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

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Exploring the sources of procyclical fiscal behavior at subnational level

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Abstract

This paper analyses the fiscal behavior of subnational districts in Argentina over the business cycle. I address two questions. Is the fiscal policy of Argentine districts procyclical? If so, what is the theory that best explain procyclicality? The answers come from the estimation of a Vector Error Correction model of a panel that spans 22 years and 24 districts. I found that all categories of revenues and public expenditures, except for Capital Expenditures, were procyclical. The main sources of procyclicality are the political networks, the changes in the amount of oil and gas grants, federal interventions and discretionary intergovernmental transfers.

Resumen

Este trabajo analiza el comportamiento de los gobiernos subnacionales argentinos durante los ciclos económicos. Formulo dos preguntas. ¿Es la política fiscal procíclica? Y si así fuere, ¿cuáles son las fuentes de la prociclicidad? Las respuestas provienen de la estimación de un modelo de Corrección de Errores de un panel que abarca 22 años y 24 distritos. Encuentro que todas las categorías de ingresos y gastos públicos, con la excepción de gastos de capital, son prociclicos. Las fuentes de prociclidad son el alineamiento político, las regalías de gas y petróleo, las intervenciones federales y las transferencias intergubernamentales discrecionales.

Key Words: Procyclical fiscal policy, Argentine provinces, Vector Error Correction

JEL Classification Codes: E3, H7.

1. Introduction

Policy recommendations to smooth out the business cycle are among the most popular in economics. Carrying out a countercyclical fiscal policy is an old prescription that can be traced back to the Holy Bible although gained fame and recognition from the scientific community with the publication of *The General Theory of Employment, Interest and Mone*y by John Maynard Keynes in 1936. Recommending increases in public spending and decreases in tax rates during recessions and the opposite in booms has become essential in macroeconomists' toolkit and quasi mandatory in any macroeconomic textbook. Nonetheless, these prescriptions are usually ignored by developing countries' governments elsewhere. Moreover, a large body of empirical works reports procyclical rather countercyclical fiscal behavior for developing countries (Gavin and Perotti, 1997; Talvi and Vegh, 2005; Catão and Sutton, 2002; Kaminski, Reinhart, and Vegh, 2004; Brückner and Gradstein, 2014).

Several theories have been put forth to explain this apparent suboptimal behavior of emergent economies. The most prevalent is the borrowing constraint hypothesis that derives from the observation that credit markets narrow sizably for developing countries during recessions and expand considerably in booms, compelling governments to act procyclically. Another theory suggests that 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 (Cukierman et al., 1992). Alesina et al. (2008) consider procyclical spending as a result of voter's demand to avoid leaving excessive rents to corrupt governments.

Alternatively, Lane and Tornell (1996) conjecture that 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.

Except for the latter, proposed theories are well suited to explain cross-country fiscal performance but they are not so useful to explain variation across subnational districts.

Notice that during recessions districts in a given country face similar liquidity constraints. Likewise, the intertemporal strategic game suggested by Cukierman et al. calls for strong parties that subordinate politicians to their long term strategy which is hardly the case in most of the emerging economies. On the other hand, testing the Alesina et al. hypothesis requires data on corruption at subnational level which are not available for most developing countries.

This paper analyses the fiscal behavior of subnational districts in Argentina over the business cycle. I address two questions. Firstly, is the fiscal policy of Argentine districts procyclical? If so, what are the variables that best explain procyclicality? The answers come from the estimation of a Vector Error Correction (VEC) model from a panel that spans 22 years (from 1985 to 2007) and (all) 24 districts. I test the voracity theory and the influence of political alignment between the president and governors on fiscal policy since bailouts and discretionary transfers are usually strongly associated with political alignments. I also explore the role the Peronist Party on prociclicality as well as the effect of federal intervention and Oil and Gas Grants on fiscal policy.

The rest of the paper is organized as follows. The next section reviews both the theoretical and the empirical literature on procyclical fiscal policies. Section 3 discusses some key features of the Argentine federalism and section 4 describes the empirical investigation and presents the results obtained from the dynamic panel data estimation. Finally, section VII concludes.

2. Literature review

From ancient times, societies demand from government to smooth intertemporal consumption and avoid macroeconomic instability. Nonetheless, it was just after the Great Depression that formal discussions, in technical terms, gave birth to policy prescriptions rooted in economic theory. To the standard Keynesian countercyclical policies that recommend tax cuts, expenditure increases, and deficits in recessions and tax increases, expenditure cuts, and surplus in economic booms, opposed the tax-smoothing theory of budget deficits (Barro 1979) claiming that budget deficits and surpluses should be used to "smooth" the distortionary cost of taxation. This has important 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. Thus, for different reasons both theories propose countercyclical policies[1].

The empirical evidence from cross-country studies suggests that most of the developed countries practice some kind of countercyclical policies to smooth consumption while

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[1] In a neoclassical model, procyclical spending can be justified if government consumption and private consumption are complements (Lane 2003).

developing countries seem to ignore them. Why do emerging economies turn a blind eye on policy prescriptions? For Alesina et al. (2008) procyclicality is driven by voters who seek to reduce political rents. In a context of asymmetric information, voters observe the state of the economy but not the rents appropriated by corrupt governments. Hence, after observing a boom, voters demand more public goods or lower taxes, and this induces a procyclical bias in fiscal policy. For Cukierman et al. (1992) procyclicality is the result of a political game in which the incumbents run up debt levels in order to constraint the spending policies of future opposition governments. This strategic move would presumably facilitate their return to office next period. Therefore, countries accumulate debt during boom periods, generating a procyclical fiscal policy. Obviously, indebtedness requires full access to credit markets which seems reasonable for developed countries but not for developing ones and even less plausible for subnational districts. Furthermore, this 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.

The most common explanation of procyclicality is the credit constraint theory formalized in Gavin et al. (1996). According to this theory, during recessions emerging economies lose access to credit markets or get scarce funds at a very high rate, precluding any countercyclical policy. Hence, the only responses left to developing countries are expenditures cuts and rising taxes. As pointed out by Alesina et al. (2008), this implies that fiscal policy should be procyclical only in recessions, when the government would like to borrow but is prevented from issuing more debt. 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[2].

As mentioned in the previous section, voracity effects are the more probable explanation for procyclicality at subnational level. In a context of economic expansion, politicians compete voraciously for the additional funds generated by the boom, triggering a race for the appropriation of common pool funds. More funds for one politician mean fewer resources for the others. As remarked by Akitoby et al. (2006) voracity effects are more likely if government institutions are weak and if there are significant differences between the preferences of different groups in the economy. Besides, in a federal setting, local authorities have electoral incentives to get as much intergovernmental transfers as possible and federal authorities are inclined to give as much intergovernmental transfers as possible in exchange for political loyalties. On the other hand, the districts that receive larger share of funds from the central government are more likely to be subject to political pressures

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[2] It is reasonable to assume that sub-national governments have a more limited access to credit markets than central governments. Abbott & Jones (2013) address this issue. They found that sub-central government expenditures are more procyclical than central government spending.

from their constituencies to spend the money right away, and therefore to show fiscal procyclicality in their accounts.

Empirical Evidence on subnational fiscal policy

Only recently, economists turn to study empirically subnational jurisdictions. Abbott & Jones (2012) tests the predictions derived from the liquidity constraint and voracity theories: that subnational government expenditure are likely to be more procyclical than central government spending. Evidence from 23 OECD countries between 1995 and 2006 indicates that subnational districts spending is more procyclical than central government expenditure. This result supports the voracity effects. Similar evidence is reported by Arena and Revilla (2009) that analyze the case of Brazilian states for the period 1991–2006. In particular the authors discuss how sub-national fiscal revenues and expenditures were linked to the business cycle after the introduction of the Fiscal Responsibility Law in 2000. Their empirical evidence suggests the existence of a pro-cyclical fiscal policy in Brazil at the state level. However, the introduction of the Fiscal Responsibility Law helped to reduce Brazilian states' spending-side pro-cyclicality. They also find that voracity effects are more intense when there is a political alignment between the President and the Governor.

Abbott et al. (2015) also report procyclical expenditures in their study of 31 states in Mexico between 2005 and 2010. The sources of procyclicality are intergovernmental transfers and 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. This 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.

Sturzenegger and Werneck (2006) analyzed the case of Argentina and Brazil for 1992-2002. They found that the spending of subnational governments has been markedly procyclical in both countries. The authors remark that contrary to a widespread belief, the observed procyclicality cannot be solely attributed to the behavior of federal transfers. 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. So it is not the flow of federal transfers that makes the spending of subnational governments procyclical but their tax structures.

3. **The peculiarities of Argentine Federalism**

Argentina is a federal republic. For administrative and political purposes it is organized in 24 districts, the Autonomous City of Buenos Aires, the national capital, plus 23 provinces. Provincial governments undertake a large share of total spending in Argentina, yet they collect only a small fraction of taxes. Subnational districts account for more than 50% of

total public spending which is financed mostly from transfers from the federal government, and also with local taxes (chiefly, turnover, property and seal).

The key issue is that most of the taxes are collected centrally generating a "common pool" of resources that are distributed among the 24 jurisdictions partly through an automatic mechanism called federal tax-sharing agreement (FTSA) and partly discretionary according to short-run political convenience. There are also grants to provinces producers of oil and gas which are also automatic transfers and vary primarily according to international prices. The collection of the main taxes included in the FTSA, like value added tax and excise taxes, grows sharply in good times and decreases abruptly in bad times.

This revenue system has various perverse effects: (a) provinces behave as if they face a soft budget constraint increasing spending and reducing local tax collection effort. Thus, local politicians benefit from spending and pay only a small fraction of the political cost of taxation. (b) Instead of controlling public spending destiny, citizens have incentives to reward with their vote those who are effective at extracting resources from the central government. Profligacy is rewarded at the ballots rather than punished because taxpayers do not pay for them. (c) Central government uses discretionary transfers in exchange for political support to its projects.

So, it is anticipated that local politicians compete more intensely for the additional low-cost resources generated during economic expansions. Larger intergovernmental discretionary transfers are expected to be associated with procyclical expenditures.

4. Empirical Investigation

Testing for procyclicality of fiscal policy requires a data set that includes at least two or three cycles in each district. Thus, I constructed the largest possible balanced panel with annual observations from 1985 to 2007 (22 years) at the district level for all 23 Argentinean provinces and the federal district. Following the literature (Abbott & Jones, 2012; Abbott et al., 2015; Akitoby et al., 2006) I employed the standard Vector Error Correction model described in equation (1).

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

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

Where y_{it} is the log of real GDP for district i at period t recorded in *Centro de Estudios de la Producción (CEP)*.

F_{it} is the log of a particular fiscal variable. λ_t stands for common unobserved time effects; α_i are the cross-district effects and ε_{it} is a white-noise error term.

As for the dependent variable, I consider nine fiscal variables from the dataset of the *Dirección Nacional de Coordinación Fiscal con las Provincias*. I work with Total Expenditure and its two components, Current Expenditure and Capital Expenditure. I also consider Personnel Expenditures, which is the main category of Current Expenditures. On the revenue side, I work with Total Revenues, and its three main components: Automatic Transfers, Non-Automatic Transfers and Local Tax Collection. I also include the main local duty, the Turnover Tax, a sales tax on every phase of production (cascade). Table 1 reports the descriptive statistics of the fiscal variables and GDP.

The interpretation of coefficients in equation (1) is standard: $\delta > 0$ implies procyclical fiscal behavior, while $\delta < 0$ indicates counter-cyclicality. 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}.

I estimate the VEC model with the 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

Table 1. **Descriptive Statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
Δlog Total Expenditures$_{it}$	552	0.035414	0.178222	-0.5923	0.4156
Δlog Current Expenditures$_{it}$	552	0.0388	0.161036	-0.5669	0.6075
Δlog Capital Expenditures$_{it}$	552	0.027301	0.445857	-1.86	1.44
Δlog Personnel Expenditures$_{it}$	552	0.033095	0.164232	-0.4828	0.8275
Δlog Total Revenues$_{it}$	552	0.041413	0.162997	-0.72	0.52
Δlog Automatic Transfers$_{it}$	552	0.062963	0.208458	-0.8166	0.9113
Δlog Discretionary Transfers$_{it}$	552	0.05741	0.230695	-0.9155	1.0249
Δlog Local Tax Collection$_{it}$	552	0.05741	0.230695	-0.9155	1.0249
Δlog Turnover Tax$_{it}$	552	0.115918	0.231216	-0.9032	1.1853
ΔLog GDP$_{it}$	552	0.0336184	0.0919225	-0.4225	0.0694

4.1 Results

Table 2 shows evidence that 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. The reactions of all categories of spending are rather small, with Personnel Expenditures presenting the largest response to GDP growth. A 10% rise in GDP is associated with 1.48% increase in Personnel Expenditures, 1.24% in Current Expenditures and only 0.92% augmentation in Total Expenditure. The estimated coefficient for Capital expenditures was almost zero although not statistical significant. An acyclical behavior for capital expenditures in Argentina is to

some extent surprising. It is supposed that subnational governments facing downturns usually follow a pattern of expenditure cuts, beginning with capital expenditures. However, this is similar to Abbott et al. (2015) findings for Mexican states.

Table 2. *Cyclical behavior of spending*

		Current Expenditure	Personnel Expenditures	Capital Expenditures	Total Expenditures
$\Delta Logg_{it-1}$		-0.1209***	-0.0793***	-0.0095	-0.1202***
		(0.02873)	(0.0279)	(0.0342)	(0.0316)
$\Delta Log\ GDP_{it}$		**0.1236*****	**0.1483*****	**0.0129**	**0.0921***
		(0.0458)	**(0.0448)**	**(0.1735)**	**(0.0525)**
$\Delta Log\ GDP_{it-1}$		-0.0181	-0.0108	0.2988**	0.0562
		(0.0331)	(0.0327)	(0.1306)	(0.0385)
$Log\ g_{it-1}$		-0.1190***	-0.1124***	-0.4423***	-0.1681***
		(0.0172)	(0.0161)	(0.0372)	(0.0229)
$Log\ GDP_{it-1}$		0.0564***	0.0569***	0.1616***	0.0809***
		(0.0129)	(0.0120)	(0.0330)	(0.0159)
Constant		1.3384***	1.1896***	4.4012***	1.8638***
		(0.1681)	(0.1506)	(0.4247)	(0.2296)
Districts		24	24	24	24
Years		23	23	23	23
		(1985-2007)	(1985-2007)	(1985-2007)	(1985-2007)
Observations		552	552	552	552
Time effects		Yes	Yes	Yes	Yes
Sargan Test	chi2	521.2461 chi2 (529)	545.0808 chi2 (530)	553.0399 chi2 (540)	511.9466 chi2 (529)
	Prob > chi2	0.5867	0.3159	0.3395	0.6948

<u>Note:</u> standard errors in parenthesis below coefficient.

*** Significant at .01. ** Significant at .05. * Significant at .10. Observations (N)= 506.

The procyclical behavior of revenues is reported in Table 3. I include additional instruments to equations having Total revenues and Total Discretionary Transfers as dependent variables to fulfill the Sargan test of over-identifying restrictions. The estimated coefficients for Total Revenues, Discretionary Transfers, Local tax collection and the Turnover tax show procyclicality while Automatic Transfers present countercyclicality. As expected, Discretionary Transfers are the most procyclical of revenues categories. The estimated coefficients show important differences regarding the impact of GDP growth. A 10% rise in GDP is related to a 0.55% increase in Total Revenues, a 1.7% augment in Local Revenues and 11.5% growth in discretionary transfers. Tables 2 and 3 report the results of the Sargan test of over-identifying restrictions. In all equations of both Tables the null of the Sargan tests

(that overidentifying restrictions are valid) cannot be rejected at the 5% level. There is evidence to reject the null hypothesis at the 10% in only one case (the Discretionary Transfers equation).

Table 3. *Cyclical behavior of revenues*

	Own Revenues	Turnover tax	Automatic transfers	Discretionary transfers	Total revenues
$\Delta Log\tau_{it-1}$	-0.0829**	-0.1035***	-0.0087	0.4265	-0.0719***
	(0.0326)	(0.0348)	(0.0309)	(18.3614)	(0.0180)
$\Delta Log\tau_{it-2}$				-0.1990***	
				(0.0278)	
$\Delta Log\ GDP_{it}$	**0.1712****	**0.1404***	**-0.1112****	**1.1491****	**0.0545****
	(0.0732)	**(0.0789)**	**(0.0469)**	**(0.5517)**	**(0.0248)**
$\Delta Log\ GDP_{it-1}$	-0.0032	0.0142	-0.0857**	-0.9897	0.0455
	(0.0571)	(0.0590)	(0.0346)	3.100508	(0.1700)
$\Delta Log\ GDP_{it-2}$				-1.2338***	-0.0245
				(0.4110)	(0.0189)
$Log\tau_{it-1}$	-0.1918***	-0.1961***	-0.0035	-0.6567	0.7831***
	(0.0242)	(0.0252)	(0.0025)	(18.3618)	(0.0204)
$Log\tau_{it-2}$				0.4982	-0.7831***
				(18.3613)	(0.0202)
$Log\ GDP_{it-1}$	0.1827***	0.1693***	-0.0018	1.4920	-0.0245
	(0.0298)	(0.0293)	(0.0059)	(3.0394)	(0.1677)
$Log\ GDP_{it-2}$				-1.5851	0.0228
				(3.0475)	(0.1681)
Constant	0.9668***	1.3267***	0.1833***	3.1590***	0.0354
	(0.1210)	(0.1456)	(0.0651)	(0.7814)	(0.1310)
Districts	24	24	24	24	24
Years	23	23	23	23	23
	(1985-2007)	(1985-2007)	(1985-2007)	(1985-2007)	(1985-2007
Observations	552	552	552	552	552
Time effects	Yes	Yes	Yes	Yes	Yes
Sargan Test chi2	483.0355 chi2 (528)	492.4917 chi2 (526)	570.501 chi2 (539)	520.8121 chi2(471)	503.5848 chi2 (488)
Prob > chi2	0.9199	0.8497	0.1681	0.0559	0.3033

Note: standard errors in parenthesis below coefficient.

*** Significant at .01.   ** Significant at .05.   * Significant at .10. Observations (N)= 506.

4.2. **Exploring Partisan Effects: Peronists versus Radicals (UCR)**

It is frequently argued that in Argentina the procyclical fiscal behavior of subnational government is related to profligate spending habits of a particular political party, the Peronist that governed several districts over the period under study. To explore the importance of partisan effects, I modify equation (1) adding two dummies variables named PJ and UCR representing the two major national parties, Partido Justicialista (Peronist Party) and Unión Cívica Radical, respectively. Each dummy takes the value 1 if the province was administered by Peronist (Radical) governor and 0 otherwise. It is worth noting that there were also various provinces under the administration of different local parties in the period 1985-2007. I also include two variables that interacts each political party dummy with GDP growth (Δy_{it}). Equation (2) describes the VEC added with partisan dummies and interaction terms.

$$\Delta F_{it} = \alpha_i + \beta\,\Delta F_{it-1} + \delta\,\Delta y_{it} + \gamma\,\Delta y_{it-1} + \rho\,F_{it-1} + \nu\,y_{it-1} + \mu\,PJ_{it} + \sigma\,(PJ_{it}x\Delta y_{it}) + \theta\,UCR_{it} + \varsigma\,(UCR_{it}x\Delta y_{it}) + \lambda_t + \varepsilon_{it} \quad (2)$$

Where **PJ** stands for Partido Justicialista (Peronist Party) and **UCR** represents the Unión Cívica Radical (Radical Party).

Estimates of the VEC augmented by partisan effects are presented in Table 4. Dependent variables were chosen among the fiscal variables controlled by local authorities, that is, all categories of spending and own revenues. The evidence is not consistent with the presumption that fiscal procyclicality is driven by Peronist Party behavior. On the contrary, the size of the estimated coefficient for the interaction term in the Total Expenditures equation is larger for UCR than PJ.

However, it is worth remarking that the peronist party increases the likelihood of procyclicality of Local Tax Collection and Personnel Expenditures.

Table 4. **Peronists versus Radicals. Cyclical behavior of subnational expenditures and revenues**

	Current Expenditure	Personnel Expenditures	Capital Expenditures	Total Expenditures	Own Revenues (Local taxes)
$\Delta Log\,g_{it-1}$	-0.1307***	-0.0720**	-0.0194	-0.1334***	-0.0765**
	(0.0292)	(0.0285)	(0.0340)	(0.0318)	(0.0322)
$\Delta Log\,GDP_{it}$	-0.0814	0.0473	-0.0689	-0.1140	-0.0642
	(0.10852)	(0.0843)	(0.3366)	(0.1006)	(0.1384)
$\Delta Log\,GDP_{it-1}$	-0.0320	-0.0136	0.3496***	0.0484	-0.0127
	(0.0337)	(0.0336)	(0.1336)	(0.0393)	(0.05576)
$Log\,g_{it-1}$	-0.1032***	-0.0959***	-0.4064***	-0.1369***	-0.1776***
	(0.0157)	(0.0149)	(0.0355)	(0.0207)	(0.0219)
$Log\,GDP_{it-1}$	0.0503***	0.0484***	0.1677***	0.0664***	0.1753***
	(0.0116)	(0.0107)	(0.0295)	(0.0141)	(0.0267)
PJ_{it}	0.0167	0.0146	-0.0013	0.0093	-0.0139
	(0.0122)	(0.0122)	(0.0487)	(0.0143)	(0.0202)
UCR_{it}	-0.0013	0.0163	-0.0068	-0.0107	-0.0155
	(0.0145)	(0.0145)	(0.0578)	(0.0170)	(0.0242)
PJ_{it} X $\Delta Log\,GDP_{it}$	**0.2608***	**0.1897**	**0.1348**	**0.2764**	**0.4842***
	(0.0959)	**(0.0952)**	**(0.3821)**	**(0.1129)**	**0.1558**
UCR_{it} X $\Delta Log\,GDP_{it}$	**0.2537**	**0.1091**	**0.5000**	**0.3239**	**0.2253**
	(0.1127)	**(0.1115)**	**(0.4444)**	**(0.1316)**	**(0.1820)**
Constant	1.1487***	1.0174***	3.8724***	1.5233***	0.8455***
	(0.1527)	(0.1390)	(0.3903)	(0.2068)	(0.1092)
Districts	24	24	24	24	24
Years	23	23	23	23	23
	(1985-2007)	(1985-2007)	(1985-2007)	(1985-2007)	(1985-2007)
Observations	552	552	552	552	552
Time effects	Yes	Yes	Yes	Yes	Yes
Sargan Test chi2	597.6323 Chi(0.6847)	620.2239 Chi(614)	628.5164 Chi(615)	605.7908 Chi(612)	607.2298 Chi(615)
Prob > chi2	0.6847	0.4223	0.3440	05632	0.5806

Note: standard errors in parenthesis below coefficient. *** Significant at .01. ** Significant at .05. * Significant at .10. Observations (N)= 506.

4.3 Explaining procyclicality at subnational level

To explore the effects of voracity, political networks and political influences such as federal interventions as drivers of local government procyclical fiscal behavior, I extended Equation (1) to include four explanatory variables and four interaction terms. The new variables in the VEC are the intergovernmental discretionary transfers as percentage of total revenues, changes in amount receive in oil and gas grants, political alignment of local and federal government and federal intervention. These variables were interacted with the growth rate of GDP: $\Delta \text{LogGDP}_{it}$.

Equation (3) describes the VEC added with political influences and their respective interaction terms.

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

$$+ \pi_8 (I_{it} * \Delta y_{it-1}) + \lambda_t + \varepsilon_{it} \qquad (3)$$

Where **A** stands for Alignment between the local and central government; **T** represents the intergovernmental discretionary transfers as percentage of total revenues, **O** are changes in the amount of Oil and Gas Grants received by producer districts and **I** means Federal Intervention to province **i**.

To capture the effect of alignment between incumbents at national and subnational level, I include the dummy variable **A** (Alignment), which takes the value 1 if the governor of a given province is allied with the President and 0 otherwise. The codification of this variable is not straightforward. The fracture of the two most important parties (*PJ* and *Alianza UCR/FREPASO*) resulted in some atypical alliances. In the years following the 2001/2002 crisis, there was a major break in the Peronist party, which ruled the country in the periods 1989–1999 and 2002–2007. One of the factions, led by the Governor of the small San Luis province, Adolfo Rodríguez Saa, became the opposition of President Kirchner, head of the winning faction. The other main party, the *Alianza UCR/FEPASO*, also shattered and one of the groups joined Kirchner. I also account for the agreements between some provincial parties and the incumbent President during the 1990s.[3]

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[3] For the years 2003, 2004, and 2007, I code as 1 the provinces of Mendoza, Río Negro, and Catamarca, administered by UCR governors allied with the Peronist President Kirchner (called "*Radicales K*"). In contrast, the province of San Luis is coded 0 despite being administered by the Peronist governor Rodríguez Saa. For the period 1996–1999, I code as 1 the provinces of Tucumán and Tierra del Fuego to account for the alliances of *Fuerza Republicana* and *Movimiento Popular Fueguino* with President Menem (Peronist).

Intergovernmental discretionary transfers allow governors to increase local expenditures without increasing local taxation so I expect them to influence spending as well as local tax collection both in expansions and recessions. Equation (3) includes the contemporaneous value of T (Transfers) defined as intergovernmental discretionary transfers as percentage of total revenues. Notice that this definition of T is a measure of the vertical fiscal imbalance[4].

I also take into consideration the oil and gas grants received by producer provinces (coded O). Grants would presumably contribute to higher expenditures, particularly capital outlays. A priori, it is not clear whether increasing amounts of grants would augment relatively more the current expenditures than the capital expenditures. It could be expected that governors dedicate "unexpected" increases in grants to capital rather than current expenditures. Uncertainty about the future stream of grants (their amount vary with international prices and local regulations) makes unadvisable to devote uncertain money to salaries and other current expenditures.

The dummy variable I (Federal Intervention) takes the value 1 if the President declares intervention in a given district and 0 otherwise. The so-called "federal intervention" is another source of influence on fiscal policy variables. The Argentine Constitution allows the Federal Government to take control of a province in certain extreme cases of social commotion. Upon intervention, one or more branches of the provincial government are dissolved, and the Federal Government appoints a new authority (called *interventor*) who serves for a short term until order is re-established. Since historically most of the cases of social commotion usually involved fiscal mismanagement, I expect the *interventor* to stabilize the local economy by diminishing total expenditures and augmenting local taxes. Election and intervention data were obtained from *Andy Tow's Atlas Electoral*. During the period 1985–2007 there were six episodes of federal intervention, two of them in the Province of Corrientes in the years 1992–1993 and 2000–2001 and the others in the provinces of Catamarca (1991), Tucumán (1991), and Santiago del Estero (1994).

Estimates of the revised cyclicality equation for variables under the control of local government are presented in Table 5. The evidence is consistent with the proposition that political networks increase the likelihood of procyclicality in expenditures (both, Total and Current public outlays) and local tax collection. The interaction of Alignment and GDP

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[4] Jones et al. (2012) studied the impact of Vertical Fiscal Imbalance on voting behavior and Meloni (forthcoming) on political budget cycles.

growth is statistical significant at usual levels for all equation except for Capital expenditures.

Table 5. **Exploring the procyclicality of expenditures and local revenues**

	Current Expenditure	Personnel Expenditures	Capital Expenditures	Total Expenditures	Own Revenues (Local taxes)
$\Delta Logg_{it-1}$	-0.1102***	-0.0731***	-0.0276	-0.1284***	-0.1182***
	(0.0283)	(0.0281)	(0.0324)	(0.0307)	(0.0316)
$\Delta Log\ GDP_{it}$	-0.0109	0.658	-0.0982	-0.0573	0.0886
	(0.0524)	(0.0547)	(0.2036)	(0.0613)	(0.0849)
$\Delta Log\ GDP_{it-1}$	-0.0143	-0.0035	0.2721**	0.0545	0.0630
	(0.0326)	(0.0330)	(0.1294)	(0.0381)	(0.0564)
$Log\ g_{it-1}$	-0.1079***	-0.0952***	-0.4213***	-0.1416***	-0.1412***
	(0.0140)	(0.0140)	(0.0323)	(0.0184)	(0.0200)
$Log\ GDP_{it-1}$	0.0610***	0.0509***	0.1791***	0.0774***	0.14147***
	(0.0100)	(0.0099)	(0.0245)	(0.0123)	(0.0248)
$Transfers_{it}$	0.0003	0.0008	0.0030	0.0009	-0.0008
	(0.0005)	(0.0005)	(0.0020)	(0.0006)	(0.0008)
$Transfers_{it} * \Delta Log\ GDP_{it}$	**0.0145****	**-0.0004**	**0.0420***	**0.0237****	**-0.0123**
	(0.0059)	**(0.0061)**	**(0.0236)**	**(0.0070)**	**(0.0097)**
$Grants_{it}$	1.34e-07*		7.56e-07***	2.85e-07***	3.97e-07***
	(6.87e-08)		(2.80e-07)	(8.24e-08)	(1.19e-07)
$Grants_{it} * \Delta Log\ GDP_{it}$	-0.00005		**-5.45e-07****	**-0.000001****	**-1.17e-06**
	(0.00006)		**(2.45e-06)**	**(0.0000007)**	**(1.05e-06)**
$Intervention_{it}$	-0.0343**	-0.0168	-0.1656***	-0.0580***	0.0256
	(0.0163)	(0.0166)	(0.0625)	(0.0191)	(0.0269)
$Intervention_{it} * \Delta Log\ GDP_{it}$	**0.3933****	**0.3627****	**0.5484**	**0.2486****	**0.9622****
	(0.1237)	**(0.1231)**	**(0.4921)**	**(0.1459)**	**(0.2054)**
$Alignment_{it}$	-0.0069	-0.0061	0.0042	-0.0078	0.0033
	(0.0072)	(0.0075)	(0.0288)	(0.0084)	(0.0121)
$Alignment_{it} * \Delta Log\ GDP_{it}$	**0.1716****	**0.1065**	**0.4139**	**0.2241****	**0.2462****
	(0.0701)	**(0.0732)**	**(0.2773)**	**(0.0821)**	**(0.1167)**
Constant	1.1299***	1.0227***	3.9018***	1.4887***	0.6973***
	(0.1371)	(0.1330)	(0.3515)	(0.1852)	(0.1005)
Districts	24	24	24	24	24
Years	23 (1985-2007)	23 (1985-2007)	23 (1985-2007)	23 (1985-2007)	23 (1985-2007)
Observations	552	552	552	552	552
Time effects	Yes	Yes	Yes	Yes	Yes
Sargan Test — chi2	718.1004 chi2 (705)	701.401 chi2 (656)	706.3619 chi2 (704)	695.4427 chi2 (703)	684.3685 chi2 (703)
Sargan Test — Prob > chi2	0.3578	0.1068	0.4679	0.5732	0.6856

Note: standard errors in parenthesis below coefficient.

*** Significant at .01. ** Significant at .05. * Significant at .10. Observations (N)= 506.

Federal interventions also improve the chances of procyclicality in the same variables. Notice that the variable Intervention has a negative sign in all expenditure equations indicating that the federal administrator reduces but the positive and statistical significant interaction term shows that *interventor* behaves procyclically regarding all categories of expenditures. On the other hand, changes in the amount of Oil and Gas Grants augment the probability of procyclicality in Capital Expenditures and Total Expenditures, supporting the conjecture about the behavior of Local Government regarding volatile funds like Grants

The voracity effects represented by the interaction of intergovernmental discretionary transfers with GDP growth are present in all categories of expenditures with the exception of Personnel.

5. Concluding remarks

This paper explores the sources of procyclical fiscal behavior in Argentine subnational districts over the period 1985-2007. The estimated VEC with the System Generalized Method of the Moments estimator for four categories of expenditures and five categories of revenues delivers the following conclusions:

Firstly, all categories of public expenditures except for Capital Expenditures and all categories of revenues were procyclical. That is, I confirm the previous results for subnational districts of emerging economies like Mexico (Jones et al., 2015), Brazil (Arena and Revilla, 2009) and Argentina (Stuzenegger and Werneck, 2006) although my estimates are smaller than the ones obtained in these papers.

Secondly, automatic transfers are countercyclical and discretionary transfers are procyclical.

Thirdly, main national parties seem to behave similarly regarding fiscal procyclicality. Under the administration of both parties total expenditures and current expenditures were procyclical. The only relevant difference is that under peronist administrations the likelihood of procyclicality of Local Tax Collection and Personnel Expenditures increase while during radical governments, not.

Fourthly, I found four sources of procyclicality: (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) The intergovernmental discretionary transfers that influence all categories of expenditures with the exception of Personnel. There is a supply and demand for discretionary transfers. On one hand, 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. On the other hand, discretionary transfers are used by central authorities to discipline subnational governments.

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