

# Budgetary procedures and deficits in Norwegian local governments

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**Abstract** This paper provides an empirical analysis of the connection between budgetary procedures and deficits in Norwegian local governments. We argue that centralized budgetary procedures have an advantage in overcoming common-pool resource problems in the decision-making process and will lead to lower deficits. This hypothesis is tested on a panel data set of Norwegian local governments. The results add to the existing evidence of a negative connection between deficits and the degree of centralization of the budget process. Special emphasis is put on the problem with potential biased estimates resulting from endogeneity of the budgetary variables.

**Keywords** Local governments · Budgetary institutions · Public deficits · Panel data

**JEL classifications** C23 · D70 · H7

## 1 Introduction

The development of public debt and deficits during the last 25 years has stimulated much theoretical and empirical research on the political economy of budget deficits. The early literature, as represented by the study of Barro (1979), where public deficits are motivated by tax-smoothing, has been extended in the more recent literature to include characteristics of the political and legal system. Alesina and Tabellini (1990) and Roubini and Sachs (1989a,b) were early contributors with their studies of the OECD countries. Political institutions on the local level are also considered in the literature. Alt and Lowry (1994) and Poterba (1994) investigate the impact of divided governments on deficits in the US states, while Borge (1996) investigates the impact of strength of the political leadership on deficits in Norwegian local governments. Other literature focuses on the institutional setting in which the political process takes place. Alt and Lowry (1994), Poterba (1994) and Bohn and Inman (1996) investigate the impact from balanced budget rules (BBRs) on local public deficits in US states. Borge

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and Tovmo (2001) investigate whether a change towards less restrictive BBRs influenced the degree of consumption smoothing in Norwegian local governments.

While the studies on the impact of institutions referred to above focus on specific elements of the budget process, i.e., numerical targets, other studies take a broader view of the budgetary institutions. The point of departure is how the process is organized. How the budget is drafted by the government, amended and passed by parliament and implemented by the government has consequences for the fiscal policy outcome. von Hagen (1992) and von Hagen and Harden (1995) investigate the influence of different budget procedures on three indicators of fiscal performance in EC countries. They find more fiscal discipline in terms of lower deficits and debt in countries with hierarchical budget procedures. Their results are supported by the findings of A. Alesina et al. (unpublished data) in a study of Latin American countries. Alesina et al. also find that a binding program for the total budget that is determined before the composition of the budget is important for fiscal discipline. The main conclusion from these studies is that budgetary institutions are important for the policy outcome.

The empirical studies mentioned above are based on cross-national data, which limits the possibility to control for other factors that could affect fiscal outcome. One way of limiting the problem is to use data for nations that are assumed to be equally affected by economic shocks [see, for example, Hallerberg and von Hagen (1999)]. This may reduce the problem of omitted variables but at the cost of reducing the sample size. Thus, it may be appealing to use data from the local public sector in an empirical analysis, since these data provide us with a large sample where the cross-sectional units, to a high degree, are similar in the sense that they provide the same services, use the same revenue sources and face the same regulations by the national government. More homogenous units reduce the omitted variable problem.

The purpose of this study is to test the relevance of budgetary variables for fiscal outcomes measured as per capita deficit in Norwegian local governments. The local governments have chosen different procedural rules for the preparation of their annual budgets. The rules differ with respect to the degree of centralization in the preliminary stages of the budget process. The further proceedings are regulated by the Local Government Act. Since we only capture one component of the budget rules that could affect the fiscal outcome, we avoid the problems of disentangling the components of various budget policies and are able to conduct a more robust test on the quantitative impact of centralization of the budgetary procedure.

We argue that a dynamic common-pool problem in the decision-making process in Norwegian local governments may create a deficit bias. Budget institutions affect the outcome of the budget process and we argue that a centralized budgetary procedure is likely to reduce deficits. We test this hypothesis on a large panel data set of local governments. In addition to the budgetary variables the empirical model includes economic and political variables. Consistent with the results from previous studies, we find that deficits are lower in local governments using centralized procedures.

The rest of the paper is organized as follows. In the next section, we present the institutional background. Then we present the theoretical background, while the model is made ready for empirical testing in empirical specification. In the next section the results from the empirical analysis are presented and finally, some concluding remarks are also presented.

## 2 Institutional background

As in other Scandinavian countries, most welfare services in Norway are decentralized to the local public sector. The local governments are responsible for kindergartens, primary education, primary health care and care for the elderly. Other services provided at the local

level are culture and some infrastructure services, where water supply, garbage collection and sewage are the most important.

The revenue system is characterized by a high degree of centralization leaving limited discretion to the local governments on revenue determination. Income tax revenue sharing and general grants are the most important revenue sources, with a share of total revenues on 76% in 1995.<sup>1</sup> It is mainly in user charges where the local governments have some discretion on revenue determination. The user charges share of total revenues was 15% in 1995. However, that number overestimates the level of discretion in revenue determination, since two aspects of user charges are subject to central government regulation. First, the choice of what services that can be financed with user charges is regulated. Second, the level is not allowed to exceed the average production cost for the services financed by charges.

From a dynamic perspective discretion is larger since it also involves allocation of resources over time. Still, this possibility is confined by a BBR. Before 1993, the BBR required that local governments must have a non-negative net operating surplus. However, the BBR is imposed *ex ante* and has not prevented local governments from running deficits, as shown by Borge (1996). In 1993, a new Local Government Act came into force in which the BBR were made more flexible by allowing use of funds to finance current expenditures and by extending the time for repayment of actual deficits. In our data set, which covers the period 1991–1999, we observe a deficit for about a fifth of the observations.

The local political system in the Norwegian local public sector is a representative democracy where elections for the local council are held every fourth year. The local council is the highest political organ and under the council the executive board works as an executive committee. It is considered to have some executive power and the main task is to prepare cases that are to be discussed in the local council. The members of the board are elected with proportional representation from all major parties in the local council. The executive board is led by the mayor and the deputy mayor who are elected among the representatives of the board. Compared with a parliamentary system, the main difference is that no formal cabinet is established and, accordingly, no clear opposition can be identified.<sup>2</sup>

Service production is traditionally divided in sectors where the division in the vast majority of municipalities is determined by what services they offer, such as health care, care for the elderly, primary education, kindergartens and infrastructure. The local government organization is characterized by a close interaction between administrative and political bodies. In each sector, there is an administration and a political committee of elected representatives. The head of the administration is the chief administrative officer.

The local governments are obliged to present an annual budget for current revenues, spending and investments actions. Most of the procedural rules are regulated by the Local Government Act. Before the new Act came in force in 1993, it was the task of the chief administrative officer to present a budget proposal for the local government council. In the new Act this task is formally transferred to the executive board, while the chief administrator is instructed to work out and present a proposal to the executive board. The change in legal proceedings implied minor changes in practice and did not reduce the status of the chief administrator as the most prominent player in the budget process. The executive board then presents its recommendation to the local council. The parties in the council can make amendments or present alternative proposals. Finally, the local council adopts the budget, either by voting over alternative proposals or issue-by-issue. The same Act imposes few

<sup>1</sup> Source: structural data from the Municipal Accounts for 1995, Statistics Norway.

<sup>2</sup> The new Local Government Act of 1993 opened the possibility of organizing local governments as a parliamentary system, but, so far, only one local government (Oslo) has implemented such a system.

**Table 1** Organization of the annual budgetary procedures, percent of local governments

	Observations	Decentralized	Centralized administrative	Centralized political
1991	312	85.3	12.5	2.2
1992	311	76.9	19.6	3.5
1993	310	54.3	23.5	22.2
1994	311	42.2	21.5	36.3
1995	332	33.5	31.3	35.2
1996	322	26.7	30.1	43.2
1997	307	26.4	41.7	31.9
1998	309	21.4	46.6	32.0
1999	308	19.8	43.8	36.4

*Note* The budget data are provided by the Norwegian Institute of Urban and Regional Research

restrictions on how the local governments organize the early stages of the budget process. Gravdahl and Hagen (1997) have identified three different ways of organizing the first stages of the budgetary procedure, i.e. the stages before the executive board presents its recommendation to the local council:

1. *A decentralized procedure.* This procedure starts in each sector where the sector administration and the political committee, in collaboration, work out a proposal for their sector. The chief administrator coordinates the different proposals and puts forward a proposal for the overall budget to the executive board. The executive board may change the proposal before presenting it to the local government council.
2. *A centralized administrative (CADM) procedure.* In contrast to the decentralized procedure, the chief administrator first presents an overall budget proposal to the sectors. Then it will be passed to the executive board that may change it before presenting in for the local council.
3. *A centralized political (CPOL) process.* This procedure differs from the CADM procedure in the way that the first proposal is worked out in close and continuous collaboration between the executive board and the chief administrator. The further proceedings are similar to the CADM process.

The budget data are obtained through a survey where the local governments are asked to state which one of the three processes that gives the best description of their budget process. The results from the survey are presented in Table 1. Although there is substantial variation in the data, both over time and between local governments, there seems to be a trend towards less use of the decentralized procedure. In 1991, 85.3% of the local governments who responded to the survey used a decentralized procedure, while the corresponding share in 1999 was 19.8%. Even when we take into account that different local governments responded to the survey each year, it means that a substantial number of local governments have changed from a decentralized to a centralized procedure during the period of study.

### 3 Theoretical background

Recent theoretical contributions on government debt emphasize common-pool problems where decentralized decision-making result in overspending and deficits. Velasco (1999) and Persson and Tabellini (2000, ch. 2), formulate dynamic models where a common-pool

problem result in a deficit bias because the groups competing for resources only internalize a fraction of future costs associated with debt issue. von Hagen and Harden (1995) establish a similar model where spending ministers only are concerned about activity in their sector, while the activities are financed by general taxation and decentralized decision-making result in overspending. On the other hand, ministers without portfolio do not have sector-specific concerns and their preferred spending level defines the optimum level. The actual budget process is seen as a form of bargaining between spending ministers and the ministers without portfolio where bargaining strength of the parts determines the final outcome. The model in von Hagen and Harden (1995) is static, however, they find evidence that a spending bias also results in a bias towards deficits. An important question discussed in the literature is whether some political and budgetary institutions are better suited to deal with such common-pool problems than other. von Hagen and Harden (1995) focus on budgetary institutions and show that institutions which include numerical targets and centralized budgetary procedures reduce the problem with overspending and deficits. The reason is that such procedures strengthen the role of actors who internalize the fiscal externalities causing overspending and deficits.

The decision-making process in Norwegian local governments is likely to exhibit a similar common-pool problem caused by competition for resources between the sectors. In the context of von Hagen and Hardens model the sectors, comprising political spending committees and sector administration, are the spending ministers. The chief administrator plays a significant role in Norwegian local governments and can be thought of as the “finance minister”. The outcome in terms of deficits will depend on the relative bargaining power of the parts and the key assumption is that budgetary procedure affects bargaining strength, and we propose that a centralized procedure increases the bargaining power of the chief administrator. The position as the agenda setter in the centralized procedure is a strategic advantage that he or she will utilize to strengthen his or her bargaining power. The assumption is supported a study of Norwegian counties conducted by Hagen and Sørensen (1996). They estimated the effect of budget procedures on bargaining power in Norwegian counties and found that a centralized budget procedure gave what they denote as the advocates of local public service supply, comprised by sector administration and political spending committee, less bargaining power. Consequently, we expect lower deficits with a centralized budgetary procedure.

#### 4 Empirical specification

The empirical analysis is based on a panel data set covering the period 1991–1999. The sample consists of 2,514 observations, which is about 65% of the potential number of observations. The effective sample size is determined by the number of respondents to the survey containing information on the budgetary variables, see Institutional background. Since the number of respondents differs between the years, the panel is unbalanced as well. The empirical analysis is based on the following econometric model:

$$\begin{aligned} \text{DEF}_{it} = & \beta_1 \Delta Y_{it} + \beta_2 Y_{it-1} + \beta_3 \text{INT}_{it} + \beta_4 \text{LOAN}_{it} + \beta_5 \text{CH}_{it} + \beta_6 \text{YO}_{it} + \beta_7 \text{EL}_{it} \\ & + \beta_8 \text{SOC}_{it} + \beta_9 \text{HERF}_{it} + \beta_{10} \text{SHAP}_{it} + \beta_{11} \text{CENT}_{it} \\ & + \beta_{12} \text{DMAYOR}_{it} + \alpha_t + u_{it} \end{aligned}$$

$\text{DEF}_{it}$  is the deficit in local government  $i$  in year  $t$ , measured by the negative of the net operating result. All economic variables are measured as per capita and in real 1999 prices. Definitions and descriptive statistics are presented in Table A1 in the appendix. The revenue measure ( $Y$ ) is the sum of grants and tax revenue sharing. Central government grants and

revenue from other sources are closely linked, which makes it hard to disentangle the impact of revenue sources controlled by the central government and the local income base, and the appropriate measure is therefore the aggregate of these sources. Transitory and permanent changes in revenues will have different effects on deficits and as a consequence we include both lagged value and growth in revenues in the empirical model. The coefficients can be interpreted as the impact of permanent and transitory changes in revenues, respectively, and we expect  $|\beta_1| > |\beta_2|$ . To control for the initial debt position, we include costs of serving debt, measured by net interest payment (INT) and net installment on debt (LOAN). The data are described in the appendix.

We define a dummy variable (CENT) that takes the value of 1 when a centralized budgetary procedure is applied to test the impact of budget process. Thus, CENT equals one when a CADM or CPOL is applied. The prediction from the discussion above is a negative sign of the coefficient. Later, we extend the analysis by separating the centralized process in a CADM and a CPOL procedure in order to test whether they have different impact on deficits. Still, we expect both coefficients to be negatively signed.

Previous studies of determinants of fiscal policy in Norwegian local governments have found that characteristics of the political leadership are important. Borge (1995, 1996, respectively) found that strength of the political leadership reduced deficits and fees, while Kalseth and Rattsø (1998) found that strength reduced administrative spending. Strength of the leadership can influence deficits by affecting the size of the budget through the final amendments by the local council or through the implementation of the budget the next fiscal year. We think that two mechanisms are important. First, there is pressure from interest groups related to the services produced by the different sectors to increase spending. A weak leadership is more likely to accommodate such pressure and thereby increase the likelihood of running deficits. Second, unexpected economic events might occur in the implementation phase of the budget and demand some response to avoid deficits. Previous empirical research indicates that strong leaderships respond more quickly and more strongly to such events. In a study of US states, Poterba (1994) concluded that states with a unified government responded stronger to unexpected economic events than states with a split government. In a similar study of Norwegian counties, Rattsø (1999) found that political strength is associated with reductions in current expenditures after a negative shock.

The first measure of political strength is a Shapley–Shubik (SHAP) index of relative voting power constructed by Shapley and Shubik (1954). The index measures the power of the players in a game and in our case the game and the players are decisions in the local council and the political parties, respectively. The concept of this index can easiest be illustrated by assuming that a grand coalition consisting of all parties is built up in the local government council through a sequence where one and one party is added to the coalition. In each sequence, one party is pivotal in turning the coalition into a majority coalition and the Shapley value can be interpreted as the probability for this party to be pivotal in forming a majority coalition, given that all different sequences for each party to join the coalition are equiprobable.

The index is defined as follows:

$$\text{SHAP}_i = \frac{S_i}{T!}$$

where  $S_i$  is the number of orderings where party  $i$  is pivotal.  $T$  is the number of parties in the local council, thus  $T!$  is the number of possible ways to build the grand coalition. The mayor and the deputy mayor are appointed by the local council according to the relative strength of their parties and will represent the leading parties. Thus, we measure the power of the

mayor/deputy mayor party. When the mayor and the deputy mayor represent the same party, we measure strength as the Shapley value for this party.<sup>3</sup> If they represent different parties, we treat these two parties as one party when calculating the index values. The index captures both size of the leading party/coalition and the composition of what we can think about as the opposition. For a given size of the leading party, the value of the index is higher the more parties there are in the opposition. Moreover, the index takes the maximum value of one if the leading party/coalition has more than 50% of the seats in the local council.

To investigate whether is important if the mayor and deputy mayor represent different parties, we combine the SHAP index with a dummy variable (DMAYOR) that equals one if the mayor and deputy mayor represent the same party. We follow Kalseth and Rattsø (1998) and Borge (1996) who assume that a coalition consisting of a single party is stronger, and, consequently, we expect the coefficient for the dummy variable to be negatively signed.

The second measure of strength is a Herfindahl-(HERF) index of party fragmentation in the local government council. The index is the most frequently applied measure of political strength in Norwegian empirical research and is defined as follows:

$$\text{HERF} = \sum_{p=1}^P \text{SH}_p^2$$

where  $\text{SH}_p$  is the share of representatives from party  $p$  in the local government council. The index takes the maximum value of 1 when a single party has all the seats, while the minimum value,  $1/P$ , is attained when the seats are equally divided among the  $P$  parties. Strength is assumed to be negatively related to fragmentation and positively correlated with the HERF-index and consequently the variable is expected to have a negative impact on deficits.

Strength of leadership captures how a given level of pressure affects spending and the deficit. The other aspect of interest group pressure, indicates how variation in pressure affects deficits for a given political leadership. A significant share of the local public services is directed towards specific age groups. We follow Craig and Inman (1986) and assume that the influence of interest groups depends on their numerical strength. We proxy this influence by using the share of population in the age groups to whom large shares of services are directed. CH is the proportion of the population that is aged less than seven years, YO is the proportion of the population aged between seven and 15 years, while EL is the proportion of the population that is over 80 years of age. Consequently, we expect a positive impact from all three variables.

Finally, we include ideology of the leadership in the model. A general expectation is that left-wing parties are more tolerant of larger deficits, despite a lack of theoretical foundation for this proposition. Although left-wing parties prefer a larger public sector, it is not clear how this affects the intertemporal allocation of resources and empirical studies offer no clear suggestions either. Roubini and Sachs (1989a) found that left-parties are associated with larger deficits, while Borrelli and Royed (1995) came to the opposite conclusion. In Norwegian local governments, Borge (1996) found strong evidence for a positive correlation between share of representatives from the socialist camp and deficits. Although the lack of a clear hypothesis regarding the impact we include ideology because the share of representatives from the socialist camp and strength are correlated in the data.<sup>4</sup> While the socialist camp, to a large extent, is dominated by one single party, the social democrats, the non-socialist

<sup>3</sup> The Shapley values are calculated by using a program provided by König and Bräuninger (1997).

<sup>4</sup> The sample correlation coefficients between share of SOC and SHAP and HERF were 0.08 and 0.31, respectively.

**Table 2** Dependent variable is per capita deficit

	A	B	C	D	E	F
$\Delta Y$	-0.465 (5.77)	-0.468 (5.83)	0.466 (5.63)	-0.465 (5.80)	-0.597 (4.91)	-0.595 (4.90)
$Y_{-1}$	-0.290 (9.05)	-0.292 (8.93)	-0.291 (8.38)	-0.290 (9.09)	-0.421 (2.33)	-0.420 (2.32)
INT	1.031 (17.59)	1.029 (17.59)	1.031 (17.60)	1.032 (17.55)	0.905 (16.58)	0.905 (16.58)
LOAN	0.740 (4.57)	0.739 (4.58)	0.742 (4.63)	0.734 (4.58)	0.648 (2.68)	0.644 (2.65)
CH	-21.90 (0.39)	-30.42 (0.56)	-20.93 (0.37)	-20.24 (0.36)	-179.37 (1.22)	-173.76 (1.16)
YO	-22.87 (0.56)	-17.40 (0.42)	-20.72 (0.47)	-22.07 (0.54)	-297.51 (1.99)	-292.91 (1.97)
EL	375.10 (4.46)	363.59 (4.57)	369.33 (4.91)	368.87 (4.43)	79.59 (0.33)	88.70 (0.36)
SOC	-263.56 (0.75)	-675.29 (1.52)	-312.71 (0.70)	-293.43 (0.84)	1378 (1.05)	1394 (1.06)
SHAP	-181.13 (1.08)	-148.75 (0.85)		-195.71 (1.17)	-525 (1.59)	-515 (1.56)
HERF			-338.87 (0.14)			
DMAYOR		279.66 (1.63)				
CENT	-347 (3.89)	-356 (3.98)	-339 (3.86)			-153 (1.42)
CADM				-471 (3.72)	-231 (1.73)	
CPOL				-199 (1.99)	-48 (0.38)	
Method	OLS	OLS	OLS	OLS	FE	FE
Adj. R-squared	0.653	0.654	0.653	0.654	0.739	0.739

Note Absolute *t*-values in parentheses are calculated from standard deviations robust to heteroscedasticity. Time dummies are included in all columns, however the estimates are not reported

camp are more fragmented. If the ideological orientation of the leadership is important for deficits, leaving it out of the analysis will cause a bias in the estimated impact of strength and both Borge (1996) and Kalseth and Rattsø (1998) found it necessary to control for socialist influence to separate out the effect of strength. Ideological preferences of the leadership are measured by the share of seats in the local council held by representatives from socialist parties (SOC).

The model is estimated by using the method of ordinary least squares (OLS). Poterba (1996) called for cautious interpretation of estimated correlations between budgetary institutions and fiscal performance since unobserved heterogeneity might be present. His point is that as long as budgetary institutions are not randomly assigned to the municipalities, this correlation can simply reflect a correlation between unobserved background variables and fiscal performance where the budgetary variables act as a proxy for the omitted variables, implying that the estimated relationship between deficits and the budgetary variables could be spurious. In the following, we refer to this as the omitted variable problem. The point made by Poterba is highly relevant for this study as well, where the variation in budget processes gives good reasons to question the exogeneity of the variables. With this problem present, the impacts of the budgetary variables are, in general, not consistently estimated. The obvious solution to the problem is to use instrumental variables for the budgetary variables, but our inability to find valid and informative instruments has forced us to take an alternative approach, in which we try to find information about the direction of the bias. We utilize the results from Tovmo (2003) where determinants of the budgetary procedures are analyzed. The approach is explained more thoroughly in the next section. With this information we can at least conclude whether our estimates may be regarded as minimum or maximum estimates of the true impacts of the budgetary variables.

## 5 Empirical results

The empirical results are displayed in Table 2. As a check of the robustness of the results we utilize the variation in data in different ways. The first four columns contain results from



OLS regressions, while we extend the model by including community-specific effects in the last two columns.

The variables describing budgetary procedure are included in all equations. The decentralized procedure is the reference and the dummy variable for centralized procedure has the expected positive sign. Deficits are about 350 NOK lower in local governments that use a centralized procedure than in municipalities where a decentralized process is used. At mean values, this number corresponds to about 25% of the deficit and about 1% of total current revenues. In column *D*, we test whether the impacts differ between the CADM and CPOL procedure. Both coefficients are significantly different from zero, with the coefficient for the CADM procedure as the larger; however, the coefficients have overlapping confidence intervals.

As discussed above, the estimates might be biased if there is unobserved heterogeneity in preferences. The core of the omitted variable problem is that local governments that have chosen a centralized budgetary procedure have stronger preferences for fiscal discipline and will have lower deficits independent of how the budget process is organized. This implies that the coefficients in Table 2 are overestimated since the budgetary variables capture the indirect impact from omitted preferences. However, there are also arguments for a bias in the opposite direction, and the key question is what determines the changes in the budgetary variables over time. If the changes are undertaken by local governments with large deficits, OLS yields underestimated coefficients since the changes imply a partial positive impact from a centralized process on deficits if unobserved heterogeneity of the type described above is present. Thus, the direction of the bias is an empirical issue.

Empirical evidence is presented by Tovmo (2003). When investigating determinants of budgetary procedures, he finds that large deficits increase the probability of choosing a centralized budgetary procedure in the following period. This means that local governments reorganize the budget process as an attempt to improve fiscal performance when they find themselves in a situation with poor fiscal performance. The implication for this study is that the quantitative impacts of the budgetary variables that are reported in Table 2 are minimum estimates of the true values.

In the last two columns of Table 2, the model is estimated with a fixed community-specific effect. The sign of the coefficient for the budgetary variables is unaltered, but, compared with the OLS estimates, the quantitative impact is smaller and only the coefficient for CADM procedure is significant. We find negative but insignificant coefficients also when we restrict the impacts from the two centralized procedures to be equal.

Low statistical significance is not surprising since a model with fixed community-specific factors are not particularly well suited to test the impact of variables with limited variation over time which is typical for institutional variables. For the vast majority of local governments there has been no or only one change in the budgetary procedure and, in this light, we should not place too much emphasis on the estimated impact of the budgetary variables in this model specification.

Two different measures for strength of the political leadership are used. The SHAP index has the expected negative sign, but it is never statistically significant. In column *B*, we extended the model with a dummy variable that equals one if the mayor and the deputy mayor are from the same party (DMAYOR). The coefficient is positively signed, implying that deficits are lower when the mayor and deputy mayor are from different parties. This is in contrast to what we predicted, however, Tsebelis (2002, ch. 8) suggest that increasing the number of veto-players could “lock in” fiscal policies resulting in either consistently low or consistently high deficits. The extension of the model does not change the impact from the SHAP index, the relative position of their party or parties in the local council are not important. We do

not find any significant impact when we use the HERF-index as the measure of strength. The coefficient has the expected sign, but is not statistically significant. Overall, there is not much support for the hypothesis of lower deficits in local governments with a strong political leadership. This conclusion is not in accordance with the results found by Borge (1996), which indicated a robust negative relationship between political strength and deficits. Since his results are based on a data set in which the last year was 1990, we might speculate that composition of the political leadership was more important for fiscal outcome before 1990.<sup>5</sup>

Less importance of the political variables in our period of study could also explain that we find no evidence for any connection between deficits and ideology of leadership as measured by the share of socialist representatives in the local council. This result is also contrary to the findings of Borge (1996), in which a positive relationship between socialist influence and deficits was found. However, as pointed out in empirical specification, the connection between ideology and deficits is not found to be robust across studies.<sup>6</sup>

The results for variables describing the age composition of the population are only to a limited extent in line with our expectations. Only the share of the elderly (EL) comes out with a statistically significant effect and with the expected sign. The results are also very sensitive to model specification. When a community-specific effect is included, the impact from the share of the elderly drops out, while the proportion of the population aged between 7 and 15 years (YO) now has a statistically significant negative impact. Sensitive and non-robust results with respect to demographic variables seem to be common for several studies of taxation and aggregate spending in Norwegian local governments [see, for instance, (Borge 1995, 1996)].

All economic variables have the expected signs and are statistically significant as well. Exogenous revenues reduce deficits and, as expected, the impact of a permanent increase is smaller than of a short-run increase. The estimates indicate that just above half of a transitory revenue increase is offset by increased spending, while the other half reduces deficits. A permanent increase in revenues reduces deficits by about 30% of the increase. Re-estimating the model with a community-specific term does not alter the sign of the coefficients, but the qualitative impact is larger when we utilize only the variation over time, both with respect to short-run and permanent changes in revenue.

The results indicate a one-to-one relationship between interest payment and deficits and 75% of the installment on debt is reflected in increased deficits. The magnitude of both variables depends somewhat on the specification of the model since the estimates indicate a slightly smaller impact when we include a fixed effect. The estimates imply that debt-serving costs do not reduce current spending. Instead, it is counterbalanced by changes in financial assets or in local government investments and may thus have consequences for future spending.

Hallerberg and von Hagen (1999) found that the impact of political variables depended on budgetary institutions. By interacting budgetary variables and a measure for political stability they found that negative consequences of political instability were neutralized when a country introduces appropriate budget institutions. A corresponding connection could explain why

<sup>5</sup> The BBRs were made more flexible with the new Local Government Act. To investigate whether that affected the impact of political variables we estimated models which allowed different impact of the political and budgetary variables before and after the new act came into force. However, same impact could not be rejected for any variable. A possible level effect is captured by the time dummies in the model.

<sup>6</sup> We investigated if the impact of other variables is sensitive to whether ideology is included or not by excluding the latter from the model. The results are not reported, however, the impact of other variables was not affected.

**Table 3** Dependent variable is per capita deficit: selected results

	A	B	C	D
SHAP	73 (0.33)	78 (0.35)		
HERF			2142 (1.66)	2230 (1.73)
CENT	-33 (0.15)		528 (1.21)	
CADM		5 (0.02)		353 (0.51)
CPOL		-16 (0.07)		802 (1.84)
CENT × SHAP	-461 (1.42)			
CADM × SHAP		-718 (1.57)		
CPOL × SHAP		-263 (0.73)		
CENT × HERF			-3260 (1.96)	
CADM × HERF				-3079 (1.15)
CPOL × HERF				-3704 (2.22)
Method	OLS	OLS	OLS	OLS
Adj. R-squared	0.654	0.654	0.654	0.654

*Note* The same economic and demographic variables are included, as in Table 2, but the estimates are not reported. Absolute *t*-values in parenthesis are calculated from standard deviations robust to heteroscedasticity

we found no impact of political strength in the current analysis and we investigate this by interacting the political and budgetary variables, selected results are presented in Table 3.

The interaction term between budget procedure and the SHAP index is insignificant, also when the centralized procedure is separated in an administrative and a political procedure. In the last two columns of Table 3, the HERF-index is interacted with the budgetary variables and the results might indicate that the impacts of the budgetary and political variables are connected. The coefficient for the interaction term is significant at the 10% level and indicates that the impact of a centralized procedure is stronger if the local council is less fragmented. This can be illustrated by calculating the effect from a centralized procedure for different values of the HERF-index. For the minimum value of the sample the impact is close to zero, while deficits are 2732 NOK, which amounts to 8% of the average current revenues, lower for the maximum value.<sup>7</sup> Further, separating the centralized procedures indicate that this result is driven by a connection between the CPOL procedure and the HERF-index. A strong leadership is required for a centralized procedure to be efficient in reducing deficits when the politicians participate in the budget work at an early stage.

## 6 Concluding remarks

The relevance of budgetary institutions in explaining fiscal outcomes has received increasing attention in the last decade. In this paper we argue that deficits will be lower in local governments where a centralized budgetary procedure is used. The institutional setup in Norwegian local governments facilitates a robust test of the quantitative impact of centralization of the budget process since other aspects of the process do not vary over time or across local governments. The empirical version of the model is extended by economic and political variables and is tested on a large panel data set of Norwegian local governments. Our results support previous empirical evidence of lower deficits with centralized budgetary procedures. The estimates indicate that deficits are about 25% lower in local governments using a centralized procedure. When we distinguish between a CADM procedure and CPOL procedure, we find both have significant statistical results, with the former one having the largest impact, but

<sup>7</sup> The minimum and maximum values of the sample are 0.14 and 1.00, respectively.

the hypothesis of equal coefficients cannot be rejected. The problem of how to interpret the estimated relationship between budgetary variables and deficits is discussed thoroughly. We argue that the problem of omitted variables produce underestimated coefficients. We also find some evidence that a centralized procedure is not efficient in terms of reducing deficits unless there is a strong political leadership in the municipality. However, the latter result is sensitive to how the strength of leadership is measured.

## Appendix: data and variables

All economic variables are measured in 1999 kroner, deflated by the national account's price index for local public consumption. The economic and demographic data are provided by Statistics Norway. The political variables are collected from Norwegian Social Science Data Services (NSD). The descriptive statistics are based on the same unbalanced panel data set of 2,514 observations that is used in the empirical analysis.

**Table A1** Variables, definitions and descriptive statistics

Variable	Definition	Mean value (Standard deviation)
DEF	Deficit per capita	-1299 (4115)
Y	Exogenous revenue per capita	24349 (8787)
INT	Net interest payment per capita	796 (1858)
LOAN	Net down payment on loans per capita	1201 (718)
CH	Share of population below 7 years of age	0.09 (0.01)
YO	Share of population between 7 and 15 years of age	0.12 (0.02)
EL	Share of population above 80 years of age	0.05 (0.02)
SOC	Share of representatives from socialist parties	0.39 (0.15)
SHAP	The Shapley–Shubik index	0.68 (0.28)
HERF	The Herfindahl-index	0.27 (0.08)
DMAYOR	Dummy variable equal to one if the mayor and the deputy mayor are from the same party	0.33 (0.47)

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## References

- Alesina A, Tabellini G (1990) A positive theory of fiscal deficits and government debt. *Rev Econ Stud* 57:403–414
- Alt J, Lowry R (1994) Divided governments and budget deficits: evidence for the States. *Am Pol Sci Rev* 88:811–828
- Barro R (1979) On the determination of public debt. *J Pol Econ* 87:940–947
- Bohn H, Inman RP (1996) Balanced budget rules and public deficits: evidence from the U.S. States. NBER Work Pap 5533
- Borge L-E (1995) Economic and political determinants of fee income in Norwegian local governments. *Public Choice* 83:353–373
- Borge L-E (1996) The political economy of budget deficits: a study of Norwegian local governments. Mimeo, Department of Economics, Norwegian University of Science and Technology

- Borge L-E, Tovmo P (2001) Balanced-budget-rules and the permanent-income hypothesis: an analysis of Norwegian local governments. Mimeo, Norwegian University of Science and Technology
- Borrelli SA, Royed TJ (1995) Governments "Strength" and budget deficits in advanced democracies. *Eur J Pol Res* 28:225–260
- Craig SG, Inman RP (1986) Education, welfare and the "new" federalism: state budgeting in a federalist public economy. In: Rosen HS (ed) *Studies in state and local public finance*. The University of Chicago Press, Chicago
- Gravdahl HP, Hagen TP (1997) Ny KommuneLov, ny organisering? Organisasjon og arbeidsformer i kommuner og fylkeskommuner i 1996. NIBR-notat 1997:105
- Hagen TP, Sørensen RJ (1996) Bargaining strength in budgetary processes: the impact of institutional procedures. *J Theor Pol* 8(1):41–63
- Hallerberg M, von Hagen J (1999) Electoral institutions, cabinet negotiations, and budget deficits within the European Union. In: Poterba J, von Hagen J (eds) *Fiscal institutions and fiscal performance*. The University of Chicago Press, Chicago
- Kalseth J, Rattsø J (1998) Political control of administrative spending: the case of local governments in Norway. *Econ Pol* 10(1):63–83
- König T, Bräuninger T (1997) The constitutional choice of rules. An application of the absolute and relative power concepts to European legislation. MZES working paper ABII/17. Mannheim Center for European Social Research
- Persson T, Tabellini G (2000) *Political economics: explaining economic policy*. MIT Press, Cambridge
- Poterba J (1994) State responses to fiscal crisis: the effects of budgetary institutions and politics. *J Pol Econ* 102(4):799–821
- Poterba J (1996) Do budget rules work? NBER Work Pap 5550
- Rattsø J (1999) Fiscal adjustment with vertical fiscal imbalance: empirical evaluation of administrative fiscal federalism in Norway. Mimeo, Department of Economics, Norwegian University of Science and Technology
- Roubini N, Sachs J (1989a) Political and economic determinants of budget deficits in the industrial democracies. *Eur Econ Rev* 33:903–938
- Roubini N, Sachs J (1989b) Government spending and budget deficits in the industrial countries. *Econ Pol* 8:100–132
- Shapley LS, Shubik M (1954) A method for evaluating the distribution of power in a committee system. *Am Pol Sci Rev* 48:787–792
- Tovmo P (2003) The choice of budgetary institutions in Norwegian local governments. Mimeo, Department of Economics, Norwegian University of Science and Technology
- Tsebelis G (2002) *Veto players: how political institutions work*. Princeton University Press, New Jersey
- Velasco A (1999) A model of endogenous fiscal deficits and delayed fiscal reforms. In: Poterba J, von Hagen J (eds) *Fiscal institutions and fiscal performance*. The University of Chicago Press, Chicago
- von Hagen J (1992) Budgeting procedures and fiscal performance in the European communities. *Economic Paper 96*, Commission of the European Communities
- von Hagen J, Harden I (1995) Budget processes and commitment to fiscal discipline. *Eur Econ Rev* 39:771–779