

Pressures to Increase Public Expenditure and Patterns of Procyclical Expenditure

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ABSTRACT

This paper draws on the literature that explains why governments spend procyclically, to predict the pattern of cyclical expenditure across government budgets. Procyclical expenditure increases at a faster rate than income in economic upturns and falls at a faster rate in recessions. The more politicians indulge pressures to increase expenditure in an economic upturn, the more they find it difficult to sustain expenditure in a recession. In this paper, differences in politicians' willingness to increase expenditure in an economic upturn are relevant when predicting patterns of cyclical expenditure across budgets. Predictions are tested with reference to expenditures from government budgets in 23 OECD countries (over the period 1995-2006). Central government capital expenditure and sub-central government expenditure are systematically more procyclical than expenditures from other budgets.

1. INTRODUCTION

ALESINA *ET AL.* (2008) note that economists often anticipate countercyclical expenditure (an increase in expenditure when output falls below potential output) when there is increasing evidence of procyclical public expenditure. While procyclical expenditure was first identified in Latin America (Gavin *et al.*, 1996), there is evidence of procyclical expenditure in developing countries (e.g. Kaminsky *et al.*, 2004; Talvi and Végh, 2005; Woo, 2009) and in the OECD (e.g. Arreaza *et al.*, 1998; Hercowitz and Strawczynski, 2004; Lane, 2003; Abbott and Jones, 2011).

Studies have offered insight into the reasons why government expenditures are procyclical. Some offer normative rationales. They identify the circumstances in which procyclical expenditures increase a community's welfare (Lane, 2003; Alesina *et al.*, 2008). Others offer a 'positive' approach. They focus, for example, on the political pressures that governments face in economic upturns. Politicians face intense pressures to increase expenditure and, as a consequence, they find it impossible to sustain expenditure in an eco-

conomic downturn. In this paper, the objective is to call on this 'positive' approach to predict the pattern of cyclical expenditures across government budgets.

A common theme in this literature is the intensity of pressures to increase expenditures in an economic upturn. The intensity of pressures to increase expenditures from different budgets is relevant, but in this paper politicians' willingness to accommodate political pressures is also relevant. Vote-maximising politicians are always wary that increases in expenditures will alert the electorate to the possibility of an increase in taxation. In economic upturns (when tax revenues are increasing) politicians are more likely to increase expenditures from some government budgets than from others.

Pressures to increase public expenditures are often motivated by the prospect of an economic rent (Tullock, 1967). An economic rent is a payment in excess of the payment that would be received in a competitive market. 'Small' groups find it easier to organise and to lobby governments than 'large' groups (Olson, 1965). Small producer groups are often motivated by the economic rents that they might secure if governments can be persuaded to increase expenditures. However, in this paper the relative size of the group is also important, because politicians are more likely to accommodate pressures to increase government spending if they are exerted by relatively 'small' groups. They are more willing to accommodate these pressures because they are able to dissipate any increase in tax costs over a much larger group of taxpayers (Brennan and Buchanan, 1980).

Politicians are aware that they will win support when they increase government expenditure and that they will lose support when they increase taxation, but politicians are also myopic (Downs, 1957; Buchanan and Lee, 1982). They focus on a four, to five, year electoral cycle. When they face pressure to increase expenditures in an economic upturn, they discount the difficulties they might encounter if the economy moves into recession. The focus of their concerns is the likelihood that they will alert the electorate to any prospect of an increase in taxation. In this paper, the proposition is that they are less likely to alert the electorate to any prospect of an increase in taxation if (in economic upturns) they increase expenditures from some budgets, rather than from others.

Empirical studies (e.g. Lane 2003) highlight the relevance of political pressure in economic upturns to explain procyclical expenditure. If willingness to accommodate pressure is relevant when focussing on total expenditure, will differences in willingness to accommodate pressure be relevant when focussing on the pattern of cyclical expenditures across government budgets?

Section two of the paper explains why pressures to increase government expenditure are intense in an economic upturn. It draws on theoretical insights in the literature to predict the pattern of cyclical expenditures from different government budgets. Section three of the paper describes the data and the models employed to test predictions. The paper tests predictions with

reference to budgetary expenditures in the OECD. The empirical model is an error-correction model designed to estimate short-run spending adjustments alongside a long-run relationship between income and government spending. This error-correction framework is particularly apposite because it acknowledges Wagner's Law. It acknowledges the long-run relationship between levels of income and levels of spending (Wagner, 1911). A short-run error-correction model (ECM) is estimated using the dynamic panel data estimator of Arellano and Bover (1995) and Blundell and Bond (1998). Section four of the paper presents the results and section five concludes.

2. THE RELEVANCE OF THE 'DISTRIBUTION OF FISCAL POWER'

There are circumstances in which a beneficent government would choose procyclical expenditure to maximise a community's welfare. When markets are working perfectly and when public-sector goods and private-sector goods are complements, there is a rationale for procyclical government spending (Lane, 2003).

A first concern is that this rationale is unlikely to explain why governments rely on procyclical spending, because the circumstances in which it applies are very specific. A second concern is that the empirical evidence suggests that procyclical expenditures are produced as a consequence of pragmatic responses to political pressures. When Halland and Bleaney (2009, p.4) surveyed the literature that focuses on these pragmatic responses, they reported that: '...essentially three types of explanations have been suggested: i) restrictions on access to domestic...and /or international credit markets..., ii) institutions or political structures and iii) the polarization of preferences.'

The first type of explanation of procyclical expenditure focuses on the difficulties governments experience if they must borrow to sustain expenditures in a recession. Credit restrictions are particularly relevant when focussing on developing countries' failure to smooth business cycles (e.g. see Gavin and Perotti, 1997).²

The second type of explanation of procyclical expenditures focuses on the argument that competition between pressure groups (for more government spending) increases as national income increases. Lane and Tornell (1996) and Tornell and Lane (1999) argue that this produces 'voracity effects'. The importance of this increase in pressure in an economic upturn is that there is no budget surplus sufficient to sustain expenditure in a recession. Talvi and Végh (2005) also offer this insight. They refer to '...an increasing convex function of the size of the budget...' as income increases (Halland and Bleaney, 2009, p. 5). Alesina *et al.* (2008) follow suit when they focus on pressures to increase expenditures in an economic upturn. They argue that voters press governments to spend because they fear that, otherwise, the increasing government revenues will be squandered on rents to government supporters.

The third type of explanation focuses on the polarisation of preferences for increased government expenditure. Woo's (2009) theoretical model predicts

that the likelihood of procyclical expenditure will increase if the heterogeneity of preferences of different groups in the community increases. Heterogeneity increases as income inequality increases (measured with reference to the Gini coefficient) and this variable was significant when Woo tested for fiscal procyclicality.

In this literature, the emphasis is on 'demand' for increased expenditure but, in this paper, the emphasis is on politicians' willingness to 'supply' increases in government expenditure. The literature that explains levels of government expenditure indicates that levels of expenditure are higher than anticipated when tax systems rely on high income-elasticities of tax revenue (e.g. Oates, 1975; Craig and Heins, 1980). They are higher because politicians are able to increase expenditures without alerting their electorate to any likelihood that there will be an increase in taxation. The same consideration is implicit in the literature that focuses on procyclical government, e.g. Woo (2009) recognises the relevance of willingness to accommodate pressures to increase public expenditure. When he modelled the importance of social polarisation of preferences, he argued that different groups have a greater incentive to press their case '...when rising government revenues or newly available resources make their agenda seem more feasible...' (p.851).

Lane (2003, p. 2665) suggests that '...it is plausible that variation in procyclicality across different expenditure items will be influenced by the specific distribution of fiscal power...' The distribution of fiscal power depends on the way that pressures to increase government spending are exerted *and* on the way that pressures are received. Both considerations are likely to be relevant when predicting the pattern of cyclical expenditure across budgets.

In this paper, the intention is to predict cyclicity across: (1) budgets (e.g. capital and current spending) *at* a specific fiscal tier and (2) budgets at *different* government tiers (central or sub-central tiers of government).

2.1 Central government expenditures

Lane (2003, p.2665) argues that '...individual voters may care most about public consumption goods or transfers, business interests about infrastructure; and government employees about public sector wages...' The implication is that (other things equal) producer groups are more likely (than consumer groups) to press for increases in capital expenditures.

As noted above, the literature that compares the efficacy of lobby groups argues that 'small' producer groups are at an advantage. In 'large' groups, the free-rider problem atrophies individuals' willingness to act collectively (Olson, 1965; Buchanan, 1968). Becker (1983, 1985) argues that 'small' groups are more successful than 'large' groups when there is political competition. However, it is also the case that 'small' groups are at an advantage because an increase in tax (incurred accommodating 'small' groups) can be dissipated over a 'large' number of taxpayers (Brennan and Buchanan, 1980). Politicians are more likely to accommodate demands for increased capital

expenditure because the electorate is not as aware of any increase in capital expenditure. Downs (1960) demonstrates that voters are more aware of policies that exert a direct and tangible impact on their day-to-day life. If an increase in spending should alert concern that taxation might also increase, this will be more acute when increasing government consumption expenditure. It is also the case that it is far more difficult to 'rein in' government consumption if an economy's upturn should prove transitory. A finite 'one off' investment might imply future maintenance costs, but voters are not as concerned because they are not as aware of the implied tax commitment.

If politicians are prepared to accommodate relatively 'small' groups (because tax costs can be dissipated over a 'large' group of taxpayers), they are systematically more likely to accommodate pressures to increase capital expenditures (than consumption expenditures).

2.2 Sub-central government expenditures

If politicians are willing to accommodate pressure from relatively 'small' groups (because tax can be dissipated across a relatively 'large' group of taxpayers), politicians in sub-central governments are more willing (than central-government politicians) to increase expenditures in an economic upturn.

Vote-maximising politicians in sub-central governments have an incentive to press for intergovernmental transfers because they are able to use intergovernmental transfers to increase expenditures without introducing a new tax, or a new tax rate. As Mueller (2003, p.223) notes, '...the more the government spends holding taxes constant the happier voters are and the higher the probability of incumbent politicians being re-elected'. The comparison with the position of 'small' producer groups is obvious. Sato (2007, p.183) notes that sub-central governments: '...may also undertake rent-seeking or lobbying activities in order to obtain more transfers... (and) ...small lobbying groups (or regions) may be more successful than larger ones, because the cost of transfers to them is so widely spread so that it is not noticeable (Becker, 1983)...'

Receipt of intergovernmental transfers is likely to be procyclical. Abbott and Jones (2013) argue that competition for intergovernmental transfers is more effective when national income is increasing and central tax revenues are increasing. When national income is falling, vote-maximising politicians at central government are under pressure to increase 'direct' central government expenditures (e.g. health, education, transport) to signal they are increasing aggregate demand to stabilise the economy.³ Voters' evaluation of politicians at central government depends on their perception of a politician's ability to manage the economy (Jones and Hudson, 1996).

If intergovernmental transfers are procyclical and if local politicians are willing to spend more from transfers (because they do not need to increase taxation), sub-central government expenditures *gross* of intergovernmental transfers are likely to be more procyclical than sub-central government expenditure *net* of intergovernmental transfers. There is a literature that

reports the existence of a ‘flypaper effect’ (Hines and Thaler, 1995; Bailey and Connolly, 1998 survey this literature). Even when sub-central governments receive transfers as lump sum grants, government spending increases by a greater proportion from an increase in grant income than it would if there had been an equal increase in tax revenue (raised from local taxpayers). There is a ‘flypaper effect’ because ‘money sticks where it hits’ — in the public sector. At the heart of this literature is the argument that voters press for further expenditure because their perception is that the receipt of an intergovernmental transfer reduces the marginal cost of public spending programmes (Oates, 1979). In sub-central governments politicians are able to spend more because the largest share of the tax costs of any increase in expenditure will be borne by taxpayers in other constituencies.

In a sub-central government, politicians are willing to spend more in an economic upturn because intergovernmental transfers are procyclical *and* because they are able to dissipate any increase in tax costs across the ‘large’ group of taxpayers within the nation state. The implication is that, in sub-central governments, politicians (unable to rely, to any significant extent, on borrowing⁴) will find it difficult to sustain expenditure in a recession. Abbott and Jones (2013) present evidence that indicates intergovernmental transfers and sub-central government expenditures are more procyclical the greater the degree of decentralisation (i.e. the greater the number of ‘small’ sub-central government jurisdictions).

In sub-central governments, politicians have less reason to fear vote-loss than central-government politicians (because they are able to fund expenditures from intergovernmental grants) and the implication is that differences in procyclicality between *sub-central* current expenditures and capital expenditures are likely to be less obvious than differences in procyclicality between *central* government current and capital expenditures. In these jurisdictions, politicians are more likely to indulge pressures to increase capital and current spending in economic upturns the more they feel that the costs are financed by transfers. As a consequence, they are more likely to find it difficult to sustain expenditures from both of these budgets when the economy moves into recession.

If politicians are more willing to accommodate pressures to increase government spending from relatively ‘small’ groups because they can dissipate the tax costs over a relatively ‘large’ group of taxpayers, the predicted pattern of procyclical expenditures can be described as:

- (i) higher values of procyclicality in central government capital expenditure than in central government current expenditure;*
- (ii) higher values of procyclicality in sub-central government expenditure gross of intergovernmental transfers than net of intergovernmental transfers;*
- (iii) a stronger procyclicality bias in central government capital expenditures-relative to current expenditures than in sub-central government capital expenditures-relative to current expenditures.*

Table 1: Error Correction Model estimates

	Sub-central government			Central government		
	Total Spending	Current Spending	Capital Spending	Total Spending	Current Spending	Capital Spending
constant	-0.970 (-1.10)	-2.458** (-1.84)	-12.363* (-3.84)	-1.977 (-1.28)	-2.402* (-3.55)	-7.165* (-2.62)
Δg_{it-1}	-0.148* (-4.57)	-0.015* (-3.35)	0.002 (0.02)	-0.116 (-0.85)	-0.155* (-2.09)	-0.183* (-2.11)
Δy_{it}	2.086* (3.17)	1.460* (3.21)	2.836** (1.79)	3.766* (2.47)	0.142 (0.21)	5.082* (3.17)
g_{it-1}	-0.045 (-1.68)	-0.109* (-2.07)	-0.590* (-6.85)	-0.134 (-1.42)	-0.197* (-3.68)	-0.257* (-3.83)
y_{it-1}	0.052 (1.30)	0.134** (1.93)	0.653* (4.64)	0.117 (1.36)	0.174* (3.95)	0.338* (3.09)
N×T	187	190	191	187	189	188
Number of instrments	67	67	67	67	67	67
Joint significance:	32.49*	8.90	23.00*	28.41*	25.92	23.20*
Time dummies						
Joint significance:	2.83	4.29	47.43*	28.41*	15.71*	16.41*
H0: $\pi_1 = \pi_2 = 0$						
AR(1) serial correlation	-1.487	-1.373	-2.246*	-1.797	-2.60*	-2.721*
AR(2) serial correlation	1.416	1.531	1.054	1.168	-1.05	-2.433*
Long-run estimate:	1.159*	1.234*	1.106*	0.877*	0.887*	1.314*
Log of real GDP	(1.98)	(5.87)	(6.90)	(2.63)	(8.44)	(3.38)

Note: Estimates of (1) are derived using the linear dynamic panel data estimator of Arellano and Bover (1995) and Blundell and Bond (1998) (t-ratios from robust standard errors are shown in parentheses). The number of instruments displayed refers to the number of lagged values of the regressors (in level and first difference form) that are used as instruments for the explanatory variables. The estimated equation also includes time dummies (the estimates from which are not reported to conserve space) that account for idiosyncratic time effects. The long-run estimate for the log of real GDP is found from $\pi_2 / -\pi_1$ and the estimated t-ratio obtained from the delta method (Feiveson, 2005). The autocorrelation tests are for zero autocorrelation in first-differenced errors. * indicates significance at the 5% level and ** significance at the 10% level.

3. MODEL AND DATA

To test for the procyclicality of government spending we use the following autoregressive distributed lag error-correction model:⁵

$$\Delta g_{it} = \alpha_i + \lambda_t + \beta \Delta g_{it-1} + \delta \Delta y_{it} + \pi_1 g_{it-1} + \pi_2 y_{it-1} + \varepsilon_{it} \quad (1)$$

for $i=1, \dots, N$ and $t=1, \dots, T$.

where g_{it} is the log of real government expenditure for country i at time period t and y is the log of real GDP. The error-correction specification allows the simultaneous estimation of both the short-run adjustment process for g_{it} and the long-run relationship between y_{it} and g_{it} . δ estimates the cyclicity of government spending, with $\delta < 0$ indicating government spending is counter-cyclical and $\delta > 0$ suggesting procyclical behaviour. The estimates of π_1 and π_2 identify the long-run relationship between the level of output and government spending. A positive long-run relationship provides evidence in favour of Wagner's Law, with a strict interpretation consistent with a coefficient greater than one in magnitude. α_i are the individual effects that account for unobserved cross-country heterogeneity, λ_t are common unobserved time effects, and ε_{it} is a white noise error term.

Government expenditure data were obtained from the IMF's Government Finance Statistics database for the local, state and central tiers of government, including total spending, current spending and expenditure on capital projects. Data for local and state government are aggregated to produce a series for sub-central government. This is necessary because for some countries there are only data for either local or state government but not both. In addition, we took data on central government transfers to sub-central government. Both spending and transfers data are converted into constant prices using the GDP deflator series, which, together with the real GDP data that we use, is taken from the OECD's National Accounts database. All series are expressed in local currency terms. The sample consists of data for 23 high-income countries⁶ over the period 1995-2006. Our choice of sample was restricted by the intergovernmental transfers series, which while available for most of the high-income OECD countries (excluding notably Australia and Japan) is published consistently only from 1995 onwards.⁷ To estimate the error-correction model we use the System Generalised Methods of Moments (SYS-GMM) dynamic panel estimator of Arellano and Bover (1995) and Blundell and Bond (1998).

4. EMPIRICAL RESULTS

The results from the SYS-GMM estimation of the error-correction model are shown in Table 1. In the lower panel, the long-run slope estimate for the log of real GDP is positive throughout. In five cases it is above one, implying government spending rising at a faster rate than GDP, consistent with a strict

interpretation of Wagner's Law. Δy_{it} has a statistically significant effect on Δg_{it} in five cases, with a positively signed estimated coefficient.

One of the first observations is that there is a larger cyclical coefficient for sub-central government expenditure than for central government expenditure. Our estimates suggest that the β coefficient from (1) is 2.086 for sub-central government spending, but only 0.486 for central government spending. Moreover, in the central government equation Δy_{it} is not statistically significant. The estimate for the sub-central government tier implies that a one standard deviation increase in Δy_{it} (0.018) is expected to raise Δg_{it} by 0.038. The finding of acyclical central government spending is consistent with the findings of Fiorito and Kollintzas (1994) and Talvi and Végh (2005) for the G7⁸, though making a strict comparison is difficult, since they use data on general government expenditure, which is the sum of both central and sub-central spending. When Δy_{it} is statistically significant, the sub-central tier of government produces four out of the five positive estimates, which are also greater than one in magnitude. Procyclicality is only found for central government capital spending.

The observation that central government expenditures are likely to be more counter-cyclical than sub-central government expenditures is consistent with predictions that are presented in Section Two of the paper. However, they are also consistent with predictions presented by an established literature on fiscal federalism. Oates (1972) argued that counter-cyclical responsibility for management of the economy should be the prerogative of central government. The fiscal federalism literature does not imply that sub-central government spending should be procyclical (that coefficients should be positive or that coefficients should exceed one). The rent-seeking analysis predicts that it will be more procyclical than central government spending and that coefficients are also likely to exceed one. The rent-seeking analysis also predicts the full pattern of spending across capital and current accounts that are reported at the end of section two of the paper, and in this context:

(i) *Higher values of procyclicality in central government capital expenditure than in central government current expenditure.* The estimated coefficient for Δy_{it} is 5.082 for capital spending by central government but only 0.142 for central government current spending. Moreover, Δy_{it} is not statistically significant for current spending. The finding of a higher elasticity for capital spending is consistent with the earlier literature that uses total government spending. For 51 developing countries, Akitoby *et al.* (2006) find a mean cyclical coefficient for capital spending of 2.677, whereas the current spending coefficient is 0.537; whilst Lane (2003) finds a mean cyclical coefficient from the OECD of 0.840 for government investment and 0.17 for government consumption. Again, however, these studies have tended to concentrate on total government spending from all tiers.⁹

(ii) *Higher values of procyclicality in sub-central government expenditures gross of intergovernmental transfers than net of intergovernmental transfers.* For spending minus transfers, the slope estimate for the growth in income is -1.296, but Δy_{it} is not statistically significant, whereas for total sub-central government spending it is significant and the estimated coefficient has a magnitude of 2.086 and significant at the 5 per cent level. Confirmation of this finding also comes from the δ estimate for transfers, which has a value of 3.766, where again Δy_{it} is statistically significant. This implies that a one standard deviation increase in Δy_{it} will raise the growth in transfer spending by 0.068.

(iii) *A stronger procyclicality bias in central government capital expenditures relative to current expenditures than in sub-central government capital expenditures relative to current expenditures.* The ratio of capital spending estimates to current spending estimates for Δy_{it} is 5.082:0.142 whereas for sub-central government spending it is 2.836:1.460. Δy_{it} is statistically significant at the 10 per cent level in all cases except for current spending by central government. The result suggests that sub-central governments are more willing to increase spending on both capital and current accounts as they are able to finance increased spending with intergovernmental grants.

5. CONCLUSIONS

This paper has focused on the pattern of cyclical expenditure across government budgets. The literature that explains procyclical government spending emphasises the importance of political pressures to increase public expenditure in economic upturns. This paper has emphasised the relevance of politicians' willingness to accommodate pressures to increase public expenditure. Indulgent expenditure in economic upturns leaves governments without a budget surplus sufficient to sustain expenditure in recessions.

The first conclusion in this paper is that there is evidence of a systematic pattern of procyclical expenditure across budgets in the OECD. The second conclusion is that this pattern is consistent with the proposition that politicians are more at ease increasing expenditures from some budgets than from others. They are more at ease when an increase in expenditure is unlikely to draw voters' attention to the prospect of any increase in taxation. In an economic upturn, politicians are more likely to accommodate pressures from relatively 'small' groups because they are able to dissipate an increase in taxation across a 'large' group of taxpayers.

When focussing on the pattern of cyclicity in the OECD, central government spending is acyclical, but sub-central government spending is strongly procyclical. Central government capital expenditures are more procyclical than central government current account expenditures. This evidence of capital spending is consistent with Lane's (2003, p.2668) prediction that '..the most procyclical component of government spending is government investment...'. Sub-central government spending *gross* of intergovernmental

transfers is more procyclical than sub-central government transfers *net* of intergovernmental transfers. Capital spending is procyclical for central and sub-central governments, but only current government expenditure is procyclical for sub-central governments.¹⁰

While each comparison (e.g. that central government capital expenditure is more procyclical than central government current expenditure) is relevant in its own right, it is important to emphasise the consistency that exists when focussing on the pattern of procyclical expenditures. It is important to note, for example, that sub-central current expenditures are procyclical and central government current expenditures are not. In both instances, consumer groups *are* difficult to mobilise as pressure groups. But in the case of sub-central government expenditures, politicians in sub-central governments *are* inclined to increase *current* expenditures because they can dissipate tax costs across a 'large' group of taxpayers elsewhere in the nation state. Systematic differences in willingness to indulge pressures are relevant when predicting procyclical expenditure.

While pressures from 'small' groups are likely to be more intense than pressures from 'large' groups, the evidence in this paper is consistent with the proposition that politicians' vote-maximising concerns are also relevant when predicting procyclical expenditure. Their willingness to indulge pressures is important when predicting the likelihood of procyclical expenditure. With these results, there is reason to question the proposition that politicians are solely motivated by their desire to maximise social welfare. Studies that analyse the costs of rent seeking focus on static resource misallocation costs (e.g. Mueller, 2003; Cullis and Jones, 2009). However there are also further costs, downstream. Low-income individuals are particularly vulnerable in economic recessions (e.g. Bordo and Meissner, 2011). Indulgence in an economic upturn makes it even more difficult to offer social protection in a recession.

The overarching conclusion is that expenditures are more likely to be procyclical the more that vote-maximising politicians are inclined to indulge political pressures when national income is increasing.

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ENDNOTES

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2. Alesina *et al.* (2008, p 1007) suggest that '...in bad times, many developing countries cannot borrow, or can do so only at very high interest rates, therefore they cannot run deficits and have to cut spending; in booms, they can borrow more easily and choose to do so, increasing public spending...'. If this is a reflection of failure in financial markets, governments might rely on procyclical expenditure to increase welfare.

3. In some countries, the same politicians that represent sub-central jurisdictions are also the politicians that collectively signal ability to manage the economy. However, with this mix of incentives, politicians will press for intergovernmental transfers voraciously when national income increases, but be far more concerned about increasing other central government expenditures when national income falls.

4. For further analysis of the constraints that limit sub-central government reliance on borrowing, see Rodden (2002).

5. A similar structure was proposed by Akitoby *et al.* (2006).

6. The countries are Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Slovak Republic, Spain, Sweden, Switzerland, United Kingdom and United States.

7. For a few countries data are only published for a more limited interval (e.g. Greece; Iceland).

8. Woo (2009) also reports a mean fiscal cyclical coefficient of 0.176 for the OECD countries, in contrast to a mean coefficient of 0.818 for a sample of developing countries.

9. In an attempt to further explain the procyclicality of our government expenditure series, particularly to ascertain whether the nature of the political or electoral system influences the degree of procyclicality, we interacted y_{it} with i) an election dummy (to account for the possibility of an electoral cycle for procyclicality); ii) with the intensity of trade union membership (accounting for the influence on public sector employment/wages and hence government spending); iii) accounting for the proportion of total government spending coming from the central government sector (and hence the degree of federalisation across economies). Generally, we found these interaction terms were not statistically significant. However, we did find for the cyclicity of intergovernmental transfers, the interaction term with the election dummy was statistically significant and the estimated coefficient positively signed. The estimation results are available from the authors upon request.

10. In this paper the analysis began by focusing on capital expenditures. Lane (2003) reported evidence that procyclical *wage* expenditures were sensitive to pressure to increase spending in the OECD in an economic upturn. He used the Henisz (2000) index as a proxy for 'voracity effects' (this index is based on the number of veto points in the process of decision-making and the distribution of differences in preferences for government spending). However, Lane's observation is also consistent with the hypothesis presented here. Politicians are more disposed to indulge pressures (in economic upturns) that are exerted by relatively 'small' groups (in this case, by public sector trade unions).

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