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A voting power approach

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Government strength, power dispersion in governments and budget deficits in OECD-countries. A voting power approach*

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Abstract: We test for the influence of government strength and dispersion of power among the parties of coalition governments on the size of annual debt accumulation through budget deficits in OECD-countries from 1970 to 1999. Contrary to previous studies, we measure government strength and power dispersion in coalition governments by the Banzhaf index of voting power, respectively the standard deviation of Banzhaf indices of coalition parties. We consider the Banzhaf index as a better measure of voting power than the crude proxies that have been used, hitherto. Indeed, results seem reliable and are not always in line with prior studies.

Keywords: deficit, debt, political parties, polarization, cross-country study

JEL-classification: H62

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1 Introduction

A basic contribution of the political economy of fiscal policy (Drazen, 2000; Persson and Tabellini, 2000) is that levels of deficits and debt can only partly be explained by genuine macroeconomic variables like, for instance, the unemployment rate or the growth of GDP. In addition political variables like the strength of government, the polarization between alternating governments or the institutions governing the budgetary process are important for understanding cross-country differences as well as inter-temporal changes in deficits and debt.

This paper addresses the relation of the strength of government to the levels of deficits and debt in 21 OECD-countries in the time period 1970 to 1999. Its major innovation is the use of a voting power index, the Banzhaf index, to measure government strength and the dispersion of power within coalition governments. Even though political decision making in parliament and within governments can be modeled as a simple voting game (Felsenthal and Machover, 1998), the empirical literature on the political economy of fiscal policy has, so far, not used voting power indices for measuring government strength and power dispersion within governments. All relevant empirical contributions have relied on sometimes crude methods for testing the influence of the strength of and within governments on the accumulation of debt. Our results show that government strength vis-à-vis the opposition has no significant effect on debt levels, but the dispersion of power within coalition governments is a significant predictor of deficit levels: Coalition governments with about equally strong parties have higher deficits than governments where there is one dominating party and one or more relatively weaker parties.

Our paper proceeds as follows: Section 2 reviews the main theoretical and empirical contributions regarding the effects of government strength and power dispersion within governments on public debt. Section 3 introduces the Banzhaf index as a measure of government strength and presents our hypotheses. The model and the data are described in Section 4. Results are presented in Section 5, before concluding in Section 6.

2 Government strength and power dispersion – Theory and empirical evidence

The seminal contributions of Roubini and Sachs (1989a, 1989b) on the political and economic determinants of budget deficits in industrialized countries have triggered a series of papers on the political economy of fiscal policy. Roubini and Sachs propose that relatively weaker governments run higher deficits. They regard single party majority-governments as the strongest form of government, since they control the parliament vis-à-vis the opposition and – typically – face only insignificant internal conflicts about budgetary policy. Coalition governments, however, are prone to much more internal conflicts about budgetary policies and are, therefore, classified as weaker and claimed to run higher deficits due to a probable prisoner's dilemma between coalition members. The line of reasoning runs as follows: Reducing a budget deficit can be considered a public good in a coalition government. Every party wants to consume the public good (of deficit reduction) without paying for it (by cutting expenses, which favor the own clientele). The more parties are involved in a coalition, the less likely is successful coordination on budget deficit reduction.

Alesina and Drazen (1991) provide a formal model, called the ‘war of attrition’-model, for the problems of budget cuts within coalition governments. A war of attrition-model¹ is basically a game of timing with the following characteristics: (1) the payoff to the ‘winner’ exceeds the payoff to the ‘loser’ and (2) the payoffs to both winner and loser are declining over time. If coalition governments face a permanent shock, which leads to debt accumulation, there might even be an agreement on the need for a fiscal consolidation, but a political stalemate over how the burden of higher taxes or expenditure cuts should be allocated. In such situations, parties in the coalition benefit from waiting for the other party (parties) to concede and bear the larger share of the stabilization costs. However, waiting is also costly since the accumulating debt has to be financed (by inefficient and distortionary taxes in the model of Alesina and Drazen). Finally, one party will concede when the costs from debt service requirements and the resulting pressure of taxation as well as the growth of the informal economy exceed the benefits of waiting for the other party to concede (see also Gantner, 1985). According to Alesina and Drazen (1991, p. 1173), “when stabilization occurs, it coincides with a *political* consolidation. Often, one side becomes politically predominant.”

Regarding the empirical evidence for the effects of government strength and the dispersion of power within governments on budget deficits, Roubini and Sachs (1989a, 1989b) find a clear tendency for larger deficits in countries with a relatively larger number of political parties in government. Yet, their results have been questioned seriously by subsequent research. Edin and Ohlson (1991) argue that the political power

¹ See also Krishna and Morgan (1997) or Bulow and Klemperer (1999) for a general treatment of war of attrition-models and their implications for economic policy. Velasco (1998) presents a common property-model of delayed fiscal reform which is in spirit similar to the war of attrition-model of Alesina and Drazen (1991).

dispersion index² used by Roubini and Sachs captures the effects of minority governments rather than majority coalition governments, and, hence, single party governments can only be judged to have lower deficits in comparison with minority governments, but not with coalition governments in general. Re-examining the effect of the political power dispersion index and extending the data set into the 1990ies, de Haan and Sturm (1994, 1997) and de Haan et al. (1999) do not find any significant relationship between the power dispersion index and (general) government debt.³

Borrelli and Royed (1995) also address the relation of government strength to budget deficits. They construct a rather crude index for government strength, which is calculated from the sum of the average number of parties in the government in the previous year, the number of different governments serving during the previous year and a dummy variable indicating a previous election year. Higher numbers imply weaker governments. Furthermore they include dummies indicating high increases in the unemployment rate and low GDP growth and let them interact with the government strength index. Their findings suggest that weak governments have higher deficits, but only under conditions of sluggish economic growth. Yet, they find no political variable whose presence inevitably or automatically leads to higher deficits, irrespective of economic conditions.

Whereas Borrelli and Royed (1995) focus on the strength of government vis-à-vis the opposition, Volkerink and de Haan (2001) consider in addition some aspects of

² This index is differently defined in the two papers by Roubini and Sachs (1989a, 1989b). The basic distinction made by the index is between (i) single party governments, (ii) two-party or three-party coalition governments, and (iii) coalition governments with more than three parties.

³ However, de Haan et al. (1999) can show that the number of parties in government has a significant positive impact on central (but not general) government debt ratios.

political fragmentation within parliament, but also within the members of a coalition, since ideological coherence of a cabinet may matter for fiscal policy outcomes. Taking 22 OECD-countries over the period 1972 to 1996, they find that a higher fragmentation of government – measured by the number of spending ministers in a government – leads to higher budget deficits, but that the political fragmentation of government – measured with the help of a one-dimensional left-right scale of political ideology – does not affect central government budget deficits. The more fragmented the whole parliament is (thus including opposition parties), the larger the central government's budget deficit.

Volkerink and de Haan (2001) were the first to consider the political fragmentation within coalition governments and examine the influence of fragmentation on budget deficits. However, to our point of view, measurement of political (ideological) fragmentation is a tricky issue and can have some pitfalls. Ideological polarization of coalition parties is measured on a one-dimensional left-right scale which can cause problems of classification, for instance in countries with a large number of parties, which compete for the popular vote on several, multi-dimensional issues, or when different fractions of one larger party in a coalition hold different portfolios.

Therefore, we would like to propose that fragmentation within government should more accurately address the power of coalition members for making or breaking governments, which has so far not been done in the literature. In general, a party is more powerful the more crucial this party is for a coalition to possess a majority in parliament and the more outside options it has to form another (majority) government with other parties in parliament. A coalition party's power, and the dispersion of power within a coalition, will also be decisive when it comes to distribute the burden of fiscal

adjustment in case that is necessary (see Alesina and Drazen, 1991).⁴ In the following, we propose to measure a government's strength and the dispersion of power within a coalition government (fragmentation) by use of the Banzhaf index of voting power.

⁴ Note that we do not address the effects of polarization between alternating governments on the size of budget deficits. The papers by Alesina and Tabellini (1990), Tabellini and Alesina (1990), and Persson and Svensson (1989) show that uncertainty about future policy makers' preferences with respect to the composition and the level of public spending creates an incentive for incumbent policy makers to run higher budget deficits than they would choose if they were certain to be re-elected. Budget deficits are, then, used strategically to tie the hands of future policy makers. Strategic debt use-models have received mixed support from empirical studies. Using data from 16 OECD-countries from 1960 to 1992, Lambertini (2000) shows that the incumbent's probability of being voted out of office or his political color can not explain budget deficits; nor does provision of public goods follow a political pattern. Franzese (2001) examines the political determinants of deficits and debt in 21 OECD-countries from the 1950s to 1990. Estimating a government's replacement risk from historical data and measuring partisan polarization by left-right indices from political science, he rejects the predictions of strategic debt use-models. Pettersson-Lidbom (2001), however, finds significant effects of the probability of electoral defeat on the accumulation of debt in Swedish municipalities. Running a controlled experimental study on the strategic use of deficits, Sutter (2001) finds that the polarization between alternating decision makers (in terms of their preferences for different public goods) has a positive effect on deficits, but that the effects of re-election probabilities are uncertain.

3 Measurement and hypotheses

3.1 Banzhaf index

Depending on the distribution of seats in the parliament, each party in parliament has a certain number of opportunities to form (majority) coalitions with other parties. Each party in parliament has a certain amount of power to enable a winning coalition or to break up an existing one. A party's power to make or break governments is in many cases very poorly reflected by looking at the share of seats this party controls in parliament (see, e.g., Sutter, 2000). Rather, power can be adequately measured by applying voting power indices to the distribution of seats in parliament. The two most frequently used power indices are the Banzhaf index (Banzhaf, 1965) and the Shapley-Shubik index (Shapley and Shubik, 1954). In this paper, we are going to use the normalized Banzhaf index as a measure for government strength (vis-à-vis the opposition) and for power dispersion within governments.⁵

⁵ For a concise treatment of the properties of the Banzhaf-Index see Felsenthal and Machover (1998). Note that Felsenthal and Machover (1998) found out that the Banzhaf-Index was, in fact, first proposed by Penrose (1946). However, Banzhaf reinvented the index independently in 1965. The choice of the Banzhaf-Index is mainly based on Felsenthal's and Machover's (1998) interpretation of the normalised Banzhaf-Index as a measure of relative I-power. I-power is related to what they call a 'policy-seeking' motive of voting, meaning that a voter is interested in implementing a certain policy. We take the normalized Banzhaf-Index since we are interested in the relative power of government (vis-à-vis the opposition) and the relative power of parties in government vis-à-vis each other. Felsenthal and Machover interpret the Shapley-Shubik-Index as a measure of P-power. The latter is related to an 'office-seeking' motive of voting, which means that a vote is only a means to a subsequent distribution of a fixed purse (spoils) among the members of a winning coalition.

Consider a set of players $N = \{1, 2, \dots, i, \dots, n\}$, where player i has voting weight w_i . Let Ω be the set of all possible coalitions S which can be formed out of N .⁶ A winning coalition $S \subset \Omega$ is characterized by $\sum_{j \in S} w_j \geq q$, where q denotes the majority requirement. If a coalition S is a winning coalition, the value v of this coalition is defined as one, since S can determine the outcome of a vote. All losing coalitions are assigned a value $v=0$ accordingly. To determine player i 's voting power, consider all coalitions where player i has a swing, meaning that player i is crucial for turning a losing coalition into a winning one. Player i has a swing if $\sum_{j \in S / \{i\}} w_j < q$, but $\sum_{j \in S / \{i\}} w_j + w_i \geq q$. From that one can calculate the absolute or non-normalized Banzhaf index β_i^* as follows:

$$\beta_i^* = \frac{\sum_{S \subset \Omega} [v(S) - v(S / \{i\})]}{2^{n-1}} \quad (1)$$

The denominator 2^{n-1} represents the total number of coalitions including player i . The normalized Banzhaf index β_i , which is used in this study, relates the number of swings of player i to the total number of swings of all players, resulting in the formula:

⁶ All coalitions are assumed to be equiprobable. This assumption is sometimes criticized (see, e.g. Garrett and Tsebelis, 1996), because due to ideological preferences not all coalitions might be equally likely. However, Holler and Widgren (1999) argue extensively that the critique of Garrett and Tsebelis is based on a misunderstanding of voting power analysis. Furthermore, as already hinted at in Section 2, it can sometimes be rather tricky to classify parties, which compete on multiple issues, on a one-dimensional policy-scale. Therefore, if strategic options and, consequently, the relative strength of political parties are the issue, we regard voting power indices as an appropriate tool.

$$\beta_i = \frac{\beta_i^*}{\sum_{j=1}^n \beta_j^*} = \frac{\sum_{S \subset \Omega} [v(S) - v(S/\{i\})]}{\sum_{j=1}^n \sum_{S \subset \Omega} [v(S) - v(S/\{j\})]} \quad (2)$$

3.2 Hypotheses on government strength and power dispersion

In our estimations we will measure government strength vis-à-vis the opposition as the sum of the Banzhaf indices of all parties in government. We will denote this variable as STRENGTH. In case of a single party majority government, STRENGTH will assume a value of one. Coalition governments will in most cases have a value smaller than one.⁷ Minority governments will have values smaller than one by simple construction of the Banzhaf index. By summing governing parties' Banzhaf indices we are able to capture two ideas: the first, proposed by Roubini and Sachs (1989a, 1989b), that coalition governments are (typically) weaker than single party majority governments, and the second, put forward by Edin and Ohlsson (1991), that minority governments are the main cause for weak fiscal performance. Following this line of reasoning, we expect higher debt accumulation through budget deficits in case of lower values for government strength.⁸

Dispersion of power within governments is measured by the standard deviation of voting power of parties in government and will be denoted DISPERSION. This measure can meaningfully be applied only to coalition governments. Coalitions with more or less

⁷ Exceptions are cases where all parties in parliament form an encompassing government, or when parties with zero voting power (so-called dummy players) are the only ones excluded from government.

⁸ Note, however, that previous empirical research has not found firm confirmation for this so-called "weak-government hypothesis".

equally strong parties will have lower values, whereas coalitions with one predominant party will have larger values of DISPERSION. Following the arguments developed in Alesina and Drazen (1991), we expect governments with higher scores of DISPERSION to have lower debt levels, because in governments with a relatively higher power dispersion, one strong party can put pressure on the relatively weaker party (parties) in order to stabilize the budget.

3.3 Two further political variables – EMU and election years

Even though we are mainly interested in the effects of government strength and dispersion of power within governments on the size of budget deficits, we are also going to consider the effects of two further political variables.

The classic “political business cycle” theory proposes that election years have some influence on budgetary outcomes. However, recent empirical results have not been significant with regard to election years, which can be explained by rational expectations-models (e.g. Rogoff and Sibert, 1988). The latter suggest that voters’ rationality and politicians’ craving for reputation limit the extent to which politicians can and want to expand fiscal policy in election years. If at all, electoral budget cycles should be observed only occasionally and should not be very large (see also Alesina and Perotti, 1995). We are going to control for the effects of election years by the dummy ELECT which takes on the value one in election years⁹ and zero otherwise.

⁹ As a kind of sensitivity analysis, we also tried a codification where ELECTION was coded one for year $t - 1$, if an election were held in the first half of year t . With an election relatively early in the year, a government might actually try to boost public spending and cut taxes in the previous calendar year. This alternative coding did not change our results in any significant way.

As a second political variable, we would like to test for the effects of commitment to European Economic and Monetary Union (EMU) on budget deficits. To get entrance into EMU, countries of the EU had to stabilize their public finances. Within EMU, member countries' public finances are under surveillance from the EU-commission and are restricted by the requirements of the Stability and Growth Pact. To account for the effects of EMU, we construct a dummy EMU, which is coded one for countries willing to enter EMU, respectively those being members of EMU.¹⁰

We refrain from assessing other political variables that might have an influence on public finance, like the budgetary institutions, the role of the finance minister in opposition to the spending ministers, the extent of federalism etc. (see, e.g., Franzese, 2001), because we deliberately wanted to concentrate on the usefulness of the Banzhaf index as a measure for government power and power dispersion within government.

4 Data

We succeeded in assembling quite a comprehensive data base. The economic data stem from the data set introduced by Volkerink and De Haan (2001), who examined 22 OECD countries from 1970 to 1996 based on IMF's Government Financial Statistics (GFS), OECD National Accounts and Economic Outlook. We updated and extended

¹⁰ When the treaty of Maastricht was drafted in 1992, the EU had 12 member countries. With the exception of the U.K. and Denmark, all of them intended to join EMU at the end of the 1990ies. Austria and Finland, joining the EU in 1995, committed themselves also to EMU, whereas Sweden, also joining in 1995, did not. Hence, 10 out of 12 members from 1992 were coded one on the EMU-dummy from 1992 on. Austria and Finland were coded one starting from 1995.

their economic data with Eurostat, IMF and UN data for the period 1970 to 1999.¹¹ Unemployment and inflation figures were taken from the OECD Main Economic Indicators.

With regard to our political data, we required the following information to be able to calculate the two main indices proposed by the hypotheses (STRENGTH and DISPERSION): the distribution of seats in national parliaments, the composition of national governments and government formation dates. For the election year dummy the exact dates of elections have been ascertained.

Woldendorp et al. (1993, 1998) has proven extremely helpful by providing data on elections, government composition and parliament seats held by governments. Their data had to be extended by data on opposition parties by Katz and Mair (1992) as well as Mackie and Rose (1991). The resulting data base had to be updated with information from the internet, which was mainly assembled from the following websites: "Parties and Elections in Europe" by Nordsieck (2001), "Elections around the World" by Derksen (2001) and "The World Factbook" by the CIA (2000). Furthermore, we could rely on the "Fischer Weltalmanach" (Baratta, various issues). Banzhaf indices for each party have been calculated with the help of "IOP 2.0" by Bräuninger and König (2001).

¹¹ New Zealand has been removed because of missing debt data, and for Japan data for years 1994-2000 are missing.

Table 1: Variables, abbreviations and sources

<i>Abbreviation</i>	<i>Variable</i>	<i>Source</i>
DEBT	total debt, in national currency	IMF
GDP	nominal GDP, in national currency	IMF
DEBT/GDP	debt-level as share of GDP	IMF
GGDP	rate of growth of real GDP	IMF
INFL	inflation (CPI)	OECD
UNEMP	rate of unemployment (standardized)	OECD
INTPAY	central government interest payments (in national currency)	IMF
STRENGTH	sum of Banzhaf index of parties in government	various
DISPERSION	standard deviation of Banzhaf index of parties in government	various
ELECT	Dummy for election years	various
EMU	membership (or intention to join) in European Economic and Monetary Union	various

Construction of the political variables, i.e. STRENGTH (with $0 \leq \text{STRENGTH} \leq 1$), DISPERSION (with $0 \leq \text{DISPERSION} \leq 1$), EMU and ELECT, has already been explained in Section 3. Data origins and abbreviations are summarized in Table 1.¹²

In line with Borrelli and Royed (1995) political data are measured one year prior to the dependent variable, because of the lead time necessary to draft, pass and implement a budget. This means that, e.g., the debt/GDP ratio of 1990 is in the same line as the political data of 1989. In some years, though, more than one government has been in power. In order to have a criterion to decide, which one is to be held responsible for budget and financial stance, we used a simple rule of thumb. The government in power on the 30th of September is relevant for our political data for the according year.

¹² Political data on governments are missing for Spain (1970-1977) and for Portugal (1970-1984).

5 Results

We start by presenting results for our whole sample, including single-party governments and coalition governments for 21 countries ($N=519$). Pooled cross-section and time-series regression estimations are by weighted least squares (WLS), and standard errors are White-corrected (White, 1980), in order to account for the unbalanced data set and possible heteroscedasticity.

In line with the relevant literature our basic model includes important macroeconomic terms and a vector of political variables to test for the hypotheses introduced in Section 3:

$$\Delta(DEBT/GDP)=\alpha_1+\alpha_2\Delta(DEBT_{-1}/GDP_{-1})+\alpha_3\Delta\{[(INTPAY/DEBT)-GGDP]*DEBT/GDP\}+\alpha_4\Delta(UNEMP)+MEANA\Delta(DEBT/GDP)+\alpha_i\mathbf{P}+e \quad (3)$$

We choose the change in the debt/GDP ratio of the general government as dependent variable. The basic explanatory variables are: the lagged change in debt/GDP ratio, $\Delta(DEBT_{-1}/GDP_{-1})$; the change in debt-servicing cost, $\Delta\{[(INTPAY/DEBT)-GGDP]*DEBT/GDP\}$; the change in the rate of unemployment, $\Delta(UNEMP)$; the mean of the annual change in DEBT/GDP over the previous three years and over all countries (as a possibility to single out general macroeconomic effects on DEBT/GDP ratios similar to Borrelli and Royed, 1995)¹³; and a vector of political variables (\mathbf{P}).

The change in debt-service costs deserves a short discussion. As our rate of growth of GDP ($GGDP$) is measured in real terms, (3) can be rewritten as follows:

¹³ Note that this procedure leads to a loss of four years of observation in the results.

$$\Delta\{[(INTPAY/DEBT) - INFL - GGDP_{nom}] * DEBT/GDP\} \quad (4)$$

(4) displays the intended effect more clearly. The ratio of interest payments on government debt (INTPAY) and debt, minus the rate of inflation, minus the (nominal) rate of growth of GDP, are altogether multiplied by the debt/GDP ratio. If (4) is positive, the outstanding debt imposes a real burden on public finances; in other words, (4) measures the real burden of accumulated debt for a country.

Table 2: Impact of government strength on fiscal policy, full sample (N=519)

Dependent variable: $\Delta(\text{debt}/\text{GDP})$	(1)	(2)	(3)	(4)	(5)	(6)
<i>Constant</i>	0.003** (3.987)	0.005 (1.662)	0.006 (1.865)	0.004 (1.517)	0.003** (2.664)	0.006 (1.819)
$\Delta(\text{DEBT}_{-1}/\text{GDP}_{-1})$	0.607** (14.856)	0.606** (14.758)	0.611** (14.840)	0.607** (14.728)	0.602** (13.222)	0.600** (13.036)
$\Delta\{[(INTPAY/DEBT)-GGDP]*DEBT/GDP\}$	0.633** (6.201)	0.631** (6.184)	0.630** (6.206)	0.641** (6.275)	0.654** (6.343)	0.660** (6.393)
$\Delta(\text{UNEMP})$	0.960** (10.523)	0.954** (10.414)	0.944** (10.230)	0.961** (10.157)	0.956** (10.188)	0.952** (9.859)
<i>MEANA(DEBT/GDP)</i>	-	-	-	-	0.024 (0.373)	0.034 (0.534)
<i>STRENGTH</i>	-	-0.002 (-0.636)	-0.003 (-0.822)	-0.003 (-0.820)	-	-0.004 (-1.197)
<i>EMU</i>	-	-	-0.003 (-1.105)	-0.003 (-0.952)	-	-0.004 (-1.274)
<i>ELECT</i>	-	-	-	0.003* (2.33)	-	0.003* (1.995)
<i>Adj. R²</i>	0.487	0.486	0.488	0.490	0.477	0.479
<i>Number of observations</i>	519	519	519	519	494	494

** significant at the 1% level; * significant at the 5% level; t statistics based on White heteroscedasticity-consistent standard errors in parentheses

All economic explanatory variables have been found to be highly significant in all previous studies. Model (1) in Table 2 confirms this result for our data. Model (2) introduces the first political variable, STRENGTH, measured by the sum of the normalized Banzhaf indices of all parties in government. The dummies for EMU, respectively for election years (ELECT) are included in models (3) and (4). Like most of the literature on the political determinants of debt, we do not find a significant influence of government strength. Indeed, the weak government hypothesis in its general form cannot be confirmed. EMU has no significant effect on changes in debt ratios in Table 2, which may be due to the short time period, which the EMU dummy covers. On the contrary, the dummy ELECT for election years is significantly positive, indicating higher debt accumulation in election years, as traditional budget cycle theories would expect.

Note that we do not test for the impact of the dispersion of power within governments in Table 2, because the underlying sample is not appropriate, since it contains a lot of single-party governments, where power dispersion within government cannot be measured meaningfully.

The next step is to test for the dispersion of power within government. In this case we restrict our analysis to coalition governments. We therefore arrive at a new data set with only 217 observations, which is due to the relatively large number of single-party governments in the OECD. The according results are presented in Table 3.

STRENGTH is again insignificant and cannot contribute to explain the changes in the debt/GDP ratio. DISPERSION, however, is significantly negative as expected. That means that governments consisting of parties with unequal voting power accumulate less debt than coalitions of rather equally powerful members. One promising theoretical explanation for our finding is that the war of attrition can be stopped more easily if there

is a leading party of considerable size in a governing coalition. Stalemate situations over longer periods on how to consolidate budgets are much more likely in coalitions which consist of equally powerful parties in terms of voting power. Furthermore, the pressure a large party can exert on a small party within a coalition is perhaps strong enough to arrive at appropriate measures that are suitable to improve the fiscal stance.

Another explanation would be that the leading party of a coalition government is held much more responsible for the overall economic situation by the electorate than smaller parties. Hence, the pressure to avoid fast growing debts and deficits might be more severe for a party which is perceived to lead a coalition. In a similar vein, one might argue that the performance of smaller parties in coalitions with regard to overall economic measures might be less visible for the public. Even more severe, they actually have a smaller clientele than larger parties, and budget consolidation measures might hurt the small parties' clientele less, because exemptions from consolidation for small groups are much more feasible than for larger groups. Thus, small parties are perhaps more likely to accept consolidation measures, and larger parties in a coalition may feel stronger pressure to implement an appropriate fiscal policy.

Table 3: Impact of government strength on fiscal policy, coalition sample (N=217)

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\Delta(\text{debt}/\text{GDP})$							
<i>Constant</i>	0.003*	0.006	0.004**	0.006	0.009	0.003	0.010
	(2.207)	(0.929)	(3.403)	(0.895)	(1.469)	(1.764)	(1.559)
$\Delta(\text{DEBT}_{-1}/\text{GDP}_{-1})$	0.637**	0.638**	0.644**	0.644**	0.649**	0.638**	0.640**
	(12.140)	(12.051)	(12.334)	(12.226)	(12.218)	(11.123)	(11.128)
<i>DEBT BURDEN</i>	0.798**	0.802**	0.801**	0.803**	0.783**	0.796**	0.791**
	(6.739)	(6.723)	(6.903)	(6.878)	(6.737)	(6.759)	(6.814)
$\Delta(\text{UNEMP})$	1.009**	1.006**	0.996**	0.993**	0.939**	1.007**	0.941**
	(6.351)	(6.318)	(6.313)	(6.279)	(6.065)	(6.390)	(6.152)
<i>MEANA(DEBT/GDP)</i>	-	-	-	-	-	-0.011	0.075
						(-0.114)	(0.797)
<i>STRENGTH</i>	-	-0.005	-	-0.002	-0.005	-	-0.007
		(-0.512)		(-0.224)	(-0.543)		(-0.728)
<i>DISPERSION</i>	-	-	-0.013**	-0.013**	-0.014**	-	-0.015**
			(-3.092)	(-3.099)	(-3.279)		(-3.089)
<i>EMU</i>	-	-	-	-	-0.006*	-	-0.007*
					(-2.000)		(-2.316)
<i>ELECT</i>	-	-	-	-	-0.002	-	-0.002
					(-0.832)		(-1.094)
<i>Adj. R²</i>	0.578	0.576	0.584	0.582	0.588	0.574	0.586
<i>Number of observations</i>	217	217	217	217	217	210	210

$$\text{DEBT BURDEN} = \Delta\{[(\text{INTPAY}/\text{DEBT}) - \text{GGDP}] * \text{DEBT}/\text{GDP}\}$$

** significant at the 1% level; * significant at the 5% level; t statistics based on White heteroscedasticity-consistent standard errors in parentheses

Somewhat surprisingly, when only coalition governments are under consideration, the EMU dummy is marginally significant, implying that coalition governments were successful in reducing annual debt accumulation (or even in reducing debt levels) in case they committed to EMU.¹⁴ The election year dummy ELECT is not significant any more in Table 3, which might indicate that election years play a more important role for single-party governments than for coalitions. This could be a consequence of the fact that loosening fiscal policy might pay off more readily for single party governments than for coalition governments, since the economic situation and pre-election “presents” like tax cuts or additional public expenditures can much more easily be ascribed to a single-party government than to one single party or several parties within a coalition government. Indeed we find in another regression, where we restrict ourselves to single party majority governments only, a significant effect of the ELECT dummy, which corroborates our intuition that single party majority governments run higher budget deficits in election years to increase the chance of being re-elected.

We also tested for the influence of several other variables – like the system of representation or the inter-temporal changes in power of re-elected governments – but none of them was found to have a significant impact. Nevertheless in all these models STRENGTH is never significant and DISPERSION is always significant. This finding makes us confident that our results are quite robust with regard to the inclusion of further political variables. Likewise, results do not change when we introduce dummies for sluggish economic growth in a similar vein as Borrelli and Royed (1995).

¹⁴ Rotte and Zimmermann (1998) have also found a positive effect of EMU on debt reduction.

6 Discussion and conclusion

The innovation of this paper is to address the issue of political determinants of budget deficits and debts by employing a voting power approach. By measuring the voting power of parties in parliament and government, we are able to capture government strength and dispersion of power within governments in an adequate way.

The theoretical background of our empirical assessment is constituted by the “weak government hypothesis” (Roubini and Sachs, 1989a, 1989b) and by the “war of attrition” (Alesina and Drazen, 1991). The weak government hypothesis is tested by measuring the voting power of all parties in government. Yet, contrary to Roubini and Sachs (1989a, 1989b), but in line with subsequent studies by Edin and Ohlsson (1991), de Haan and Sturm (1994, 1997) or de Haan et al. (1999), we do not find any support for the hypothesis that stronger governments have lower budget deficits or accumulate less debt.

The implications of the war of attrition-model are tested by the standard deviation of voting power of parties in government. According to Alesina and Drazen (1991), fiscal stabilization should coincide with a political stabilization. In our estimations, a higher dispersion of voting power of government coalition members has turned out to lead to less debt accumulation. This corroborates the importance of the distribution of power within coalition governments. Equally strong coalition partners tend to block any cooperative outcome by using their veto power. Coalition governments composed of parties which differ considerably in their voting power are better in achieving a successful stabilization of their debt level.

We think that crude measures of government strength should be treated with caution in future studies and that voting power indices are a reliable alternative to them.

With regard to government fragmentation we have presented another way of interpretation. Of course, we do not oppose standard approaches that concentrate on ideological fragmentation, but they exhibit some considerable shortcomings. It is therefore worthwhile taking our alternative interpretations of fragmentation additionally into account as a source of information.

REFERENCES

- Alesina, A. and Allan, D. (1991). Why are stabilizations delayed? *American Economic Review* 81: 1170-1188.
- Alesina, A. and Perotti, R. (1995). The political economy of budget deficits. *IMF Staff Papers* 42: 1–31.
- Alesina, A. and Tabellini, G. (1990). A positive theory of fiscal deficits and government debt. *Review of Economic Studies* 57: 403–414.
- Banzhaf, J. F. (1965). Weighted voting doesn't work: A mathematical analysis, *Rutgers Law Review* 19, pp. 317-343.
- Baratta, M. (various issues). *Der Fischer Weltalmanach*. Fischer Taschenbuch Verlag.
- Borrelli, S. and Royed, T. J. (1995). Government 'strength' and budget deficits in advanced democracies. *European Journal of Political Research* 28: 225-260.
- Bräuninger, Thomas and Thomas König (2001). *IOP 2.0*. at: <http://www.uni-konstanz.de/FuF/Verwiss/koenig/IOP.html>.
- Bulow, J. and Klemperer, P. (1999). The generalized war of attrition. *American Economic Review* 89: 175-189.
- CIA (2000). *The world factbook*. at <http://www.cia.gov/cia/publications/factbook/indexgeo.html>.
- de Haan, J. and Sturm, J.-E. (1994). Political and institutional determinants of fiscal policy in the European Community. *Public Choice* 80: 157-172.
- de Haan, J. and Sturm, J.-E. (1997). Political and economic determinants of budget deficits and of government spending: A reinvestigation. *European Journal of Political Economy* 13: 739-750.
- de Haan, J., Sturm, J.-E. and Beekhuis, G. (1999). The weak government thesis: Some new evidence. *Public Choice* 101: 163-176.

- Derksen, W. (2001). *Elections around the world*. at: <http://www.electionworld.org/>.
- Drazen, A. (2000). *Political Economy in Macroeconomics*. Princeton University Press.
- Edin, P.-A. and Ohlsson, H. (1991). Political determinants of budget deficits: Coalition effects versus minority effects. *European Economic Review* 35: 1597-1603.
- Felsenthal, D. S. and Machover, M. (1998). *The measurement of voting power. Theory and practice, problems and paradoxes*. Edward Elgar.
- Franzese, R. J. Jr. (2001). The political economy of public debt: An empirical examination of the OECD postwar experience. Version presented to the Workshop on Political Economy at the Berglas School of Economics at Tel Aviv University, 30-31 January 2001. University of Michigan, mimeo.
- Gantner, M. (1985). Public debt and democracy: Is there a bias towards budget deficits in democracy? *Western Tax Review* 6: 41-64.
- Garrett, G. and Tsebelis, G. (1996). An institutional critique of intergovernmentalism. *International Organization* 50: 269-299.
- Garrett, G., and Tsebelis, G. (1999). Why resist the temptation to apply power indices to the European Union? *Journal of Theoretical Politics* 11: 291-308.
- Holler, M. J. and Widgrén, M. (1999). Why power indices for assessing EU decision-making? *Journal of Theoretical Politics* 11: 321-330.
- Katz, R. S. and Mair, P. (1992). *Party Organizations – A Data Handbook*. Sage Publications.
- Mackie, T. T. and Rose, R. (1991). *The International Almanac of Electoral History*. Library of Congress Cataloging-in-Publication Data.
- Krishna, V. and Morgan, J. (1997). An analysis of the war of attrition and the all-pay auction. *Journal of Economic Theory* 72: 343-362.

- Lambertini, L. (2000). Are budget deficits used strategically? UCLA, mimeo.
- Nordsieck, W. (2001). *Parteien und Wahlen in Europa*. at: <http://www.parties-and-elections.de/indexd.html>.
- Penrose, L. S. (1946). The elementary statistics of majority voting. *Journal of the Royal Statistical Society* 109: 53-57.
- Persson, T. and Svensson, L. E. O. (1989). Why a stubborn conservative would run a deficit: Policy with time-inconsistent preferences. *Quarterly Journal of Economics* 104: 325–346.
- Persson, T. and Tabellini, G. (2000). *Political Economics. Explaining Economic Policy*. MIT Press.
- Pettersson-Lidbom, P. (2001). An empirical investigation of the strategic use of debt. *Journal of Political Economy* 109: 570-583.
- Rogoff, K and Sibert, A. (1988). Elections and macroeconomic policy cycles. *Review of Economic Studies* 55: 1–16
- Rotte, R. and Zimmermann, K. F. (1998). Fiscal restraints and the political economy of EMU. *Public Choice* 94: 385-406.
- Roubini, D. and Sachs, J. (1989a). Government spending and budget deficits in the industrialized countries. *Economic Policy* 8: 99-132.
- Roubini, D. and Sachs, J. (1989b). Political and economic determinants of budget deficits in the industrial countries. *European Economic Review* 33: 903-938.
- Shapley, L. S. and M. Shubik (1954). A method for evaluating the distribution of power in a committee system. *American Political Science Review* 48: 787-792.
- Sutter, M. (2000). Flexible integration, EMU and relative voting power in the EU. *Public Choice* 104: 41-62.

- Sutter, M. (2001). The political economy of fiscal policy - An experimental study on the strategic use of deficits. University of Innsbruck. Discussion paper in economics 2001/6.
- Tabellini, G. and Alesina, A. (1990). Voting on the budget deficit. *American Economic Review* 80: 37-49.
- Velasco, S. (1998). A model of fiscal deficits and delayed fiscal reforms. in: Poterba, J. and von Hagen, J. (eds.). *Fiscal Institutions and Fiscal Performance*. University of Chicago Press.
- Volkerink, B. and de Haan, J. (2001). Fragmented government effects on fiscal policy: New evidence. *Public Choice* 109: 221-242.
- White, Halbert (1980). A heteroscedasticity consistent covariance matrix estimator and a direct test of heteroscedasticity. *Econometria* 48: 817-838.
- Woldendorp, J., Keman, H. and Budge, I. (1993). Special issue: Political data 1945-1990: Party government in 20 democracies. *European Journal of Political Research* 24 (1).
- Woldendorp, J., Keman and H., Budge, I. (1998). Party government in 20 democracies: an update (1990-1995). *European Journal of Political Research* 33: 125-164.

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