The Fiscal Spending Gap and the Procyclicality of Public Expenditure

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Abstract

Stronger fiscal procyclicality in developing countries has typically been associated with institutional or financial constraints. In this paper, we propose an alternative explanation. We show that, in general, fiscal spending converges over time to a desired spending level determined by long-run fundamentals, with the speed of convergence increasing with the distance between desired and actual spending (the fiscal spending gap). Moreover, we find that convergence is faster during booms than during recessions, suggesting that governments in economies with postponed public consumption are hard-pressed to spend whatever windfall they receive almost immediately. Finally, we show that developing economies with negative or no spending gap display an acyclical fiscal spending pattern no different from those in developed economies.

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I. Introduction

The behavior of fiscal policy over the cycle has been the subject of a substantial body of work, both for industrial and developing countries. From a theoretical perspective, there is no clear cut answer as to the desired pattern. While Keynesian models suggest that government expenditures should increase during recessions to fuel economic recovery, tax-smoothing models a la Barro (1979) would indicate that fiscal policy should remain neutral over the cycle.[2] The existing empirical work does not settle this issues. While Blanchard and Perotti (2001) show that positive shocks to government spending (taxes) had a positive (negative) output effects in post-war U.S., in line with the Keynesian view, Giavazzi and Pagano (1990) find that two large fiscal consolidations (Denmark 1983-86, and Ireland 1987-89) led to substantial increases in private consumption.[3]

Beyond the normative perspective, a vast positive literature has documented differing patterns of fiscal cyclicality across countries that has tended to support the view of fiscal policy as acyclical or weakly countercyclical in industrial countries, and as procyclical in developing ones. [4] This in turn has led to the conventional view that governments in developing countries cannot save, and that the recurrent episodes of fiscal vulnerability and debt crises have been to some extent the reflection of this characteristic behavior.[5] To be fair, some studies, including Talvi and Vegh (2000) and Hercowitz and Strawczynski (2001), have highlighted the presence of procyclical fiscal policy even within the OECD group, although the phenomenon is arguably more systematic for developing economies.

In trying to explain the differing patterns in industrial and non-industrial countries, Gavin-Perotti (1997) argue that the procyclicality of international capital flows and, in particular, the sharp reduction in access to foreign borrowing in bad times that characterizes developing economies underscore the fact that *fiscal policy is more procyclical in bad times.* They support this view by showing that the fiscal contractions

[2] According to this argument, due to Ricardian equivalence, increases in government spending induce a decline in private consumption iin anticipation of higher taxes in the future, offsetting the desired expansionary effect on current output.

[3] Another studies of "expansionary fiscal consolidations" include Alesina and Perotti (1997), Alesina et al. (2002) and Perotti (1999).

[4] To name just a few studies, Fiorito and Kollintzas (1994) and Fiorito (1997) find no cyclicality of goventment consumption for G-7 countries, Arreaza et al. (1999) and Lane (2002) find a mild countercyclicality for a sample of OECD economies, and Barro (1990), Huang and Li (1993) find countercyclical taxes for the U.S.. For developing countries, Talvi and Vegh (2000) find a significant correlation between the cyclical components of government cunsumption and output, while Gavin and Perotti (1997) find zero correlation between output growth and fiscal balance, which they interpret as evidence in favor of a procyclical fiscal policy.

[5] Indeed, this lack of savings, which may be partially compensated with access to foreign funds during recessions, becomes a crucial amplifying factor in cases in which such access is also highly procyclical, as is typically the case in developing economies.

in bad times (typically driven by tax increases) depend negatively on the deficit with which the economy enters a recession.[6]

Alternatively, political economy arguments have tried to explain the differing patterns in industrial and non-industrial countries by highlighting the role of interest groups, and explain fiscal procyclicality as the result of a coordination failure among different such groups.[7] In particular, and in light of the contrasting evidence between developed and developing countries, the argument leads to conclude that fiscal procyclicality is related to the presence of relatively stronger interest groups (or weaker political institutions) in developing economies.[8]

In this paper, we proposed an alternative explanation to the empirical evidence. More precisely, we argue that governments in countries with large postponed (public and private) consumption are hard-pressed to spend whatever windfall they receive almost immediately. Thus, fiscal pressure may arise not only from free-riding interest groups but also from needy constituencies that translate increased spending into political support.[9] Moreover, this pressure should depend on the sign and size of the distance between the current and the desired level of fiscal spending, which here we label the "fiscal spending gap." Implicit in our story is the belief in the existence of a desired spending level, that in turn depends on country characteristics such as demographics, country size, long-run growth, etc.[10]

It is straightforward to see how our proposed hypothesis relates and differs from the political economy argument discussed above. On the one hand, we should expect fiscal procyclicality to be larger in good times as in the standard political economy view.[11] On the other, such procyclicality would depend in this case not on the country's political characteristics but on the distance between current and desired spending. As a result, inasmuch as developing countries tend to lag behind desired spending levels, they would tend to exhibit higher procyclicality.

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[6] As Talvi and Vegh (2000) point out, while it is difficult to motivate theoretically the fact that rational governments do not anticipate and avoid the financial constraint by saving for the rainy days, in practice the "financial constraint" argument is at odds with the case of non-financially contrained developing countries (and some industrial countries) that also display procyclical fiscal behavior.

[7] Tornell and Lane's (1999) "voracity effect" offers an analytical account along this lines that shows how a positive real shock may lead to a more than proportional increase in public transfers. See also, Lane and Tornell (1998) and Tornell and Lane (1998).

[8] Lane (2002) shows that fiscal procyclicality is related to measures of political strength, in line with this hypothesis.

[9] Alternatively, it is easy to conceive the case of less-developoed countries in which primary surplus are difficult to justify in light of widespread poverty.

[10] Several studies have attempted to measure the determinants of the size of the government, including Alesina and Wacziarg (1998) and Rodrik (1998). Below, we draw from this literature to compute the "spending gaps".

[11] Note that this differs from the financial constraint argument that emphasizes procyclicality in the event of negative shocks.

To address this hypothesis, in the paper we first estimate a cross-country regression of fiscal expenditure based on the standard determinants of public expenditure,[12] and using a sample of developed countries, and use the results from this regression to estimate the target ("desired") fiscal expenditure for a larger sample that includes developed and developing countries over the period 1980-1999. Next, we model the dynamics of public expenditure as a function of the gap between the desired and the actual expenditure level during the previous year, controlling for GDP and country fixed effects. As expected, we find that expenditure is strongly correlated with output, as well as with the expenditure.

More importantly, we find that this procyclicality increases significantly with the gap, indicating that countries with an expenditure deficit (as compared with their desired level) spend more of current increases in output than the rest. Moreover, we find that procyclicality of fiscal spending is significant only during expansions (in line with the fiscal pressure hypothesis) and for countries that on average exhibit a positive fiscal gap (i.e., desired expenditure exceeding the actual level). Indeed, countries with negative fiscal gaps do not display a fiscal procyclicality, irrespective of their level of development.

The paper is organized as follows. Section 2 introduces the main hypothesis of the paper in light of the existing theoretical and empirical literature on the procyclicality of government expenditure. Section 3 describes the empirical methodology. Section 4 discusses the data and the main empirical results. Section 5 concludes.

II. Fiscal spending gaps and fiscal procyclicality

A recent stream of political economy models have shed new light on the analysis of the cyclical nature of public spending. Lane and Tornell (1999) model the interactions of "fiscal groups" (broadly defined as groups with the power to extract fiscal transfers) to show that higher pre-tax rate of returns during expansions induces these groups to lobby for a greater share of the surplus, an attempt that is reflected in higher tax rates in the formal sector (and a relocation of resources to the informal economy). As Lane (2002) puts it, "a basic prediction of this approach is that political systems in which power is diffused among a number of agents will witness a higher degree of fiscal procyclicality…"[13]

A similar concept underlies Talvi and Vegh's (2000) model of fiscal cyclicality. In the presence of political distortions that limit the capacity of governments to run fiscal

[12] See references in footnote 9.

[13] However, a closer inspection of Tornell and Lane's (1999) model casts doubts on this conclusion, since its main result, namely the "voracity effect," indicates that a positive terms of trade shock that leads to higher fiscal tranfers would entail lower real growth due to divestment in the formal economy, which should be empirically reflected in a negative spending-output correlation.

surpluses, governments try to reduce the pressure of fiscal groups to redistribute windfalls entirely by lowering taxes in good times, although it does it partially due to tax smoothing considerations. According to this argument, highly volatile economies (that is, those with substantial positive and negative shocks) should display both a more countercyclical tax polices and more procyclical spending.

Overall, the existing empirical evidence appears to support the conventional view that fiscal policy is countercyclical in industrial countries and procyclical in developing countries, although, as many authors have stressed, the contrast between the two groups is not so clear-cut, and the cyclical behavior of the different fiscal components tends to vary significantly.

For instance, Arreaza et al. (1999), using panel data from OECD countries, find that government spending (particularly through fiscal transfers) tend to smooth private consumption over the cycle. Also for OECD economies, Lane (2002) finds government current spending to be countercyclical on the average (although country-by-country regressions display considerable differences, which he shows to be related to output volatility and the dispersion of political power in line with the political economy models). In contrast, the less numerous studies that focus on developing countries typically find strong indication of fiscal and, in particular, public spending procyclicality.[14]

Talvi-Vegh (2000) find a positive correlation between the growth rates of HP-filtered real output and fiscal variables for non-G7 countries. They argue that, although procyclical fiscal policy appears not to be limited to developing countries, it is indeed more salient for this group. Moreover, in line with their political economy model discussed above, they found a positive correlation between government consumption and output volatility, and between the latter and the volatility of the inflation tax base (although they do not compare tax base volatility and government consumption directly).

The political economy approach have pointed at the pressure of fiscal groups to account for the higher fiscal procyclicality in developing economies. However, it is difficult to rationalize the significant difference between fiscal behavior in developed and developing countries in terms of the relative strength of political groups. Indeed, the correlation between procyclicality and political concentration appears to be somewhat weak (Lane, 2002) even for a sample of relatively comparable OECD countries. Thus, while the intuition underpinning this approach (that windfalls are lobbied away, leaving little or no room for countercyclical spending) looks both empirically and intuitively attractive, one should have to look into additional country-specific factors to account for the empirical dispersion in fiscal behavior.

[14] See Talvi and Vegh (2000), and Gavin and Perotti (1997).

It is reasonable to assume that, for a given political structure, the pressure to consume temporarily high fiscal revenues should be positively correlated with the immediate marginal utility that fiscal groups (including the government's constituency) derive from additional fiscal spending. After all, the government's utility is ultimately a positive function of both its constituency's utility during his term in office, and of private benefits that he can get from transfers to special interests. In turn, again for a given level of government spending efficiency, the lower the current level of public spending (relative to the long term optimal), the higher the marginal utility of additional increases. Thus, in countries where public goods are underprovided (alternatively, where public spending is below the desired level) either because of budget constraints or because of an increase in the demand for these goods, governments will tend to consume more (save less) of whatever extra resources it comes around.[15]

Note that both credit constraints a la Gavin-Perotti (1997) and political economy arguments a la Tornell-Lane (1999) hint at asymmetric fiscal responses to positive and negative shocks, although in different directions. As noted, the financial constraint view points at a faster fiscal downturn in the event of adverse shocks, driven by the quick reversal of financial capital. In contrast, the voracity of fiscal groups (either political or corporatist) is likely to be reflected relatively rapidly in increased spending in good times (as groups struggle to get their share of the temporary surplus) while the subsequent fiscal adjustments in government consumption once the effects of the positive shock fade away is likely to be distributed over time due to institutional and political constraints.[16]

The same could be said of our fiscal gap story, as politicians are quick to beef up their transfers when revenues go up, but slow to cut them when they go back to normal, resulting in increased deficits or procyclical tax rates during bad times. Surprisingly, to our knowledge no attempt has been made to test the presence of asymmetry in the cyclical behavior of fiscal policy, to which we devote the final part of the empirical section.[17] In line with our argument, we expect to observe this asymmetry increasing with the size of the fiscal spending gap, and disappearing as this gap gets closer to zero.

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[15] One could argue, as in Talvi and Vegh (2000), that consumption smoothing governments would factor in the expected downturn in its spending decision. However, it is easy to conceive a political economy framework in which a politician maximizes over its term in office, thereby highly discounting (or directly disregarding) the costs of future adjustments. Interestingly, systems in which the government actions are more tied to the party line and where the horizon exceeds that of the current incumbents are expected to be less permeable to short term pressures and therefore likely to display a countercyclical behavior. We try to control for these factors in the final section of the paper.

[16] Indeed, the fact that sharp fiscal adjustments typically involve tax increases rather than expenditure cuts is consistent with the voracity view.

[17] The notable exception is Hercowitz and (2001), who, for a sample of OECD economies, find an asymmetry that goes in the opposite direction: spending is quickly scaled up during recessions, but adjusts only partially (due to political pressures) during expansions, when fiscal groups successfully resist expenditure cuts. We copme back to this in the final section of the paper.

III. Empirical results

Empirical methodology

Equilibrium correction mechanism models were initially adopted as a method for implementing economic theory in econometric models (see Sargan, 1964 and Davidson et al., 1978). Indeed, ECMs are a general class of models isomorphic to cointegration. Thus, we postulate the following (general) dynamic model for fiscal expenditures:

$$\Delta G_{it} = \alpha_0 \Delta y_{it} + \alpha_1 z_{it} \Delta y_{it} + \beta_0 (G^*_{it-1} - G_{it-1}) + \beta_1 z_{it} (G^*_{it-1} - G_{it-1}) + \mu_i + \lambda_t + \varepsilon_{it} \quad (3)$$

where G is real fiscal expenditure, *y* is real total output and *z* is any variable that may affect the response of G to changes in *y*. In turn, G^* is a (time-varying) desired level of real fiscal expenditure (the expenditure target) and G* – G measures the distance between the target and the achieved actual level (the error correction component of the dynamic system), which we refer to as the fiscal spending gap. μ_i is a country *i*-specific time-invariant effect, λ_t is a time effect common to all countries in period t, and ε_{it} is a country time-varying error distributed independently across countries and time and independently of all μ_i and λ_t.

Most of the existing literature on fiscal procyclicality focuses directly or indirectly on the size of coefficient α_0. In this context, developing countries are found to display a larger α_0 than developed ones and, accordingly, are attributed more fiscal procyclicality. However, as we argue here, previous inferences were conducted in misspecified models: if countries do not adjust instantaneously to the new target expenditure level, omitting the ECM in the empirical model would bias the estimates. In particular, under the realistic assumption that G* is a positive function of *y*, ignoring the equilibrium adjustment process biases α_0 upward. The equilibrium correction specification of equation (3) addresses this problem. Interestingly, previous specifications are nested in the specification (3). Thus, by encompassing them, we are able to test the validity of the different theories.

In practice, however, the target expenditure level G* is not observed. To overcome this nuisance, we proceed in two-steps. In the first one, we obtain consistent estimates of the determinants of G*, based on a cross-section regression of fiscal expenditure on its relevant long-run determinants. These estimates are then used to fit a target expenditure level for each country and year as a function of these determinants, from which we can compute, in turn, a time-varying fiscal spending gap. Finally, using the gaps so computed, in the second step we estimate equation (3).

Thus, the first thing we need is a convincing measure of the desired level of fiscal spending. This is by no means trivial since, by definition, in a stochastic environment a country never reaches its desired level of fiscal expenditure. However, one can

reasonably assume that, absent financial constraints, a country hits this target spending on average. Thus, we postulate that there exist a set of countries Ω for which $G = G^* + e$, such that $E(e| G^*) = E(e) = 0$. Under this assumption, we obtain the process determining G* by estimating the following regression function:

$$G_i = \phi\, w_i + e_i \qquad \text{for } \forall\, i \in \Omega \text{ and } t = t_0 \qquad (4)$$

where w is the vector of variables that determine the equilibrium level of G in each country.[18] Then, for t = 1,…,T, equation (3) is estimated by replacing

$$G^*_{it-1} = \hat{\phi}\, w_{it-1}$$

Thus, in the second-step, we estimate regression functions of the following generic form:

$$h_{it} = \Phi\, m_{it} + \theta(\hat{\phi}\, w_{it-1}) + \mu_i + \lambda_t + \varepsilon_{it} \qquad (5)$$

where h and m are observable variables and $q = \hat{\phi}\, w$ is a generated regressor (see Pagan, 1984).

If $\hat{\phi}$ converges in probability to ϕ, the OLS dummy variable estimator of (Φ θ) also converges in probability to the true parameter values if the estimator were consistent when G* is used instead of q. However, things are no simple when it comes to inference: the standard errors and test statistics obtained from regression (5) are generally invalid because they ignore the sampling variation in $\hat{\phi}$. Since $\hat{\phi}$ is also obtained using data –even though in our case is not the same data—uncertainty in the estimate should be accounted for in the second step. Nevertheless, there is at least one important case where the sampling variation of $\hat{\phi}$ can be ignored, at least asymptotically: If $E(\varepsilon \mid m, w) = 0$, which usually holds under the standard assumptions made for consistency, and θ = 0, then the $\sqrt{N}$ – limiting distribution of the OLS dummy variable estimator from regression (5) is the same as the OLS dummy variable estimator when G* replaces q. Thus, under the null hypothesis of θ = 0, the usual t-statistic on q has a limiting standard normal distribution, so it can be used to test it. However, if θ ≠ 0, then an adjustment is needed for the asymptotic variances of all OLS dummy variable estimators that are due to estimation of ϕ.

[18] Note that in our model, G* = ϕ w, instead to the most commonly encountered case in which E(G* | w) = ϕ w. Thus we are able to disentangle a consistent estimate of G*.

Measurement of the fiscal gap

As noted, the measurement of the fiscal gap requires a set of countries that can be realistically assumed to face no financial constraints so that, on average, they reach the target expenditure level. We address this step by estimating a desired public spending equation based on a cross section of 21 (financially unconstrained) industrial countries, for the year 1979, immediately preceding our period of analysis (1980-2000).[19]

To select the specification, we borrow from the literature on long-run determinants of fiscal spending. More precisely, we run a regression of the log of the HP-filtered trend of government spending (ltendexp) on the following variables: *young* (share of population age 0 to 14), *old* (share of population age 65 and older), *pop* (total population), *dens* (million of people per square kilometer), and the log of the HP-filtered GDP trend.[20]

Table 1 reports the results of the cross-section regression of fiscal expenditure on long run determinants. As can be seen, with the exception of the population variable, regressors are significant and of the expected sign, and the overall fit of the model is quite high. We use the fitted values from this regression to compute annual target fiscal expenditure levels and the associated spending gap for all countries in our sample over the period 1980-2000.

Main results

Table 2 presents the estimations of equation (3). All regressions include both country and year fixed effects, not reported in the Tables for conciseness. Column (1) shows the results for the model that includes only the current growth rate and the error correction term. Both display the expected sign and are highly significant indicating the presence of fiscal procyclicality and a strong convergence effect.

However, the sample masks important differences between industrial and non-industrial countries. In particular, while for the former the convergence effect is still there (and its coefficient is comparable to that of the full sample), the evidence on procyclicality disappears (column 2).[21] Instead, the growth rate coefficient when we exclude industrial countries is virtually the same as for the full sample, indicating that the procyclicality result is entirely driven by the non-industrial lot. Thus, these results appear to confirm the view that fiscal procyclicality characterizes non-industrial (but not industrial) economies. Moreover, they confirm our prior that fiscal spending tends to adjusts to a target level over time.

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[19] The list of the industrial countries used in this estimation is reported in the Appendix.

[20] On the determinants of fiscal expenditure, see, among others, Alesina and Wacziarg (1998), Rodrick (1998) and references therein. Following this literature, we tried additional variables such as openness, initial per capital income, and urbanization ratios. Since they turn out not to be significant and implied the loss of observations, they were excluded from the final specification.

[21] Similarly, no pricyclicality is found if we drop the error correction term.

Next, we test our main hypothesis, namely, that fiscal procyclicality itself is a function of the spending gap. Finally, the last column introduces the interaction of the change in real output with last period's fiscal spending gap, defined as the difference between target and actual spending. As expected, the coefficient is positive and highly significant: as the spending gap increases (as countries are farther away from the desired level of expenditure) fiscal spending becomes more procyclical.

In order to better understand what is behind the reported procyclicality, and to test the implications of alternative stories regarding the asymmetric fiscal response to real shocks, we examine the cyclical behavior of public spending distinguishing between expansions and recessions (defined as periods in which real growth is above or below its long-run rate).[22]

Table 3 documents the results. The first column of the table reproduces column (4) of Table 2 for ease of comparison. The next one shows that growth rates coefficients do not differ significantly in expansions and contractions. In contrast, the impact of the spending gap on fiscal procyclicality is significant only in times of bonanza, as hypothesized in the previous section. The asymmetry holds even after distinguishing growth rates in expansions and recessions (indeed, the asymmetry is even stronger).

While the previous evidence appears to confirm our priors, it is still consistent with (and subject to the same caveats as) the standard institutional argument inasmuch as it cannot explain the differences between industrial and non-industrial countries. Table 4 goes a step further in that direction. There, we divide the sample according to whether the country displays, on average, a positive or a negative spending gap. As our argument goes, only the former should display a procyclical behavior during expansions, as the mounting social pressures to increase public transfers dominate consumption-smoothing arguments.

The first two columns show the results for non-industrial countries exhibiting a positive fiscal, which, as expected, largely replicate those in Table 3. By contrast, non-industrial economies with negative fiscal gaps do not exhibit any sign of procyclicality, either in relation with the growth rate or linked to the presence of a spending gap (column 3), nor they display any asymmetric fiscal pattern (column 4). In fact, this group tend to display a fiscal behavior that does not differ significantly from that of comparable industrial countries (columns 5 and 6). In sum, the sign of the fiscal spending, rather than the country's level of development, seems to explain the different fiscal behavior over the cycle.

[22] Distinguishing between positive and negative growth rates yields comparable results, available from the authors upon request.

Robustness

As an alternative way of verifying the relative importance of the spending gap vis a vis other relevant factors in explaining fiscal procyclicality, we regressed country-by-country estimates of fiscal procyclicality on the average fiscal gap. More precisely, following Lane (2002), we computed procyclicality coefficients from country-by-country regressions of public spending on GDP growth.

Next, we run cross-country regressions of these coefficients first on the average gap alone, and then controlling for other factors found to be relevant in the literature on fiscal procyclicality:[23] the average growth rate, initial per capita wealth, *openness* (measured as the exports plus imports over GDP), output volatility (*vol*), and a variable of political strength (*polcon*, a variable in the zero-one interval that measures the number of veto points in the political system, averaged over the period for these regressions).

As Table 5 reports, the average gap is positively and (once the relevant variables are included) significantly related with the degree of procyclicality, with larger gaps inducing higher fiscal procyclicality.[24] However, as before, the result only holds for non-industrial countries that exhibit a positive fiscal gap, while for the rest (which, as shown in the previous table, tend to display no procyclical behavior) no link between procyclicality and spending gap is found. The link between procyclicality coefficients and the average spending gap is graphically documented in Figure 1, where coefficients are plotted against spending gaps after both have been conditioned on the remaining regressors in equation (5).

V. Conclusions

The conventional wisdom view has typically hinted at the contrast between fiscally procyclical developing countries and fiscally countercyclical developed ones. Indeed, while the cyclical pattern tends to differ among the latter, the empirical literature has found them to be (at least) less procyclicality than the former. In turn, explanations have pointed at the role of institutional aspects (e.g., the relative influence of interest groups) or financial constraints (e.g., the need to adjust fiscal spending in times of limited access to international capital markets).

In this paper, we proposed an alternative explanation: countries with fiscal where spending levels are low (relative to a target level) are pressed to spend a larger share of the additional revenues collected in good times, either reluctantly due to a stronger

[23] See Lane (2002) for a discussion of the rationale for the different controls.
[24] Note that the result, by abstracting from asymmetry, understates the procyclicality and therefore the impact of the fiscal spending gap.

demand from interest groups and taxpayers in general, or willingly because of a higher marginal (political) benefit of additional spending.

We present four pieces of evidence supporting this argument. First, we show that fiscal spending converges over time to a desired spending level determined by long-run (macroeconomic and demographic) fundamentals. Second, we find that the speed of convergence increases with the distance between desired and actual spending: countries further away from their desired level tend to behave more procyclically. Third, we show that this convergence is faster during booms than during recessions, suggesting that the incidence of the spending gap on fiscal procyclicality inhibits fiscal savings in good times (rather than fiscal activism during bad times): governments in economies with postponed public consumption are hard-pressed to spend whatever windfall they receive almost immediately. Finally, we show that fiscal spending in developing economies with negative or no spending gap display an acyclical pattern no different from those in developed economies.

It is not difficult to come up with examples that illustrate the intuition behind these results. Savings in very poor countries with important deficits in health and education are likely to be hampered by very high discount rates, both from the population and, to the extent that their preferences reflect those of their constituencies, from their political leaders. Moreover, this is related to the familiar idea of a minimal (subsistence) consumption level: Not only are some public spending items such as health subject to minimum provision levels, but the minimal consumption of a large share of the population is usually tied to public programs, particularly in low income countries.

Thus, the higher procyclicality of developing countries may be explained without resorting to the expedient of weak institutions or imperfect capital markets.[25] Indeed, while the fiscal spending gap needs not always reflect the country's degree of development, it is highly correlated with it, as Figure 2 shows. Whereas most developing countries are characterized by chronic positive fiscal spending gaps (presumably associated with the underprovision of basic public goods), developed economies tend to display negative or no average gap.

This findings explain the apparent link between the procyclical-countercyclical dichotomy and development levels reported by the literature. However, our implications are different from those usually derived in the literature. In particular, they give no reason to presume that the inability to save in good times is due to a weaker institutional framework: societies in developed economies would behave procyclically if public goods were underprovided in their countries. On the other hand, accepting that a countercyclical behavior is to be preferred even in the presence of spending gaps, the findings suggest that *stronger* institutions (relative to developed countries) are needed to overcome the pressure to spend in low income countries, perhaps separating the

[25] This does not imply, of course, that the latter do not play any role.

decision from individual leaders impotent of even unwilling to forestall the immediate satisfaction of long-standing social demands.

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Tabla 1. Desired Public Expenditure

	(1)
Young	3.884564*
	(1.96)
Old	11.09137***
	(4.08)
Pop	-0.0003362
	(0.29)
Dens	0.0010317
	(1.69)
Ltendgdp	0.9390313***
	(38.02)
Constant	-2.803473***
	(3.97)
Observations	23
R-squared	0.9812

Absolute value of t-statistics in parentheses
** significant at 10%; ** significant at 5%; *** significant at 1%*

Tabla 2. Procyclicality of Public Expenditure

	Full sample	Industrial	Non-industrial	
	(2)	(3)	(4)	
dlgdp	0.712***	0.044	0.734***	0.613***
	(10.68)	(0.33)	(9.34)	(6.27)
difexpj1	0.233***	0.166***	0.246***	0.247***
	(12.69)	(5.74)	(11.09)	(11.15)
interajdesv				0.235**
				(2.08)
Constant	-0.038**	-0.001	-0.066***	-0.061***
	(2.53)	(0.06)	(3.14)	(2.88)
Observations	1300	374	926	926
Number of id	83	21	62	62
R-squared	0.321	0.447	0.329	0.332

Absolute value of t-statistics in parentheses
** significant at 10%; ** significant at 5%; *** significant at 1%*

Tabla 3. Non-industrial Sample – Asymmetry

	(1)	(2)	(3)	(4)
Dlgdp	0.613***		0.609***	
	(6.27)		(6.23)	
dlgdp_desvpos		0.586***		0.556***
		(5.63)		(5.25)
dlgdp_desvneg		0.682***		0.736***
		(5.09)		(5.31)
difexpj1	0.247***	0.247***	0.238***	0.234***
	(11.15)	(11.16)	(10.06)	(9.76)
interajdesv	0.235**	0.249**		
	(2.08)	(2.17)		
interajdesv_pos			0.375**	0.478**
			(2.15)	(2.49)
interajdesv_neg			0.090	0.039
			(0.51)	(0.21)
Constant	-0.061***	-0.062***	-0.061***	-0.063***
	(2.88)	(2.92)	(2.89)	(2.97)
Observations	926	926	926	926
Number of id	62	62	62	62
R-squared	0.332	0.333	0.333	0.334

Absolute value of t-statistics in parentheses
** significant at 10%; ** significant at 5%; *** significant at 1%*

Tabla 4. Non-industrial Sample – Positive and Negative Spending Gap

	Non-industrial				***Industrial***	
	Average Fiscal Gap > 0		**Average Fiscal Gap < 0**		**Average Fiscal Gap < 0**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Dlgdp	0.599***	0.605***	0.258	0.324	0.097	0.174
	(4.68)	(4.72)	(1.00)	(1.23)	(0.64)	(1.14)
dlgdp_desvpos						
dlgdp_desvneg						
Difexpj1	0.276***	0.265***	0.228***	0.292***	0.193***	0.236***
	(11.26)	(10.24)	(3.55)	(3.54)	(6.35)	(6.85)
Interajdesv	0.266*		0.065		0.143	
	(1.82)		(0.12)		(0.34)	
interajdesv_pos		0.428**		-1.183		-1.417*
		(2.21)		(1.02)		(1.91)
interajdesv_neg		0.072		0.903		1.564**
		(0.34)		(1.02)		(2.25)
Constant	-0.078***	-0.079***	0.187***	0.171***	0.008	0.0003
	(3.13)	(3.17)	(2.73)	(2.94)	(0.39)	(0.02)
Observations	791	791	135	135	342	342
Number of id	53	53	9	9	19	19
R-squared	0.354	0.356	0.375	0.384	0.495	0.506

Absolute value of t-statistics in parentheses

** significant at 10%; ** significant at 5%; *** significant at 1%*

Tabla 5. Procyclicality and Average Spending Gap

	All Sample		Industrial		Non-Industrial	
	(1)	(2)	All	Average Fiscal Gap<0	>0	Average Fiscal Gap<0
			(3)	(4)	(5)	(6)
difexpjprom	0.194	0.382**	-0.560	-0.726	0.421**	-0.778
	(1.64)	(2.44)	(1.64)	(1.28)	(2.47)	(0.96)
dlgdpprom		-5.611**	8.194	8.536	-6.211**	4.372
		(2.14)	(1.56)	(1.48)	(2.31)	(0.66)
gdppc79		-21.504	7.450	8.609	4.655	-18.904
		(1.15)	(0.30)	(0.29)	(0.28)	(0.46)
opennnesprom		0.235	0.304	0.371	0.117	-0.622
		(0.75)	(1.30)	(1.48)	(0.31)	(1.14)
polconprom		0.644**	-0.362	-0.383	0.832**	0.275
		(2.23)	(0.42)	(0.46)	(2.60)	(0.39)
Vol		2.001	-5.545	-5.664	0.997	11.852
		(0.58)	(0.40)	(0.39)	(0.27)	(1.07)
Constant	0.848***	0.799*	0.590	0.519	0.836*	-0.187
	(17.56)	(1.94)	(0.61)	(0.50)	(1.89)	(0.17)
Observations	83	79	21	19	58	9
R-squared	0.052	0.173	0.366	0.287	0.220	0.511

Robust t-statistics in parentheses

** significant at 10%; ** significant at 5%; *** significant at 1%*

Figure 1. Procyclicality and Average Spending Gap

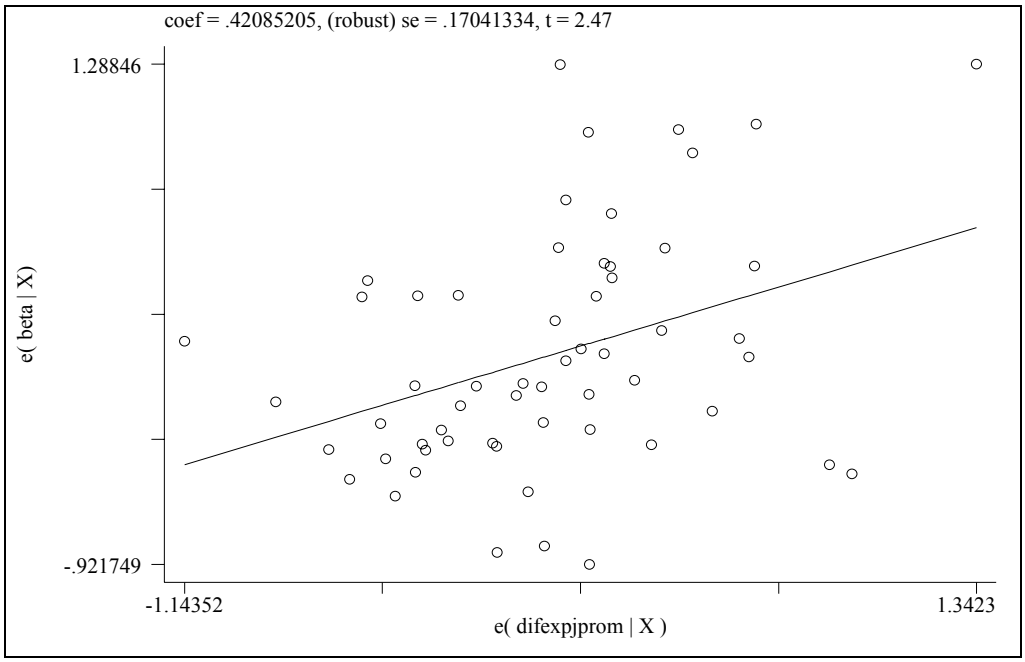
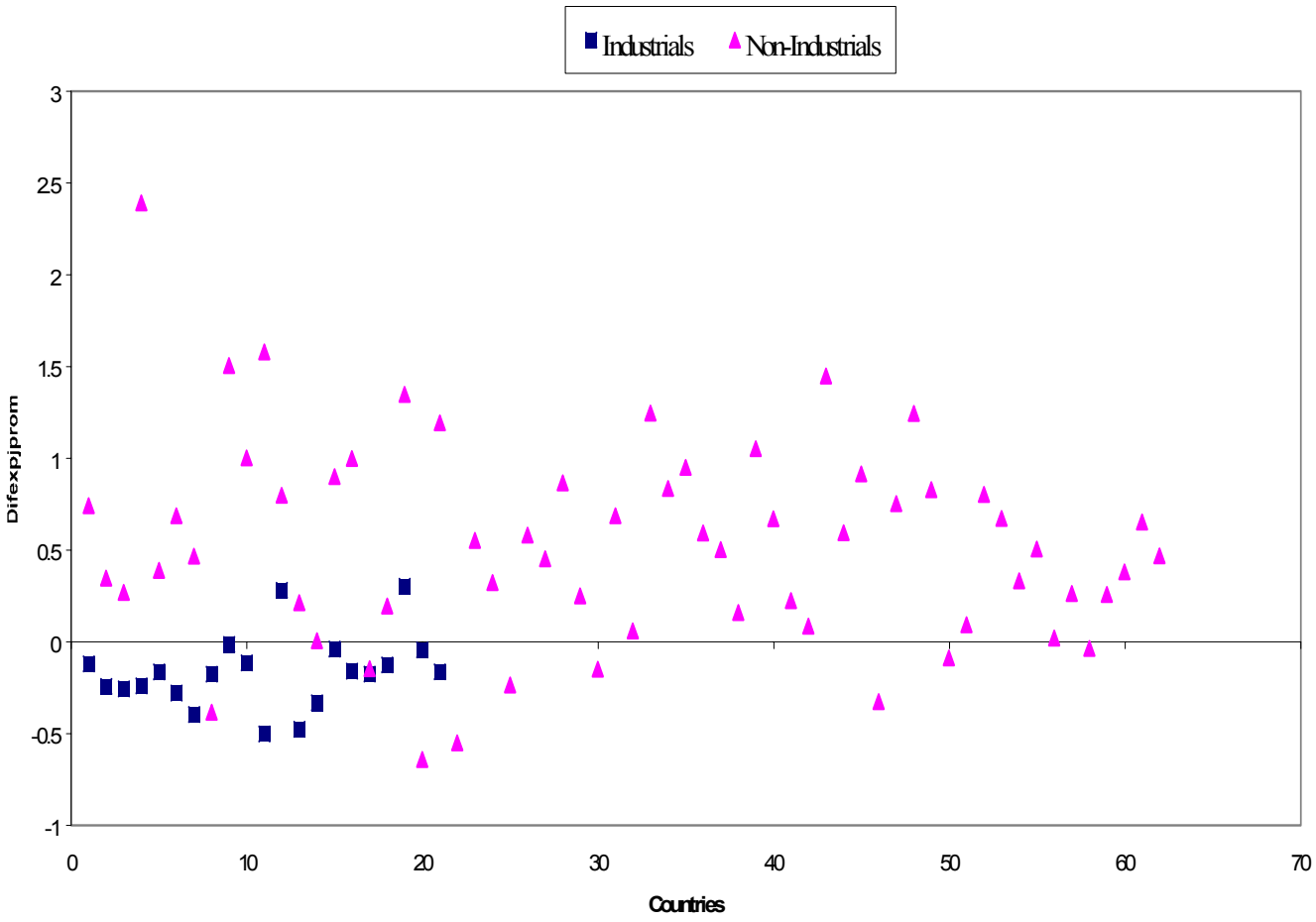


Figure 2. Average Spending Gap



Appendix 1

(a) Variables and Sources

Variable	**Definitions and sources**
LTENDEXP	Government expenditure trend (according to HP) expressed in logs. Government expenditure is deflated using PPP deflator. PPP exp is government expenditure converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States. (Source: World Development Indicators [WDI]).
LTENDGDP	GDP trend (according to HP) expressed in logs. GDP is deflated using PPP deflator. PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. (Source: WDI).
POP	Total population, in millions. (Source: WDI, variable SP.POP.TOTL).
YOUNG	Is the youngest (age:0-14) population to whole population ratio. (Source: WDI).
OLD	Is the old (age:65+) population to whole population ratio. (Source: WDI).
DENS	Millions of people per sq kilometer. (Source: WDI).
DLGPD	GDP variation.
DLEXP	Expenditure variation.
DIFEXPJ1	Difference between the desired expenditure of the country measured with the structural model and the actual expenditure, in logs and lagged one period.
INTERAJ	Interaction between dlgdp and difexpj1.
DLGDP_DESV	Difference between dlgdp and dlgdptrend (where dlgdptrend equals the mean of dlgdp).
INTERAJDESV	Interaction between dlgdp_desv and difexpj1.
GDPPC79	Initial per capita GDP.
OPENNESS	Openness, (ratio of [export + import]/2 to GDP). (Source: IMF).
POLCON	Measure of power dispersion. (Source: Henisz, W. J. (2000). "The Institutional Environment for Economic Growth." Economics and Politics 12(1): 1-31).
VOL	Standard deviation of dlgdp.