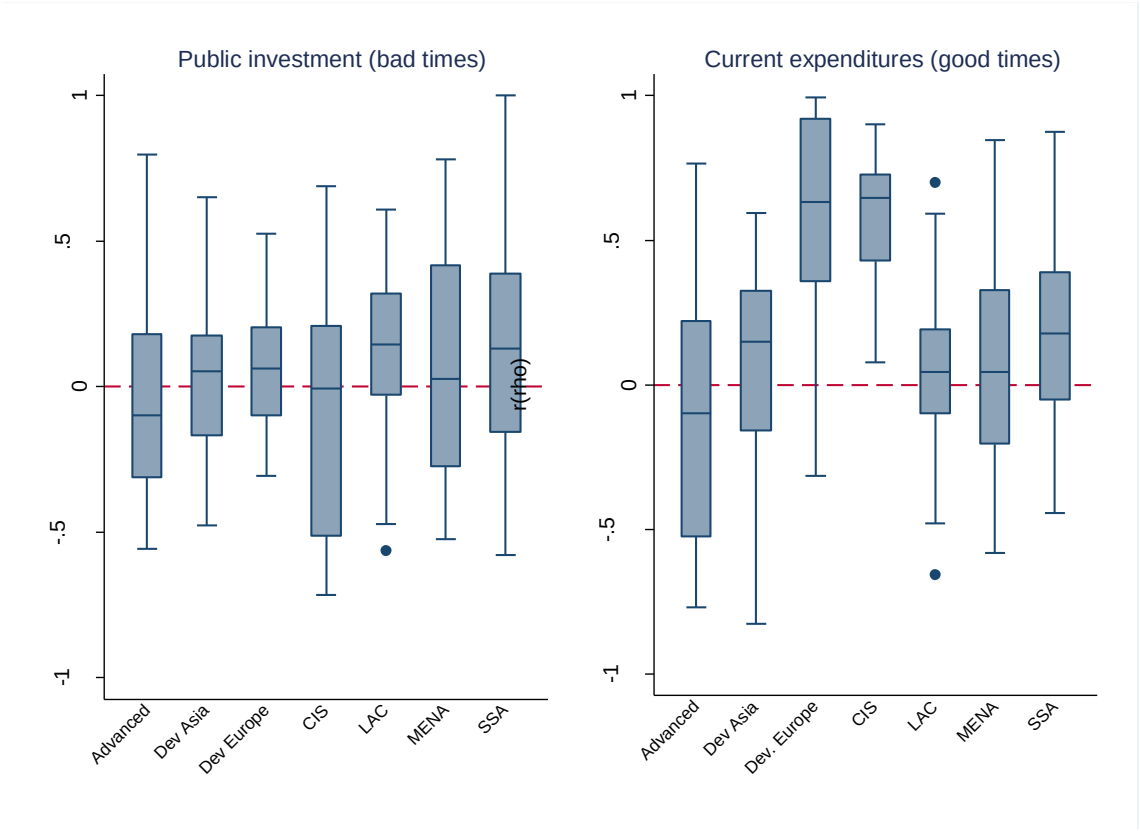
*** p<0.01, ** p<0.05, * p<0.1

Table A6. Placebo Test and Alternative Definition of Investment

Dependent variable	Interest payments	Net acquisition non-financial assets
	(1)	(2)
Pos *OG*	2.734	1.132
	(3.261)	(1.133)
Neg *OG*	-1.819	9.528**
	(1.149)	(4.294)
Pos OG*YLT	-1.353	
	(0.848)	
Neg OG*YLT		-1.641*
		(0.953)
Year effects	Y	Y
Other controls?	Y	Y
Observations	954	708
Number of countries	62	52

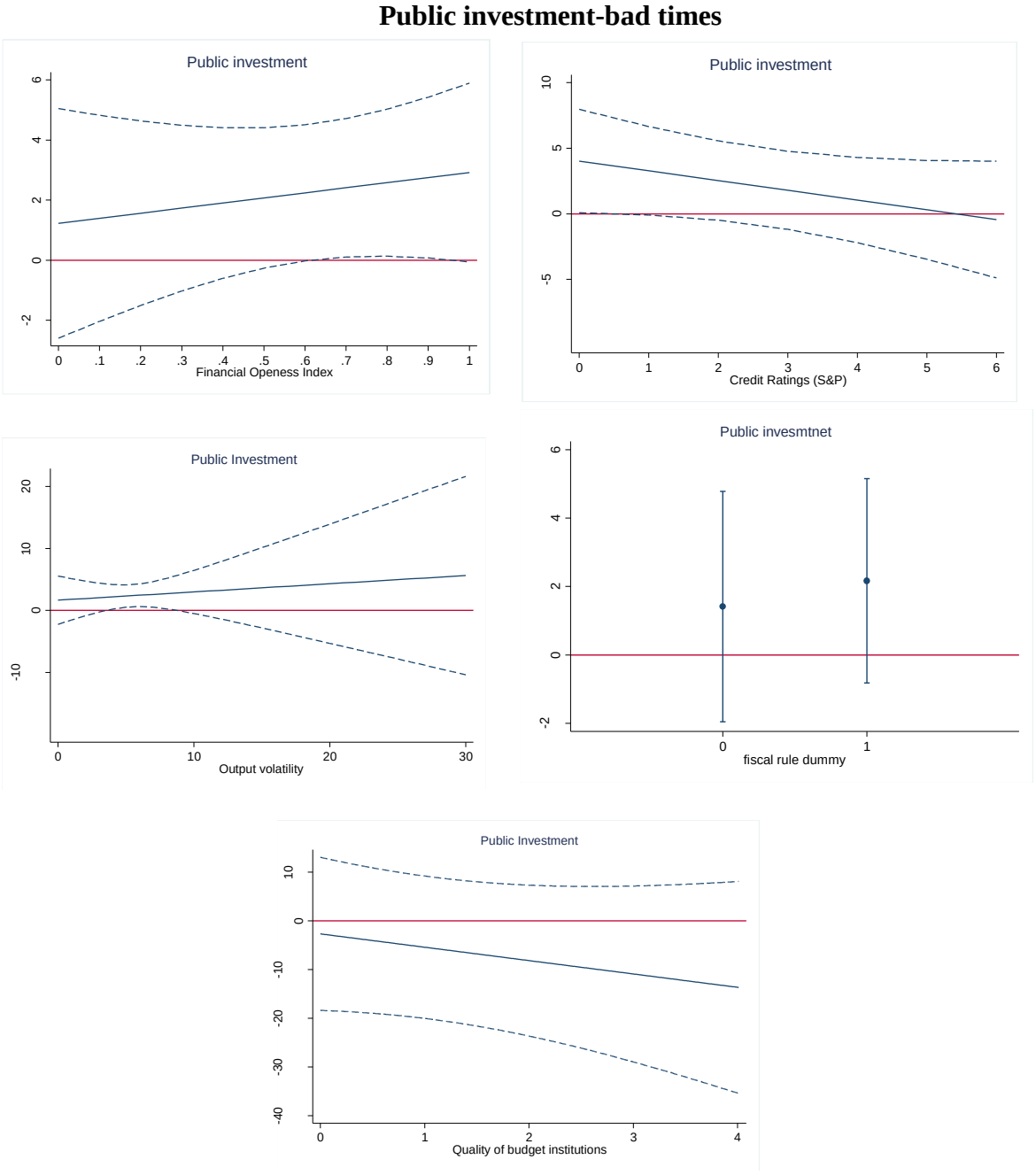
Note: Models 1 and 2 reproduce columns 10 and 5 from Table 6, respectively.

Figure A1. Box Plots by Region



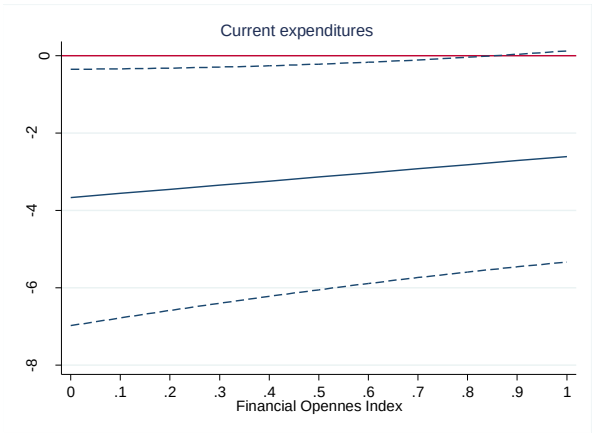
Note: Box plots are based of country specific correlations between cyclical components of G and GDP during good and bad times.

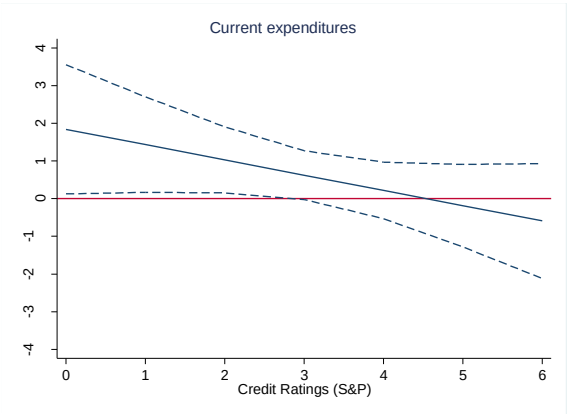
Figure A2. Effects of Output Gap on Public Investment and Current Spending, Conditional on Various Determinants

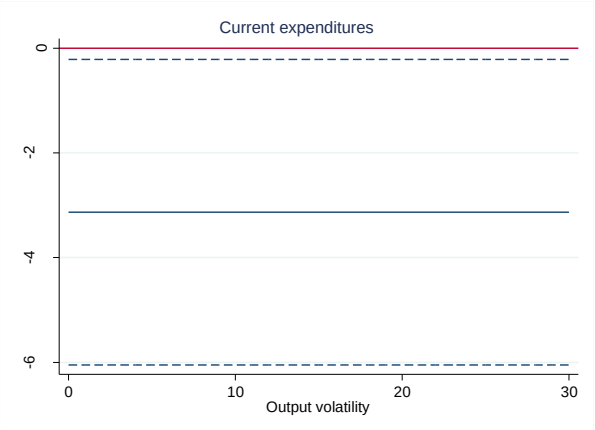


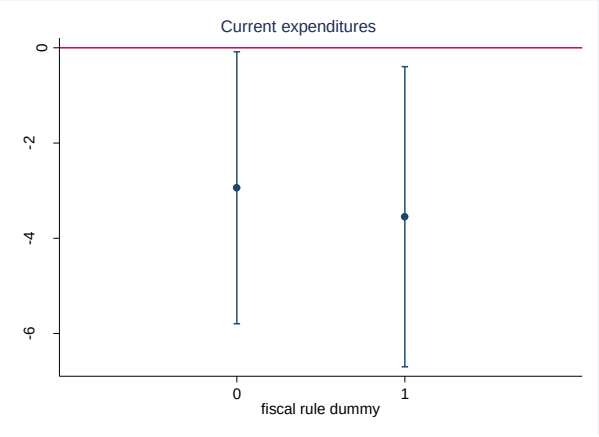
Note: Marginal effect graphs are estimated based on coefficients from Table 6, Column 10, with the exception of Credit Ratings (S&P), and the quality of budget institutions, for which separate models were estimated.

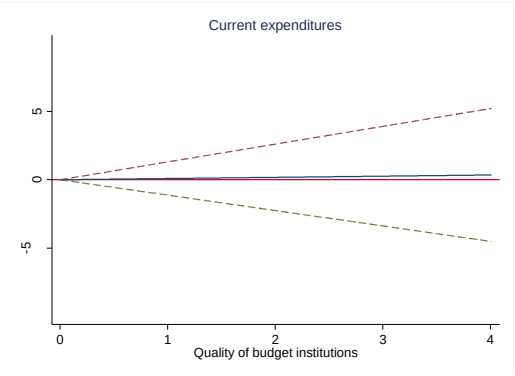
Current expenditures-good times











Note: Marginal effect graphs are estimated based on coefficients from Table 6, Column 10, with the exception of Credit Ratings (S&P), and the quality of budget institutions, for which separate models were estimated.