

**The More Things Change, the More Things Stay the Same:
A Comparative Analysis of Budget Punctuations**

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In this paper, I identify whether budgets in Denmark, Germany, the United Kingdom, and the United States are punctuated and investigate the variation in budget punctuations over time. Building on stochastic process methods, I find that budgets in all four cases exhibit mostly incremental changes punctuated by extreme shifts. In order to explain variation in budget punctuations over time, I rely on two models: partisan control of government and partisan distance of the assembly. The two models are tested using national budgetary data across all government functions for the four countries from the mid-1960s to 1989. The paper finds that greater distance in strength and ideology among parties leads to increases in the degree of punctuations in the German and the British cases, whereas there is some evidence for the partisan control model in the American cases. In the Danish cases, partisan distance reduces the degree of budget punctuations.

Budgeting, kurtosis, policy dynamics, political parties, punctuated equilibrium.

A national budget is the outcome of extensive decision-making processes comprising the preferences of multiple political actors. During this process, each actor attempts to inject her preferences into the final package of appropriations; however, competing demands can be met only to a limited extent. Budget negotiations are therefore often intense and subject of heightened political attention. At the center of these negotiations is the trade-off among different budget categories. Some areas of the national budget in any given fiscal year might experience little change while others suffer dramatic cuts or undergo massive expansions. Taking a conservative example, the median change for the Danish budget appropriations from 1985 to 1986 across all government programs was a modest 1.4 percent. However, this on average incremental increase included a more than 20 percent cut for the Energy and Environment resort, several small changes, as well as a 13 percent increase in the budgets of the Foreign Affairs and Justice ministry. The occurrence of these large scale shifts within annual budgets I define as budget punctuations. Neither the public's focus on entitlements and deficits nor the prevalent theory's emphasis on incrementalism captures this phenomenon.

In this paper, I develop three models of policy-making in order to analyze the political and institutional determinants of large-scale shifts within national budgets. First, I expand the punctuated equilibrium model on American politics (Baumgartner and Jones 1993) into a comparative investigation across four countries. Second, building on Downs (1957), I hypothesize that divergent preferences of Leftist and Rightist governments determine budget punctuations (partisan control model) and that the election of a new government leads to shifts within budgets. Third, the partisan distance model (PDM) asserts that increasing differences in ideology and strength between governing and non-governing parties lead to punctuated budgets.

I employ time series regression methods in order to test these hypotheses for Denmark (DK), Germany (GER), the United Kingdom (UK), and the United States (US) for the period

between 1963 and 1989. Graphical and statistical evidence confirms that the budget changes in all four countries are characterized by incremental changes punctuated by extreme shifts in allocations. I then assess the variation in budget punctuations over time in each country. I find strong support for the partisan distance model in the British and German cases and some evidence for the partisan control model in the American case. The Danish case runs counter to the expectations of the partisan distance model: budgets are punctuated when the political parties in parliament are similar in ideology and strength. I conclude the paper by discussing the findings and placing them in relation to existing empirical evidence and theoretical frameworks. The article aims to enhance the empirical and theoretical understanding of how political institutions and partisan preferences shape budgetary outputs in developed democracies.

Budget Distributions

The literature on the various aspects and determinants of public spending is immense in its theoretical, empirical, and methodological scope.¹ In general, current research focuses on a single policy area (such as welfare spending or deficits) and the theoretical dialogue centers around the impact of domestic institutions, partisan preferences, and the international environment on public budgets. However, the literature's exclusive focus on specific policy areas does not advance a general theoretical argument about budgeting *per se*, and fails to recognize that decision makers propose and legislate budgets in their totality.

Contradistinctively, this paper considers the entirety of annual budgets as the unit of analysis. Since government resources are limited and budgeting is a multi-dimensional endeavor (Tsebelis and Chang 2004), budget decisions reflect the importance of one specific matter in relation to all other potential issues. A model which comprises all types of budgetary change is based on the idea that policy choices can be expressed as a full

distribution of choices rather than single choices. This notion approaches budgeting as a stochastic process and conceptualizes budget changes in terms of probability densities (Padgett 1980: 359). I build on this idea and define budget punctuations as the distribution of yearly percentage changes across all governmental budget functions.

The distributional model of budgetary decisions offers a new understanding of budgetary outputs. This model advances a clear distinction between incremental and punctuated budgets (Padgett 1980; Jones *et al.* 2003; Baumgartner *et al.* 2006 for a straightforward rationale). An incremental budget is characterized by a Normal distribution because it assumes that today's policy choice follows yesterday's plus some "random error" adjustments (Jones and Baumgartner 2005: 2) by governments that responds to changes in social inputs proportionally. A punctuated budget is typified by the great stability of many minor adjustments *and* some massive change, indicated by a distribution's high peaks and heavy tails (Paretian or power distribution). The shape of a budget distribution is measured in terms of its kurtosis score, where increasing values characterize increasing degrees of punctuation;² it represents how much stability and change occurs within a budget. Both insights – employing the entire budget as the unit of analysis and understanding change as a stochastic process – are the theoretical bases of studying budget punctuations.

Theoretical Approaches for Explaining Budget Punctuations

Beginning with Wagner's (1893) law of the expansion of public expenditures, annual budgets have been identified as one of the central outputs of political systems in general and advanced democracies in particular (Wildavsky 1964). Recent scholarly work on both sides of the Atlantic has reinvigorated the interest in budgets and policy change. Cumulatively, the major research questions concern how people interrelate in political institutions when deciding on budgets, and why budgets as well as budget institutions change. These studies can be

categorized into two distinct approaches. One approach is to analyze budget authority (mainly in the US and the UK) employing a framework derived from literature on American public policy processes (Jones *et al.* 1998; John and Margetts 2003; Jones *et al.* 2003; Soroka and Wlezien 2005). The other approach concentrates on public spending in comparing parliamentary democracies and utilizes collective choice theory and spatial modeling (Cusack 1997; Bawn 1999; Tsebelis and Chang 2004; Hallerberg 2004). Using these two distinctive literatures, I develop four hypotheses regarding the sources of budget punctuations.

Policy Processes and Bounded Rationality – The Policy Process Model (PPM)

Early scholarship (Lindblom 1959; Davis *et al.* 1966; Wildavsky 1964) understands budgets as incremental and depicts policy change as a gradual, cooperative process that allows for marginal change based on the notion of “fair share”. Literature on administrative behavior and bounded rationality (Simon 1985; Jones 2001) describes these processes as standard operating procedures: decision makers attach a stable policy image to a policy, operate within a clearly established institutional structure, and legitimize a certain group’s ability to determine policy outcomes. Clearly, this depiction of the budget process ignores the occurrence of large-scale budget change.

Building on bounded rationality theory and public policy research (Simon 1947; Simon 1985; Baumgartner and Jones 1993; Jones 2001), the argument of the *policy processes model* (PPM) is that periods of relative stability interspersed with dramatic change characterize American politics. They argue that institutional costs (defined as the sum of decision-making, transaction, and information costs) and attention shifts generate punctuated policy changes. In addition to incremental adjustments, times of rapid change is characterized as a “self-reinforcing mechanism that accentuates rather than counterbalances a trend” (Baumgartner and Jones 2002: 20). Here the notion of attention shifting (Jones 2001: 84-107) plays a crucial

role. Although the issue of a public policy is often multi-dimensional, attention to the subject is uni-dimensional and temporally limited. Consequently, humans and organizations prioritize certain issues over others. As some problems gain disproportionate attention, institutional barriers are overcome and dramatic policy change occurs. In short, the punctuated equilibrium model joins incrementalism and dramatic changes under one model of public choice.

For budgetary politics, the key insight from the PPM is that budgets should be punctuated because of high institutional costs and cognitive demands placed on the process of budgeting. In terms of institutional costs, budgeting is arguably the most formalized and institutionalized process among all forms of policy making. Annual budgeting demands cooperation within the executive branch and between the executive and legislative branch. Negotiations extend among the finance minister, cabinet, and committees to the assembly at large. The often rigid process of assessment, execution, and evolution (budget cycle) adds additional institutional costs to budgeting. In this environment, the necessity to cooperate among decision-making bodies accrues substantial transaction, decision-making and information costs. Likewise, the high cognitive costs of budgeting stem from the multi-dimensional nature of budgeting. Since budgets are divided into a host of spending categories, the process is inherently multi-dimensional. In order to cope with the sheer complexity of the task, policy makers are forced to rely on operating procedures and budget routines which add additional resistance to budget change. However, when attention is focused on one particular budget dimension, the standard operating procedures give way to genuine solution searches resulting in massive budget change. The cumulative forces of institutional costs and the multi-dimensionality of budgeting lead to the following hypothesis:

***H_{shape}**: The high institutional and cognitive costs of budgeting produces punctuated budgets.*

Spatial Modeling and Rational Choice – The Partisan Control (PCM) and Partisan Distance Model (PDM)

A second approach to studying public policy in general and budgetary politics specifically rests on the theory of rational choice and spatial modeling (Downs 1957; Hinich and Munger 1997). The guiding assumption is that actors base their decisions on the spatial model of fixed preferences. This means that policy alternatives are represented as points in a policy space and the policy makers' coherent policy preferences are symbolized by utility functions.

Literature on budgetary politics has advanced two separate applications of this basic postulate: (1) partisan control models which stress the electoral incentives for political parties to change policy according to constituents' preferences and (2) veto player models which take not only preferences but also the institutional structure of a political system into account.

Proponents of the *partisan control model* (PCM) employ Downs' (1957: 115-116) assumption that the ideological composition of parties can be ordered on a left-right scale, corresponding to the desired degree of state intervention into the economy. In his classic statement regarding partisan control, Hibbs (1977) argues that (1) Left and Right constituents have divergent preferences on policy outcomes and (2) parties competing for votes promise to implement policies that best serve the groups they represent. Thus, proponents of the partisan model "conceive of politics as a market in which politicians and governments deliver policies in exchange for specific or generalized political demands and support" (Schmidt 1996: 155). Parties pursue policies in order to create winning electoral coalitions; in the budget context, parties spend money to reward constituents.

I maintain that Leftist governments produce large budget punctuations, i.e. they produce larger shifts within an annual budget than Rightist parties (H_{PCM}). This is clearly a contentious hypothesis because it opposes the view that governments of both ideological directions have

the potential to inflict massive changes on budgets. The hypothesis can be defended in the following manner. Leftist and Rightist parties and their constituency have divergent core preferences regarding the size of government. Whereas Leftists support government intervention in the market, Rightists insist on fiscal responsibility. For the Left, this ideological commitment prevents budget cuts and induces programmatic spending increases (especially for labor, housing, etc). The ideological preference of the Right inhibits dramatic budget increases (at least in theory). However, Rightist parties' ability to implement budget cuts is circumscribed by bureaucratic resistance (Padgett 1980), the development of vested beneficiary groups (Pierson 1996) and demographic change. Consequently, there is less room for Rightists to cut funds with the same frequency as Leftist parties raise them. Therefore, governments controlled by Rightist parties should display a less punctuated budget distribution.

Alternatively, literature on American lawmaking (e.g. Krehbiel 1998) argues that political parties can only bring budgets in line with their preferences during the first year in power. In the following years, they rely on incremental management of the new equilibrium. This implies that only newly- elected governments would alter a certain set of budgetary functions, thereby producing a punctuated budget.

H_{PCM}: Leftist governments are more likely than Rightist governments to produce a more punctuated budget.

H_{EC}: Newly elected governments model the budget according to their preference and therefore produce a punctuated budget.

Recent advances in the literature on budgetary policies and public spending in advanced democracies reject the notion that partisan preferences can easily translate into public policies.

Instead, veto players, defined as “individual or collective actors whose agreement ... is required for a change in policy” (Tsebelis 1995: 301) decide policy outcomes. Authors in this literature (Romer and Rosenthal 1978; Tsebelis and Chang 2004; Hallerberg 2004; König and Troeger 2005) argue that the veto player’s spatial locus within a governmental institution, actors’ spending preferences and their strategic interaction with others determine policy change. They assume that the logic of decision making is similar in all representative democracies and contend that “the more veto players there are, and the more their preferences diverge, the harder it is, on average, to change policy” (Bawn 1999: 708). Hence, different institutional set-ups as well as different alignment of interests along major issue dimensions affect the strategic structure of decision making.

The *partisan distance model* (PDM) states that the greater the number of veto players and the more divergent the preferences, the more punctuated the budget. Veto player theory suggests that systems with multiple veto players holding divergent positions present higher levels of stability in policy making than systems with one veto player or a small number of veto players with similar preferences. It follows that the further away the preferences of the players are from the status quo, the greater the possible departure from the status quo and the more dramatic the change. With respect to budgetary policy, previous governments create the status quo. A majority of budget changes should be marginal because a move away from the status quo requires the accommodation of all veto players. In systems with one or a few veto players with similar preferences, the necessity to accommodate several veto players is not as prevalent. As a result, systems with one or a few homogenous veto players can more easily change budgets. Because players can more easily adjust budgets to their preferences and respond more rapidly to exogenous shocks, the necessity for dramatic change is less pronounced. Few veto players with comparable predilections operate within a rather stable policy space. Instead of stagnating, policy making fluctuates within a small range. In short,

this deduction avers that policy change should be less punctuated in systems with one or a few relatively homogenous veto players.

Given that most of the veto points, such as strength of bicameralism as well as existence of judicial review and of referenda, remain constant during the investigated time period, I concentrate on differences within the legislative and executive branch of government. This restriction also seems reasonable because the previously mentioned veto institutions have not contested the annual budget. As a response to this limitation, I assess the prediction that a more diverse and ideologically distant set of veto players would lead to greater punctuations for the legislative branch. For the PDM, I examine whether an increase in the distance between the political center of gravity³ between governing and opposition parties in the legislatures produces higher levels of leptokurtosis of budget distributions. Since a large distance indicates that the government party holds a significantly higher number of seats in parliament and is ideologically committed, I expect that higher kurtosis scores would prevail in this setting.

H_{PDM}. The greater the partisan distance between governing and opposition parties, the more punctuated is the annual budget.

Data and Methodology

I test the proposed hypotheses for four countries (Denmark, Germany, the United Kingdom and the United States) individually and then compare them to each other. Regarding case selection, it is difficult to ascertain whether certain countries present most likely or least likely cases a priori. Hence, I rely on a focused comparison of four countries selected for their variation in outcomes of the independent and dependent variables. They also represent four

distinct types of democracies (presidential, Westminster, coalition, and minority). Due to German reunification and data limitations, 1989 is the last year considered here.

The data used for this paper stem from a variety of sources. First, I obtain yearly budget data⁴ that facilitates measuring budget punctuation. I acquire these data from four sources. The US budget data are from the Policy Agendas Project web page (<http://www.policyagendas.org>). For the German data, I use the Federal Ministry of Finance's Yearly Financial Report (*Finanzbericht*) (see Bawn 1999: 723). I obtain the data for the UK central government budget from John and Margetts (2003). The Danish data are based on budget appropriations (*bevillinger*) that are annually published as *Finanslov for finansåret* by the Danish Finance Ministry. Measures of the independent variables originate from large a data set collected by Cusack and Engelhardt (2002).

The variables described above are operationalized in the following fashion. The dependent variable – the degree of budget punctuation – is computed by using a kurtosis score.⁵ Kurtosis provides a summary measure of the shape of a distribution and is computed by using the fourth L-moments (Hosking 1990 and 1998). This score ranges from zero to one where an increasing number identifies a higher level of kurtosis, i.e. more punctuation. A Normal distribution's score approximates 0.123. In order to receive a reliable assessment of the budget's shape, I slide a five-year window over the yearly budget changes at functional level. The use of a sliding window is unavoidable for obtaining a sufficient number of cases to compute the kurtosis score. Because more data points were available for the U.S., I also create a three-year window in this case. Besides the necessity to create a reliable measure of the budget shape, I opt for a three and a five-year window in order to avoid potential complications arising from the four-year electoral cycles. Compared to a yearly shape measure, the smoothed measure should, in theory, "average" the kurtosis scores and therefore the measure presents a higher hurdle to overcome for the independent variables.

In order to measure partisan control, I utilize the measure of the center of political gravity (CPG) of government parties in the legislatures of each country. This is not only the obvious choice for the European parliamentary democracies, but also makes sense in the American case where budget making is largely the responsibility of both Houses. Formally, the CPG weighs each party's ideological dimension with its decimal share of seats and then sums across all parties (Cusack 1997). The measure of CPG and partisan distance is computed by using a composite ideology index based on expert survey and ranges from -100 (far left) to +100 (far right). A simple dummy variable for the occurrence of an election year is employed to assess the influence of the electoral cycle. Since the newly elected government passes their first budget in the following year, I lead this variable by one year. For measuring partisan distance, I employ the distance of the CPG scores between non-governing and governing parties in both houses of parliament (the exception is unicameral Denmark). From the construction of the measurement, it follows that a large positive term indicates a large partisan distance.

- Table 1 about here -

Before employing both graphical and statistical methods for testing the proposed hypotheses, I briefly describe the key independent variables (Table 1). On average, the partisan distance is largest in the UK (about 186) and smallest in Denmark (roughly 68). In the US, the partisan distance is about 129 and has a small variance. The mean of German and Danish partisan control measure is relatively close to 0 indicating that these governments are, on average, centrist. The US and UK governments are, on average, more conservative but large fluctuation between Leftist and Rightist dominance prevails.

Results

Comparative Test of Budget Punctuations

Derived from the PPM, I hypothesize that the distribution of budget changes in Denmark, Germany, the UK and the US should be punctuated. I pool all budget changes across all budget categories and years and employ both statistical as well as graphical methods in order to assess the degree of punctuation. The L-kurtosis scores for all budget changes of the four countries validate the hypothesis that budgets are punctuated. Table 1 suggests that the United States' budgets (L-kurtosis $\approx .49$) display more stability and more dramatic budget change than those of the other countries (L-kurtosis $\approx .47$ for Denmark, $\approx .42$ for Germany and $\approx .37$ for Britain). These scores are significantly greater than the .12 value for a Normal distribution. For a visual assessment, I rely on frequency distribution plots displayed in Figure 1. I add a Normal curve to each country's histogram in order to facilitate comparison. The tall peaks, weak shoulders, and fat tails of the histograms (indicated by the large number of tickmarks towards the tail of each distribution) strikingly confirm the statistical test: the overall budget change is not Normal; it is punctuated in all four countries.

- Figure 1 about here -

The finding that budgets are punctuated regardless of the distinct institutional matrix of each country provides a very robust substantiation of Jones and Baumgartner's (2005) simulation results. Their simulation demonstrates that the allocation of political attention in tandem with institutional constraints produce punctuated outcomes. The result presented here also corroborate with the evidence concerning the punctuated nature of budgets detected in the French cases (see Baumgartner *et al.* 2006). Taken together, these findings signal that

budgets, in general, are punctuated. The next step is to uncover and detail the sources of these punctuations.

Cross-national Regression Analysis

Figure 2 displays the development of budget punctuations and illustrates that variation in the degree of budget punctuations prevails over time and across countries. In order to test the hypotheses regarding the determinants of the degree of budget punctuations, I conduct a one period lagged autoregressive⁶ time series regression for each of the three countries under investigation. The estimation uses the common Huber/White method for controlling heteroskedasticity. I discuss each model's prediction (the various models are labeled as *m1*, *m2*, and *m3*) for each country individually and then draw some conclusions regarding the causes of budget punctuations in the four countries.

- Table 2 and Figure 2 about here -

Table 2 presents the time-series regression results for each country. Although the coefficients have the hypothesized sign, the results show that neither the electoral cycle nor partisan control has a statistically significant impact on budget punctuations in Denmark. Instead, the partisan distance variable is statistically significant but negative. This finding is robust in all three models and suggests that budget punctuations occur in Denmark when government and opposition parties are similar in strengths and preferences. For the German cases, the regressions establish that both partisan control and partisan distance have a significant impact on budget punctuations. Thus, the greater the difference in ideology and strength of parties, the higher the kurtosis score and the more punctuated the German budgets. However, the partisan control coefficient indicates that Rightist governments are also

responsible for punctuations. Again, the electoral cycle variable is non-significant. The regressions for the UK denote that partisan distance has a statistically significant and positive impact on budget punctuations. Greater partisan distance leads to more punctuated budgets *ceteris paribus*. In contrast, neither partisan control of government nor the electoral cycle affect shifts within budgets in a statistically significant manner. For the American case, there is some evidence that a shift in partisan control in the liberal direction results in more punctuated budgets. Based on data that uses a three year window to compute punctuations (Table 2 column *Ik3*), the coefficient for the PCM is in the hypothesized direction and statistically significant. In addition, I do not find evidence⁷ for the impact of the variables in the other US models.

Discussion

Overall, graphical and statistical evidence shows that the policy process model correctly predicts that budgets are punctuated across all four countries. For most of the years and most of the budget areas the change is incremental. However, the high frequencies of small change are interspersed with occurrences of extreme change. The punctuated nature of budgets suggests that the institutional costs and demands in attention placed on the process of budgeting are severe. This pattern is not only common among the four countries studied here but matches analyses of budget data in other countries and at various levels of government (Mortensen 2005; Breunig and Koski 2005; and Baumgartner et al 2006).

A time-series regression analysis of the four examined countries finds that different sets of institutions are responsible for the variation in budget punctuations over time. In the U.S., the degree of budget punctuations is largely determined by the partisan propensity for change. During times of Leftist dominance, budgets are more likely to remain stable in some areas while extreme changes occur in other budget areas. This finding for the US cases validates

existing literature on American policy making, which downplays the role of political parties as a “cost-cutting device”. It also suggests that US scholars may amend existing theories by taking partisan preferences more explicitly into account.

On the other side of the Atlantic Ocean, partisan distance between governing and non-governing parties determines budget punctuations. Evidence from the German and British cases suggests that greater differences in ideology and strength between governing and non-governing parties in parliament lead to more punctuated budgets. The opposite holds true for Danish budgeting. The regression analysis suggests that greater distance between governing and non-governing parties in the Danish *Folketing* leads to lower degrees of punctuation.

The two divergent findings on the impact of partisan distance can be explained when additional institutional constraints on policy makers are considered. In contrast to the German coalition model of government, Denmark is usually governed by a minority. It is vital for these minority governments to elicit sufficient majorities behind their major policy proposal in order to govern effectively (Green-Pedersen 2001). Building the support of a majority is facilitated at times when the distance in ideology and strength is smaller. Compared to the other three countries, the partisan distance in the Danish case is in fact small (Table 1). Therefore, political institutions superseding partisan distance also impact budget punctuations. This discussion suggests that a more comprehensive assessment regarding the institutional locus (e.g. coalition leader, minority government supporter, occupant of one or more chambers) of each political party should be a primary focus of future research.

The consideration of additional institutional constraints can be further refined by the distinction between political and budget institutions (Blom-Hansen 2001). Although not a constitutional rule in Ostrom's (1991) sense, one might consider the relationship of government vis-à-vis parliament as political institutions. This assessment is defensible because of the government's ability to change budget institutions. In other words, "budget

institutions are nested within political institutions" (Blom-Hansen 2002: 100). This first form of institutions was tested in this paper and proves to be important in the European cases. The second form of institutional constraint centers on the role of budget institutions (von Hagen 1992; Hallerberg 2004) which merits further investigation. Once these additional institutional costs are considered, a more complete explanatory model for explaining budget punctuations might be advanced.

Conclusion

The purpose of this paper is to explain the variation of budget punctuations among advanced industrialized countries. Based on evidence from Denmark, Germany, the United Kingdom, and the United States for the period between the mid-1960s and 1989, I find that budgets exhibit mostly incremental changes punctuated by extreme shifts in allocations. This finding signifies that different sets of institutions can still produce similar results. I also find that political and institutional constraints determine the variation in punctuation over time. Time series regressions provide evidence for the partisan control model in the American cases and overwhelming support for the partisan distance model in the British and German cases. On the other hand, the Danish data suggests that greater distance between government and opposition decreases the degree of punctuations. The Danish case also reminds us that it is important to place partisan and institutional factors in the broader institutional context. Based on evidence about American budget change distributions, conservative governments provide both less stability and less change. The German and British cases show us that great ideological and numerical divergences between governing and non-governing parties result in punctuations.

This paper aims to highlight that a particular political institution simultaneously contributes to stability and change. The distribution of budget changes in all four cases

suggests that the very institutional factors that provide stability to a political system might ultimately be also responsible for a system's failure. For example, the large and in many countries automated social security spending eventually requires a massive overhaul because their hitherto rigid institutional structure is too statically constructed. That institutions provide both stability and change is overlooked by the veto player literature's exclusive focus on stability and the political party literature's predisposition toward change. Proponents of the policy process models are aware of the phenomenon that institutions produce punctuated policy outcomes. This awareness stems from the conception of institutions as both opportunity structures and veto points and is aided by a distributional understanding of budgetary politics.

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Notes

¹ For a condensed starting point, see Persson and Tabellini (2000).

² The methodology section and appendix provides details on measuring the shape of distributions.

³ The center of political gravity (CPG) is based on the summation across all parties of each party's relative strength weighted by its ideological position (Cusack 1997).

⁴ Although budget expenditures data is collected by two international organizations (OECD and IMF), this data is inappropriate for this research because of two reasons: (1) expenditures not only represent policy references of policy makers but also include implementation and (2) the level of aggregation does not correspond to actual government functions delineated in national budgets.

⁵ In contrast of the standard kurtosis, the L-moments are an appropriate measurement for this research because they are less sensitive to outliers and reliably computed for a relatively small number of cases (Hosking 1998).

⁶ Not only do diagnostics show a one period autoregressive lag, I expect that realizations of the yearly L-kurtosis scores are a function of last year's scores. The L-kurtosis score was computed by sliding a five year window across the time line. I also log the dependent variable in order to attenuate skewness of the variable.

⁷ This difference in the results might stem from the fact that partisan control changes more rapidly than partisan distance and therefore partisan distance might wash out the effects of partisan control in the regular models.

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Methodological Appendix

Measuring the shape of a distribution

Kurtosis is usually defined as the fourth moment around the mean. This definition can be

expressed as $k = \frac{E(X - \mu)^4}{(E(X - \mu)^2)^2} = \frac{\mu_4}{\sigma^4}$, where E is the expectation operator, μ is the mean,

μ_4 is the fourth moment of the mean, and σ the standard deviation. Thus, kurtosis provides a scale free measure of the shape of a distribution but it is sensitive to outliers (Groeneveld 1998). L-moments (Hosking 1990 and 1998) – which are the expected values of linear combinations of order statistics $X_{i:n}$ multiplied by scalar constants – provide more efficient statistics for distributions. If $F(x)$ is a distribution function of a random variable X and $X_{1:n} \leq X_{2:n} \leq \dots \leq X_{n:n}$ are the order statistics associated to the distribution F (or the ordered values of a single sample of size n), then L-moments $L_r(F)$, $r = 1, 2, \dots$ are defined as

$L_r(F) = \frac{1}{r} \sum_{j=0}^{r-1} (-1)^j \binom{r-1}{j} E(X_{r-j:r})$. The first L-moment $L_1(F)$ is a measure of location.

$L_2(F)$ is a scale measure for dispersion. The fourth moment (L-kurtosis) is obtained by

normalizing $L_4(F)$ by $L_2(F)$. Thus, the L-moment ratio $\tau_4 = \frac{L_4(F)}{L_2(F)}$ measures the kurtosis

of a distribution.

Figure 1. Histograms of all annual budget changes in Denmark, Germany, the United Kingdom, and the United States, 1963 to 1989.

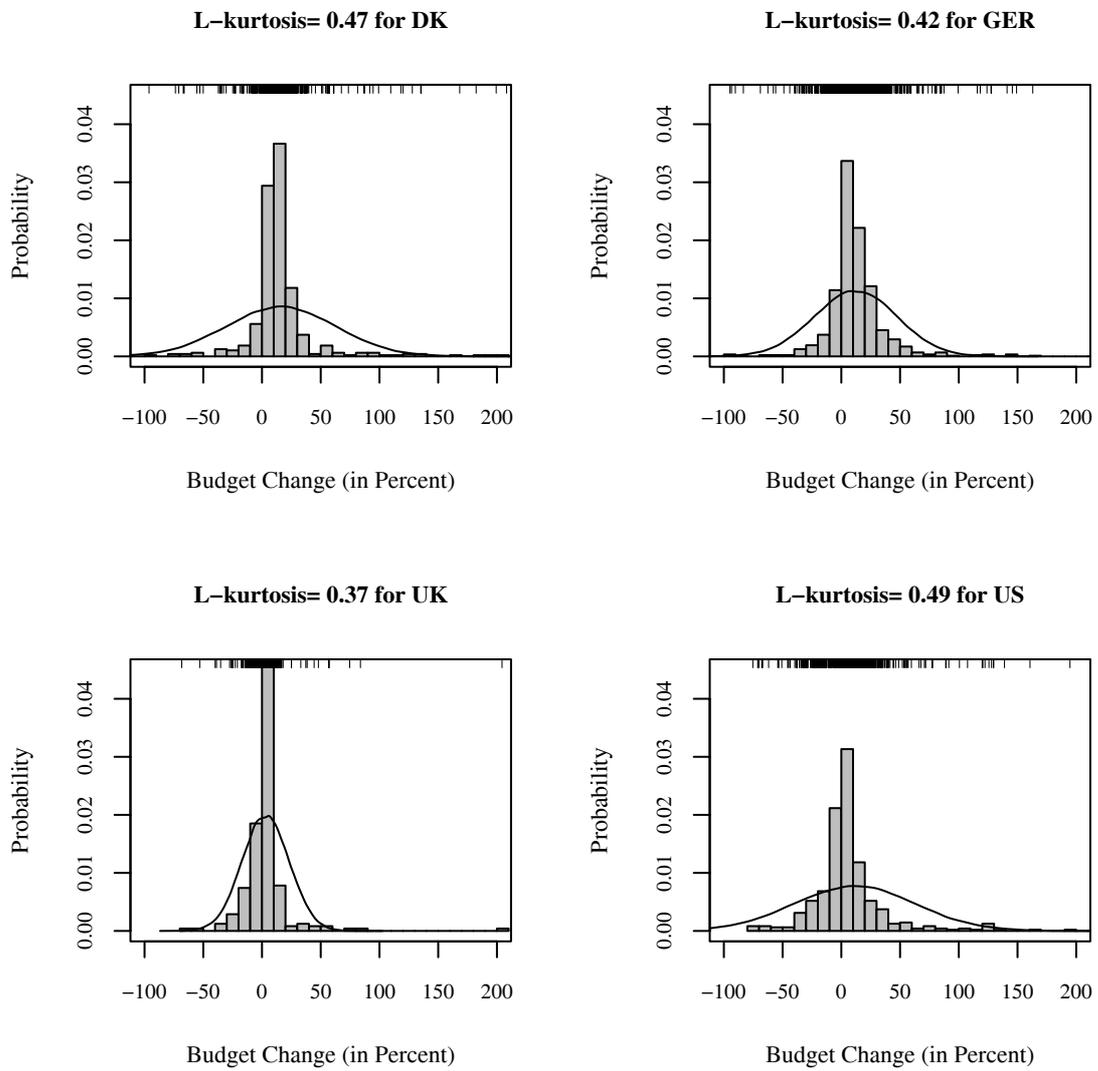


Table 1. Descriptive statistics of the major variables.

Country	Statistic	Variable			
		<i>L-kurtosis</i>	<i>Partisan Distance</i>	<i>Partisan Control</i>	<i>Electoral Cycle</i>
DK	Mean	.47	54.36	4.78	.44
	Std. Dev.	.14	10.31	32.01	.51
	Min	.26	24.80	-24.74	.00
	Max	.71	67.65	50.21	1.00
GER	Mean	.42	110.25	-3.17	.26
	Std. Dev.	.09	25.61	28.93	.45
	Min	.27	49.45	-33.03	.00
	Max	.62	141.47	29.84	1.00
UK	Mean	.37	186.47	16.41	.26
	Std. Dev.	.11	5.40	49.52	.45
	Min	.18	177.18	-46.95	.00
	Max	.62	191.71	53.68	1.00
US	Mean	.49	128.63	12.10	.48
	Std. Dev.	.13	.51	31.75	.51
	Min	.31	127.69	-28.53	.00
	Max	.79	129.05	36.00	1.00

Figure 2. *L*-kurtosis for annual budget changes in Denmark, Germany, the United Kingdom, and the United States, 1963 to 1989.

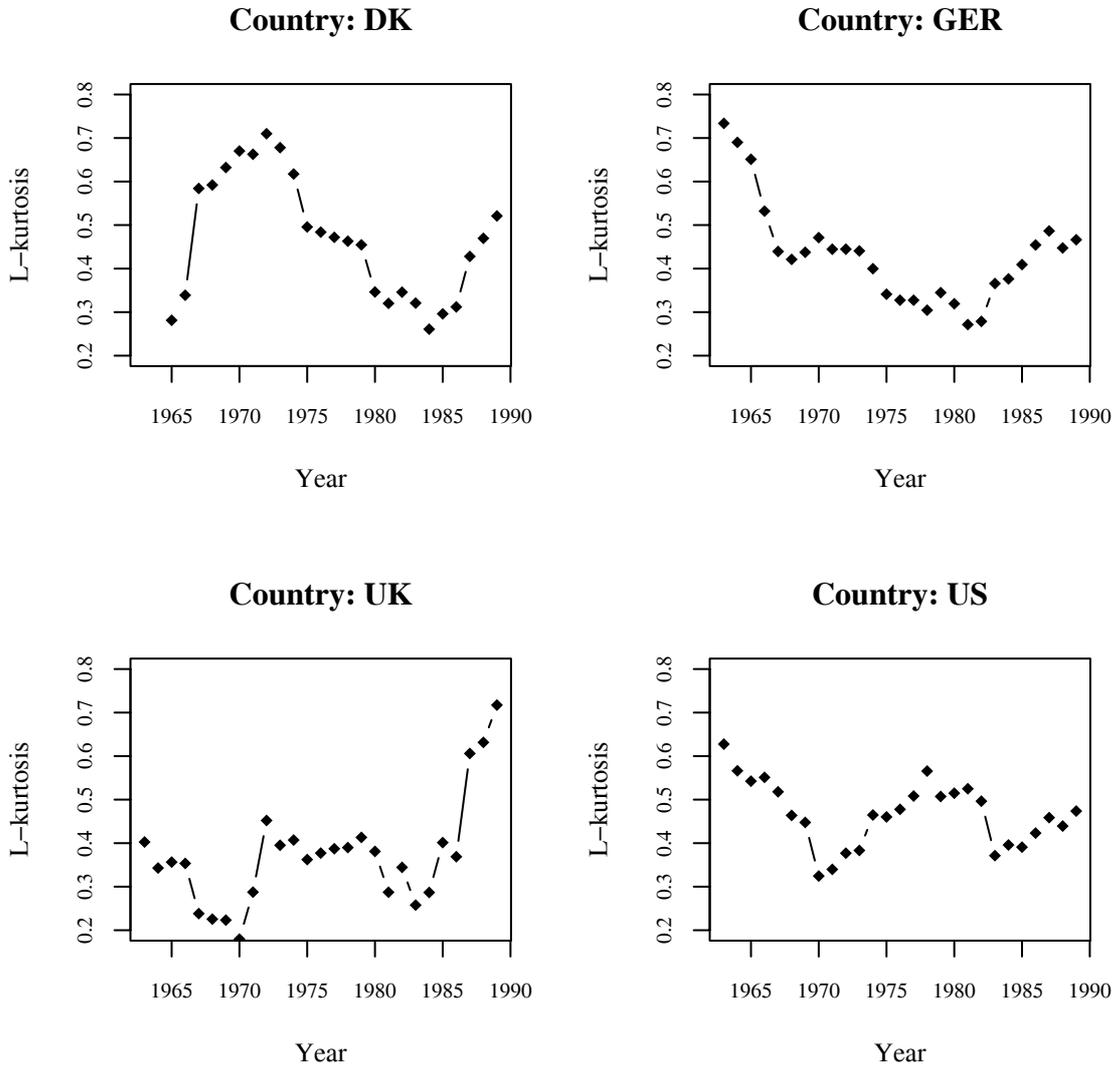


Table 2. Time Series Analysis of the Determinants of Budget Punctuations (measured as the log of the annualL-kurtosis).

Variable	DK			GER			UK			US			
	m1	m2	m3	m1	m2	m3	m1	m2	m3	m1	m2	m3	lk3
Partisan Distance	-.0075	-.0081	-.0077	.0027	.0019	.0020	.0216	.0219	.0267	-.0800	-.0753	-.0669	.0876
	(.0033)	(.0034)	(.0032)	(.0009)	(.0009)	(.0009)	(.0059)	(.0061)	(.0008)	(.1066)	(.1121)	(.1241)	(.0910)
Partisan Control		.0009	.0010		.0027	.0027		-.0004	-.0006		-.0012	-.0013	-.0059
		(.0008)	(.0008)		(.0010)	(.0010)		(.0008)	(.0083)		(.0012)	(.0019)	(.0017)
Electoral Cycle			.0275			-.0073			-.0393			.0010	.0597
			(.0312)			(.0222)			(.0521)			(.0355)	(.0635)
Constant	-.4383	-.4148	-.4548	-1.0666	-1.0185	-1.0280	-4.7879	-4.7930	-5.5340	(9.6417)	9.0256	7.9309	-11.9832
	(.3318)	(.3325)	(.3165)	(.2471)	(.1885)	(.1926)	(1.0223)	(1.0620)	(1.3475)	(13.7188)	(14.4480)	16.0428)	(11.7077)
ϕ	.8900	.8860	.8897	.9397	.9240	.9252	.9036	.9131	.9347	.8710	.8345	.8041	.2639
	(.0749)	(.0738)	(.0729)	(.0543)	(.0628)	(.0626)	(.1366)	(.1322)	(.1280)	(.0960)	(.1617)	(.2637)	(.2869)
N	25	25	25	27	27	27	27	27	27	27	27	27	27
Log-Likelihood	12.09	12.51	12.83	27.49	30.00	30.05	4.97	5.03	5.23	14.54	14.87	13.94	6.92
<i>Note:</i> Robust standard errors in parentheses. Two tailed test with p-values:							<.05	<.01	<.001				

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TOTAL WORDS: 6566 + 950 (figures and tables)= 7516.