



THE THIRTEENTH YOUNG ECONOMISTS' SEMINAR

TO THE TWENTY-FOURTH DUBROVNIK ECONOMIC CONFERENCE

Organized by the Croatian National Bank

Drini Imami, Endrit Lami, Edvin Zhllima, Muje Gjonbalaj and
Geoffrey Pugh

Closer to Election, more Light: Electricity Supply and Elections in Transition Economies, the Case of Kosovo

Hotel "Grand Villa Argentina"

Dubrovnik

June 3, 2018

Draft version

Please do not quote



CROATIAN NATIONAL BANK

**Closer to election, more light: electricity supply and elections in transition economies,
the case of Kosovo**

Drini Imami

(Corresponding author)

Faculty of Economics and Agribusiness, Agricultural University of Tirana,

Kodër-Kamëz, Tirana, Albania,

and Fellow at CERGE – EI

E-mail: dimami@ubt.edu.al

Endrit Lami

Ministry of Finance of Albania,

Bulevardi Dëshmorët e Kombit, Tirana, Albania

E-mail: endrit.lami@financa.gov.al

Edvin Zhllima

Faculty of Economics and Agribusiness, Agricultural University of Tirana,

Kodër-Kamëz, Tirana, Albania,

and Fellow at CERGE – EI

E-mail: ezhllima@ubt.edu.al

Muje Gjonbalaj

University of Prishtina

Rr. "George Bush", p.n.. Prishtina, Kosovo

E-mail: muje.gjonbalaj@uni-pr.edu

Geoffrey Pugh

Professor at Faculty of Business, Education and Law

Staffordshire University

Brindley Building, Leek Road,

Stoke-on-Trent, ST4 2DF, UK

E-mail: g.t.pugh@staffs.ac.uk

Abstract

In our paper we analyze the the supply of electricity in conjunction with elections in Kosovo. The results confirm our hypotheses that before *scheduled* (regular) parliamentary elections, the supply of electricity increases significantly above usual levels, but this is not the case for *early* elections. This paper contributes to the PBC literature in two ways. It provides additional evidence of incumbent manipulation of non-classical policy instruments before elections. The paper contributes also to PBC debate by revealing different incumbent strategies in *scheduled* and early elections respectively, thus highlighting the importance of distinguishing between these types of elections in PBC research.

Keywords: Political Business Cycle; Electricity; Kosovo

JEL classification code: E32, D72

Introduction

Over the last decades, there has been a large body of literature analyzing the use by incumbent governments of economic policy, namely fiscal and monetary instruments, to improve economic performance before elections. The traditional Political Business Cycle (PBC) research, following Nordhaus (1975), focused on an exploitable Phillips curve, to explain the use of economic instruments by an opportunistic incumbent to impact macroeconomic variables, by creating pre-election economic growth and lower unemployment. On the other hand, 'partisan' models complement the 'opportunistic' approach by arguing that PBC may also result from incentives stemming from party ideology or the material interests of the incumbent's political constituencies. Left-wing incumbents are more likely to employ expansionary policies to reduce unemployment (Hibbs 1977; Alesina and Roubini 1992).

Initial research focused on Western economies, while recently there has been a growing interest in developing and transition democracies. New democracies are more vulnerable to opportunistic political budget cycles (Brender and Drazen 2005; Shi and Svensson 2006). Political budget cycles are found to be significantly larger in developing than in developed countries (Shi and Svensson 2006). In developing or transition countries, lack of institutional mechanisms to constrain discretionary expenditure policies and strengthen fiscal control can result in opportunistic policy making around elections (Schuknecht 2000). While Alt and Lassen (2006) show the relevance of the transparency, Brender and Drazen (2005) also stress the lack of experience that voters have in new democracies regarding the existence of political fiscal cycles.

In some countries, election timing is imposed constitutionally (e.g. in the US, Presidential Elections are held every 4 years). But this is not the case for many consolidated and new democracies. According to Lächler (1982), if election timing is not set for a fixed date by the constitution, the incumbent can call early elections for political, economic and/or social reasons. Ito and Park (1988) argue that the incumbent, instead of manipulating the economy, may use a positive non-government sector supply shock (high growth, low inflation) as an opportunity to call an (early) election. On the other hand, when early elections are called for other reasons (e.g. loss of confidence, or coalition break down), the incumbent may not have sufficient time to plan and implement expansionary policies. Thus it is important to distinguish between regular (scheduled) and early elections when analyzing PBCs. In this context, the governments may not engage in expansionary policy (or in our case may not increase electricity supply before early elections) because they might call these right when their electoral support is high and thus they do not need it. On the other hand, governments might not have time to engage in expansionary policy (eg. increase electricity supply) because early elections are due to governmental instability.

There have been mixed results from empirical studies on the impact of PBC on economic growth and unemployment. Alesina et al. (1992) found very little evidence of pre-electoral effects on economic outcomes, in particular, on GDP growth and unemployment in OECD countries. There might be several reasons. First, it is not an easy task to generate expansions

well calculated and timed for elections. Second, with experience voters may tend to become “rational” thereby limiting such an approach, because policymakers – being rationally aware of voter rationality – do not try to implement PBC policies.

Since the incumbent cannot precisely estimate the lag between the intervention (e.g. increase of public expenditure) and the impact on the economy, it may consider the use of other instruments having a more direct impact on the economy and the welfare of the voters. This may be particularly so in the transition/developing economy context, because on the one hand the impact and timing of macroeconomic interventions may be less predictable while, on the other, instruments with a direct and immediate impact might be available. Further, relative lack of experience with stable political democracy in developing and transition countries makes the assumption of full voter rationality less compelling, with correspondingly less constraint on incumbent electoral strategy.

One potential policy instrument that can be controlled or influenced by the government is electricity supply. Electricity supply regularity and price is very important for households and businesses, therefore the incumbent might be cautious when implementing new policies related to electricity supply before elections. Government may tend to avoid increase in electricity price before elections, and do so after elections. For example, Bernard et al. (1997) found that electricity prices are manipulated by the incumbent in conjunction with elections in Quebec, Canada. In the case of developing/transition countries, which are often characterized by scarcity of electricity supply (frequent power cuts or shortages), incumbents may tend to manipulate the supply of electricity. Baskaran et al.(2015) finds evidence from India showing that state governments induce electoral cycles in electricity provision. Similarly, in the case of Albania (a transition country, situated in the Balkans close to Kosovo), Kachelein et al. (2011) found that before elections the supply of electricity increases significantly above usual levels, followed by contraction after elections.

We address the question as to whether incumbent may use instruments other than classical fiscal instruments to influence voters’ choices. To this end, we focus specifically on electricity supply in Kosovo, which is a publicly provided good and which is characterized by special features. A post-conflict transition economy, Kosovo has been facing constraints related to economy, services and infrastructure. Among these, a major concern is the shortages of electricity supply, reflected in interruptions to supply for households and business throughout the country. As shown in the following Section, electricity supply shortages are found to have a significant negative effect on business performance and the economy as a whole. Hence, there is an incentive for the incumbent to improve electricity supply to please voters and positively impact the economy before elections by using its monopoly position in the production and supply of electricity.

Our primary hypothesis is that before scheduled (regular) parliamentary (general) elections, electricity supply may increase above usual levels, followed by a contraction after elections. A supplementary hypothesis is that in the case of early elections there is no increase compared to the regular elections. This is because the incumbent may face constraints (e.g. insufficient time to prepare for the increase in supply of electricity, or administrative problems,

considering also that early elections were caused in Kosovo by internal struggle or break down of governing coalitions, which hampers the governing capacity of the incumbent).

This paper contributes to the PBC literature in two aspects. First, it provides additional evidence of incumbent manipulation of non-classical policy instruments before elections, such as supply of energy, which has been under-investigated, despite its high relevance for transition or developing country. Second, it contributes to the PBC debate around the incumbent behaviour in early versus regular (scheduled) elections, by showing very different policy strategy followed by the incumbent in Kosovo, thus highlighting the importance of distinguishing between these types of elections when conducting research on PBCs.

In the upcoming section we will present an overview of post conflict Kosovo's elections and electricity provision. Section three discusses the method of enquiry, section four presents the results of the study, and the final section draws conclusions.

Context: background on Kosovo

Kosovo is a parliamentary republic. It is located in the Western Balkans, with a population of 1.8 million. Kosovo is a post-conflict transition country, because it used to be a centrally planned economy under Yugoslavia until the late 1980s and underwent a notorious conflict in the 1990s. Kosovo emerged as an independent country in the following decade, with its own elected institutions partially monitored by the international community.

The election process in Kosovo was regulated in its initial phase by the UNMIK (UN Mission in Kosovo). From the termination of war in 1999 to the end of 2016 there were five elections for the Assembly (parliament). On November 17th, 2001, under the authority of UN Security Council Resolution 1244 (1999), Kosovo held its first parliamentary elections, yielding the first elected government, which acted under the international supervision. Until the declaration of independence (2008), the election date was decided/scheduled in advance by the Special Representative of the Secretary-General of the United Nations. The fourth (2010) and fifth (2014) parliamentary elections, (respectively the first and second parliamentary elections after independence) were early/extraordinary elections, following political disputes within the governing coalitions.

Kosovo remains one of the poorest countries in Europe. Growth performance has been hampered by infrastructure bottlenecks, particularly an unreliable power supply. Kosovo has suffered from regular electricity black-outs, mounting to 6 hours per day in the early 2000s. Surveyed companies in Kosovo have reported the unreliable electricity supply as the main barrier to their operations, leading to average losses of around 5 percent of sales (excluding the cost of purchasing and operating generators) (WB 2006). According to USAID (2015) the interruption of energy supply in 2014 created a considerable financial burden to the business sector (circa 296 million Euros on an annual basis).

Systematic shortages are caused by constraints in the relevant infrastructure as well as public financial constraint related to production, import and supply of electricity (run by Kosovo Energetic Corporation (KEK), which is a public company). Indeed Kosovo's power sector during the postwar period has not been capable to fulfill the needs of its population due to frequent blackouts and electricity supply shortages (GIZ 2012). The electricity sector in Kosovo is characterized by insufficient production of electricity, unreliable supply and high technical and commercial losses (ERO 2013). Low payment collection rates and illegal use of electricity (which leads to its extensive use for heating) and limited availability of power generation capacities, prevent a steady electricity supply to all consumers while impairing KEK's financial position.

About 97 % of power production in Kosovo is based on two lignite-fired power plants of KEK: Kosovo A (5 units) and Kosovo B (2 units) while renewable energy, hydro and wind is insignificant (KAS 2017). The total installed capacity of both plants is 1,478 MW, which could have been sufficient to fulfill the demand, but fails to operate at full efficiency due to depreciation (GIZ 2012). The domestic production is not sufficient to meet domestic needs. Hence, a part of consumption of electricity in Kosovo is covered by imports (circa 10% of supply), especially during the winter period. The main import partner is Serbia, which exerts influence in terms of electricity costs and sales due to the inherited physical interconnection and fragile political relations (Kittner et al. 2016). In order to improve the supply and lower dependence on imports, the development and rehabilitation of power generation capacities with private investment is of high priority for the Government of Kosovo (Vattenfall Europe. 2015; ERO 2013).

Shortages of electricity do not affect only businesses and the economy as whole (and indirectly the whole population), but also affect directly the welfare of households who consume more than half of electricity supply (KAS, 2017). Citizens have expressed high dissatisfaction with public services such as frequent disconnections of water and electricity supply (UNDP 2012). Reports show that categorization of electricity supply in different groups has been discriminatory (PIPS 2013). Access to heating energy and electricity remain major concerns and constituents of peoples' living conditions. Accordingly, addressing the systematic interruptions of supply (even temporarily before elections) gives rise to immediate effects on voters' living condition and perceptions of incumbent performance.

Methods and Procedures

As highlighted in our primary hypothesis, we intend to test for statistically significant increase of electricity supply before elections, in line with the incumbents' interest being re-elected. The time series of electricity supply is on a monthly basis, extending from January 2000 to November 2016, yielding 203 observations. The measurement unit of the time series

is MW/H. There have been five parliamentary elections taking place in this period, namely: November 2001; October 2004; November 2007; December 2010; and June 2014. However, two elections, those of November 2010 and November 2014, were early elections. Before the first elections (November 2001), executive power in Kosovo was held entirely by international institutions so there was not yet a national elected incumbent in office (thus, these elections are not included in our analysis).

The main focus of our analysis is based on the behavior of the incumbent during the two scheduled elections, 2004 and 2007, assuming an increase of electricity supply before such elections. In order to have an alternative view, we contrast the empirical results obtained in the case of the regular elections against those held in early elections (December 2010 and June 2014) as well as the results obtained when all elections were considered altogether.

Following the standard approach in this field we employ the econometric methodology of Intervention Analysis based on Box and Tiao (1975)¹. We test the hypothesis of the existence of changes in the supply of electricity close to general elections. Basically, the test proceeds by subjecting the monthly seasonally adjusted time series of electricity supply to a Box-Tiao intervention analysis using the most appropriate autoregressive-moving average (ARMA) structure for the social process and an intervention term; here the intervention term models the time distance to the election day.

A simple formal representation of the intervention analysis is:

$$z_t = \sum_{i=1}^s \alpha_i z_{t-i} + b_0 + \omega_t PD_t + \varepsilon_t$$

Where (z_t) denotes the outcome of electricity supply, modeled using a suitable ARMA (p,q) model and a political dummy variable (PD_t) to be specified below.

The parameter (ω_t) measures the change in the dependent variable (electricity) caused by the intervention (approaching elections) as modeled by the political dummy variable and is estimated along with the ARMA time series components. The estimation procedure provides an estimate of (ω_t) and a confidence interval for the parameter.

In the case of electricity supply, we consider that the period before elections, during which hypothetically incumbents could engage in opportunistic manipulative behavior, would be from three to twelve months. Therefore, we have defined adequate political dummy variables to capture the impact of the elections on electricity related variables(PD),formally defined as follows:

Political dummies *before* elections, with *cumulative* timing:

¹See for example McCallum (1978), Hibbs (1977), Alesina and Sachs (1988), Alesina and Roubini (1992). Hibbs (1987) offers a good introduction to the Box-Tiao technique.

$$PDcb_t = \begin{cases} 1: & \text{during}(t) \text{ cumulative quarters before elections} \\ 0: & \text{otherwise } t \in [-4; -3; -2; -1] \end{cases}$$

Political dummies *after* elections, with *cumulative* timing:

$$PDca_t = \begin{cases} 1: & \text{during}(t) \text{ cumulative quarters after elections} \\ 0: & \text{otherwise } t \in [1; 2; 3; 4] \end{cases}$$

Political dummies *before* elections, with *discrete* timing:

$$PDdb_t = \begin{cases} 1: & \text{during}(t)^{th} \text{ discrete quarter before elections} \\ 0: & \text{otherwise } t \in [-4; -3; -2; -1] \end{cases}$$

Political dummies *after* elections, with *discrete* timing:

$$PDdb_t = \begin{cases} 1: & \text{during}(t)^{th} \text{ discrete quarter after elections} \\ 0: & \text{otherwise } t \in [1; 2; 3; 4] \end{cases}$$

Estimation of the empirical models

We have followed precisely the Box-Jenkins (BJ) Methodology (1970). The first step was removing the seasonal patterns from the time series. Next we investigated the stationarity of the time series as a necessary prerequisite for the further steps.

Based on Box-Tiao's (1975) intervention analysis, after ensuring stationarity, the time-series is modeled as ARMA (Auto-Regressive Moving Averages). By modeling through ARMA it is possible to test whether or not elections can explain the changes of the dependent variable, in addition to the inherent "natural" characteristics of the variable and the random error term. Hence, it is necessary to identify the benchmark ARMA (p,q) model. To find the "best" ARMA model for each time series, straight forwardly following the Box-Jenkins methodology (1970), we followed an iterative process of identification, estimation and diagnostic checking of several competing ARMA models until we found the most plausible one, deemed as the "best" for each series.

In the second stage we individually incorporated each of the political dummy variables in the related ARMA model tentatively found in the first stage and re-estimated the whole model now with an additional incorporated PD_t aiming to capture any possible impact of elections on the dependent variable and testing elections' impact on electricity supply. Thus, the impact of elections is considered to be an intervention or shock in the value of the analyzed variable by forcing the value of the variable to shift during the intervention or shock periods. The statistical significance of the political dummy variables is tested using the t-test.

The original monthly time series of electricity supply is non-stationary and embodies significant seasonal patterns. However, based on all formal tests employed (not reported but available on request), the first differences with a time lag of twelve terms of the natural logarithm proved stationary and free of seasonality². Logarithmic transformation also removes the heteroskedasticity present in the original time series. Therefore, the transformed time series is employed in the analysis.

Following the iterative Box-Jenkins procedure of identifying, testing and diagnosing several competing autoregressive moving-average models, we concluded that the most appropriate one for the electricity supply was ARMA (1,12). Note that the moving average term of twelve lags present in the model captures any remaining seasonality in the adjusted time series. The estimated equation for electricity supply is presented below:

$$\Delta_{12} \ln(\text{Supply}) = 0.045 + 0.55 * AR(1) - 0.91 * MA(12)$$

We estimate the five main empirical models of our study each of them incorporating different *prior*-elections political dummy variable(s). Each of the first four models embodied one of the cumulative PD as defined earlier (*PDcb-1; PDcb-2; PDcb-3; PDcb-4;*) to test for the effect of *scheduled* (regular) elections on electricity supply during different time spans before elections (from a quarter to a year). The fifth estimated model incorporates simultaneously the discrete PD variables (*PDdb-1; PDdb-2; PDdb-3; PDdb-4;*). The latter has a twofold purpose. First, is a robustness check. Second, should there be any evidence of approaching elections on electricity, to investigate whether or not there is any pattern of intensification of such effect as elections come closer. In a symmetrical way to the first five models, we estimate another five with *post*-elections cumulative and discrete political dummy variables. Finally we estimate all models with *prior*-election PDs, once with *early* elections only and then with *all* elections altogether and contrast the results with different sets of elections.

Empirical Results

Table 1 summarizes the main findings. The empirical results strongly support the hypothesis of this study for an election-related cycle in electricity supply motivated by the opportunistic electoral interests of the incumbents. Most evidently, the supply of electricity one quarter before regular (timely held) elections increases by around 17% more than its natural pattern, when the cumulative dummy variable is deployed, or 23% in the case of the estimated coefficient on *PDcb-1* (see model 1 in table 2) and *PDdb-1* (see model 5 in table 2) both with a significance level of 1%.

²The following tests were employed: the Augmented Dickey-Fuller test; the Philips-Perron test; and the Kwiatkowski-Phillips-Schmidt-Shin test.

Table 1: Electricity supply *before* regular elections

Estimated ARMA(1,12) with different pre- elections PDs	Model 1		Model 2		Model 3		Model 4		Model 5	
Variables	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.
<i>PDcb</i> -.1	0.167***	0.008								
<i>PDcb</i> -.2			0.124**	0.027						
<i>PDcb</i> -.3					0.105**	0.049				
<i>PDcb</i> -.4							0.111*	0.083		
<i>PDdb</i> -.1									0.233***	0.002
<i>PDdb</i> -.2									0.089	0.226
<i>PDdb</i> -.3									0.070	0.343
<i>PDdb</i> -.4									0.109	0.161
<i>Intercept</i>	0.033***	0.000	0.030***	0.003	0.028**	0.012	0.028**	0.021	0.025**	0.020
<i>AR(1)</i>	0.496***	0.000	0.494***	0.000	0.508***	0.000	0.494***	0.000	0.457***	0.000
<i>MA(12)</i>	-0.827***	0.000	-0.815***	0.000	-0.816***	0.000	-0.798***	0.000	-0.855***	0.000
Main diagnostic tests										
Adjusted R-squared	0.624		0.615		0.615		0.618		0.632	
F-statistic	105.656		101.538		101.506		102.730		55.037	
Prob(F-statistic)	0.000		0.000		0.000		0.000		0.000	
Mean dependent var	0.071		0.071		0.071		0.071		0.071	
S.D. dependent var	0.306		0.306		0.306		0.306		0.306	
Akaike info criterion	-0.486		-0.461		-0.461		-0.469		-0.491	
Schwarz criterion	-0.418		-0.393		-0.393		-0.400		-0.372	
Durbin-Watson stat	2.034		1.975		1.999		1.992		1.999	

(***) significant at 1% level; (**) significant at 5% level; (*) significant at 10% level

The statistically significant higher supply of electricity is also present in longer cumulative periods before regular elections, namely 6 months, 9 months and one year before elections. However, the analysis reveals a kind of trend such that the closer the elections the more intense this opportunistic behavior in electricity supply. The coefficients on the dummy variables capturing longer cumulative periods before elections are generally smaller in magnitude than those of shorter periods to elections and somewhat weaker in statistical significance, although always positive and still significant at conventional levels (see and compare models 1, 2, 3 and 4 in table 2). This is revealed also when discrete political dummy variables were employed. Model 5 indicates that while the coefficients on different PDs capturing four discrete quarterly periods to elections all have a positive sign, only the coefficient of *PDdb*-.1 capturing the final quarter to the elections day is significant at the 1% level.

The view of a politically driven cycle in energy supply is potentially complemented by a post-election contraction of supply. However, all political dummy variables capturing different cumulative or discrete periods after scheduled (regular) elections are statistically insignificant at conventional levels (see models 6 – 10 in table 2). Note that we introduced and estimated *pre*-election and *post*-election political dummy variables in separate models in order to

preserve the econometric parsimony of the estimated models. However, the results remain similar when they are introduced simultaneously.³

Table 2: Electricity supply *after* scheduled elections

Estimated ARMA(1,12) with different pre- elections PDs	Model 6		Model 7		Model 8		Model 9		Model 10	
	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.
<i>PDcb</i>₁	0.017	0.798								
<i>PDcb</i>₂			-0.011	0.853						
<i>PDcb</i>₃					-0.049	0.398				
<i>PDcb</i>₄							0.114	0.196		
<i>PDdb</i>₁									0.127	0.127
<i>PDdb</i>₂									0.077	0.319
<i>PDdb</i>₃									0.107	0.164
<i>PDdb</i>₄									0.243	0.182
<i>Intercept</i>	0.038***	0.000	0.040***	0.000	0.045***	0.000	0.025*	0.076	0.020*	0.096
<i>AR(1)</i>	0.541***	0.000	0.537***	0.000	0.559***	0.000	0.495***	0.000	0.460***	0.000
<i>MA(12)</i>	-0.793***	0.000	-0.785***	0.000	-0.788***	0.000	-0.768***	0.000	-0.839***	0.000
Main diagnostic tests										
Adjusted R-squared	0.608		0.606		0.608		0.607		0.625	
F-statistic	98.611		97.882		98.855		98.197		53.402	
Prob(F-statistic)	0.000		0.000		0.000		0.000		0.000	
Mean dependent var	0.071		0.071		0.071		0.071		0.071	
S.D. dependent var	0.306		0.306		0.306		0.306		0.306	
Akaike info criterion	-0.443		-0.439		-0.445		-0.441		-0.472	
Schwarz criterion	-0.375		-0.371		-0.377		-0.372		-0.352	
Durbin-Watson stat	2.043		2.032		2.080		1.996		1.998	

(***) significant at 1% level; (**) significant at 5% level; (*) significant at 10% level

We also find evidence in line with our second hypothesis – lack of electricity supply expansion before *early* parliamentary elections. There is no significant increase in electricity supply in the case of early elections.

When both types of parliamentary elections (regular and early elections) are considered altogether in the analysis simultaneously, it seems that their effects on electricity supply offset each other. That is why one does not find significant alteration in the electricity supply during parliamentary elections in general, i.e. without making a distinction between regular and early types of elections. Table 3 presents the main statistical estimations in the case when only early elections were considered as well as all elections altogether.

³The results are available upon request.

Table 3: Electricity supply before *early* and *all* elections

Estimated ARMA(1,12) models incorporating a single different cumulative PD	Estimated parameters								Main diagnostic tests			
	<i>PDcb</i> _(i)		<i>Intercept</i>		<i>AR(1)</i>		<i>MA(12)</i>		<i>Adj. R</i> ²	<i>Prob</i> (<i>F-stat</i>)	<i>AIC</i>	<i>DW stat.</i>
	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.				
Early elections												
Model 11 <i>PDcb</i> ₋₁	0.017	0.80	0.037***	0.00	0.590***	0.00	-0.834***	0.00	0.613	0.00	-0.46	2.14
Model 12 <i>PDcb</i> ₋₂	-0.054	0.49	0.037***	0.00	0.568***	0.00	-0.770***	0.00	0.604	0.00	-0.43	2.10
Model 13 <i>PDcb</i> ₋₃	-0.015	0.82	0.047***	0.00	0.551***	0.00	-0.747***	0.00	0.602	0.00	-0.43	2.08
Model 14 <i>PDcb</i> ₋₄	-0.132**	0.04	0.063***	0.00	0.467***	0.00	-0.835***	0.00	0.623	0.00	-0.48	1.96
All elections												
Model 15 <i>PDcb</i> ₋₁	0.075	0.11	0.032***	0.00	0.538***	0.00	-0.821***	0.00	0.614	0.00	-0.46	2.07
Model 16 <i>PDcb</i> ₋₂	0.029	0.54	0.036***	0.00	0.523***	0.00	-0.795***	0.00	0.607	0.00	-0.44	2.00
Model 17 <i>PDcb</i> ₋₃	0.039	0.41	0.028***	0.00	0.560***	0.00	-0.769***	0.00	0.602	0.00	-0.43	2.08
Model 18 <i>PDcb</i> ₋₄	0.028	0.71	0.031***	0.00	0.597***	0.00	-0.727***	0.00	0.595	0.00	-0.41	2.16

(***) significant at 1% level; (**) significant at 5% level; (*) significant at 10% level

Supply of electricity is determined by domestic production and imports. Hence, we analyzed both (see Annex 1). However, we observe a significant increase only in domestic production. From this we conclude that the above analyzed pre-election increase in supply is sustained by a temporary increase in domestic production.

Conclusions

There are mixed results from empirical studies on the impact of PBC on economy growth and unemployment. Since the incumbent cannot precisely estimate the lag between the stimulus as a change in the public budget and the impact on the economic environment, it may use other instruments having a more direct impact on the economy and voter welfare. This may be particularly so in the transition/developing economy context, because on the one hand the impact and timing of macroeconomic interventions may be less predictable while, on the other, instruments with a direct and immediate impact are available.

One potential policy / intervention instrument that can be controlled or influenced by the government is electricity supply. A post-conflict economy, Kosovo has been facing constraints related to economy, services and infrastructure. One problem faced is shortages of electricity supply, reflected in interruptions to supply for households and business throughout the country. Such shortages are motivated by constraints in the relevant infrastructure as well as public financial constraints related to production, import and supply of electricity (run by Kosovo Energetic Corporation (KEK) which is a public company). Electricity shortages not only seriously affect household welfare but also cause huge losses for businesses and the economy in general. Thus, it is rational to expect that the incumbent engages in improving electricity supply before elections to please voters (household consuming electricity), and/or alternatively to boost the economy (considering the vital role of the energy for all major economic sectors) in line with classical PBC expansionary policy motivation.

In our paper we analyze the potential impact of general elections on the supply of electricity to test our primary hypothesis that the incumbent is engaged in expansion of electricity supply before regular elections. The results confirm that before general scheduled (parliamentary) elections, the supply of electricity increases significantly above usual levels. This effect is not found in the case of early parliamentary elections, or when all elections are analyzed jointly.

The increase in supply is triggered by increase in domestic production. Potential fiscal constraints may discourage the incumbent from increasing (expensive) imports. Instead, incumbents may decide to temporarily mobilize and over-utilize domestic production capacities, which could result in long term negative consequences, and/or alternatively, the incumbent may engage in improving the efficiency/performance of the domestic production capacities. Indeed, in the case of Albania (country which is similar to Kosovo), the production and supply of energy was found to reduce drastically after elections – the increased production before election, was simply enabled from the overuse of the water reservoirs resources (more than 90% of Albanian energy production relying on hydro-power), rather than improved efficiency, thereby resulting in after-election contraction (conditioned by falling water levels). In the case of Kosovo, the fact that the energy supply does not fall after elections indicates that the pre-election improvement in supply may be rather persistent, which may be caused by improvement in technical or management capacities.

This paper contributes to the PBC literature in two aspects. First, it provides additional evidence of incumbent manipulation of non-classical policy instruments before elections, such as supply of energy, which have been under-investigated, despite their relevance for transition or developing countries. The increase of electricity supply before elections is found to be significant statistically and of substantial magnitude – the supply of electricity one quarter before scheduled elections increases by around 23% above its natural pattern.

The paper also contributes to the PBC debate by distinguishing incumbent behavior in early versus regular elections, by highlighting very different incumbent policy strategies in these two distinct cases. We see clear increase of supply before regular elections but not for early elections. Presumably the incumbent may not be able to use this policy instrument because of timing (early elections are called 30 – 45 days in advance in Kosovo). Moreover, early elections were caused by internal struggle or break down of governing coalitions, a situation which hampers the governing capacity of the incumbent, which might result in poor public administration performance (which could potentially result in weaker electricity performance).

Interestingly, when both types of elections are analyzed jointly, the expansionary effect of regular elections is offset by early elections, which could misleadingly guide us to the conclusion that the incumbent does not manipulate this policy instrument for electoral reasons. Therefore, we highlight the importance of distinguishing between both types of elections, not only for this research work, but also for other research work on PBCs.

The paper has several limitations. There are few elections within a relatively short time span (although the results are fully in line with the hypothesis and the magnitude of the effect

(increase in supply) in the case of scheduled elections is rather large). Thus, there should be caution when generalizing the results beyond the case of Kosovo for the given time span. Secondly, we do not control for possible factors that can affect the demand side, which, in turn can affect the supply. The departing point, is that, in Kosovo there has been historically shortage of the electricity, thus, the supply has been always lower than the demand, thus, the supply pattern cannot be fully explained by demand patterns. Furthermore, we analyze seasonally adjusted electricity supply, which takes into consideration possible seasonal patterns related to the demand too (such as the demand for heating).

REFERENCES

- Alesina, A., & Roubini, N. (1992). Political cycles in OECD economies. *The Review of Economic Studies*, 59(4), 663-688.
- Alesina, A., & Sachs, J. (1988). Political Parties and the Business Cycle in the United States, 1948-1984. *Journal of Money, Credit, and Banking*, 20(1), 63-82.
- Alesina, A., Cohen, G. D., & Roubini, N. (1992). Macroeconomic policy and elections in OECD democracies. *Economics & Politics*, 4(1), 1-30.
- Alt, J. E., & Lassen, D. D. (2006). Transparency, political polarization, and political budget cycles in OECD countries. *American Journal of Political Science*, 50(3), 530-550.
- Baskaran, T., Min, B., & Uppal, Y. (2015). Election cycles and electricity provision: Evidence from a quasi-experiment with Indian special elections. *Journal of Public Economics*, 126, 64-73.
- Bernard, J. T., Gordon, S., & Tremblay, J. (1997). Electricity prices and elections in Quebec. *Canadian Journal of Economics*, 505-525.
- Box, G. E. P., & Jenkins, G. M. (1970). "Time Series Analysis: Forecasting and Control", Holden-Day, London. United Kingdom Google Scholar.
- Box, G. E., & Tiao, G. C. (1975). Intervention analysis with applications to economic and environmental problems. *Journal of the American Statistical Association*, 70(349), 70-79.

- Brender, A., & Drazen, A. (2005). Political budget cycles in new versus established democracies. *Journal of monetary Economics*, 52(7), 1271-1295.
- Energy Regulatory Office (ERO). 2013. Statement of security of supply for Kosovo (electricity, natural gas and oil). Available at: https://www.energy-community.org/dam/jcr...f81b.../KV_SOS_statement_2013.pdf. Last visited August 2017
- German Society for International Cooperation (GIZ). 2012. Thematic Roundtable 6 of Task Force on European Integration: Environment,energy,transport and regional development. Report for GIZ Project "Support to European Integration". Available at: http://www.mei-ks.net/repository/docs/Terms_of_Reference_ENG.pdf. Last visited August 2017
- Hibbs Jr, D. A. (1987). *The American Political Economy: Macro'economics and Electoral Politics* Cambridge.
- Hibbs, D. A. (1977). Political parties and macroeconomic policy. *American political science review*, 71(4), 1467-1487.
- Ito, T., & Park, J. H. (1988). Political business cycles in the parliamentary system. *Economics Letters*, 27(3), 233-238.
- Kachelein, H., Lami, E., & Imami, D. (2011). Election-Related Cycles in Publicly Supplied Goods in Albania. *South-Eastern Europe Journal of Economics*, 9(1), 13-25.
- Kittner, N., Dimco, H., Azemi, V., Tairyan, E., & Kammen, D. M. (2016). An analytic framework to assess future electricity options in Kosovo. *Environmental Research Letters*, 11(10), 104013.
- Kosovo Agency of Statistics (KAS). 2017. Annual energy balance of republic of Kosovo for the year 2016. Available at: <http://ask.rks-gov.net/en/add-news/bilanci-i-energjis%C3%AB-n%C3%AB-kosov%C3%AB-2016/>. Last visited August 2017
- Lächler, U. (1982). On political business cycles with endogenous election dates. *Journal of public economics*, 17(1), 111-117.
- McCallum, B. T. (1978). The political business cycle: An empirical test. *Southern Economic Journal*, 504-515.
- Nordhaus, W. D. (1975). The political business cycle. *The review of economic studies*, 42(2), 169-190.
- Pristina Institute for Political Studies (PIPS). 2013. Political Obligations in Kosovo. Available at: http://pips-ks.org/wp-content/uploads/publications/en/439627724_Political_Obligations_in_Kosovo.pdf. Last visited August 2017
- Schuknecht, L. (2000). Fiscal policy cycles and public expenditure in developing countries. *Public Choice*, 102(1), 113-128.

Shi, M., & Svensson, J. (2006). Political budget cycles: Do they differ across countries and why?. *Journal of public economics*, 90(8), 1367-1389.

United Nations Development Programme Kosovo (UNDP). 2012. Kosovo Mosaic 2012: Overview of perceptions on public services and local authorities. Prishtina. Available at: www.lr.undp.org/content/dam/kosovo/docs/.../Kosovo_Mosaic_2012_Eng_735317. Last visited August 2017

United States Agency for International Development (USAID). 2015. Follow-up assessment on impact from irregular electricity supply on Kosovar businesses. Final report Implemented by UBO Consulting. Available at: http://uboconsulting.com/PDF/Final_Report_Follow_up_Assessment_on_Impact_from_Irregular_Electricity_Electricity_Supply_on_Kosovar_Businesses.pdf. Last visited August 2017

Vattenfall Europe Powerconsult (GMBH). 2015. Study about security of electricity supply in Kosovo. Available at: http://www.kostt.com/website/images/stories/dokumente/publikime/Report_REV15_i_publicuar_ne_web.pdf. Last visited August 2017

World Bank (WB). 2006. Interim Strategy note for Kosovo for the period FY06-FY07. Technical Report No. 35262-XK. Available at: [http://siteresources.worldbank.org/INTKOSOVO/Resources/Kosovo_ISN_\(Final\).pdf](http://siteresources.worldbank.org/INTKOSOVO/Resources/Kosovo_ISN_(Final).pdf). Last accessed in August 2017

APPENDIX 1

Annex 1: Electricity imports before *regular* and *all* elections

Estimated ARMA(1,12) models incorporating a single different cumulative PD	Estimated parameters								Main diagnostic tests			
	<i>PDcb</i> _(i)		<i>Intercept</i>		<i>AR(1)</i>		<i>MA(12)</i>		<i>Adj. R</i> ²	<i>Prob</i> (<i>F-stat</i>)	<i>AIC</i>	<i>DW stat</i>
	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.				
Regular elections												
Model 1 <i>PDcb</i> ₋₁	0.015	0.97	-0.053	0.11	0.284***	0.00	-0.906***	0.00	0.50	0.00	3.37	1.97
Model 2 <i>PDcb</i> ₋₂	0.226	0.46	-0.069*	0.07	0.276***	0.00	-0.889***	0.00	0.51	0.00	3.36	1.96
Model 3 <i>PDcb</i> ₋₃	0.222	0.43	-0.082*	0.06	0.278***	0.00	-0.910***	0.00	0.50	0.00	3.37	1.96
Model 4 <i>PDcb</i> ₋₄	0.315	0.31	-0.108**	0.03	0.277***	0.00	-0.909***	0.00	0.50	0.00	3.36	1.97
All elections												
Model 5 <i>PDcb</i> ₋₁	-0.012	0.97	-0.040	0.27	0.272***	0.00	-0.890***	0.00	0.51	0.00	3.36	1.95
Model 6 <i>PDcb</i> ₋₂	0.192	0.46	-0.070	0.15	0.274***	0.00	-0.886***	0.00	0.51	0.00	3.35	1.96
Model 7 <i>PDcb</i> ₋₃	0.152	0.53	-0.075	0.24	0.264***	0.00	-0.909***	0.00	0.50	0.00	3.37	1.94
Model 8 <i>PDcb</i> ₋₄	0.812	0.55	-0.274**	0.03	0.270***	0.00	-0.935***	0.00	0.48	0.00	3.41	1.95

(***) significant at 1% level; (**) significant at 5% level; (*) significant at 10% level

