

**Turning a blind eye to policy prescriptions.  
Exploring the sources of procyclical fiscal  
behavior at subnational level**

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## *Motivation*

- Fiscal policy recommendation from economic theory: smooth out the business cycle
- Keynesian countercyclical policies recommend tax cuts, expenditure increases, and deficits in recessions and tax increases, expenditure cuts, and surplus in economic booms
- Tax-smoothing theory of budget deficits (Barro 1979): budget deficits and surpluses should be used to “smooth” the distortionary cost of taxation.
  - Implications for budget deficits: a temporary increase of expenditures should be financed by issuing debt in order to spread the increase in taxes over a longer time horizon and to minimize the welfare costs of high tax rates.
- For different reasons, both theories propose countercyclical policies

## ***Why do emerging economies turn a blind eye to policy prescriptions?***

- ***Borrowing constraint hypothesis***: credit markets narrow sizably for developing countries during recessions and expand considerably in booms, compelling governments to act procyclically (Gavin et al., 1996)
- ***Constraining the opposition***: debt accumulation, resulting from procyclical fiscal behavior, is a strategic move of incumbents in their last period to constraints the actions of future opposition governments. This strategic move would presumably facilitate their return to office next period (Cukierman et al., 1992).

## ***Why do emerging economies turn a blind eye on policy prescriptions?***

- ***Constraining Corruption***: procyclical spending is the result of voter's demand to avoid leaving excessive rents to corrupt governments. After observing a boom, voters demand more public goods or lower taxes, and this induces a procyclical bias in fiscal policy. (Alesina et al. , 2008)
- ***Voracity Effect***: in the presence of common pool resources the “voracity” of politicians exacerbates expenditures in booms. Economic expansions generate additional funds for which pressure groups compete to appropriate them (Lane and Tornell, 1996)

## ***Why is important to study procyclicality at subnational level?***

- In federal organized countries, provinces account for a large fraction of total revenues and expenditures.
- Procyclical behavior of subnational governments could exacerbate the procyclicality of fiscal policy at the federal level while constraining its ability to save resources for countercyclical discretionary spending during economic downturns

# *Empirical Evidence: subnational districts*

Authors	Data	Conclusions
Abbott & Jones (2012)	23 OECD countries; 1995-2006	<ul style="list-style-type: none"> <li>• Subnational districts spending is more procyclical than central government expenditure.</li> <li>• Voracity effects</li> </ul>
Arena & Revilla (2009)	Brazilian states; 1991-2006	<ul style="list-style-type: none"> <li>• Pro-cyclical fiscal policy at state level.</li> <li>• The introduction of the Fiscal Responsibility Law helped to reduce Brazilian states' spending-side pro-cyclicality.</li> <li>• Voracity effects are more intense when there is a political alignment between the President and the Governor.</li> </ul>
Abbott et al. (2015)	31 Mexican states; 1995-2010	<ul style="list-style-type: none"> <li>• The sources of procyclicality are:               <ul style="list-style-type: none"> <li>(a) intergovernmental transfers</li> <li>(b) the “distribution of fiscal power” across fiscal tiers measured by the coincidence of political party control of the office of state legislature and the office of state governor.</li> </ul> </li> </ul> <p>Political alignment increases the likelihood that local politicians will feel that their party is secure enough electorally to accommodate pressures exerted by rent-seeking lobby groups.</p>
Sturzenegger & Werneck (2006)	Argentina & Brazil; 1992-2002	<ul style="list-style-type: none"> <li>• Spending of subnational governments has been markedly procyclical in both countries</li> <li>• In both countries, though more so in Brazil than in Argentina, the main source of procyclicality is to be found in the highly procyclical pattern of tax revenues directly collected by subnational governments.</li> <li>• It is not the flow of federal transfers that makes the spending of subnational governments procyclical but their tax structures</li> </ul>

# ***Which are the sources of procyclical fiscal policy at subnational level?***

Existing theories are not well suited to explain procyclicality at subnational level

- ***Borrowing constraint hypothesis***

Testing the liquidity constraint hypothesis requires variations of debt level during recessions across subnational districts which is hard to verify since most of the districts face similar credit constraints

- ***Constraining the opposition hypothesis***

Intertemporal strategic game needs strong political parties with a long term planning horizon, which is barely the case of Argentine parties in most of the districts.

- ***Constraining Corruption hypothesis***

Testing this hypothesis requires data on corruption at subnational level which are not available for most developing countries.

Studying cyclicity of subnational districts calls for additional hypothesis that take into account the relationship between the central government and the subnational jurisdictions.

# Data, Model & Estimation Method

- **Data**

Panel: 24 Argentine districts; 1985-2007 (annual data)

- **Model**

$$\Delta F_{it} = \alpha_i + \beta \Delta F_{i,t-1} + \delta \Delta y_{it} + \gamma \Delta y_{i,t-1} + \rho F_{i,t-1} + \nu y_{i,t-1} + \lambda_t + \varepsilon_{it} \quad (1)$$

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

$y_{it}$  is the log of real GDP for district  $i$  at period  $t$ .

$F_{it}$  is the log of a particular fiscal variable.

$\lambda_t$  stands for common unobserved time effects;

$\alpha_i$  are the cross-district effects

$\varepsilon_{it}$  is a white-noise error term.



## ***Data, Model & Estimation Method***

- ***Model*** 
$$\Delta F_{it} = \alpha + \beta \Delta F_{it-1} + \delta \Delta y_{it} + \gamma \Delta y_{it-1} + \rho F_{it-1} + \nu y_{it-1} + \lambda_i + \varepsilon_{it}$$

$\delta > 0$  implies procyclical fiscal behavior

$\delta < 0$  indicates counter-cyclical.

The long-run relationship between the level of output and a particular fiscal variable is captured by the estimates of  $F_{it-1}$  and  $y_{it-1}$ .

- ***Estimation Method***

System Generalized Method of the Moments estimator proposed by Blundell and Bond (1998) in which lags and lagged differences are employed to instrument for endogenous variables

# Results

## Cyclical behavior of spending

Argentine subnational government outlays are *procyclical*.

The estimated coefficients for Total Expenditures, Current Expenditures and Personnel Expenditures are positive ( $\delta > 0$ ) and statistical significant at usual levels.

	Current Expenditure	Personnel Expenditures	Capital Expenditures	Total Expenditures
$\Delta \text{Log} g_{it-1}$	-0.1209*** (0.02873)	-0.0793*** (0.0279)	-0.0095 (0.0342)	-0.1202*** (0.0316)
$\Delta \text{Log GDP}_{it}$	<b>0.1236***</b> <b>(0.0458)</b>	<b>0.1483***</b> <b>(0.0448)</b>	<b>0.0129</b> <b>(0.1735)</b>	<b>0.0921*</b> <b>(0.0525)</b>
$\Delta \text{Log GDP}_{it-1}$	-0.0181 (0.0331)	-0.0108 (0.0327)	0.2988** (0.1306)	0.0562 (0.0385)
$\text{Log } g_{it-1}$	-0.1190*** (0.0172)	-0.1124*** (0.0161)	-0.4423*** (0.0372)	-0.1681*** (0.0229)
$\text{Log GDP}_{it-1}$	0.0564*** (0.0129)	0.0569*** (0.0120)	0.1616*** (0.0330)	0.0809*** (0.0159)
Constant	1.3384*** (0.1681)	1.1896*** (0.1506)	4.4012*** (0.4247)	1.8638*** (0.2296)

The reactions of all categories of spending are rather small, with Personnel Expenditures presenting the largest response to GDP growth.

# Results

## Cyclical behavior of revenues

The estimated coefficients for Total Revenues, Discretionary Transfers, Local tax collection and the Turnover tax show procyclicality while Automatic Transfers present countercyclicality

	Own Revenues	Turnover tax	Automatic transfers	Discretionary transfers	Total revenues
$\Delta \text{Log} \tau_{it-1}$	-0.0829** (0.0326)	-0.1035*** (0.0348)	-0.0087 (0.0309)	0.4265 (18.3614)	-0.0719*** (0.0180)
$\Delta \text{Log} \tau_{it-2}$				-0.1990*** (0.0278)	
$\Delta \text{Log GDP}_{it}$	<b>0.1712**</b> <b>(0.0732)</b>	<b>0.1404*</b> <b>(0.0789)</b>	<b>-0.1112**</b> <b>(0.0469)</b>	<b>1.1491**</b> <b>(0.5517)</b>	<b>0.0545**</b> <b>(0.0248)</b>
$\Delta \text{Log GDP}_{it-1}$	-0.0032 (0.0571)	0.0142 (0.0590)	-0.0857** (0.0346)	-0.9897 3.100508	0.0455 (0.1700)
$\Delta \text{Log GDP}_{it-2}$				-1.2338*** (0.4110)	-0.0245 (0.0189)
$\text{Log} \tau_{it-1}$	-0.1918*** (0.0242)	-0.1961*** (0.0252)	-0.0035 (0.0025)	-0.6567 (18.3618)	0.7831*** (0.0204)
$\text{Log} \tau_{it-2}$				0.4982 (18.3613)	-0.7831*** (0.0202)
$\text{Log GDP}_{it-1}$	0.1827*** (0.0298)	0.1693*** (0.0293)	-0.0018 (0.0059)	1.4920 (3.0394)	-0.0245 (0.1677)
$\text{Log GDP}_{it-2}$				-1.5851 (3.0475)	0.0228 (0.1681)
Constant	0.9668*** (0.1210)	1.3267*** (0.1456)	0.1833*** (0.0651)	3.1590*** (0.7814)	0.0354 (0.1310)

Discretionary Transfers are the most procyclical of revenues categories

## Exploring Partisan Effects: *Peronists & Radicals*

$$\Delta F_{it} = \alpha_i + \beta \Delta F_{it-1} + \delta \Delta y_{it} + \gamma \Delta y_{it-1} + \rho F_{it-1} + \nu y_{it-1} + \mu PJ_{it} + \sigma (PJ_{it} * \Delta y_{it}) + \theta UCR_{it} + \zeta (UCR_{it} * \Delta y_{it}) + \lambda_t + \varepsilon_{it}$$

Equation (1) augmented with:

- A. Two dummies variables, ***PJ*** and ***UCR*** representing the two major national parties, Partido Justicialista (Peronist Party) and Unión Cívica Radical, respectively.
- B. Two interaction terms: political party dummy with GDP growth ( $\Delta y_{it}$ )
  - Each dummy takes the value 1 if the province was administered by Peronist (Radical) governor and 0 otherwise.

There were also various provinces under the administration of different local parties in the period 1985-2007.

# Results

## Exploring Partisan Effects: PJ vs. UCR

	Current Expenditure	Personnel Expenditures	Capital Expenditures	Total Expenditures	Own Revenues (Local taxes)
$\Delta \text{Log } g_{it-1}$	-0.1307*** (0.0292)	-0.0720** (0.0285)	-0.0194 (0.0340)	-0.1334*** (0.0318)	-0.0765** (0.0322)
$\Delta \text{Log GDP}_{it}$	-0.0814 (0.10852)	0.0473 (0.0843)	-0.0689 (0.3366)	-0.1140 (0.1006)	-0.0642 (0.1384)
$\Delta \text{Log GDP}_{it-1}$	-0.0320 (0.0337)	-0.0136 (0.0336)	0.3496*** (0.1336)	0.0484 (0.0393)	-0.0127 (0.05576)
$\text{Log } g_{it-1}$	-0.1032*** (0.0157)	-0.0959*** (0.0149)	-0.4064*** (0.0355)	-0.1369*** (0.0207)	-0.1776*** (0.0219)
$\text{Log GDP}_{it-1}$	0.0503*** (0.0116)	0.0484*** (0.0107)	0.1677*** (0.0295)	0.0664*** (0.0141)	0.1753*** (0.0267)
$PJ_{it}$	0.0167 (0.0122)	0.0146 (0.0122)	-0.0013 (0.0487)	0.0093 (0.0143)	-0.0139 (0.0202)
$UCR_{it}$	-0.0013 (0.0145)	0.0163 (0.0145)	-0.0068 (0.0578)	-0.0107 (0.0170)	-0.0155 (0.0242)
$PJ_{it} \times \Delta \text{Log GDP}_{it}$	<b>0.2608***</b> <b>(0.0959)</b>	<b>0.1897**</b> <b>(0.0952)</b>	<b>0.1348</b> <b>(0.3821)</b>	<b>0.2764**</b> <b>(0.1129)</b>	<b>0.4842***</b> <b>(0.1558)</b>
$UCR_{it} \times \Delta \text{Log GDP}_{it}$	<b>0.2537**</b> <b>(0.1127)</b>	<b>0.1091</b> <b>(0.1115)</b>	<b>0.5000</b> <b>(0.4444)</b>	<b>0.3239**</b> <b>(0.1316)</b>	<b>0.2253</b> <b>(0.1820)</b>
Constant	1.1487*** (0.1527)	1.0174*** (0.1390)	3.8724*** (0.3903)	1.5233*** (0.2068)	0.8455*** (0.1092)

*The size of the estimated coefficient for the interaction term in the Total Expenditures equation is larger for UCR than PJ.*

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*The PJ increases the likelihood of procyclicality of Local Tax Collection and Personnel.*

## ***Explaining procyclicality at subnational level***

$$\Delta F_{it} = \alpha_i + \beta \Delta F_{it-1} + \delta \Delta y_{it} + \gamma \Delta y_{it-1} + \rho F_{it-1} + \nu y_{it-1} + \pi_1 A_{it} + \pi_2 T_{it} + \pi_3 O_{it} + \pi_4 I_{it} + \pi_5 (A_{it} * \Delta y_{it}) + \pi_6 (T_{it} * \Delta y_{it-1}) + \pi_7 (O_{it} * \Delta y_{it-1}) +$$

Extended Equation (1): four explanatory variables and four interaction terms.

The new variables are:

- a) Intergovernmental discretionary transfers as percentage of total revenues (**T**). This variable represents the ***voracity effects***
- b) Changes in amount received in oil and gas grants (**O**);
- c) Political alignment of local and federal government (**A**)
- d) Federal intervention (**I**).

These variables were interacted with the growth rate of GDP:  $\Delta \text{LogGDP}_{it}$ .

# Results

## Explaining procyclicality

Voracity effects are present in all categories of expenditures with the exception of Personnel

Changes in the amount of Oil and Gas Grants augment the probability of procyclicality in Capital Expenditures and Total Expenditures,

The interventor behaves procyclically regarding all categories of expenditures.

Political networks increase the likelihood of procyclicality in expenditures and local tax collection.

	Current Expenditure	Personnel Expenditures	Capital Expenditures	Total Expenditures	Own Revenues (Local taxes)
$\Delta \text{Log} g_{it-1}$	-0.1102*** (0.0283)	-0.0731*** (0.0281)	-0.0276 (0.0324)	-0.1284*** (0.0307)	-0.1182*** (0.0316)
$\Delta \text{Log GDP}_{it}$	-0.0109 (0.0524)	0.658 (0.0547)	-0.0982 (0.2036)	-0.0573 (0.0613)	0.0886 (0.0849)
$\Delta \text{Log GDP}_{it-1}$	-0.0143 (0.0326)	-0.0035 (0.0330)	0.2721** (0.1294)	0.0545 (0.0381)	0.0630 (0.0564)
$\text{Log } g_{it-1}$	-0.1079*** (0.0140)	-0.0952*** (0.0140)	-0.4213*** (0.0323)	-0.1416*** (0.0184)	-0.1412*** (0.0200)
$\text{Log GDP}_{it-1}$	0.0610*** (0.0100)	0.0509*** (0.0099)	0.1791*** (0.0245)	0.0774*** (0.0123)	0.14147*** (0.0248)
$\text{Transfers}_{it}$	0.0003 (0.0005)	0.0008 (0.0005)	0.0030 (0.0020)	0.0009 (0.0006)	-0.0008 (0.0008)
$\text{Transfers}_{it} * \Delta \text{Log GDP}_{it}$	<b>0.0145**</b> <b>(0.0059)</b>	<b>-0.0004</b> <b>(0.0061)</b>	<b>0.0420*</b> <b>(0.0236)</b>	<b>0.0237***</b> <b>(0.0070)</b>	<b>-0.0123</b> <b>(0.0097)</b>
$\text{Grants}_{it}$	1.34e-07* (6.87e-08)		7.56e-07*** (2.80e-07)	2.85e-07*** (8.24e-08)	3.97e-07*** (1.19e-07)
$\text{Grants}_{it} * \Delta \text{Log GDP}_{it}$	-0.00005 (0.00006)		<b>-5.45e-07**</b> <b>(2.45e-06)</b>	<b>-0.000001**</b> <b>(0.0000007)</b>	<b>-1.17e-06</b> <b>(1.05e-06)</b>
$\text{Intervention}_{it}$	-0.0343** (0.0163)	-0.0168 (0.0166)	-0.1656*** (0.0625)	-0.0580*** (0.0191)	0.0256 (0.0269)
$\text{Intervention}_{it} * \Delta \text{Log GDP}_{it}$	<b>0.3933***</b> <b>(0.1237)</b>	<b>0.3627***</b> <b>(0.1231)</b>	<b>0.5484</b> <b>(0.4921)</b>	<b>0.2486**</b> <b>(0.1459)</b>	<b>0.9622***</b> <b>(0.2054)</b>
$\text{Alignment}_{it}$	-0.0069 (0.0072)	-0.0061 (0.0075)	0.0042 (0.0288)	-0.0078 (0.0084)	0.0033 (0.0121)
$\text{Alignment}_{it} * \Delta \text{Log GDP}_{it}$	<b>0.1716**</b> <b>(0.0701)</b>	<b>0.1065</b> <b>(0.0732)</b>	<b>0.4139</b> <b>(0.2773)</b>	<b>0.2241***</b> <b>(0.0821)</b>	<b>0.2462**</b> <b>(0.1167)</b>
Constant	1.1299*** (0.1371)	1.0227*** (0.1330)	3.9018*** (0.3515)	1.4887*** (0.1852)	0.6973*** (0.1005)

## ***Concluding remarks***

- Existing theories are well suited to explain cross-country fiscal policy but not quite appropriate to elucidate procyclicality at subnational level
- In Argentina (1985-2007) all categories of public expenditures except for Capital Expenditures and all categories of revenues were procyclical.
- Previous results for subnational districts of emerging economies like *Mexico*, *Brazil* and *Argentina* are confirmed although my estimates are smaller than the ones obtained in these papers.
- Automatic transfers are countercyclical and discretionary transfers are procyclical.
- Main national parties seem to behave similarly regarding fiscal procyclicality. But, under peronist administrations the likelihood of procyclicality of Local Tax Collection and Personnel Expenditures increase while during radical governments, not.



## ***Concluding remarks***

- Four sources of procyclicality were found:

(a) ***Political networks*** (proxied by the alignment between the President and the Governor) that increase the likelihood of procyclicality in expenditures and local tax collection. Similar results are obtained by Jones et al. (2015) for Mexican states.

(b) ***Changes in the amount of Oil and Gas Grants*** augment the probability of procyclicality in Capital Expenditures and Total Expenditures.

(c) ***Federal interventions*** that improve the chances of procyclicality in the same variables.

(d) ***Intergovernmental discretionary transfers*** that influence all categories of expenditures with the exception of Personnel.

- When national income increases, local authorities exert political pressure to get federal funds (they act voraciously). Thus, they get low cost financing for their expenditures.
- Discretionary transfers are used by central authorities to discipline subnational governments.

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# **Thanks!!**

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