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The Budget Dilemma and Public Spending: Evidence from Ten Postcommunist Countries[3]

Abstract

The paper examines whether the number of parties in the cabinet and the type of coalition affect the level of public spending. It offers a statistical analysis of two hypotheses: (1) the larger the number of parties in the cabinet, the higher the public spending; (2) minority and minimal winning coalitions tend to spend more, whereas large majority coalitions tend to spend less. The analysis draws on statistical data from ten East-Central European countries, with the data confirming the first and rejecting the second hypothesis. The paper offers two novelties. First, it defines a new concept (the Budget Dilemma) to test the relationship between the number of parties and the level of public spending. Second, it uses data about the countries that has appeared less frequently in similar types of research and studies, providing new observations for testing the relationship between the number of the parties in a cabinet and the level of public spending.

Keywords: Budget Dilemma; fiscal policy; public spending; minimal winning coalition; oversized coalition.

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1. Introduction

In his study on veto players, George Tsebelis claims that larger number of actors in a decision making body increases the likelihood of policy stability (Tsebelis 1995; 2002). The claim has to do with the size of the winset of status quo (a set of policy proposals that can defeat the status quo). If two decision makers have to decide on a policy that departs from the status quo, they will find it easier to agree on the departure than three decision makers, three easier than four, and so on. The larger the number of players, the smaller the winset, and hence a more stable public policy.

The implication is clear: the policy stability is a function of the number of players, and, in that case, has a positive slope (Figure 1). Public policy is the least stable when the number of players is minimal (value 1 on the y axis). When only one party is in the cabinet, it can practically do whatever it wants *vis-à-vis* public policy change (provided it reached an internal party consensus on it). Smaller number of members increase the likelihood of policy change, because the winset from which an option that can defeat the status quo can be drawn is larger. Assuming that the winset depends on the number of actors in the government, Tsebelis derives a simple theorem: the more actors in the government, the smaller the winset, and the less likely the policy change. In such a situation, the stability of the policy is high (Tsebelis, 2002, 2; 22-3).

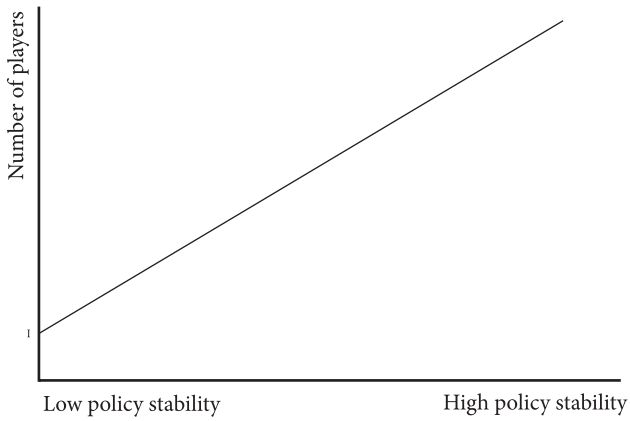

Figure 1: Policy stability as a function of the number of players – Tsebelis's view

In this paper we want to prove an opposite thesis. We claim that a large numbers of cabinet members increases the likelihood of policy change. We draw on Persson and Tabellini's attempt conceptualize the same problem. In *The Economic Effects of the Constitution* (2003) they demonstrate a different policy stability function. On their theory, based on the problem of collective action (Olson 1965) and the common pool resource problem (Hardin, 1968), policy stability is also a function of the number of parties, but here the stability is lower as the number of parties goes up. Thus, the slope of the function is negative (Figure 2). When the number of parties is small, policy stability is high. In contrast, when the number of parties in the cabinet increases, policy stability drops.

Let us apply this concept of policy stability to fiscal policy, which is a subject matter of this paper. Policy stability is about stability in spending. When we observe that cabinet can easily change its fiscal policy—decrease or increase spending—we say that policy stability is low. In contrast, when we observe that cabinet is unable to change level of spending, policy stability is high.

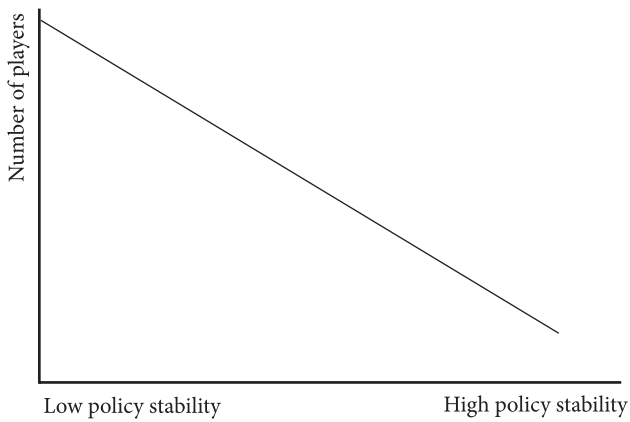

Figure 2: Policy stability as a function of the number of players – Persson and Tabellini's view

Persson and Tabellini examined the correlation between the electoral system and level of spending. They claim that cabinets that emerged from proportional representation tend to spend more (Persson and

Tabellini, 2003).[4] They do so because such cabinets are composed of more cabinet members. Higher number of cabinet members increase the likelihood of higher spending. In other words, if a cabinet has x members, and we observe a spending of €1 billion in t_1, the spending level in t_2 is likely to significantly rise beyond €1 billion provided the number of cabinet members is x+y (where $y>0$) in t_2.

2. Contribution of this Paper

This paper draws support from and empirically test Persson and Tabellini's view, and opposes Tsebelis's veto player theory. We draw on the common pool resource problem (Hardin, 1968) which we apply to fiscal policy. It suggests that public spending rises as a function of the number of participants in the policy making. The major reason for such a behavior is that policy makers receive all the benefits from such a policy, but internalize only a fraction of its cost. The cost can be transferred to actors who are outside the cabinet (e. g. tax payers, next cabinet, or next generations), and the upshot is aggregate overspending (Persson and Tabellini 2003: 26).[5]

In order to prove our point, we offer a game theory concept titled Budget dilemma. We conceptualize the general relations among actors (section 3), but also a more specific relation that depends on the type of the coalition (section 4). Finally, we offer an empirical test to support the Budget dilemma. We run OLS regression to test if the number of parties and the type of the coalition increase public spending (section 7). Our sample is ten post-communist countries that are usually avoided in this type of research.[6]

3. The Model

We ask two research questions:

- does a number of players in a cabinet increase public spending?;
- if not, does the type of the cabinet increase the level of public spending?

4 However, in contrast to Persson and Tabellini who are more interested in the causal relation between electoral systems and public spending, we look into the relation between the number of players and policy change, leaving the issue of electoral systems aside

5 Persson and Tabellini's book has a large sample, but many post-communist countries are excluded from the sample.

6 The definition of minimal winning coalition will be given in section 4.

Before we offer empirical answers for these questions, we outline a model that theoretically supports our claim. The game model is suited to analyzing the interactions between actors in the cabinet when it (the cabinet) has to decide how to tackle fiscal policy matters—notably, public spending. We name the game the Budget Dilemma (BD). We start by considering a simple model with two players.

Suppose there are two political parties, The Green and The Reds, which form a minimal winning coalition.[7] Both parties received approximately equal electoral support, slightly over 25%, so both are veto players in Tsebelis's sense. The Reds represent mainly older population and the badly-off, whereas The Greens represent mainly "green" entrepreneurs and social groups that advocate the usage of green technology in the economy. Suppose that, after the previous cabinets's history of high public spending, these two parties make an agreement (perhaps brokered by the IMF) to pursue a sustainable fiscal policy[8] —namely, to cut public spending and arrest the increase of public debt.

Each party has a choice between two options: it can stick to the agreement to run a balanced budget (cooperate), or it can demand more spending which will benefit only itself and its electorate (defect). If both parties pursue policy of higher spending, there will be aggregate overspending. More formally, the model can be presented in Figure 3.

		The Reds	
		Balanced budget (cooperate)	larger budget (defect)
The Greens	Balanced budget (cooperate)	Overall decrease	A loses, B wins
	larger budget (defect)	A wins, B loses	Aggregate overspending

Figure 3: The Budget Dilemma with two players. A general form.

7 Sustainable fiscal policy is any policy that will not end up in a bankruptcy.

8 I am not discussing long-term effects of defection. Mainly because most officials are out of office when long-term effects start to take place, and the cost of high spending is paid up by next cabinets.

We claim that the outcome of the Budget Dilemma represented in Figure 3 is aggregate overspending which is a function of the number of cabinet members. The idea is based on the same fiscal policy function that characterizes the Persson and Tabellini model (Figure 2): larger number of cabinet members produces unstable public policy; smaller number of players keeps public policy stable.

To express the main idea more clearly, we could reproduce Figure 3 by assigning cardinal values to the outcomes. Suppose that this year's budget is €4 billion. If both cabinet members abide by prudent fiscal policy, the outcome will be (2, 2). However, suppose that The Reds demand larger budget deficit in the amount of €5. In this case, The Greens cannot block the budget increase even if they wanted to, because The Reds have veto power and could bring down the government. In order not to be suckers (outcome 2, 3), The Greens accept the budget increase by demanding their share of the pie, thus producing an aggregate overspending (3, 3).

		The Reds	
		Cuts (cooperate)	Demands larger deficit (defect)
The Greens	Cuts (cooperate)	2, 2	2, 3
	Demands larger deficit (defect)	3, 2	3, 3

Figure 4: The Budget Dilemma expressed in cardinal values.

* * *

The BD assumes a world without fiscal rules (most countries from our sample are such). In the world without fiscal constraints, the opportunity for defection is risk-free (in the short run). By taking out loans from local or international funds, the government can simply

roll over the spending costs to the next cabinet or to the next generation. This is a practice that has a theoretical grounds (Pettersson-Libel 2001), but also lot of empirical confirmation in both pre- and post-2007 financial crisis period. With few exceptions, governments are free to accumulate new debt, run budget deficit, and increase aggregate spending even if they fail to reach an agreement on how to execute the initial budget plan.

Under the BD assumptions, mutual defection is preferred. When two players defect and converge on (3, 3), it is not a concerted action of the two players, but rather a rational choice to get a larger share of the pie in the situation in which everyone else does the same. Players will not miss the opportunity to enlarge their share, when there is no cost and when everyone else does the same.

This is a type of sucker game but in its most general sense. Being sucker is not an essential feature of the game.[9] Rather, it is the absence of cost. If we both could have payoff of (3, 3), and I choose (3, 2) instead, I am a sucker for not using the opportunity to get (3, 3). But the major drive for aggregate increase comes from the absence of cost for one's action.

The model can be expressed more formally. Let *g* and *r* indicate cabinet members (Greens and Reds), P policy, x decision of a cabinet member, and S total spending. If so, S will be an aggregation of two decision on how much to spend.

$$S = Pg(x) + Pr(x)$$

Each particular actor will make decision based on the cost-benefit calculation. It will make a decision on how much to spend if its benefits outweighs costs.

$$Pi(x) = b(x) > c(x)$$

Since there is no fiscal rules, the cost of higher spending is practically zero, meaning that the decision to spend more brings only benefits, but no costs. When fiscal rules do not regulate fiscal policy, the cost of higher spending is transferred to next cabinets, or next generations. It's them, rather than the current cabinet, who will have to service the today's costs of higher spending.

9 To repeat, it is a game in a qualified sense. Strictly speaking, it is not a game at all, because my action does not really depend on your action.

On the ground of this, we formulate our first hypothesis *(H1)*: the more members there are in a cabinet, the higher public spending it will be.

4. The Type of the Coalition

As mentioned, we want to test yet another hypothesis—if the type of the coalition increases public spending. We differentiate among three types of coalitions based on the size principle (Riker 1962):

- minority coalition government, which has no simple majority in the parliament;
- minimal winning coalition (MWC), which has a minimal (simple) majority in the parliament (50%+1); and
- oversized coalition, which has more than a simple majority.

Suppose again that there are no fiscal rules. Will the behavior of the actors remain the same irrespective of the type of the coalition? If The Reds prefer prudent fiscal policy, and The Greens do not, will The Reds give up? Will they both end up in (3, 3)? This time, it depends on the type of the coalition. In minority cabinets and MWCs, each veto player has much greater veto potential: it is enough that only one member withdraws its support, and the cabinet has to be dismissed. Veto capacity is much smaller (or non-existent) in oversized cabinets, because the withdrawal of the support leaves the cabinet intact.

Consider the behavior of cabinet members in oversized cabinets. Member i cannot veto prudent fiscal policy proposals anymore. If *i* wants to withdraw its support, it will be dismissed from the cabinet for which it will receive the payoff of 0. The cost of such a decision is, therefore, negative, because costs looms larger than benefits.

$$Pi(x) = b(x) < c(x)$$

The game from Figure 3 can be now presented in a extensive form which reflects the fact that The Greens receive the payoff of 0 for defection (Figure 5).

By using backward induction, the outcome of this game should be (3, 3), but we qualified this game by saying that The Reds prefer prudent fiscal policy (want to keep spending within (2, 2)). If The

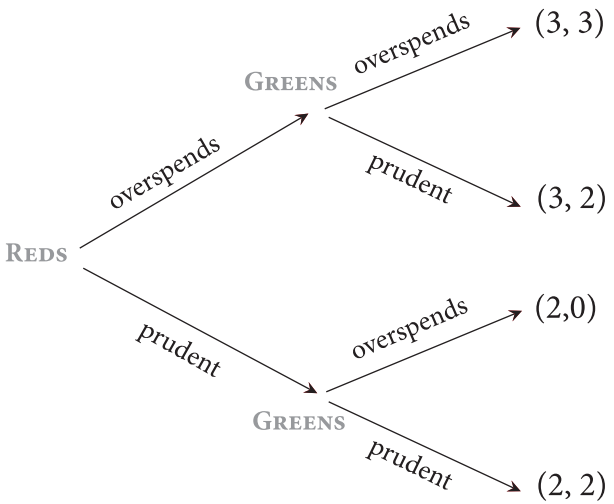

Figure 5: Budget Dilemma in oversized coalition with The Reds preferreing prudent fiscal policy

Reds seriously prefer prudent fiscal policy, the upper part of the decision tree is eliminated, and we apply backward induction only to what is left in the lower part (Figure 6). The outcome of this game is now (2, 2)—namely, prudent fiscal spending.

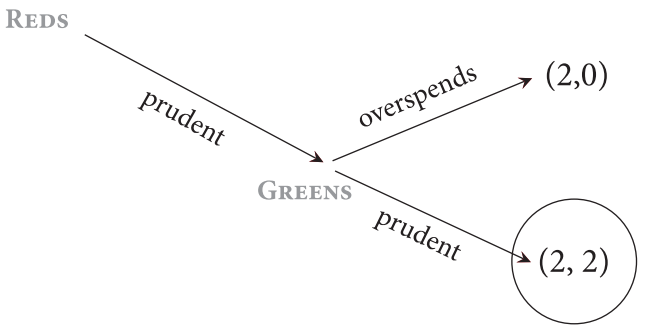

Figure 6: Equilbrium outcome of the Budget Dilemma in oversized coalition with The Reds preferring prudent fiscal policy

From this discussion we formulate our second hypothesis *(H2)*: the structure of minority cabinets and MWCs will increase public spending (such cabinets will tend to spend more). In such cabinets each member is a veto player with the power to bring the cabinet down. In contrast, surplus cabinets (oversized coalitions) will tend to spend less because in such coalitions no member has veto power.

5. The Selection of Countries

For our analysis, we selected ten countries that were members of the communist block in 1945-1989. All are at least semi-consolidated democracies, using the Freedom House (FH) democracy score[10]. Since different countries in our analysis cleared the threshold for democracy at different times, we use data for each country only from the time when they became at least semi-consolidated democracies according to the FH score.[11]

Six out of ten countries are semi-presidential regimes (meaning that their presidents are elected by a popular ballot). The Persson & Tabellini study differentiates only between parliamentary and presidential regimes, subsuming semi-presidentialism (such as in France and Finland) under parliamentary systems (Persson and Tabellini 2003: 97). There are several studies on semi-presidentialism (Elgie 2008; 2011; 2012), but rare are those that explore the impact of semi-presidentialism on economic policy (Schleiter and Morgane-Jones, 2010). Further, there are significant differences among presidential systems, as well as among parliamentary systems (Persson and Tabellini 2003: 95-6). At this point, we cannot determine whether semi-presidentialism is significant for the analysis (but see Pavlović, 2011 for Serbia). Therefore, we assume that presidents in semi-presidential regimes do not significantly affect economic policy, and we subsume the semi-presidential countries from our sample under parliamentary regimes.

10 For the Freedom House categorization visit: http://www.freedomhouse.org/report/nations-transit-2012/map-regime-classifications. (Accessed on September 20, 2012) Freedom House categorizes a country as a democracy if it has a score of 3.00-3.99. We would prefer to use some other index, such as Economist Intelligence Unit's index of democracy. However, we use the FH index because it covers a greater number of years.

11 We do not follow religiously the FH democracy score. In the case of Serbia and Montenegro, we declared the countries semi-consolidated democracies one year earlier (in 2001) than the Freedom House analysts. We started following some countries later than when democracy was declared by FH due to the limited availability of data for those countries.

6. Data Method and Measurement

Our data file contains a total of 177 observations. The number of observation per country is presented in Figure 7. Due to the inaccessibility of data for each year, we covered the period from 1992 to 2012 with the indicated different number of observations per year (Figure 8).

Country	N
Serbia	12
Macedonia	19
Montenegro	15
Slovenia	20
Bulgaria	18
Hungary	19
Croatia	13
Estonia	21
Albania	19
Romania	21
Total	**177**

Figure 7: Number of observations per country.

Year	N
1992	2
1993	3
1994	6
1995	7
1996	7
1997	7
1998	8
1999	8
2000	9
2001	10
2002	10
2003	10
2004	10
2005	10
2006	10
2007	10
2008	10
2009	10
2010	10
2011	10
2012	10
Total	**177**

Figure 8: Number of observations per year.

	Mean	Median
Serbia	13	17
Macedonia	4.74	4
Montenegro	3.87	4
Slovenia	4	4
Bulgaria	2.67	3
Hungary	1.89	2
Croatia	6.08	6
Estonia	2.52	3
Albania	4.63	4
Romania	3	3
Total	**4.24**	**3**

Figure 9: Mean and median number of parties in the cabinet.

The main independent variable in this analysis is NUP (number of parties in the cabinet). Figure 9 reports the mean and median number of parties per country.

Our second dependent variable is COL (type of coalition, as defined in section 4). We present the distribution of this variable per country in Figure 10.[12]

Country	N			Total
	Minority	Minimal winning	Oversized	
Serbia	3	8	1	12
Macedonia	0	5	14	19
Montenegro	0	5	10	15
Slovenia	0	12	8	20
Bulgaria	3	11	4	18
Hungary	2	6	11	19
Croatia	0	4	9	13
Estonia	6	15	0	21
Albania	0	0	19	19
Romania	15	0	6	21
Total	**29**	**66**	**82**	**177**

Figure 10: Type of coalition per country.

Bearing in mind that our dependent variable may depend on many possible factors, to control the model, we introduced background variables which are, according to the theory, significant predictors of our dependent variables. These are reported in Figure 11.

Variable SOI (strength of institutions) indicates mean value based on z scores of four variables (Rule of Law, Control of Corruption, Corruption Perception Index, and Freedom House Index).[13] We created this variable because we observed a strong intercorrelation among the four

12 The data for coalition type are personal calculations of the authors.

13 The first two variables in this set are based on the World Bank's Governance Matters study. Full data can be viewed at http://info.worldbank.org/governance/wgi/index.asp. (Accessed on March 11, 2013). The curruption perception index variable is obtained from Transparency International data (view data at http://www.transparency.org; accessed March 11, 2013), and Freedom House index from the Nations in Transit study (http://www.freedomhouse.org/report-types/nations-transit; accessed on March 13, 2013).

	UNM, Unemployment rate	*GDP*, real change	*ROL*, rule of Law	*COC*, control of corruption	*CPI*, corruption perception index	*FHI*, Freedom House index	*SOI*, strength of institution
N	153	173	144	144	119	100	156
Mean	14.28	3.03	.06	-.008	4.25	-3.54	.00
Median	11.59	4.00	-.09	-.19	4.00	-4.00	-.23
Std. Deviation	8.41	4.55	.67	.62	1.30	.87	1.03
Minimum	3.73	-14.20	-1.31	-1.12	2.00	-6.00	2.83
Maximum	38.00	12.70	1.22	1.32	7.00	-2.00	1.87

Note: Freedom House Index is converted in order to reach the same direction of the interpretation as with other variables (i.e. making the interpretation intuitive).

Figure 11: Control independent variables. Note: Freedom House Index is converted in order to reach the same direction of the interpretation as with other variables (i.e. making the interpretation intuitive).

variables in question (Cronbach's Alpha = 0.90). In this way we avoid the multicollinearity problem in the regression analysis. In addition, in the final models it was necessary to exclude some other possibly important variables such as FDI (foreign direct investments) and INC (income per capita). These two variables are highly correlated with GDP. Leaving them in the analysis would produce the problem of multicollinearity. Therefore, they were both tested and excluded.

We produced an additional variable (dummy by its nature) and named it election year (EYR). We wanted to test whether government spending was affected by the fact it is a year in which elections are held. The political economy literature on opportunistic behavior and political cycles claims that politicians are opportunistic and use voter naivety to win votes through increased spending (Nordhaus 1975; Hibbs 1986).

Some other studies refer to strategic debt behavior to prove that a government can use public debt to constrain the behavior of future governments (Pettersson 2001; Alesina and Tabellini 1990; Persson and Svensson 1989). The distribution of the elections per country is presented in Figure 12.

	N		Total
	No elections	Elections	
Serbia	8	4	12
Macedonia	12	6	18
Montenegro	9	6	15
Slovenia	15	5	20
Bulgaria	14	4	18
Hungary	14	5	19
Croatia	9	4	13
Estonia	15	6	21
Albania	14	5	19
Romania	15	6	21
Total	**125**	**51**	**176**

Figure 12: Elections held in countries.

The last background variable we produced is YOO (years of observation), because each observation is situated in a specific year. By introducing the year of observation as a variable, we control the model since it could be possible that the very dependent variables are a function of "time" rather than on independent variables we want to test.

	DEF	***DEB***	***EXP***
N	170	151	167
Mean	2.75	39.66	39.98
Median	2.63	36.96	39.45
Std. Deviation	3.30	22.49	6.63
Minimum	-6.30	3.69	26.35
Maximum	16.94	108.31	62.65

Note: Deficit (%GDP) is converted in order to reach the same direction of scale as it is the case with the other two variables (i.e. making the interpretation intuitive).

Figure 13: Dependent variables.

In order to test our hypotheses, we used four dependent variables, producing a separate regression analysis for each of them. Our main target is SPE (spending), which practically consists of three separate variables—DEF (budget deficit as a percentage of GDP), DEB (public debt as a percentage of GDP), and EXP (budget expenditure as a percentage of GDP). The distribution of the three variables is presented in Figure 13.[14]

	Initial	**Extraction**
DEF	1.000	.605
DEB	1.000	.583
EXP	1.000	.548

Figure 14: Communalities.

	Component
DEF	.778
DEB	.763
EXP	.740

Note: * indicates statistically significant correlation (p<.01)

Figure 15: Component matrix. Note: First and only component explains 57.85% of variance.

Our main dependent variable, SPE, is created as a factor regression score based on principal component analysis with three variables, as explained above. The result of the principal component analysis is presented in Figures 14 and 15.

14 All economic data – GDP, unemployment rate, public expenditure, public debt, and budget deficit – are from the Economicst Intelligence Unite Database.

Finally, Figures 16 and 17 displays the distribution of SPE, as the main dependent variable.

N	**147**
Mean	.00
Median	-.16
Std. Deviation	1.00
Minimum	-1.90
Maximum	3.18

Figure 16: SPE – statistics.

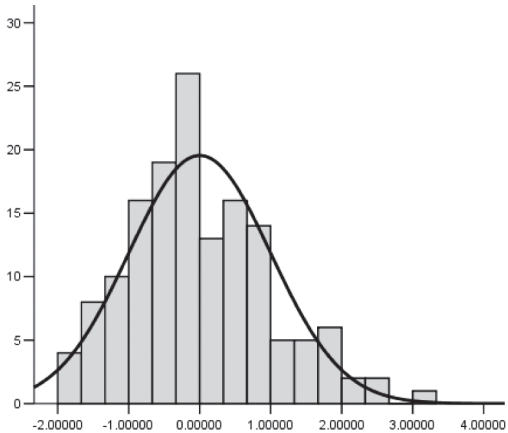

Figure 17: SPE – distribution.

7. Analysis and Results

In order to test the theory based on our empirical evidence, we formulate two hypotheses in accordance with the model presented in sections 3 and 4:

H1: The number of parties in the government is a statistically significant predictor of government spending. The greater the number of parties in the cabinet, the higher the spending.

H2: The type of coalition is a statistically significant predictor of government spending. Minority cabinet or minimal winning coalition will tend to spend more; oversized coalition will tend to spend less.

In order to test our hypotheses, we present the bivariate correlation among *NUP* and *SPE* (Figure 18). We find weak correlation. Moreover, we can identify negative correlation among some aspects in question, which runs contrary to the theory. Therefore, it is not to be expected that the number of parties is a strong predictor of public spending.

	DEF	*DEB*	*EXP*	*SPE*
Serbia	.688*	.340	.157	.772**
Macedonia	.173	-.224	.368	.230
Slovenia	.103	-.117	-.417	-.250
Bulgaria	-.057	.594*	.227	.375*
Hungary	.104	-.369	-.029	-.063
Croatia	.074	-.641*	.525	-.105
Estonia	-.229	-.035	-.101	-.229
Albania	-.387	-.575	.337	.324
Romania	.199	.281	-.006	.203
Total variance	**.050**	**.183***	**-.017**	**.117**

Note: * indicates statistically significant correlation (p<.01)

Figure 18: Bivariate correlations between *NUP* and *SPE* - per countries.

We also use bivariate statistics to estimate the relationship between COL and *SPE* (Figure 19). More precisely, we compare the mean value of each dependent variable in relation to the two types of coalition.[15] The results of the t-test showed that strong predictability of the type of coalition for dependent variables is not to be expected.

Given that SPE consists of three variables, and that we test two different hypotheses, we run OLS regression analysis to produce eight different models. More accurately, we produce two models for the same four dependent variables with different independent variables (number of parties and type of coalition), but keep the same background variables to control the model.

Figure 20 presents the results of the OLS regression analysis. In models 1.1 and 1.2, we present unstandardized regression coefficients for DEF. In both models, it can be seen that neither NUP nor COL is a significant predictor. Background variables seem to have strong predictability. More specifically, GDP (in model 1.1: B= –0.373; p <0.01 and in model 1.2: B= –0.364; p <0.01) and SOI (model 1.1: B= –0.741; p <0.05 and model 1.2: B= –0.786; p <0.05) are negative pre-

15 Figure 19 shows that we grouped minority and minimal coalition into one group, and kept oversized coalition in another.

Countries	*COL*	*DEF*	*DEB*	*EXP*	*SPE*
Serbia	Minority and minimal coal.	2.75	47.89	43.08	.46
	Oversized coalition	.86	105.20	36.20	.79
	T test	t (10)=0.88	t (10)=3.83**	t (10)=4.98**	t (10)=0.64
Macedonia	Minority and minimal coal.	1.31	37.37	37.12	-.40
	Oversized coalition	1.58	36.66	36.53	-.50
	T test	t (17)=0.25	t (14)=0.11	t (17)=0.34	t (14)=0.31
Montenegro	Minority and minimal coal.	2.66	52.56	41.35	.18
	Oversized coalition	2.62	39.93	45.62	.20
	T test	t (9)=0.02	t (9)=1.32	t (8)=1.80	t (6)=0.04
Slovenia	Minority and minimal coal.	2.16	28.60	45.86	.13
	Oversized coalition	.76	26.07	47.86	-.21
	T test	t (18)=1.69	t (13)=0.93	t (16)=0.64	t (13)=1.11
Bulgaria	Minority and minimal coal.	1.84	51.03	38.98	-.26
	Oversized coalition	-2.15	16.79	36.54	-1.40
	T test	t (16)=1.58	t (14)=2.23*	t (16)=1.00	t (14)=3.61**
Hungary	Minority and minimal coal.	6.11	68.37	50.24	1.88
	Oversized coalition	4.83	68.99	50.33	1.70
	T test	t (17)=0.91	t (17)=0.12	t (17)=0.08	t (17)=0.65
Croatia	Minority and minimal coal.	2.50	43.50	41.20	.19
	Oversized coalition	3.78	49.89	41.67	.55
	T test	t (11)=1.64	t (11)=1.41	t (11)=0.61	t (11)=1.85
Estonia	Minority and minimal coal.	-.15	5.87	37.90	-1.22
	Oversized coalition	-	-	-	-
	T test	-	-	-	-
Albania	Minority and minimal coal.	6.51	56.93	30.73	-.024
	Oversized coalition	2.94	25.25	34.41	-.57
Romania	T test	5.11	30.47	35.71	-.017
	Minority and minimal coal.	t (18)=2.70*	t (19)=2.11*	t (18)=1.34	t (18)=2.91**
Total variance	**Minority and minimal coal.**	**2.14**	**34.93**	**40.45**	**-.15**
	Oversized coalition	**3.50**	**46.44**	**39.39**	**.22**
	T test	**t (168)=2.72****	**t (149)=3.19****	**t (165)=1.03**	**t (145)=2.21***

** p < .01, * p < .05.

Figure 19: Type of coalition and spending variables – MEAN and T test.

dictors. However, unemployment rate (model 1.1: B= –0.103; p <0.01 and model 1.2: B= –0.104; p <0.01) is a significant predictor, but the reasons are unclear due to its negative predictability.[16] Although in model 1.1 and 1.2 we cover a more than satisfying 27.2% of variance of the dependent variable, the sum of squares of the model is still significantly smaller than the sum of squares of the residuals.

In the case of DEB, presented in models 2.1 and 2.2, NUP and COL are not significant predictors. As in the previous model, GDP seems to be a strong negative predictor (model 2.1: B= –1.226; p <0.05, and model 2.2: B= –1.091; p <0.05) as well as SOI (model 2.1: B= –10.043; p <0.01 and model 2.2: B= –10.334; p <0.01). But in the case of this dependent variable, YOO is also significant negative predictor (model 2.1: B= –0.942; p <0.05, and model 2.2: B= –0.795; p <0.05). This finding simply shows that as the time passes (measured by year), DEB gets smaller. Finally, model 2.1 covers 19.6% and model 2.2 covers 20% of variance of the dependent variable. Still, the sum of squares of the model is much smaller than the sum of squares of the residuals.

Our third dependent variable is EXP (public expenditure). We present the analysis for this variable in model 3.1 and 3.2. First, and most important, NUP is a significant predictor for EXP, as predicted by the theoretical framework (B=0.468; p <0.01). However, neither NUP nor COL are significant predictors.

As in model 2, two of the background variables in model 3 have negative predictability: GDP (model 3.1: B= –0.457; p <0.01 and model 3.2: B=–0.459; p <0.01) and YOO (model 3.1: B= –0.296; p <0.01 and model 3.2: B=-0.245; p <0.05). Interestingly enough, SOI (model 3.1: B=4.069; p <0.01 and model 3.2: B=3.272; p <0.01) is a positive predictor, which is the opposite position for this variable than in the previous two models. Thus, budget spending increases when institutions are stronger.

The predicting variables have the largest explanatory power in this model compared to the other dependent variables. We explain 36.8% variance of EXP in model 3.1 and 30.9% in model 3.2. The sum of squares of this model is smaller compared to the sum of squares of the residuals.

16 It was expected that the higher unemployment rate, the bigger deficit. However, according to our empirical evidence it is the opposite, which probably means that unemployment rate is collinear with some other variable not included in the model.

	DEF		*DEB*		*EXP*		*SPE*	
	Model 1.1	**Model 1.2**	**Model 2.1**	**Model 2.2**	**Model 3.1**	**Model 3.2**	**Model 4.1**	**Model 4.2**
Constant	111	88.440	1934.3**	1646.092**	632.797***	530.243***	75.603**	56.552**
Unemployment rate (*UNP*)	-.103***	-.104***	-.308	-.321	.011	.029	-.019*	-.019*
GDP	-.373***	-.364***	-1.226**	-1.091**	-.457***	-.459***	-.100***	-.095***
Year of observation (*YOO*)	-.053	-.041	-.942**	-.795**	-.296***	-.245**	-.038**	-.028
Election year (*EYR*)	.699	.718	1.027	1.299	.267	.434	.152	.170
Strength of institution (*SOI*)	-.741**	-.786**	-10.043***	-10.334***	4.069***	3.272***	-.010	-.077
No. of parties (*NOP*)	**.053**		**.556**		**.468*** **		**.053****	
Minority government and minimal winning(*COL*)		**-.349**		**-5.004**		**.819**		**-.169**
Explained variation	**Adjusted R^2=0.272**	**Adjusted R^2=0.272**	**Adjusted R^2=0.196**	**Adjusted R^2=0.200**	**Adjusted R^2=0.368**	**Adjusted R^2=0.309**	**Adjusted R^2=0.159**	**Adjusted R^2=0.132**
Sum of Squares: model	370.671	370.170	15221.004	15465.521	2029.857	1741.177	24.248	21.104
Sum of Squares: residuals	843.640	844.140	50040.960	49796.443	3086.184	3374.864	98.060	101.204

*** 99% of CI, ** 95% of CI, * 90% of CI.

Figure 20: Predictors of SPENDING - OLS unstandardized regression coefficients.
*** 99% of CI, ** 95% of CI, * 90% of CI.

Finally, we run a regression analysis for our composite variable SPE (model 4.1 and 4.2). The most important finding, which supports H1, is that NUP is a significant predictor of SPE (overall spending of government) (B=0.053; p <0.05). However, we did not find any empirical support for H2, meaning that COL is not a significant predictor for SPE. As we found in the first model, unemployment is a significant negative predictor of SPE (model 4.1: B= –0.019; p <0.1 and model 4.2: B= –0.019; p <0.1). GDP remains the strongest and most stabile negative predictor (model 4.1: B= –0.100; p<0.01 and model 4.2: B= –0.095; p <0.01). It is interesting that YOO is a statistically significant negative predictor for model 4.1 (B= –0.038; p <0.05), but it is not significant in model 4.2. Finally, model 4.1 covers 15.9% of variance of dependent variable, and model 4.2 covers 13.2%. In both models, the sum of squares is significantly smaller compared to the sum of squares of residual.

8. Interpretation of the Findings

To recap, we proposed that the number of parties in the cabinet and the type of coalition affect public spending. We tested two specific hypotheses for four dependent variables, each of which represents public spending in a different way. Consequently, we developed eight different models and ran an OLS regression to test the hypotheses.

Let us begin with H2, which we rejected. We did not find empirical support for the claim that minority or minimal cabinets spend more than oversized coalitions. We found one possible reason to explain such an outcome. As shown by the analysis in section 7 (Figure 20), GDP is a rather strong negative predictor of public spending: when GDP is growing, DEF and DEB tend to drop (and vice versa). It seems that the type of coalition does not matter as long as the economy is expanding. This is precisely what happened over the 2000-2008 period, which accounts for almost 2/3 of our observations.

Consider several examples. The only time the Serbian government ran budget surplus was in 2006, when the ruling coalition was a minority coalition. This could be opposite of what the model (section 4) claims. In minority cabinets, each member has greater veto power, meaning that deficit should rise. But 2006 was simply a year in which economy

did relatively well, with foreign investments pouring into the country. Thus, although total spending did rise, the rise was not reflected in the budget deficit, which is why our model appears to be ineffective. Similarly, in the period 2004-2008, Croatia was governed by a minimal coalition; again, this would have created good theoretical conditions for the growth of deficits and debt, according to the hypothesis. However, Croatia consistently reduced its budget deficit over those years, cutting it from 3.65% of GDP in 2004 to 0.9% of GDP in 2008. The budget consolidation appears to be more influenced by the growing economy than the coalition type. Bulgaria presents a third example. From 2000 through 2008, its economy had an average annual growth rate of 5.76%. Over the same period, Bulgaria was governed by a minimal coalition, and it ran a budget surplus from 2004 through 2008, which also is contrary to the theory. The case of Romania partly confirmed our thesis: From 2001-2008, it had a minority coalition, and the deficit declined; but that lasted only until 2005, when the deficit started rising again. In other cases, such as Estonia and Hungary, it is simply impossible to establish a clear trend. It is difficult to tell, within such small number of observations, what triggers which trend and how.

Regarding H1, we found that the number of parties is not a significant predictor of DEF and DEB, but it is a significant predictor for EXP and our major dependent variable – SPE.

Our analysis from section 7 produced several interesting insights. First, the most useful model we introduced is model 3, for which the dependent variable is EXP. In this model, predictors explain much more variance of the dependent variable compared to the other models. Most important, from the standpoint of supporting our theory, in this model the number of parties plays a significant role as a predictor. With model 3, we also explain a significant percentage of variance of DEF as our dependent variable. Our second model is somewhat weaker because the percentage of variance for DEB is smaller, but it is still sufficient.

Our final model produced with the synthetic variable SPE is statistically the weakest one. This is due to the fact that some predicting variables have the opposite influence on the three separate variables which cons.titute the composite score in question.

H1 claims that the number of parties in the coalition (NUP) influences public spending (SPE). Public spending is a synthetic variable which consists of three separate variables: DEF, DEB and EXP. Curi-

ously, as shown in section 7 (Figure 20), the independent variable does affect the major synthetic variable (SPE), but it does not affect each of its components (DEF, DEB). However, this is explained by the fact that, statistically, the effect of the variable EXP is so strong that it neutralizes the statistical effect of DEF and DEB.

Hence, we need not worry that we found no correlation between the number of parties (NUP) and budget deficit and public debt (DEF, DEB), especially in the years when the economies under analysis were growing (2000-2008). We contend that in the Budget Dilemma, the more actors in the cabinet, the higher the level of public spending. The only dependent variable that unambiguously confirms this claim is public expenditure (EXP), which is the amount of resources a government spends within a certain time period as a percentage of GDP.

EXP outweighs DEB and DEF in our models. When an economy grows, the government's activities can be financed from higher revenues. When economy is doing well, even though public expenditure rises, the deficit remains small and public debt does not increase. However, we do not see this during recession because most governments then attempt to stimulate the economy by running a larger deficit, financed with debt. Therefore, during slumps or depression, we may see an increase in all three variables (EXP, DEB, DEF).

Although we found some evidence that the number of parties positively affects public spending, from our analysis we cannot be absolutely certain that it is causation rather than merely correlation. Social phenomena cannot be explained by general laws but rather by mechanisms (Swedberg 1998; Elster 2007; Demeulenaere 2011). To be sure that, at least in some cases, the number of parties positively affects public spending, we would have to open and look into the black box. We would have to identify the causal chain which unambiguously confirms that an indispensable veto player blackmailed the rest of the cabinet and that resulted in higher spending. This task we leave for future research, which would require a sophisticated multilevel model with more control variables, and more descriptive and interpretative work.

Finally, as we predicted, the control variables in the model proved to be critical in explaining overall government spending. It could be considered an intuitive conclusion, since the variables in question are

economic in nature. By introducing these variables, we practically and efficiently control the tested models identifying the importance of the main independent variables that we set in the hypothesis.

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