Electorally-induced crime rate fluctuations in Argentina

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Abstract. In the last two decades crime has ranked at the top of mayor concerns of Argentineans which leaves open the question about the behavior of incumbent governors of the 24 districts about anti-crime measures in the proximity of elections. This paper investigates electorally-induced fluctuations in Argentina for the period 1984-2007. Using the Arellano-Bond GMM technique, province –level dynamic panel data reveals that incumbent governors manage to diminish the crime rate in election years.

Keywords: Crime, Electoral cycles, Argentina.

1. Motivation

For decades Argentina took pride in its relative safety compared with other emergent as well as developed countries, but in the 1980s crime rate started a clear upward tendency that become steeper in the 1990s and definitively worrisome at the turn of the century when crime rates hit historical records. The consensus on the media and opinion surveys throughout the country that crime is foremost in voters' consideration, clearly relates the security policy to the political cycle.

Do incumbent governors reinforce anti crime measures, particularly in the proximity of elections, to increase their chances to remain in office? One of main conclusions of the empirical literature on political budget cycles in Argentina and elsewhere is that incumbents behave opportunistically: increasing public expenditure and changing its composition to retain power (Meloni, 2010; Jones et al., 2009; Drazen and Eslava, 2005; Eslava, 2006) Do incumbent governors also behave opportunistically in crime matters? This paper investigates electorally-induced crime rate fluctuations in Argentina, a federal republic with 23 provinces and a federal district (the City of Buenos Aires). I study 117 gubernatorial elections in the 24 argentine districts for the period 1984-2007. Gubernatorial elections took place regularly every four years since 1983, when democracy was recovered after several years of military regime.

The literature on elections and crime is still scanty and is focused mainly on the behaviour of elected judges facing polls (Dyke, 2007; Berdejo and Yuchtman, 2010) or alternatively use electoral cycles in police hiring to estimate the effect of police on crime (Levitt, 1997; McCrary, 2002) Only Ghosh (2006) can be taken as a near reference of this study. This author uses annual data on the major Indian states to investigate whether the timing of elections affect the crime rate or not. He finds that scheduled elections are associated with a fall in crime.

2. Empirical specification

I estimate the effect of the electoral cycle by merging the standard political budget cycle equation (Brender and Drazen, 2005) with the typical supply of offenses (Cerro and Meloni, 1999):

$$\text{CRIME RATE}_{it} = \alpha_0 + \alpha_1 \text{CRIME RATE}_{it-1} + \alpha_2 \text{ELECTION YEAR}_{it} + Z_{it} + X_{it} + \varepsilon_{it} \qquad (1)$$

The dependent variable Crime rate is measured as the total number of crimes per 100,000 inhabitants in district i and year t. A distinctive feature of the empirical literature of political budget cycle is the inclusion of a dummy variable (ELECYEAR) that takes the value 1 if the gubernatorial election is carried out during

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year t; -1 in the year t+1 (the year following gubernatorial elections) and 0 otherwise. I consider that t is an election year if the voting ballot was carried out from May to December. Despite governors have attributions to manipulate electoral dates in most of the provinces, they are restricted by laws or constitutional arrangements to the year the election was originally scheduled, thus ameliorating the potential endogeneity of elections, a usual problem in PBC studies.

Vector Z includes the variable Condemnatory Sentences to capture the deterrence effect of the probability of conviction, calculated as the ratio of total condemnatory sentences to total reported offenses. Vector X contains political and economic controls. I include the rate of unemployment, GDP per capita and the rate of growth of GDP per capita to control for an environment prone to crime. I expect the rate of unemployment and GDP per capita to be positive associated with crime. Earning opportunities in the labor market as well as in illegal activities influence the allocation of time and effort between legal and illegal activities, therefore higher rates of unemployment diminish the rate of return of legal activities generating an environment favorable to illegal activities (Cerro and Meloni, 2000) Likewise, per capita income is used to measure potential returns from legal earnings, so an increase in income may lead to an increase in crime. Those provinces with a higher GDP per capita are expected to be more attractive for criminals since they entail greater opportunities. On the other hand, the rate of growth of GDP per capita is included to capture the pure income effect. If criminal activity were an inferior good, the pure income effect would be negative. I also incorporate the URBANIZATION RATE, defined as the percentage of urban population in each province, to control for the effects of the changing structure of population on crime. I expect urbanization rate to impact positively on crime rate.

Table 1: Descriptive Statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
Crime Rate	576	2681.26	1361.815	485.4	8145.2
Election year	576	0.0365	0.6676	-1	1
Condemnatory Sentence	576	2.6264	2.1818	0	14.54
Rate of Unemployment	576	9.5535	4.7061	0	25.5
GDP per capita	576	385.3877	272.5594	93.9	1811.2
Rate of growth GDP per capita	576	1.7623	9.6556	-36.9	48.9
Urbanization rate	576	80.3377	9.7312	55	100
Vertical Fiscal Imbalance	576	1.0983	2.1261	0	24.3
Federal Intervention	576	0.0156	0.1241	0	1
Ratio of Current to Capital Expenditures	576	5.9432	4.2769	.5	37.7

Vector X also contains the RATIO CURRENT TO CAPITAL EXPENDITURES and VERTICAL FISCAL IMBALANCE to control for political manipulation of expenditure composition and the effects of federal transfers on crime rate, respectively. Vertical Fiscal imbalance is measured as the ratio of total federal transfers, both automatic and discretionary, to local revenues. FEDERAL INTERVENTION instead, is included to capture the impact of the direct intervention of the central government on some provinces facing political turmoil. The Argentine Constitution allows the federal government to run 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 reestablished. I expect the interventor to diminish the crime rate. In the lapse 1983-2004 there were six episodes of federal intervention, two of them on the Province of Corrientes in the years 1992-1993 and 2000-2001 and the others on the provinces of Catamarca (1991), Tucumán (1991) and Santiago del Estero (1994).

My empirical specification includes the lagged dependent variable to handle the inertia of the crime rate and the asymmetric response of crime to economic opportunities and deterrence reported by Mocan and Bali (2005). They found that increases in the crime rate are sharper but decreases are gradual.

To avoid estimating inconsistent coefficients due to likely correlation between unobserved panel-level effects with the lagged dependent variable, I use the dynamic panel technique developed by Arellano-Bond (1991) The Arellano-Bond estimator forms moment conditions using lagged-levels of the dependent variable and the predetermined variables with first-differences of the disturbances. I consider UNEMPLOYMENT, RATE of GROWTH of GDP and CONDEMNATORY SENTENCE as predetermine variables. I report Sargan test whose null hypothesis is that model and overidentifying conditions are correct specified and the Arellano-Bond tests that there is no serial correlation in the first-differenced disturbances.

As a robustness check, I also estimate equation (1) with OLS with fixed effects and robust standard errors.

3. Results

Econometric estimations of equation (1) are displayed in Table 2. Columns I and II shows the Arellano-Bond technique with robust standard errors. Columns III and IV present the OLS estimation with fixed effects.

I find evidence of an electoral cycle in the crime rate. My key variable, ELECTION YEAR is statistically significant at 1% in all four models, indicating that incumbent governors manipulate instruments at hand namely expenditures on security, police force and management changes and adjustments, etc., to affect crime rate. In fact, the crime rate diminishes, on average, from 76 to 86 offenses per 100,000 inhabitants in election years (depending on the estimation method) but resumes the year after elections. In all four regressions, the lagged dependent variable is statistical significant at usual levels and the estimated coefficients indicate an important inertial effect.

Taking Equation I as a benchmark for my analysis, all socio economic control variables have the expected signs, but only CONDEMNATORY SENTENCES, FEDERAL INTERVENTION and UNEMPLOYMENT are statistical significant at usual levels. Stiffer judicial conditions as well as federal administration (presumably putting doses of order after chaotic circumstances leading to intervention) diminish crime. As expected, higher unemployment rate generates an environment favoring crime.

Sargan tests do not reject the model (instruments are valid) and the Arellano-Bond tests shows no second-order serial correlation. Notice also that OLS with fixed-effects estimations differ scantly from the Arellano-Bond results.

Table 2: Dynamic Panel data Estimations.

Dependent variable: Crime Rate (Total)   Period: 1984 -2007   Districts: 24

Explanatory Variables	Arellano-Bond one step estimation with Robust standard errors		OLS with fixed effects and Robust standard errors	
	I	II	III	IV
Crime rate (t-1)	0.7924008*** (0.0649177)	0.8082644*** (0.063661)	0.8111493*** (0.0620088)	0.8331303*** (0.0555429)
Election year	-76.43621*** (24.04642)	-86.72374*** 24.70886	-78.54438*** (24.66265)	-86.26395*** (25.37487)
Condemnatory Sentences	-77.60182*** (25.02455)		-60.7201*** (18.77395)	
Rate of Unemployment	25.08323*** (6.831257)	27.75112*** (7.061472)	24.59998*** (6.906599)	25.30836*** (6.443167)
GDP per capita	0.2671213 (0.4524631)	0.514436 (0.4882561)	0.2962943 (10.61797)	0.477907 (0.4147737)
Rate of growth GDP per capita	-3.64223 (3.442371)	-5.275206 (3.613711)	-3.772319 (3.451003)	-5.319546 (3.533014)
Urbanization Rate	10.72547 (11.85727)	17.5730 (12.42701)	8.242147 (10.61797)	14.67885 (11.10991)

Vertical Fiscal Imbalance	11.77282 (13.47231)	7.019167 (15.54881)	14.38689* (7.290262)	7.251175 (4.694647)
Federal Intervention	200.1285* (115.4759)	227.118* (123.7766)	169.2377 (112.6686)	176.3796 (107.869)
Ratio current to capital expenditures	0.8796114 (3.46479)	1.4940 (4.048819)	.7777429 (3.508685)	1.168832 (3.732449)
Constant	-387.8077 (849.885)	-1293.18 (876.9315)	-282.9127 (766.1176)	-1084.72 804.5186
Sargan Test	chi2(478) =498.93 Prob > chi2= 0.2454	chi2(455) = 487.20 Prob > chi2= 0.1434		
A-Bond test that average autocovariance in residuals of order 1 is 0.	z = -1.8094 Prob > z= 0.0704	z = -1.7859 Prob > z= 0.0741		
A-Bond test that average autocovariance in residuals of order 2 is 0.	z = 0.07421 Prob > z= 0.9408	z = 0.0981 Prob > z= 0.9218		
R sq within			0.8128	0.8061
R sq between			0.9531	0.9293
R sq overall			0.8624	0.8539

Note: Standard errors in parenthesis below coefficient.

*** Significant at 0.01;   ** Significant at 0.05;   * Significant at 0.10.

4. Concluding remarks

This paper contributes to the political budget cycle literature as well as to the research on crime by presenting further evidence on the opportunistic behavior of incumbent governors in Argentina. Governors not only manipulate fiscal variables such as public expenditure and its compositions, as reported by previous studies, but also influence the crime rate generating electoral cycles in this variable. The argument explaining such manipulation is simple: since public safety ranks at the top of Argentineans concerns, incumbent governors dedicate additional efforts to improve crime indicators in election years. Presumably, incumbents not only dedicate more resources to safety matters but also work on managerial issues (i.e. changing the Police Chief, etc.) to make a more efficient police force.

5. Acknowledgements

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