The Performance of Discretionary Fiscal Policies and Fiscal Rules at the Argentine Subnational Level

Ernesto Rezk

Unidad de Investigación en Política Fiscal: Joaquín Aguirre, María Azul Chiancarini, Santiago Piemontesi Sferco, Francisco Rezzónico, Agustín Soliani

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Outline

Motivations

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- The matter not only concerns to the highest government level of countries but also to subnational and local ones due to evidences that **provincial and state policymakers very often pursue pro-cyclical discretionary fiscal policies**,

- Reasons for that suggest:
  - Difficulties acceding to credit markets during contractionary phases
  - Political considerations whereby policymakers tend to run deficits whichever the phase of the cycle
  - Subnational governments´ strategies running pro-cyclical tax reductions during boom times instead of generating surpluses for economic downturns.

The Papers' Objectives

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- It is first purported **to assess provinces´ fiscal behaviour in relation to economic cycles**; that is, their pro or counter cyclical patterns as determined by the conventional fiscal reaction function (using in this case a variant of the **'CAPB model' fiscal rule**) in which the cycle explanatory variables are the output gap or the unemployment rate. Control and dummy variables are also considered.

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- Secondly, and seeking for also ascertaining the role of what Larch et al (2020) called the drivers of pro or countercyclical policie, **the classical linear reaction function is extended by including ´interaction terms´** that might enrich the analysis of stabilization properties of subnational discretionary fiscal policies.

The Standing Literature

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- He concluded that the **government historically responded to increases in the debt-GDP ratio by raising the primary surplus, or by reducing the primary deficit**. Bohn´s empirical work also pointed out that the positive response of the primary surplus to changes in debt reasserted that U.S. fiscal policy was satisfying an intertemporal budget constraint.

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1. The ´**CAPB Model**´ **fiscal rule** in which the discretionary fiscal action (Δ CAPB) was explained by this variable lagged and debt (also lagged) and the level of the output gap as a measure of cycle conditions;

2. The **Primary Balance Model** in which the primary balance was now the dependent variable and its lagged value enters the equation as an explanatory variable.

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2. The **Primary Balance Model** in which the primary balance was now the dependent variable and its lagged value enters the equation as an explanatory variable.

A key difference between both models is that in the second one the dependent variable also included the effects of automatic stabilizers.

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Larch et al (2020) analyzed discretionary fiscal policy in the **EU and in non EU countries**. They resorted to the classical **linear fiscal reaction function**. The dependent variable was ΔCAPB. The lagged ΔCAPB, as well as cycle and control variables and a number of dummies accounted for the explanatory variables.

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- **They could not confirm priors related to other cycle variables**, as for instance the Industrial Production and Δ OECD Composite Leading Indicator.

- The counter cyclical behaviour exhibited by **debt to GDP ratio**, apart from a **sign of sustainability**, might also be understood as **debt ratios not reaching yet dangerous thresholds**.

The Standing Literature

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For that, they investigated the ´drivers´ of pro or counter cyclicality by introducing **non linearities in the classical approach**. This procedure allowed **dummies to interact with cycle variables of interest**.

The Conventional Linear Fiscal Reaction Function

$$\Delta CAPB_{i,t} = \alpha_1 + \alpha_2\,\Delta CAPB_{i,t-1} + \alpha_3\,OG_{i,t-1} + \alpha_4\,X_{i,t-1} + \theta_t + \delta_i + \mu_{i,t}$$

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Where:

$CAPB =$ Cyclically Adjusted Primary Balance

$$CAPB = R \left(\frac{GGP^p}{GGP^a} \right)^{\epsilon_R} - S \left(\frac{GGP^p}{GGP^a} \right)^{\epsilon_S}$$

$OG =$ Output Gap (Cycle variable, alternative: Unemployment Rate, $UR_{i,t}$)

$X =$ Control and dummy variables

The Conventional Linear Fiscal Reaction Function

Dummies:

- $EY =$ Election Year
- $CR =$ Systemic Crises Dummy
- $FRL =$ Fiscal Responsability Laws, standing for the performance of Laws 25917/04 and 27428/01
- *Spending Rule compliance* $=$ is equal to 1 when the rate of increase in primary public spending did not exceed the rate of nominal increase in GDP
- *Fiscal Balance compliance* $=$ is equal to 1 when the instrumented debt services did not exceed 15% of current resources net of co-participation transfers to municipalities or when, having exceeded 15%, a primary surplus is reported in subsequent years

Other control variables:

- *Population*
- *Inflation*
- *Debt to GGP ratio*

The Conventional Linear Fiscal Reaction Function

- Regressions for the period (2005-2019), including data for 23 Argentine provinces were in turn run by using the **GMM-IV** estimator of Blundell and Bond, which, as known, successfully deals with the so called **Nickel bias** and also with important econometric problems found when using dynamic panel data models such as **endogeneity**, **heteroskedasticity** and **autocorrelation**.

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- The dependent variable $\Delta CAPB$ measures the discretionary fiscal impulse following different phases of the economic cycle (the pattern of discretionary fiscal policies). In this connection, the ensuing comments highlight regression results related to cyclicality at the Argentine subnational level.

Results

OUTPUT GAP, xtabond2			
Number of instruments = 23		Number of obs = 299	
Wald chi2(9) = 301.36		Number of groups = 23	
Prob > chi2 = 0.000			
ΔCAPB	Coef.	z	P > |z|
ΔCAPB (t-1)	-.2578***	-3.90	0.000
Output Gap (t-1)	-.1865***	-2.71	0.007
Debt to GGP ratio (t-1)	.0012	0.16	0.875
Crisis Dummy (t-1)	-.0084	-1.57	0.117
Election Year Dummy (t)	-.0088***	-4.60	0.000
Inflation (t)	-.0252***	-2.84	0.005
Fiscal Size Poblat. (t)	-.0033	-1.53	0.125
Spending Rule compliance (t)	.0019	0.54	0.592
Fiscal Balance compliance (t)	.0162***	4.40	0.000
Cons	.0098	1.38	0.168

Arellano-Bond test for AR(1) in first differences: Pr > z = 0.002

Arellano-Bond test for AR(2) in first differences: Pr > z = 0.062

Hansen test of overid. restrictions: Prob > chi2 = 0.222

*p< 0.10, **p< 0.05, ***p< 0.01

Dependent variable: Δ Cyclically-adjusted primary balance

	xtreg	xtabond2	xtreg
Δ CAPB (t-1)	-.289***	-.258***	-.249***
	(.064)	(.066)	(.062)
Δ Output gap (t-1)	-.158***	-.186***	
	(.034)	(.069)	
Δ Unemployment rate (t-1)			.325***
			(.084)
Debt to GGP ratio	.006	.001	.002
	(.007)	(.008)	(.008)
Crises dummy (t-1)	.001	-.008	.002
	(.002)	(.005)	(.002)
Election year dummy	-.009***	-.008***	-.009***
	(.002)	(.002)	(.002)
Fiscal Size	-.001	-.003	.003***
	(.001)	(.002)	(.001)
FRL			.011***
			.003
Spending rule compliance	.009***	.002	
	(.003)	(.003)	
Fiscal Balance compliance	.012***	.016***	
	(.002)	.004	
Inflation	-.020***	-.025***	
	(.006)	(.009)	

Notes: *p< 0.10, **p< 0.05, ***p< 0.01, Standard errors are noted in parentheses

Results from the Conventional Linear Fiscal Reaction Function Approach

- No matter the variant and lags used, and in line with what is upheld by the literature, **the Output Gap´s negative and statistically significant coefficients show a marked procyclical impact upon subnational discretionary fiscal policy**.

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- Contrary to expectations, **positive and significant coefficients of the unemployment rate also depict a procyclical impact** of this alternative cycle variable. Suffice it to say that if employment falls were viewed as a signal of a recessive economic phase, counter cyclical fiscal policy should be expected to go in the opposite direction, causing CAPB to shrink.

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- Surprisingly, the performance of CR, mainly aimed at capturing the negative fiscal impact of developed countries´ crises of years 2009-2011 **seemed not to have had an important impact on provincial public finances** as the dummy held not statistically significant coefficients.

Results from the Conventional Linear Fiscal Reaction Function Approach

- In turn, Argentine Fiscal Responsibility Laws (FRL) **did not fully help** to enhance countercyclical features of subnational discretionary fiscal policy. That is, **as laws rather promoted financial balances and imposed mandatory limits to spending**, the chances of theirs favouring stabilization were thwarted in practice.

The Extended Non-Linear Equation

$$\Delta CAPB_{i,t} = \alpha_1 + \alpha_2 \, \Delta CAPB_{i,t-1} + \alpha_3 \, \Delta OG_{i,t-1} + \alpha_4 \, F_{i,t-1}$$
$$+ \alpha_5 \, (\Delta OG_{i,t-1} \, F_{i,t-1}) + \alpha_6 \, X_{i,t-1} + \mu_{i,t}$$

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- $(\Delta OG_{i,t-1} \, F_{i,t-1})$ stands for the Interaction Term (when $F = 0 \rightarrow IT = 0$)
- If α_5 positive, $F_{i,t-1}$ increases the effect of the cycle upon discretionary fiscal policy
- If α_5 negative, $F_{i,t-1}$ diminishes the effect of the cycle upon discretionary fiscal policy

Drivers of Procyclicality

Blue (red): the marginal effect of the interacting factors supports counter- (pro-) cyclical fiscal policy					
		Cyclical indicator			
		Δ Output gap (t-1)		Δ Unemployment rate (t-1)	
Type		LSDVC	GMM	LSDVC	GMM
D u m m i e s	Sign outputgap				*
	Crisis	**	***		
	Threshold Debt	***	**		
	Fiscal Size Royalties				
	Fiscal Size Poblation	**		*	*
	Spending Rule Compliance				
	Fiscal Balance Compliance				
	Debt Rule Compliance				
	High Public Employment	**		*	**
	High Inflation				
Levels	National resources dependence				
	Public Employment	**		*	**
	Discretionary transfers	**		***	***

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

Conclusions

- When interaction terms include output gap as the cycle variable, coefficients are negative and statistically significant, thus providing marginal support to **more pro-cyclical subnational fiscal policies**.

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- When interaction terms include output gap as the cycle variable, coefficients are negative and statistically significant, thus providing marginal support to **more pro-cyclical subnational fiscal policies**.
- The additional fall in CAPB induced by interaction terms clearly counteracts the effects of better cyclical conditions since, instead of benefitting from improvements in the fiscal balance by drawing public resources, **subnational policymakers react by not buiding up fiscal stabilization funds.**

Logit and Probit Models

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- As dependent variable, we use a binary indicator equal to **one for procyclical province-year episodes and zero otherwise**. A pro-cyclical province-year episode is defined as an observation where either the cyclically adjusted primary balance **increased by more than 0.25% of GGP when the output gap was negative** or where the cyclically adjusted primary balance **decreased by more than 0.25% of GGP when the output gap was positive**.

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- Due to the non-linearity of the logit and probit models, the estimated coefficients do not represent the marginal effect on the probability to run pro-cyclical fiscal policy. Nevertheless, **positive** (negative) **coefficients indicate a higher** (lower) **likelihood of pro-cyclical fiscal policy**.

Logit and Probit Models

Variable	Logit Model Estimation	Probit Model Estimation
Debt GGP	0.526 (0.3357)	0.2582** (0.1109)
Debt GGP Squared	0.037 (0.2391)	0.01811** (0.0798)
Crisis Dummy	-0.273 (0.225)	-0.159 (0.159)
Election Year Dummy	0.397** (0.167)	0.233 (0.149)
Fiscal Size (Population)	-0.681** (0.339)	-0.415** (0.205)
Fiscal Size (Royalties)	0.455 (0.378)	0.280* (0.152)
Fiscal Balance Compliance	0.514 (0.346)	0.315 (0.199)
High Inflation Dummy	0.243 (0.255)	0.137 (0.171)
Public Employment	0.0201 (0.0435)	0.0126 (0.0295)
Constant	1.241 (1.057)	0.732 (0.545)

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

Conclusions

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- Election years are associated with a deterioration of provincial public finances, which could be indicative of a **campaign-oriented attitude**.

- Smaller provinces, with a higher level of public employment, a greater dependence on discretionary transfers, and higher levels of debt, engage in **more aggressive procyclical fiscal policies**.

Conclusions

- The **discretionary fiscal policy of the provinces is evidently procyclical**, a result that is verified using different estimation methods and for different variables that capture the economic cycle.
- Election years are associated with a deterioration of provincial public finances, which could be indicative of a **campaign-oriented attitude**.
- Smaller provinces, with a higher level of public employment, a greater dependence on discretionary transfers, and higher levels of debt, engage in **more aggressive procyclical fiscal policies**.
- **The outcome of the Fiscal Responsibility Laws does not seem to have been very significant**. Although compliance with them was associated with an improvement in public finances, it is not observed that they have helped temper the effect of the cycle on fiscal policy or prevent the implementation of procyclical fiscal policies.

References

ALESINA, A. AND R. PEROTTI (2005). "Fiscal expansions and adjustments in OCED countries", *Economic Policy*, 10: 207–248.

BALASSONE, F. AND M. S. KUMAR (2007). "Cyclicality of Fiscal Policy," (in Ter-Minassian, T. and Kumar, M. S. Editors, *Promoting Fiscal Discipline*, pp. 19–35), International Monetary Fund, Washington, DC.

BAUMANN, F. I. Y L. COHAN (2018), "Crecimiento Económico, PTF y PIB Potencial en Argentina", *Subsecretaría de Programación Macroeconómica*, Ministerio de Hacienda, Buenos Aires

BLUNDELL, R. .AND S. BOND (1998), "Initial conditions and moment restrictions and moment restrictions in dynamic panel data models", *Journal of Econometrics*, 87(1): pp. 115-143

BOHN, H. (1998). "The behavior of the US public debt and deficits, *The Quarterly Journal of Economics*, 113(3), pp 949-963.

BOHN, H. (2005). "The sustainability of fiscal policy in the United State as", CESIfo Working Paper, No. 1446, Munich.
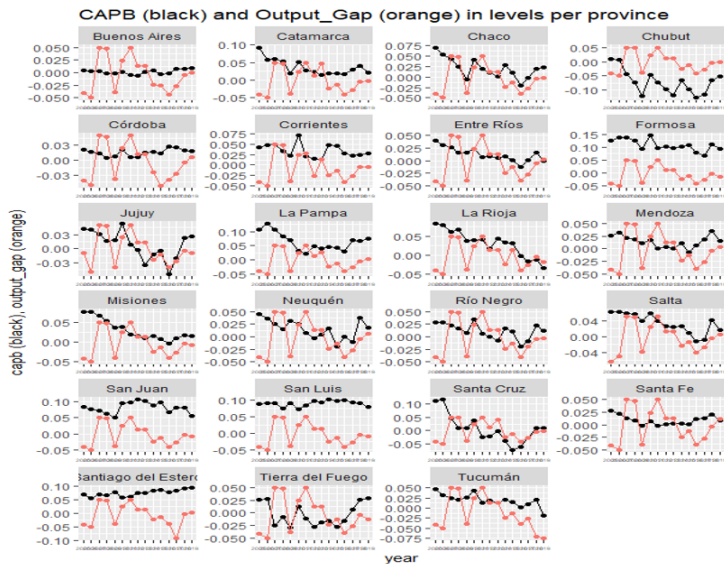
References

GAVIN M. AND R. PEROTTI (1997), "Fiscal Policy in Latin America", *NBER Macroeconomics Annual*, Vol. 12, pp. 11-72, Cambridge US.

GOLINELLI, R. AND S. MOMIGLIANO (2009), "The Cyclical Reaction of Fiscal Policy in the Euro Area: The Role of Modelling Choices and Data Vintages", *Fiscal Studies*, Vol. 30 No. 1, pp. 39-72.

LARCH. M., ORSEAU, E. AND W. VAN DER WIELEN (2020), "Do EU Fiscal Rules Support or Hinder Counter-Cyclical Fiscal Policy?", *CEsifo*, Working Paper 8659, Munich.

MELAMUD, A. D. (2010). "Reglas Fiscales en Argentina: el caso de la ley de responsabilidad fiscal y los programas de asistencia financiera", *ILPES-CEPAL*, Santiago de Chile.

NICKELL, S. (1981). "Biases in Dynamic Models with Fixed Effects", *Econometrica*, 49(6): 1417- 1426.

ORPHANIDES, A. AND S. VAN NORDEN (2002), "The unreliability of output gap estimations in real time", *The Review of Economics and Statistics*, 84(4): 569-583.
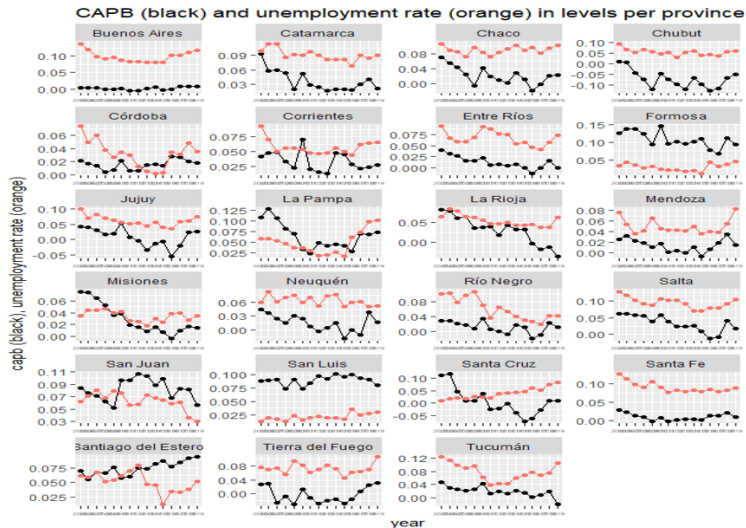
References

PRADHAN, B. K. (2019), "Cyclically Adjusted Primary Balance for Centre and States in India", *Development Planning Centre*, Institute of Economic Growth, Delhi.

REZK, E., RICCA, V AND G. LAFIT (2010), "The Impact of International Financial Crises upon Emerging Economies and the Performance of Discretionary Fiscal Policies", Annals of the *Banca d´Italia Workshop on Fiscal Policy*, Perugia, Italia. *Revista de Economía y Estadística*, Cuarta Época, Vol. 48, No. 2 (2010), pp. 29-68.

Charts

CAPB (black) and Output_Gap (orange) in levels per province

Charts

CAPB (black) and unemployment rate (orange) in levels per province

Charts

CAPB (black) and debt ggp ratio (orange) in levels per province