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Stability and Punctuations in Public Spending: A Comparative Study of Budget Functions

Christian Breunig
University of Toronto
Chris Koski
James Madison University
Peter B. Mortensen
University of Aarhus

ABSTRACT

This article provides a comprehensive analysis of stability and punctuations in public spending within and across two different countries—Denmark and the United States. The theoretical starting point is the classic model of budget incrementalism and Jones and Baumgartner's model of disproportionate information processing. First, despite the clear differences in institutional setup, we show that public spending spanning many decades in Denmark and the United States are characterized by a similar distribution of small-, medium-, and large-scale spending changes. What is more intriguing is that we show how this aggregate result obscures (1) substantial variation between categories of public spending and (2) similar tendencies within similar spending categories across the two countries. These findings suggest that we need to unpack the overall budgets for detecting the particular sources of stability and change in government spending. Hence, the article offers important comparative findings that not only challenge the empirical validity of classic budgetary incrementalism but also advocate an increased focus on more disaggregated spending dynamics than employed in previous studies of the model of disproportionate information processing.

INTRODUCTION

The mismatch between empirical accounts of both public budgeting and decision making in general and theories that explain public policy in terms of incremental change prevailed for several decades. Although the reputation of incrementalism as a very static model of public budgeting may be a little unfair (see, e.g., Davis, Dempster, and Wildavsky 1966, 1974), the approach is definitely not well suited to account for the large changes in policy and public spending that many national governments display on a surprisingly frequent basis (see, e.g., John and Margetts 2003; Jones, Sulkin, and Larsen 2003; Jones et al. 2009). Jones and

Address correspondence to the author at c.breunig@utoronto.ca.

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Baumgartner's (2005a, 2005b) disproportionate information processing model, which includes aspects of incrementalism, offers a more compelling explanation for those very large changes in policy making. The disproportionate information processing model suggests that policy makers often ignore powerful signals for policy correction, which in turn leads to the type of long-term policy stability that incrementalism characterizes. However, when signals are particularly strong, policy makers tend to overadjust the current policies leading to periodic, large-scale policy changes. Thus, Jones and Baumgartner (2005a, 2005b) argue that political decision makers either ignore or overreact to information signals from their surroundings. This results in a distinct pattern of both stability and punctuated change in policy outputs often measured in terms of public spending indices.

This article extends the investigation of stability and punctuations in public spending to a longitudinal cross-national comparison between Denmark and the United States of different spending domains. Although previous cross-country studies of budget dynamics have been focused on country-level comparisons, we unpack the national budgets and initiate a systematic comparison of stability and punctuations at a more disaggregated level of policy making. Applying this approach to two very different political systems reveals how the similarities found in previous country-level comparisons obscure substantial variation at the functional level both within and between the two political systems. Although almost all spending categories show the distinct punctuated pattern of stability occasionally interrupted by relatively large-scale changes, we also find considerable variation in the degree of stability and punctuation across spending categories.

Furthermore, we present evidence that the patterns of stability and punctuations of similar spending categories are alike across the two countries. This finding suggests that part of the explanation for stability and punctuations in public spending is linked to some fundamental characteristics of particular spending domains—independent of country context. We do not propose definite answers to the origins of these patterns but argue that these findings should lead to a renewed interest in domain-specific explanations as those advocated in various strands of literature on issue characteristics and subsystem dynamics (e.g., Baumgartner and Jones 1993; Heclo 1978; Lowi 1964; Thurber 1991). Whatever the exact explanation of this variation at the budget function level, the findings are important because they extend our scholarly attention away from macro-institutions and more universal explanations, such as the bounded rationality of public policy makers, and point to the importance of policy making determinants operating at the subfunction level of public policy making.

INCREMENTALISM AND DISPROPORTIONATE INFORMATION PROCESSING

For several decades, incrementalism was the dominant theory of public budgeting. At the dawn of empirically derived theories of policy change, scholars observed that budgets developed incrementally with only minor adjustments from one year to another (see Danziger 1978; Davis, Dempster, and Wildavsky 1966, 1974; Fenno 1966; Wildavsky 1964; for a review, see LeLoup 1978). As early as the 1970s, however, the theoretical foundations of incrementalism came under attack. Critics noted problems in the measurement and methodology used to support the model of incrementalism (Padgett 1980; Wanat 1974), as well as a lack of theoretical and conceptual clarity (Bailey and O'Connor 1975; Berry 1990; Dempster and Wildavsky 1979). Furthermore, nearly all studies investigating policy change over time find periods of stability, but many of them also find significant and

large-scale changes that cannot be accounted for by the model of incrementalism (Boyne, Ashworth, and Powell 2000; Danziger 1978; Davis, Dempster, and Wildavsky 1966, 1974; Natchez and Bupp 1973). Alternative explanations of this pattern of both stability and change have been few and for many years "we have been left with incrementalism by default" (True 2000, 4).

The incrementalist budgeting tradition remained beset by this theoretical, methodological, and empirical quandary until Baumgartner, Jones, and various colleagues offered a model capable of explaining long periods of stability punctuated by short periods of rapid change (Baumgartner and Jones 1993; Jones and Baumgartner 2005a, 2005b; Jones, Baumgartner, and True 1998; Jones, Sulkin, and Larsen 2003; Jones, True, and Baumgartner 1997; True, Jones, and Baumgartner 1999). Jones and Baumgartner (2005a, 325) argue that incrementalism is a special case of a more generalized model that they term disproportionate information processing.[1] Like the incremental model of decision making, the model of disproportionate information processing assumes bounded rationality among decision makers and institutional friction in the processing capacity of political organizations (Jones and Baumgartner 2005a, 2005b). However, according to the model of disproportionate information processing, these factors do not imply incrementalism. On the contrary, they imply a pattern of stability occasionally interrupted by large and sudden punctuations (ibid.). Early scholars of incrementalism missed the dynamics of attention allocation in the policy process by focusing only on the role of procedures in the normal course of decision making. The serial processing capacities of policy makers, which in periods of stability serve to prevent policy change, also ensure increased focus on new issues to the exclusion of others once their attention shifts (ibid.; also see John and Margetts 2003). As described by Jones (2001, 144), "Incrementalism is the rule when most actors are not attending in any detail to a program, but when the program attracts their attention, punctuations occur, [. . .] and these punctuations are not necessarily directly tied to major disruptions in the environment.

Empirically, the application of the model of disproportionate information processing (and its counterpart punctuated equilibrium theory) to budget changes—US state (Breunig and Koski 2006) and federal (Jones, Baumgartner, and True 1998; Jones, Sulkin, and Larsen 2003; Jones, True, and Baumgartner 1997; True 2000), British (John and Margetts 2003), Danish (Mortensen 2005), French (Baumgartner, Foucault, and Francois 2006), and German (Breunig 2006) national budgets—always show budgets peaked by large punctuations. Backed by these empirical findings, some budget scholars even claim that this pervasive pattern of many small-scale budget changes, few moderate changes, and relatively many large-scale changes represents a general empirical law of public budgets (Jones et al. 2009).

Although this seemingly universal pattern of both stability and punctuations in public budgets complies with the basic proposition made by the model of disproportionate information processing, the model also faces challenges in its application. In the first US applications, the emphasis was on the importance of the friction caused by the US system of separated powers and overlapping responsibilities (see, e.g., Baumgartner and Jones 1993; Jones, Sulkin, and Larsen 2003). However, the institutional exceptionalism of the

1 According to Jones and Baumgartner (2005a), the model of disproportionate information processing also represents a more generalized version of the punctuated equilibrium model (see Baumgartner and Jones 1993), and thus, in this article we consistently use the term disproportionate information processing model.

American political system among advanced democracies is well known. Hence, the replication of the US budget findings in a range of European parliamentary countries seem to suggest that cross-country differences in institutions may not be such a strong predictor of the stability-punctuation ratio in public budgets.

Consequently, these general cross-country findings have led to an increased focus on the role of more universal explanatory factors, such as the bounded rationality and cognitive limitations of all human decision makers. As concluded in a recent comparison of United States, Denmark, and Belgium (Baumgartner et al. 2009, 615), "Differences in political systems when the US separation of powers system is compared to European parliamentary democracies with strong political parties often attract considerable scholarly attention. However, at least in the democracies we studied, the effects of the policy process dominate the country effects. Boundedly rational human behaviour and similarities in how the processing of inputs must occur in any organization may explain our findings. No institutional design can do away with human cognitive limits."

In this article, we build on the empirical validity of the punctuated budget distributions found across countries and acknowledge that bounded rationality as emphasized by both incrementalism and the model of disproportionate information processing may be an important determinant of these distinct spending patterns. However, to better grasp the mechanisms behind these spending patterns, we open up national budgets and compare different spending categories to uncover the variation within overall similar national budgets. More particularly, inspired by the rich literature on issue and subsystem differences, we focus on the level of budget functions and start to compare patterns of stability and change in public spending, not only across countries but also across subcategories such as spending on health, education, defense, transportation, law and order, and so forth.

There are a number of reasons to expect spending patterns to differ at this disaggregated level of policy making. For instance, in their 1993 book, Baumgartner and Jones discuss potentially systematic differences across policy subsystems. Where interests are well mobilized on one side of an issue and poorly organized on the other, conflict and political debate are unlikely to be the rule, whereas subsystem politics and stability are (1993, 190). They point out that such interest configurations can change over time, paralleling redefinitions and shifts in macro-political attention. However, borrowing from the literature on policy typologies (Wilson 1980), they also hypothesize that some policy areas, due to fundamental policy characteristics, are systematically more prone to one-sided mobilization and stability than others (Baumgartner and Jones 1993, 176). Similar ideas about policy subsystem differences can be found in the vast literature on policy subsystems, policy networks, iron triangles, policy monopolies, and so forth (Heclo 1978; Jordan 1981; Jordan and Maloney 1997; Rhodes and Marsh 1992; Sabatier 1993; 1998; Thurber 1991).

The literature on issue typologies represents another perspective that points to variation across policy domains. According to this "policy-determines-politics" view—most of which is rooted in the work of Lowi (1964)—the fundamental characteristics of a given issue matters to the political decision making on that issue. Although this literature has often been concerned with regulatory policies, there is no reason why it could not apply to differences in the allocation of public spending as well. For example, one might ask, "do spending domains characterized by widely distributed interests behave differently than spending domains characterized by more concentrated agency interests?"

Finally, along the same line of reasoning, it is empirically well documented that some issues are more salient to the general public than others (see, e.g., McCombs 2004; Wlezien 2005). Again, what kind of impact this may have on the evolution of public budgets seems at this point to be a relatively open empirical question, but it does at least justify a closer look at issue-by-issue comparisons. As John and Margetts (2003, 430) note in their study of budget changes in the United Kingdom, "we find that the range of punctuations differs according to the policy sector in question .... Some sectors are more responsive to public opinion than others; others may be more locked into their policy communities."

In sum, the literature on subsystem or issue-by-issue variation is not only varied and fragmented but also remained unrelated to the study of stability and punctuations in public spending. The state of the literature does not allow us to derive firm theoretical expectations about similarities and differences across spending categories. The aim of the following empirical analysis was to examine spending changes more systematically and to point our scholarly attention to some important spending patterns that have largely been overlooked in previous applications of both incrementalism and the model of disproportionate information processing (though see John and Margetts 2003; Jordan 2003; Mortensen 2005). In the next section, we describe the setup of our comparative spending analysis.

INVESTIGATING STABILITY AND CHANGE IN PUBLIC SPENDING

The following analysis is focused on a comparison between Denmark and the United States. Because it is hard to think of two more institutionally different Western democracies than the small European unitary state of Denmark and the large federal US political system, this case selection clearly represents a most different systems design research strategy. Hence, our country selection is not only well suited to detect general empirical regularities across institutional differences at the country level but also appropriate to assess whether (1) variation across policy domains is found within very different kinds of political systems and (2) similar policy domains follow similar patterns across very different political systems.

We pursue a three-step empirical approach to shed light on these questions. First, in line with previous studies we show that at the country level the spending patterns indeed look very similar across these two very different political systems. This analysis, however, mainly serves as a baseline comparison for the following analyses. It simply shows that differences at the sub-functional level become subsumed under one punctuated distribution. When budget functions are pooled together, they produce rather similar results across the two political systems.

Second, we break down the country results and compare spending changes across subcategories within each of the two countries. Demonstrating clear differences across spending categories (such as health, defense, education, etc.) within each country would be a clear indicator that universal factors such as bounded rationality are not sufficient to account for punctuated patterns of public spending changes. Rather, such variation would lend credence to an increased focus on factors operating at the issue or subsystem level, such as the configuration of interest groups, the public salience of the issue, and the different institutional setup of different policy domains.

Finally, we select a subset of spending categories that can be matched more directly across the two countries. We conduct a focused cross-country comparison to identify similar patterns within similar spending categories across the two countries. Such similarities would lend support to the policy-determines-politics typology perspective. In contrast, if

spending patterns differ across domains in the two countries, variation at the subcategory level is still important to understanding the (lack of) spending dynamics in each nation. The reasons for these spending differences, however, may then be found in more country-specific, perhaps historical, factors than objective domain or issue characteristics. For instance, previous comparative process studies of tobacco control, health, and environmental policy making in Denmark and the United States point to different policy-making styles across the two countries within otherwise similar policy domains (Albæk, Green-Pedersen, and Nielsen 2006; Green-Pedersen and Wilkerson 2006; Lundqvist 1980). Such process differences may also show up in policy outputs measured here as annual changes in public budgets.

Data and Methods

Questions about the appropriate data structure regularly surface in applied public policy research. In general, decisions of national governments in Denmark and the United States define our theoretical interest. Because public spending is a broad concept, it is not always straightforward what particular type of public spending most accurately reflects the governmental decisions. Should we distinguish between local and central spending, especially in a unitary state like Denmark? What is the appropriate level of functional aggregation and is planned spending a better measure than final expenditures?

To some extent the answers to these questions depend on the context of the specific governmental decisions. Sometimes central government interferes rather directly in local spending priorities and sometimes they do not. Sometimes politicians can decide about how much to spend on a specific research institute and who should be employed there; however, they can also just decide on the general level of public spending on science and research. In fact, this kind of decision making is exactly what we would expect given the idea of attention-based decisions underlying both the decision-making model of incrementalism and the model of disproportionate information processing. Nevertheless, it certainly complicates the systematic study of governmental decisions over time. The US Policy Agendas Project[2] demonstrates that, despite these uncertainties, it is possible to construct a data set based on functional categories that proxy broader governmental priorities over time. Hence, to the extent possible we follow the template from the Policy Agendas Project in both of our countries.

For the United States, we directly use the Policy Agendas Project data on budget authority, which, unlike budget outlays, registers the total cost of a given activity at the time of the political decision to spend the money.[3] The data set covers the period from 1947 to 2006 and consists of congressional budget authority. The Policy Agendas Project is the most comprehensive database of government budget authorities categorized by programmatic and nonprogrammatic function available. Additionally, we use policy agendas data to understand budgetary decision making over time because of its consistent and backward-compatible coding system. Specifically, we employ its 60 programmatic subfunctions

2 See http://www.policyagendas.org. For an introduction to the database, see Baumgartner, Jones, and Wilkerson (2002).

3 The US budget data used here were originally collected by Frank R. Baumgartner and Bryan D. Jones, with the support of National Science Foundation (NSF) grant number SBR 9320922, and were distributed through the Center for American Politics and Public Policy at the University of Washington and/or the Department of Political Science at Penn State University. Neither NSF nor the original collectors of the data bear any responsibility for the analysis reported here.

and its distinction between mandatory and discretionary domestic spending.[4] It is further adjusted for technical changes and all entrances are transformed to constant US dollars to enhance the cross-sectional over-time comparability.[5] All 60 categories are shown in Table A1.

The Danish data set is produced by Statistics Denmark and covers the period from 1971 to 2003.[6] It consists of 34 subfunctions of which we exclude 8 because no description of their programmatic content is available. The subfunctions cover many central aspects of Danish public policies (all categories are shown in Table A2) and are corrected for technical changes in registration and budget principles to make it comparable over time.[7] From this data set, we construct a unified measure of both central and local public spending converted into 2000 constant Danish prices.

To facilitate the comparison of specific budget functions, we matched several major budget functions and subfunctions across the two countries with the use of detailed descriptions provided by the Policy Agendas Project and Statistics Denmark. These categories also rather closely resemble those proposed by the United Nations (2000) guidelines called Classification of Functions of Government. Table A3 provides the details of this comparison. To increase comparability, these matched data across the two countries cover the years between 1971 and 2003.

Furthermore, we follow the standard approach for transforming the spending data to conduct the subsequent analysis (see Jones, Sulkin, and Larsen 2003). Thus, for each data set, we compute the annual changes in the budget share for each function.[8] These year-to-year percentage changes for each category are then pooled together, first by country and then by country and budget category in line with our theoretical discussion.

Finally, one graphical method and one statistical method are employed to detect the extent of stability and punctuations in the public spending data. The graphical tool is a histogram that displays the probability densities of our spending changes by grouping them into distinct categories (i.e., bins). Compared with incremental spending distributions, punctuated distributions are characterized by an overrepresentation of small changes, an underrepresentation of midrange changes, and some massive increases/decreases (see Jones and Baumgartner 2005a, 2005b; Jones, Sulkin, and Larsen 2003). Histograms of punctuated distributions, thus, have two features: high frequency of changes around the center and extreme values that taper up rather than taper down, referred to as "fat tails."

Ocular verification by itself, however, is insufficient evidence in particular when the aim is to detect specific differences between distributions of large numbers of annual spending changes. Therefore, to detect the ratio of small, medium, and large spending changes,

4 We consider programmatic subfunctions given their direct linkage with the politics and processes that determine the policies they are intended to fund. The Policy Agendas Project notes that other nonprogrammatic functions tend to be erratic in their yearly presentation of data given that they are not representative of complete funding transactions (see True 2007). We followed True's (2007) advice: concentrate on the 60 programmatic subfunctions and include offsetting receipts for these subfunctions.

5 See http://www.policyagendas.org/doc/BACodebookFY1947-2006.doc for a detailed introduction to the data set.

6 See www.statistikbanken.dk

7 The assembly of the Danish data largely resembles the policy agendas method. Statistics Denmark uses the gross spending principle, which (1) closely links outlays to programs and (2) does not employ offsetting receipts.

8 The percentage-percentage method is a relative measure of change that is based on previous activity in a policy area and on what is happening in other policy areas. If the divisor is zero (i.e., a budget function is zero in the preceding year), we omit the case.

we complement the visual analysis with a descriptive statistic of kurtosis (see also Baumgartner et al. 2008; Jones and Baumgartner 2005a, 2005b; Jones, Sulkin, and Larsen 2003; Jones et al. 2009). A high-kurtosis distribution has a sharper peak and longer fatter tails, whereas a low-kurtosis distribution has a more rounded peak and shorter thinner tails. Specifically, we rely on a statistical measure of the shape of a distribution called l-kurtosis (Hosking 1990, 1998). Compared with the commonly used excess kurtosis measure, l-kurtosis is based on linear combinations of order statistics and thus is less sensitive to outliers and is reliably computed for a relatively small number of cases.[9] The l-kurtosis ranges from zero to one where an increasing number occurs for distribution with a sharper peak and longer fatter tails (i.e., a leptokurtic distribution).

FINDINGS

As an initial step, we compare the overall shape of the Danish and US distributions by pooling all annual spending changes by category within each country. The histograms provided in figure 1 clearly show that annual changes across all budget categories display the regularly identified pattern of unusually (compared with a normal distribution) many small changes, few medium changes, and several very large changes. In fact, for both countries, we observe three times as many small changes as one would expect by a normal distribution.[10] In addition, massive increases of 50 and more percent are also more common than one would expect from a normal distribution. The visual assessment of the histograms suggests that both Danish and US spending changes are characterized by severe stability occasionally interrupted by large-scale punctuations. The l-kurtosis scores of 0.43 and 0.49 in the case of Denmark and United States, respectively, confirm our visual assessment (see Table 1). At the overall aggregation level, we find very similarly shaped distributions of Danish and US spending series. This confirms earlier findings that macro-institutional or other country-level differences do not seem to have a strong impact on the ratio of stability and punctuations in national public spending (see Baumgartner, Foucault, and Francois 2006; Baumgartner et al. 2009).

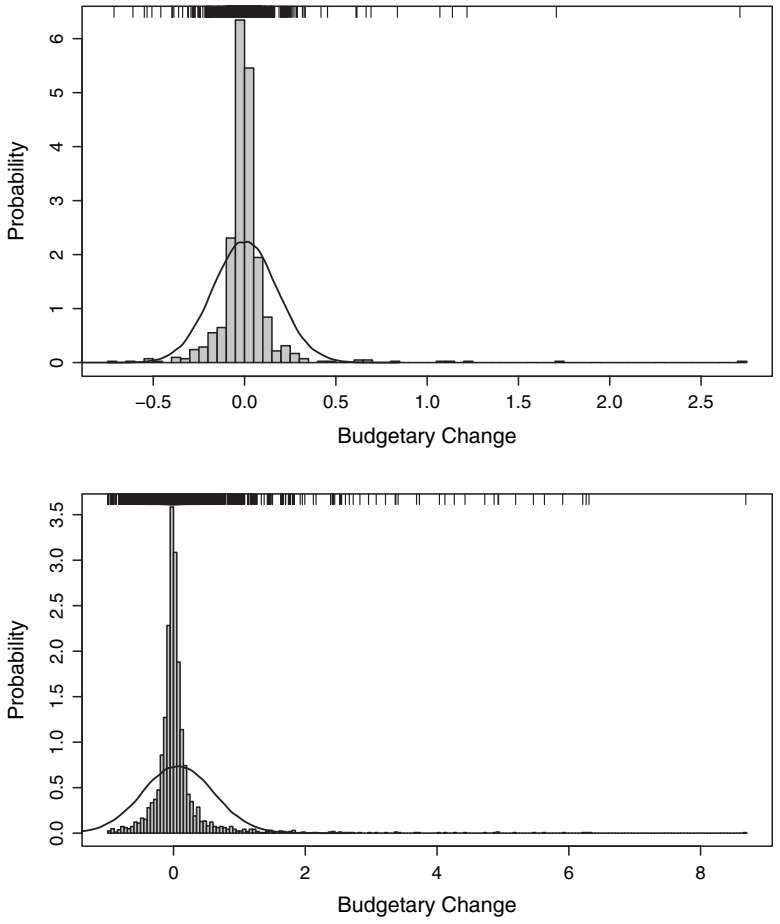
These national-level distributions, however, may hide relatively large variation in annual spending changes at a lower level of aggregation. Hence, to uncover such variation, we compute the l-kurtosis scores for each spending category. In figures 2 and 3, each dot plot is arranged so that the spending categories are ordered from the one with the lowest to the one with the highest l-kurtosis value.

Figures 2 and 3 show that at the subfunction level, the US budget is generally more punctuated than the Danish budget, but within both countries, the range in l-kurtosis scores is large, from less than 0.12 (which roughly corresponds to a normal curve) to more than 0.60 for the Danish spending subfunctions and from about 0.20 to more than 0.65 for the US subfunctions of government spending. This is an important finding that clearly shows how

9 These small *N* properties of the l-kurtosis are shown in a set of simulations by Christian Breunig (results are available upon request). The measure's robust qualities are particularly important in the present study because we break down the distributions to the level of spending subcategories.

10 The mean share change for all Danish budget categories is close to 0; for US categories, it is 0.07. This roughly conforms to the historical rate of increase in the US budget. The lower average for Denmark might be due to fiscal austerity during the 1980s. For more specific summary statistics, see Table A4.

Figure 1
Histogram of Functional Budgetary Changes in Denmark (Top) and the United States (Bottom). A Normal Curve Is Added for Comparison. $N = 832$ for Denmark and $N = 3{,}286$ for the United States



the similarly shaped aggregate-level distributions that we observe in figure 1 conceal clear and marked variations between the different spending categories.

Having identified variation in the patterns of annual spending changes across budget categories within countries, the next question is whether similar spending subfunctions behave similarly across different countries. To address this question, we construct from the two data sets 12 comparable spending categories and compute their l-kurtosis scores. To increase comparability across the two countries, we focus in this part of the analysis on the period 1971–2003, which is the period covered by both the US and the Danish spending data. The exact matching of categories is displayed in Table A3. The results of the comparison are reported in figure 4.

Figure 4 contains at least three noteworthy results. First, in line with figures 2 and 3, figure 4 shows that US spending categories generally—and more apparent than in the pooled aggregate analysis reported in figure 1—show higher l-kurtosis values than

Table 1
Kurtosis Statistics

Country	Budget Series	L-Kurtosis
Denmark	All	0.43
Denmark	Mandatory	0.40
Denmark	Discretionary	0.44
United States	All	0.49
United States	Mandatory	0.48
United States	Discretionary	0.48
United States	Domestic discretionary	0.47
United States	Military discretionary	0.51

the corresponding Danish categories. Whereas the Danish l-kurtosis scores range from around 0.03 for education spending to 0.27 for spending related to agriculture politics, the US scores range from 0.08 for health-related spending to 0.64 for spending on transportation. Again, these results confirm that the aggregate results shown in figure 1 may hide some marked country-level differences at the subfunction level of government spending.

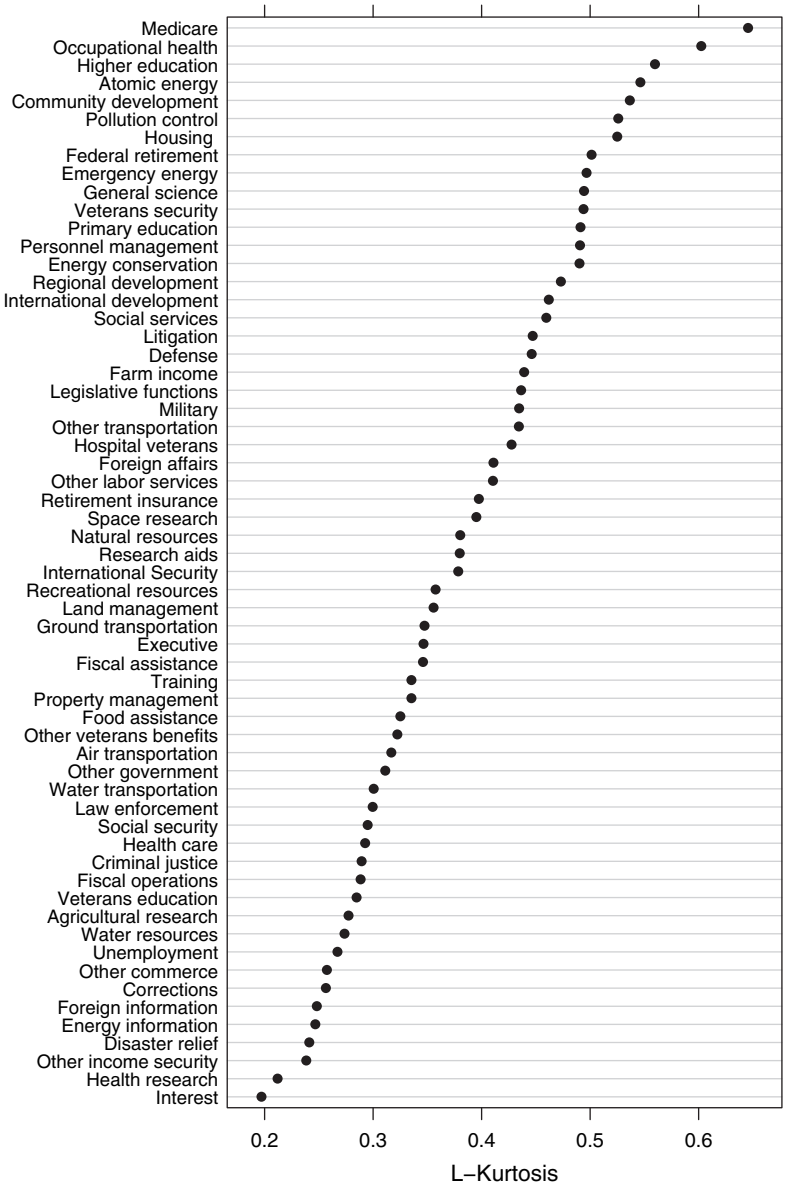
Second, however, we also see several of the spending categories producing very similar l-kurtosis scores across the two countries. This is most pronounced for the categories of agriculture, Medicare, administration of justice, and health and to a lesser degree spending on national defense and international affairs. Nevertheless, figure 4 also shows some marked differences across the two countries within similar spending categories, most clearly on transportation issues but also with respect to other spending areas such as education and Social Security.

Finally, though we see some differences in the level of l-kurtosis in figure 4, we also see a quite similar relative ordering of the l-kurtosis scores. In other words, it seems like the Danish spending categories with the lowest (and highest) l-kurtosis scores go together with the US spending categories with the lowest (and highest) scores. To assess this more directly, figure 5 displays a scatter plot of the l-kurtosis scores shown in figure 4.

Plotting the l-kurtosis scores grouped by country and spending subfunction against each other, figure 5 offers an important specification of the findings previously reported. Although some differences across the two countries' spending functions exist in the magnitude of the l-kurtosis scores, figure 5 clearly indicates a similar relative ordering of spending functions across the two countries. Thus, those of the 12 Danish subfunctions with the lowest l-kurtosis scores also tend to be those subfunctions within the 12 US categories with the relatively lowest l-kurtosis scores. In fact, Spearman's rho correlation between the two series displayed in figure 5 equals 0.52 when all 12 subfunctions are included and 0.65 if the somewhat deviant transportation category is excluded. Hence, figure 5 provides initial support for the notion that more fundamental characteristics of a given spending domain affect the spending dynamics experienced by that domain. For instance, categories such as education, international affairs, and health in both countries seem to live without major upsets in their funding streams. This is in contrast to other domains, most notably agriculture and defense, which appear to be substantively more punctuated across the two countries.

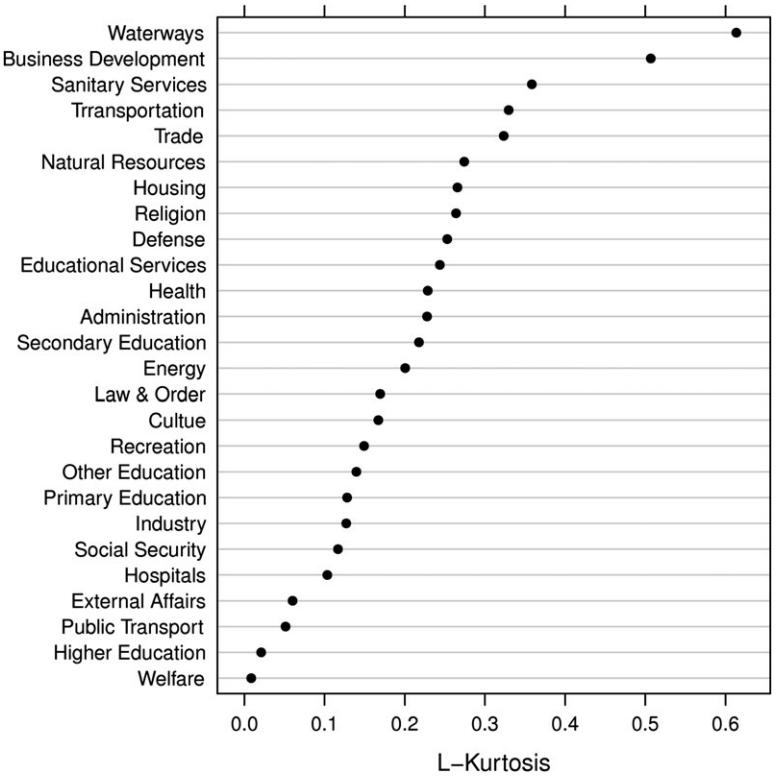
As discussed in the theoretical part of the article, the spending functions previously examined can differ on several potentially relevant dimensions and the design of the present

Figure 2
Dot Plot of L-Kurtosis for All Programmatic Subfunctions in the US Budget. Total $N = 3{,}286$ with a Range of 25–59 Cases per Subfunction



study does not allow us to pinpoint which of these dimensions are more or less important to the observed spending patterns. The available spending data do allow us, however, to examine the importance of the often referred to distinction between discretionary and mandatory spending (see, e.g., Jones, Baumgartner, and True 1998). Some spending subfunctions mainly consist of entitlements and other mandatory spending obligations,

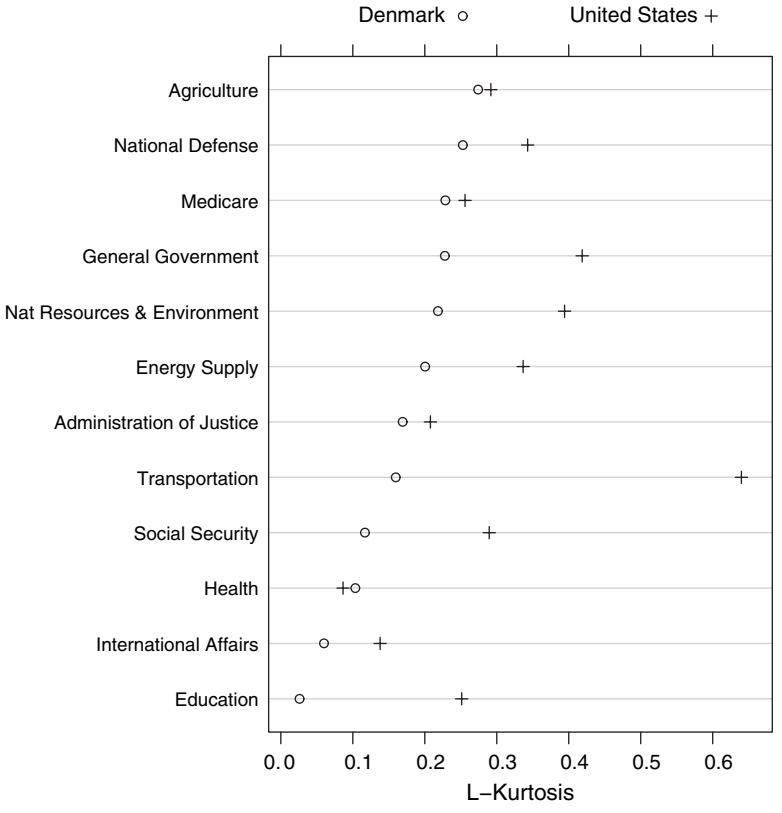
Figure 3
Dot Plot of L-Kurtosis for All Programmatic Subfunctions in the Danish Budget. Total $N = 832$ with 32 Cases per Subfunction



whereas others are dominated by discretionary spending (see Tables A1 and A2 for a categorization). As noted by Jones, Baumgartner, and True (1998, 12), tying public spending to various indices as it is often the case with mandatory spending may lead to other spending dynamics than in discretionary spending domains, where spending is largely decided on an annual basis. Hence, we conclude the analysis with a comparison of discretionary and mandatory spending categories calculated by each country. The results are shown in Table 1.

Although Table 1 shows that spending functions in Denmark dominated by discretionary spending have a slightly higher l-kurtosis score than mandatory spending, the differences in l-kurtosis scores seem too small to account for the large differences found at the more disaggregate level of spending functions. For the US series, the differences are even smaller as displayed in the lower part of Table 1. This does not necessarily imply that the two types of spending respond to similar factors because punctuations in mandatory spending may be the result of spending being tied to external indexes that themselves can be volatile (e.g., agriculture or unemployment insurance). Punctuations in other mandatory spending programs such as pension funds may rather be a function of changes in the laws governing these schemes. Only further research can answer such questions, but whatever the exact explanation of the high l-kurtosis scores reported in Table 1, the small differences

Figure 4
A Comparison of Budget Categories, 1971–2003. Total $N = 766$ with 32 Cases per Subfunction

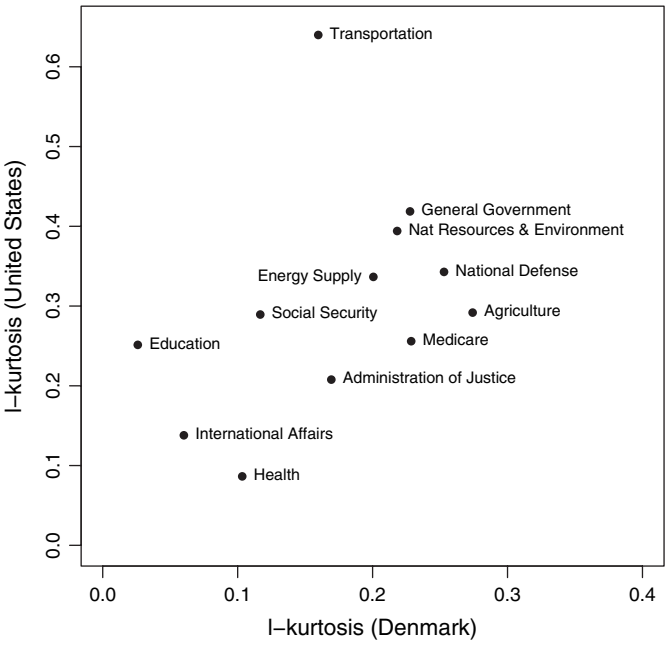


in these scores clearly suggest that the distinction between mandatory and discretionary spending seems too general to capture the differences observed in figures 2–5. Hence, although the findings in Table 1 do not rule out the importance of more aggregate and general distinctions, they do—in combination with the other findings reported in figures 1–5 above—lend credence to a renewed and an increased focus on more disaggregated spending mechanisms operating at the subfunction level of public policy making.

CONCLUSIONS AND DISCUSSION

This study has shown the following. First, consistent with previous comparative spending studies, public spending changes in Denmark and the United States are characterized by similar patterns of severe stability now and then interrupted by large-scale changes. The massive stability in these series signifies the relevance of the incrementalist perspective, whereas the regular occurrence of punctuations justifies the more generalized and elaborate

Figure 5
Scatter Plot of L-Kurtosis for US and Danish Budget Categories. Total $N = 766$ with 32 Cases per Subfunction



model of disproportionate information processing. Second, although we have demonstrated how these national-level analyses hide very diverse spending patterns across subfunctional categories within each of the two countries, we also find similar subfunctions display similar spending patterns across the two countries. Such variation does not rule out the importance of more universal explanations emphasized in the previous national-level spending studies, but they do indeed advocate increased focus on factors operating at the level of budget subfunctions.

At this stage of the research process, we are not in a position to pinpoint exactly what accounts for the variation at the subfunction level, but by showing its existence we hope to direct scholarly attention to a new set of questions that have been overlooked in previous applications of the disproportionate information processing model. Furthermore, the ordered findings across the two countries do hint at some explanations linked to fundamental characteristics of particular policy domains that should be assessed more directly in future research. These are various versions of the policy-determines-politics arguments that stress how policy making in similar policy domains tends to be organized in similar ways and with quite similar interest configurations. Alternatively, public salience of a given policy domain may tend to be quite similar for similar policy domains across different countries. Thus, to further develop our understanding of stability and punctuations in public spending, we believe that future research—perhaps based on an expanded number of countries—should try

to take into account explicit measures of such domain characteristics and to pursue a strategy for multivariate hypotheses testing to evaluate the relative importance of such domain-specific explanations.[11] Judging by the present study, we may be able to move the literature on public spending forward substantially based on a combination of universal characteristics about the policy-making process that probably apply across the board, the most likely candidate being some form of bounded rationality, and then more domain-specific characteristics that may vary more by domain than by country.

APPENDIX

Table A1
Classification of US Budget

Budget Subfunction	Programmatic Subfunction	Discretionary	Domestic Discretionary	National Security Discretionary	Mandatory
051 Military Personnel	Yes			Yes	
051 Operation and Maintenance				Yes	
051 Procurement				Yes	
051 Research, Development, Test, and Evaluation				Yes	
051 Military Construction				Yes	
051 Family Housing				Yes	
051 Other Military				Yes	
051 Military		Yes		Yes	
053 Atomic energy	Yes	Yes		Yes	
054 Defense	Yes	Yes		Yes	
151 International development	Yes	Yes		Yes	
152 International Security	Yes	Yes		Yes	
153 Foreign affairs	Yes	Yes		Yes	
154 Foreign information	Yes	Yes		Yes	
251 General science	Yes	Yes	Yes		
252 Space research	Yes	Yes	Yes		
272 Energy conservation	Yes	Yes	Yes		
274 Emergency energy	Yes	Yes	Yes		
276 Energy information	Yes	Yes	Yes		
301 Water resources	Yes	Yes	Yes		
302 Land management	Yes	Yes	Yes		
303 Recreational resources	Yes	Yes	Yes		
304 Pollution control	Yes	Yes	Yes		
306 Natural resources	Yes	Yes	Yes		
351 Farm income	Yes				Yes
352 Agricultural research	Yes	Yes	Yes		
376 Other commerce	Yes	Yes	Yes		
401 Ground transportation	Yes	Yes	Yes		
402 Air transportation	Yes	Yes	Yes		
403 Water transportation	Yes	Yes	Yes		

Continued

11 Breunig (2006), Robinson et al. (2007), and Walgrave and Nuytemans (2009) show in various ways how to combine the study of stability and punctuations with a multivariate hypotheses testing strategy.

Table A1 *(continued)*

Budget Subfunction	Programmatic Subfunction	Discretionary	Domestic Discretionary	National Security Discretionary	Mandatory
407 Other transportation	Yes	Yes	Yes		
451 Community development	Yes	Yes	Yes		
452 Regional development	Yes	Yes	Yes		
453 Disaster relief	Yes	Yes	Yes		
501 Primary education	Yes	Yes	Yes		
502 Higher education	Yes				Yes
503 Research aids	Yes	Yes	Yes		
504 Training	Yes	Yes	Yes		
505 Other labor services	Yes	Yes	Yes		
506 Social services	Yes	Yes	Yes		
551 Health care	Yes				Yes
552 Health research	Yes	Yes	Yes		
554 Occupational health	Yes	Yes	Yes		
571 Medicare	Yes				Yes
601 Retirement insurance	Yes				Yes
602 Federal retirement	Yes				Yes
603 Unemployment	Yes				Yes
604 Housing	Yes				
605 Food assistance	Yes				Yes
609 Other income security	Yes				Yes
651 Social security	Yes				Yes
701 Veterans security	Yes				Yes
702 Veterans education	Yes				Yes
703 Hospital veterans	Yes	Yes	Yes		
705 Other veterans benefits	Yes	Yes	Yes		
751 Law enforcement	Yes	Yes	Yes		
752 Litigation	Yes	Yes	Yes		
753 Corrections	Yes	Yes	Yes		
754 Criminal justice	Yes	Yes	Yes		
801 Legislative functions	Yes	Yes	Yes		
802 Executive	Yes	Yes	Yes		
803 Fiscal operations	Yes	Yes	Yes		
804 Property management	Yes	Yes	Yes		
805 Personnel management	Yes	Yes	Yes		
806 Fiscal assistance	Yes	Yes	Yes		
808 Other government	Yes	Yes	Yes		
901 Interest	Yes				Yes

Table A2
Subfunctions in the Danish Data Provided by Statistics Denmark, 1971–2003

Item	Topic	Discretionary	Mandatory
1	General administration		
2	External affairs	Yes	
3	Defense	Yes	
4	Law and order and safety	Yes	
5	Primary education	Yes	
6	Secondary education	Yes	
7	Institutions of higher education	Yes	
8	Spare-time education	Yes	
9	Services related to education	Yes	
10	Hospitals	Yes	
11	Individual health services		Yes
12	Social Security		Yes
13	Welfare services	Yes	
14	Housing		Yes
15	Sanitary services	Yes	
16	Religious services	Yes	
17	Recreational services		
18	Cultural services	Yes	
19	Energy supply	Yes	
20	Farming forestry fishing		Yes
21	Industrial issues	Yes	
22	Roads and transportation	Yes	
23	Inland and coastal waterways	Yes	
24	Public transport	Yes	
25	Trade services		Yes
26	General business development	Yes	

Table A3
Category Matching between the United States and Denmark

Cross-country Classification	United States		Denmark	
	Item	Topic	Item	Topic
National defense	50	National defense	3	Defense
International affairs	150	International affairs	2	External affairs
Energy supply	270	Energy supply	19	Energy supply
Natural resources and environment	300	Natural resources and environment	15	Sanitary services
			17	Recreational services
Agriculture	350	Agriculture	20	Farming forestry fishing
Transportation	400	Transportation	22	Roads and transportation
			24	Public transport
Education	501	EleSecVoc education	5	Primary education
	502	Higher education	6	Secondary education
	504	Training and employment	7	Institutions of higher education
	506	Edu social services	8	Spare-time education
			9	Services related to education
Health	550	Health	10	Hospitals
Medicare	570	Medicare	11	Individual health services
Social Security	650	Social Security	12	Social Security
Administration of justice	750	Administration of justice	4	Law and order and safety
General government	800	General government	1	General administration

Table A4
Summary Statistics

Country	Budget Series	Minimum	1st Quartile	Median	Mean	3rd Quartile	Maximum	*N*
Denmark	All	−0.71	−0.04	0	0	0.03	2.71	832
Denmark	Mandatory	−0.53	−0.05	0	0.01	0.03	1.14	160
Denmark	Discretionary	−0.71	−0.04	−0.01	0	0.03	2.71	608
United States	All	−1	−0.08	−0.01	0.07	0.09	8.69	3,286
United States	Mandatory	−0.84	−0.08	−0.01	0.04	0.07	9.55	746
United States	Discretionary	−1	−0.08	0.01	0.08	0.1	6.6	2,481
United States	Domestic discretionary	−1	−0.09	0	0.06	0.09	7.03	2,080
United States	Military discretionary	−0.98	−0.08	0	0.06	0.08	6.48	730

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