December fever in public finance *

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Abstract

Heightened spending at the end of fiscal years is prevalent in public and private organizations with annually lapsing budgets. It is generally perceived as less efficient than spending at other times of the fiscal year. Although the potentially lower returns to such expenditures amount to large sums, academic research into the causes and consequences of year-end spending spikes (YESS) is scarce. This paper provides the first analysis of YESS across countries. Using panel-econometric methods to exploit variation in donors' fiscal years, I find evidence for YESS in contributions to all types of funds at the daily, monthly, and quarterly level for a sample of 27 OECD countries over the 2002-2013 period. I propose that the size of YESS might be due to a lack of planning capacity and bureaucratic effectiveness. I also test the two main alternative explanations proposed in the literature: precautionary savings and procrastination by bureaucrats. There is highly robust evidence that bulk-spending at the end of the fiscal year is substantially lower in more effective bureaucracies while there is no conclusive evidence in support of the two alternative explanations for YESS.

1 Introduction

The heightened spending by government offices in the quarter, months, and weeks before the end of the fiscal year is widely acknowledged, nicknamed, and has repeatedly been discussed as a problem in government reports (e.g., GAO, 1985, 1998, 2004; Crawford et al., 2009).[1] Such year-end spending spikes are observed in most organizations with annually lapsing budgets, including public and private organizations (e.g., Fichtner and Greene, 2014; Baumann, 2015; Merchant, 1985). The common explanation is that in most countries and organizations, agencies need to return unobligated funds to the Treasury general fund at the end of the fiscal year. For the agency, this not only implies a loss of appropriated resources and the associated utility but is also associated with the fear of lower appropriations in future years. However, "use it or lose it" rules explain why budgets are spent *within* the fiscal year but not why heightened spending occurs *at the end* of the fiscal year (FY). Despite the omnipresence of the phenomenon and the widespread perception and plethora of anecdotal evidence that year-end spending surges (YESS) are (partially) inefficient, theoretical and quantitative empirical research on the causes and consequences of rushed end-of-year spending is scarce. Although some literature on policy reforms to curb year-end spending spikes exists, hard evidence on their effects is lacking.[2] The underlying causes of YESS also seem to be poorly understood in practice. For example, the introduction of carry-forward rules, that allow government units to transfer unspent funds to the next fiscal year, has not lead to sizeable reductions in year-end spikes in the United Kingdom (Crawford et al., 2009; Baumann, 2015).

This lack of research is in striking contrast to the potential consequences of rushed spending. Economic theory predicts that agents faced with lapsing funds may spend inefficiently as their opportunity costs are close to zero.[3] Liebman and Mahoney (2013) are the first to provide rigorous quantitative evidence that funds spent at the end of the fiscal year provide less value for money. Their finding confirms qualitative and anecdotal evidence that lapsing budget balances are usually spent on low-priority projects in a rushed and unplanned manner (e.g., Douglas and Franklin, 2006; McPherson, 2007; Fichtner and Greene, 2014). Because of rushed decision-making, end-of-year projects and in particular contracts are particularly prone to cronyism. This might be an additional reason for lowered efficiency, which is not yet explored in the literature. The U.S. Senate Subcommittee (1980) notes that although the share of year-end spending might be small relative to total government budgets, hurry-up spending amounts to large sums of money and even small efficiency losses lead to major (opportunity) costs. Research on YESS thus contributes to understanding and ultimately improving fiscal performance.

In public finance, there is a large literature on institutions improving fiscal outcomes.[4] One strand of this literature is concerned with budgetary institutions at the implementation stage of the budgetary processes. Thereof, two papers using sub-annual data are most relevant to this study. Liebman and Mahoney (2013) interpret YESS as precaution-

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[1]Fichtner and Greene (2014) provide a review.

[2]Fichtner and Greene (2014) review these proposals and discuss reform experiences.

[3]Liebman and Mahoney (2013, 1) write that the opportunity costs of spending about-to-expire funds is "effectively zero." If regular monitoring of the agent's achievements is possible and undertaken, and wasteful spending is punished, opportunity costs may be substantially higher.

[4]For a recent review see Eslava (2011).

ary savings by a government agency confronted with uncertain spending demands while Baumann (2015) explains YESS with the procrastinating behavior of bureaucrats. Using calibration, both studies find support for their respective theoretical mechanism. In contrast to these full-fledged theories, my explanation for YESS is simple and almost dull: it is the result of inadequate planning in ineffective bureaucracies. I argue that achieving the intended budget balance of zero at the year-end requires qualified staff, expedient software, and adequate reporting and controlling systems. Higher administrative capacity is thus associated with smaller YESS.

Using detailed accounting data on a specific item in the foreign aid budget for 27 countries in the Organizations for Economic Cooperation and Development (OECD) over the 2002-2013 period, I econometrically test the existence of YESS across countries. As comprehensive data on sub-annual spending across countries is not available, I analyze sub-annual accounting data on a discretionary budget item within countries' aid budget. Increasingly, OECD countries channel part of their foreign aid via large multilateral funds and sector- or country-specific trust funds at the World Bank to developing countries. Using financial accounting data on contributions to both types of funds, the paper is the first to empirically show that YESS exist across countries. According to the definition of multi-bi aid in the introduction of this thesis, this analysis does looks at donors' earmarked contributions to multilateral organizations (direct multi-bi aid) and donors' unearmarked contributions to pass-through multilaterals (indirect multi-bi aid). The finding on YESS is highly robust to the definition of 'last period of the fiscal year' as the last weeks, month or quarter in the donor-specific fiscal year. The paper furthermore shows that bulk expenditures at the end of the fiscal year are substantially reduced by bureaucratic quality. The robustness of this finding is assessed using alternative indicators of governance and by controlling for potential omitted variables. In contrast, I find no clear evidence in favor of or against the two alternative explanations for YESS, which imply different relationships between YESS and uncertainty. Identifying the causal mechanism(s) underlying YESS is important because alternative explanations imply the need for different types of policies to curb heightened year-end spending.

In response to government transparency initiatives and technological progress, access to sub-annual government data is likely to improve in the coming years. This paper aims to be a starting point for empirical research on the reasons for and consequences of uneven government expenditures within the fiscal year. The paper makes four contributions to the public finance literature. First, I suggest and test an additional explanation for year-end expenditure surges: poor planning by government bureaucracies with insufficient administrative capacity. Second, this paper is the first to analyze YESS with cross-country panel data while the two previous quantitative studies on YESS in public finance, Liebman and Mahoney (2013) and Baumann (2015), look at variation within individual countries. The data thus allows me to study both cross-country and within-country variation. I am the first to apply econometric analysis rather than calibration to study YESS.[5] The two previous studies on YESS calibrate their respective principal-agent models to the data. Fourth, the study contributes to the public finance literature by systematically testing proposed explanations for the existence of year-end spikes. Finally, I offer some descriptive evidence that end-of-year spending is indeed different from the remainder of the fiscal year. In the case of trust fund aid, year-end spending might not be less efficient than spending

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[5]Oyer (1998) uses econometrics to analyze variation in revenue and price within firms' fiscal years.

in the rest of the fiscal year. While contributions to trust funds are accounted as 'spent' by the donor countries' finance ministry, they are not disbursed to actual projects but transfered to trust funds, serving as "saving accounts" without annually lapsing budgets, that disburse or 're-spend' them at a later time. Thus, contributions to trust funds are somewhat different from the common understanding of spending. This should be kept in mind for the subsequent analysis and its implications for other spending categories. As my data cover a discretionary spending item within the foreign aid budget, I also contribute to the foreign aid literature by proposing a new and additional reason for the popularity of trust funds and large multilateral funds with donor countries (see Reinsberg et al., 2015, for a discussion).

The remainder of the paper is organized as follows. Section 2 reviews the related literature. In Section 3, I provide arguments as to why bureaucratic quality should be related to the size of YESS. Section 4 describes the data and the identification strategy. Section 5 uses panel-econometric methods to establish the size and variation in year-end spending spikes by analyzing the data at the quarterly, monthly, and daily level. Specifically, Section 5.2 analyzes the relationship between YESS and effective bureaucracies and Section 5.3 tests the implications of the two main alternative theories for YESS. Section 6 discusses the findings and concludes.

2   Related Literature

Anecdotal and suggestive evidence for heightened year-end spending in government departments and company divisions across the world abounds (e.g., Comptroller General of the United States, 1980; Douglas and Franklin, 2006; McPherson, 2007; Liebman and Mahoney, 2013; Baumann, 2015; Merchant, 1985). The two arguments often proposed to explain end-of-year spending sprees however lack timing specificity: These two arguments explain why the entire budget is spent *within* a fiscal year but cannot account for heightened expenditures *at the end* of the fiscal year. The first is that budget authorities in most countries need to return unspent funds to the general treasury at the end of the fiscal year. As this would affect the agency's utility negatively, these lapsing funds are spent. Second, the agency fears to obtain lower appropriations in subsequent years if the principal interprets the returning of funds as a signal of a lack of need. It is important to note that (planning for) overspending is no alternative as the consequences of overspending are more severe, including personal liability of the budget holder (Hyndman et al., 2005). Although there is no evidence supporting this argument, the fear of lowered appropriations is widespread among bureaucrats (Douglas and Franklin, 2006; Fichtner and Greene, 2014).

In the public finance literature on YESS, year-end spending spikes have so far been explained either by the bureaucracy's uncertainty about spending demands (Liebman and Mahoney, 2013) or by bureaucrats' procrastination (Baumann, 2015).[6]   For the private

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[6]See Baumann (2015) for a brief discussion of alternative explanations, that do not withstand close scrutiny. He does not cover the recent argument by Hurley et al. (2014), who propose a model in which an agency faces uncertainty about the costs of high-priority projects but must nevertheless choose additional projects of lower quality to assure exploiting the budget until the end of the fiscal year. The model's implication that year-end spending is inefficient is however generated by the assumption, namely that this over-planning leads to high-priority projects (rather than the low-quality ones) being abandoned in

sector, Oyer (1998) finds that, controlling for seasonal effects, manufacturing firms' sales are higher at the end of the firm-specific fiscal year. He finds evidence for three channels: price manipulation, influencing of the timing of customer purchases, and discounting by salespersons with nonlinear compensation contracts. The latter leads to an increase in effort during the fiscal year. The latter argument is similar to the procrastination channel advanced by Baumann's (2015).

Given the scarceness of analyses of sub-annual fiscal behavior, I draw on the political economy literature in public finance more generally to construct a motivating framework for the empirical analysis of the existence of YESS and proposed explanations for the phenomenon. There is a large literature on institutional features affecting fiscal performance. Previous research highlights the conflicts of interests and preference heterogeneity of the actors in the budgetary process and proposes and evaluates budget institutions that aim to improve fiscal discipline by constraining policymakers (see Eslava, 2011). Empirical findings suggest the effectiveness of institutions is often conditional on political systems and environments (see Eslava, 2011). Budgetary institutions discussed in the literature are either numerical targets or procedural rules (Von Hagen and Harden, 1995). The latter may govern the drafting, approval or implementation stage of the budgetary process. Curbing YESS requires budgetary institutions at the implementation stage, the period of budget execution.

Eslava (2011) mentions two budgetary institutions at the implementation stage: First, limits to the parliament's ability to impose ex-post amendments to the size of the budget and, second, the possibility of the government to cut (but not to expand) the budget after parliamentary approval. She also highlights the importance of budget transparency for these institutions to be effective. Dietrichson and Ellegård (2015) investigate two additional budgetary institutions at the implementation stage: The threat of dismissal following non-compliance to the budget and carry-forward rules. Carry-forward or roll-over rules allow sub-units of the central government to transfer surpluses or force them to carry deficits to the next fiscal year. They find that fiscal surpluses are higher in Swedish municipalities with carry-forward rules and where local managers face a higher risk of dismissal as a consequence of budget deficits. Dietrichson and Ellegård (2015) term these institutions "incentive-aligning" as they reduce the conflict between the principal and the agent, in their case of the size of the fiscal deficit.[7] In Liebman and Mahoney (2013) and Baumann (2015), the conflict between the principal and the agent is about the timing of expenditures within the fiscal year. Before looking into the details of these models, it is worthwhile to considering the importance of the exact timing of disbursements to politicians. There is ample evidence at the annual level that the timing of expenditures matters during election times (e.g., Klomp and De Haan, 2013; Sjahrir et al., 2013; Curto-Grau, 2014). In other times however, politicians may care little about the exact disbursement date. Neither Liebman and Mahoney (2013) nor Baumann (2015) discuss the empirical importance of the conflict between the parliament (the principal) and the government agency (the agent).

The first paper in the nascent literature on YESS is Liebman and Mahoney (2013), who propose a stochastic principal-agent model inspired by models of life-cycle consumption.

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the end of the year.

[7]In the case of Swedish municipalities, the principal is formed jointly by the council and the executive committee while the agents are the operating branches.

The game features two sub-annual periods and two players, a representative government agency and parliament. To model short-run rigidities in the production function, decreasing returns to spending within each period of the budget year are assumed.[8] This basic set-up is also adopted in Baumann (2015).[9] Liebman and Mahoney (2013) then introduce stochastic shocks, which complicates the agency's optimization problem of timing expenditures. With no option to overspend, the agency insures itself against future expenditure demands through the build-up of a rainy day fund in the first period of the year. A year-end spending spike is thus observed whether demands materialize or not. In the latter case, the agency needs to rush to spend the precautionary savings at the year-end. Thus, the model predicts a positive relationship between the size of spikes and uncertainty. Liebman and Mahoney (2013) also offer the first and so far only quantitative assessment of the quality of end-of-year spending.[10] They combine daily data on U.S. federal contracts for information technology (IT) projects with project evaluation data and show that the average quality of projects contracted in the last week of the fiscal year is substantially lower. This finding confirms common perceptions and anecdotal evidence that end-of-year spending is "uneconomic, inefficient, ineffective or of inappropriate quality (usually inappropriately high quality)" (Hyndman et al., 2005, 6). Liebman and Mahoney (2013) propose to curb YESS by extending the budget period through the introduction of roll-over rules.

While the precautionary saving mechanism is convincing and generally supported by accounts of budget holders, Liebman and Mahoney's (2013) paper has several weaknesses. First, Baumann (2015) criticizes that the level of uncertainty assumed in the calibration of Liebman and Mahoney's (2013) model is unrealistically high, being more than ten times that of professional forecasters in predicting standard macroeconomic variables such as unemployment.[11] One possible explanation is the difficulty of determining the optimal size of precautionary savings.[12] If savings are above the optimal level, YESS would be excessively high given the level of uncertainty. Second, the unpredictability of spending demands is likely to vary across government agencies and hence the size of YESS should differ. For example, the uncertainty faced by the defense department is probably higher than that of the finance department.

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[8]For example, departments often have a (quasi-) fixed expert staff that, in periods of abnormally high spending, has less time to devote to each project or for supervising external consultants. Project preparation time available to staff has been shown to affect the quality of World Bank projects (Kilby, 2015). Although the assumption of decreasing returns to spending is theoretically sound and realistic, there is little empirical evidence that rushed spending is of lower quality. Baumann (2015) discusses that the robustness of his model's implications to alternative assumptions about returns.

[9]Neither of the models exhibits a ratchet effect phenomenon (Freixas et al., 1985), in which the pattern of spending over the year provides an informative signal to the principal on the social value of spending at the agency.

[10]Fitzenberger et al. (2014, 3) use differences between projected and actual spending on training programs at the end of fiscal years as an instrumental variable "to come closer towards estimating the causal effect of further training" on employment outcomes in West Germany. The paper lacks a discussion about the external validity of effects based on additional training programs that are budget-driven and thus "independent of whether there were suitable participants available and whether the offered program made sense for the individual unemployed." Fichtner and Greene (2014) review the qualitative evidence on the efficiency of year-end spending.

[11]Liebman and Mahoney (2013) assume a root mean square error of 19.6. By assuming risk-averse agents, a lower level of uncertainty might suffice to obtain the calibration results.

[12]I thank Andreas Fuchs for raising this point.

The second paper in the nascent economics literature on YESS is Baumann (2015). He observes that neither the introduction nor the reform of roll-over rules in the United Kingdom has reduced year-end surges as it should have according to Liebman and Mahoney (2013) theory.[13] Moreover, he finds a positive relationship between certainty and spending spikes rather than the negative one predicted by the precautionary savings hypothesis (Baumann, 2015, Figure 4). Against the backdrop of these doubts about uncertainty about future spending demands being the (sole) explanation for YESS, Baumann (2015) proposes a deterministic principal-agent model in which time-discounting effort-averse bureaucrats postpone spending to later periods within the fiscal year. He argues that the time-inconsistency between the continuous effort expended by public servants to identify and disburse to projects of good quality and the discontinuous end-of-year performance evaluation by the parliament (the principal) leads to procrastination.[14] Using monthly data on spending by Northern Irish departments, he finds the data to be more consistent with his procrastination theory than with Liebman and Mahoney's (2013) hypothesis. To curb YESS, he suggests budgetary 'taxes' that increase towards the end of the fiscal year.

As the analyzed expenditures originate from the foreign aid budget, this paper also relates to the literature on foreign aid. Specifically, the analysis contributes to the literature on donors' choice of aid channels by suggesting a new argument for the popularity of World Bank funds with donors' aid agencies: Trust funds are an attractive instrument to spend lapsing funds.[15] The capacity of these funds to de-annualize part of the aid budget thus provides an additional justification for the effectiveness advantage of trust fund aid over bilateral aid assumed in the model by Eichenauer and Hug (2015). As this paper studies spending patterns within fiscal years, the paper only indirectly relates to arguments about the choice of aid channels made by Milner (2006); Milner and Tingley (2013), and Schneider and Tobin (2013). In the aid literature, the two most closely related papers are Reinsberg et al. (2015), which use the same data as this paper to examine donors' choice between different types of trust funds, and Eichenauer and Knack (2016), who study whether trust fund disbursements to recipient countries complement or compensate the performance-based allocation of the International Development Association (IDA), the World Bank's concessional arm. To the best of my knowledge, there is only one paper in the foreign aid literature that considers sub-annual variation.

Michaelowa (2003) uncovers a spike in the number of interim poverty reduction strategy papers (PRSP) endorsed in the last month of the calendar year 2000. PRSP are a requirement for participation in the Enhanced Highly-Indebted Poor Country (HIPC) initiative. The likely reason for this spike is mounting public pressure through the "Jubilee 2000 Coalition Initiative," a large debt-relief campaign by non-governmental and religious organizations. The example of the HIPC initiative shows that the timing of decisions matters for public perception. Many donors have self-committed to spending a certain share of their gross national income (GNI) on foreign aid, and, according to several aid officials, year-end spending such as that made via trust funds is necessary to achieve

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[13]Fichtner and Greene (2014) review the prevalence of carry-over authority and heightened budget transparency across countries and their effects on year-end spending.

[14]The mechanism is similar to the argument about effort and nonlinear performance contracts in Oyer (1998).

[15]Information on the sub-annual timing of donor countries' contributions to multilateral organizations, non-governmental organizations, and on bilateral aid disbursements is lacking. It is thus impossible to test the relative attractiveness of these aid channels at different moments within the fiscal year.

spending targets.[16] Although this argument does not illuminate the reasons behind the uneven disbursement pattern within the fiscal year, it explains the persistence of YESS in the foreign aid budget even in countries without lapsing budgets.

3 Bureaucratic Quality and End-of-Year Spending

The achievement of a satisfactory fiscal performance is a persistent challenge. This has become all the more evident in the aftermath of the 2008 financial crisis, which put a strain on the finances of many countries, regions, and municipalities. One common response is the strengthening of budget institutions. However, assessments of their effectiveness are plagued by the endogeneity of budget institutions to fiscal outcomes. One source of endogeneity are findings that some budget institutions are feasible or effective only under certain political environments (e.g., Hallerberg et al., 2009). Budget institutions might also emerge as a result of previous fiscal outcomes (e.g., De Haan et al., 1999). Moreover, a third force might simultaneously influence fiscal outcomes and budgetary institutions. Eslava (2011) mentions culture, voters' preferences and the political environment as common third factors.

I argue that the administrative capacity of government agencies affects fiscal outcomes. As I describe below, this may occur through a number of channels. Administrative capacity is today understood as an integral element of good governance in OECD countries. In the context of the European Union's 'Annual Growth Survey' for example, member states receive country-specific recommendations for rendering their public administrations more effective and improving governance. For a long time, academic research about the role of administrative capacity for fiscal and other outcomes (in economics, e.g., Knack and Keefer, 1995; Keefer and Knack, 2007; Knack and Rahman, 2007; Van de Walle, 2006) as well as capacity building efforts have focused mostly on developing and transition economies (Heichlinger et al., 2014). Three broad elements of institutional and administrative capacity can be distinguished: policy and structures, human resources, and systems (World Bank, 2006). YESS may result from inadequacies in one or several of these clusters, which are highly interdependent. Within these three clusters, seven channels could plausibly be related to YESS in a substantial way. Although supported by anecdotal evidence, they necessarily remain speculative as hard evidence is not available.

Within the policy and structure cluster, two channels can be highlighted. First, the re-allocation of funds by bureaucrats might be constrained by rules, which often earmark funds to closely defined spending categories (Douglas and Franklin, 2006). Second, the administrative burden of reshuffling resources between issue areas or of transferring funds to the next fiscal year may prevent bureaucrats from making use of such possibilities. What is more, these rules might create new costs.[17] More generally, a reasonable degree of discretion and flexibility allows bureaucrats to adjust expenditures swiftly and on a case-by-case basis. Within the human resource cluster, a first reason might be a lack of qualified staff. This may result from a shortage of accountants in the labor market, a poorly executed recruitment process, or insufficient retraining. The second reason could be

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[16]Most donors have self-commitments that are below the 0.7 percent of GNI target propagated by the United Nations and advocated for by non-governmental organizations.

[17]Douglas and Franklin (2006) report for Oklahoma that the carry-over law increased paperwork.

the inefficient management of human resources. Suitable career, pay and other incentive schemes but also monitoring may reduce procrastination and increase worker productivity. In particular, managerial accountability for budget balances seems to be effective in improving fiscal performance (Dietrichson and Ellegård, 2015). The two most relevant factors in the systems cluster are adequate technological infrastructure and resource and process management. First, modern accounting software gives decision makers 24-hour access to up-to-date information about the remaining budget and improves the precision of cost estimates for planned projects. This allows for the inclusion of information about demand shocks in previous periods in the budget and helps in determining the optimal size of precautionary savings. Second, inadequate expenditure planning or excessive precautionary savings can result in a YESS that is due to accidental 'left-over' funds.[18] Third, constant re-optimization of processes and expenditures is required to achieve the intended budget balance of zero at the year-end (Douglas and Franklin, 2006).

In sum, the interaction between bureaucratic quality and YESS may occur via multiple channels. These channels interact in non-linear ways, making their disentanglement nearly impossible.[19] This analysis does not intend to identify the relevant factors for YESS within the bureaucracy but aims to make a strong case that bureaucratic quality matters. The paper cannot however establish an indisputable causal relationship between bureaucratic quality and YESS. Bureaucratic quality and YESS might both be determined by some of the aforementioned third forces. In particular, bureaucratic quality might be the long-run outcome of culture, voters' preferences or a long-standing conflict with parliament and the government. To mitigate such endogeneity concerns, a handful studies (e.g., De Haan and Sturm 1994) analyzes the effect of (budget) institutions conditional on potential third forces. In line with these previous efforts, I examine below whether the effect of bureaucratic quality persists once I account for fundamental third factors such as per capita income or transparency in the political process.

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[18]In contrast, Hurley et al. (2014) argue that agencies overprogram and then disrupt some projects at the end of the fiscal year because of insufficient funds.

[19]Arguably, disbursements to public projects take place only at the end of the fiscal year because of lengthy planning and disbursement phases. This might be due to the project planning phase occupying at least the first half of the fiscal year while getting the approval necessary for disbursements takes several more weeks or even months, e.g., because it involves multiple decision makers. As this problem repeats itself each year, bureaucracies with higher administrative capacities are likely to have adapted their planning (e.g., to using multi-annual plans and medium-term budgeting) and optimized approval processes to minimize year-end bottlenecks.

Figure 1: Comparison of fund contributions and IDA disbursements
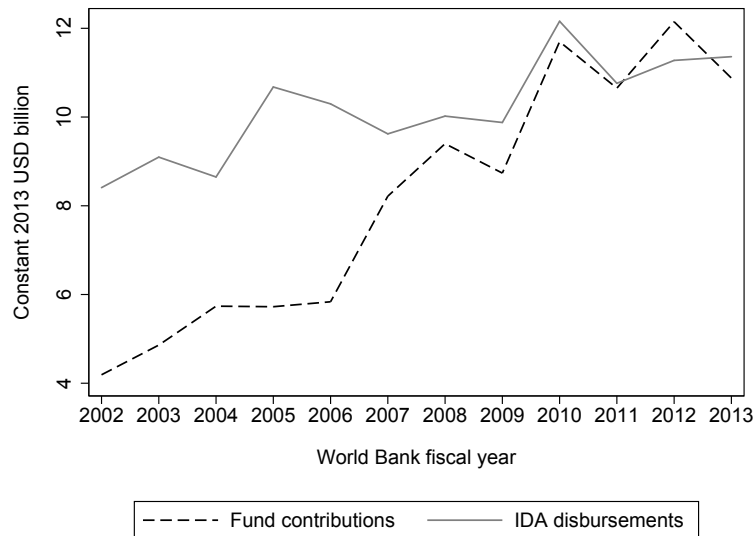
4 Data and Identification

Due to falling technology costs and (government) transparency movements, more and more detailed data are available to researchers on the web (Fung et al., 2007; The Economist, 2010). Nevertheless, there are not yet publicly accessible data on sub-annual government activities that are comparable across countries. I therefore use financial accounting data on a specific aid type available from the World Bank.[20] Over the last two decades, donor countries have started to provide earmarked aid to multilateral organizations (Eichenauer and Reinsberg, 2016). Traditional multilateral funding is allocated by the organization's governance body. In the case of earmarked aid, individual donors target the aid to their preferred recipient countries, institutions, or topics. In contrast to bilateral aid, the implementation of this earmarked aid is delegated to multilateral organizations. One multilateral organization receiving earmarked aid from donors is the World Bank, which made available disaggregated data on this new aid type.

4.1 Data

The World Bank Group manages the earmarked aid in designated trust funds until suitable projects are identified and ready to receive disbursements. Trust funds might thus accumulate and hold cash over several years before disbursing the aid to beneficiaries. A trust fund is typically set up at the request of one or several donor countries by an individually negotiated contract between the funder(s) and the Bank. Among other things, this contract details the beneficiary country or issue, the decision-making powers of fun-

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[20]The data are publicly available at: https://finances.worldbank.org/trust-funds (accessed on September 15, 2016) but do not provide some of the details required for this analysis (e.g., the contribution date).

ders, the services provided by the Bank and the Bank's management fee. Donor support for trust funds mostly comes from foreign aid budgets but also from foreign affairs and finance departments (OECD, 2012; Eichenauer and Reinsberg, 2016).[21] Figure 1 shows that earmarked funds have gained in attractiveness over the sample period, receiving more than US$ 12.1 billion in the World Bank's fiscal year 2012 and almost US$ 98.1 billion over the Bank's 2002-2013 fiscal years, of which 30 and 29 percent were made in donors' last fiscal quarter, respectively.[22] The respective percentage figures are 40 and 50 percent. Figure 1 puts these numbers into perspective: gross disbursements by the IDA, amounted to US$ 10.9 billion in the 2012 fiscal year. Over the sample period, the World Bank has managed 1669 funds over the sample period whereof more than 900 were active in June 2013 (World Bank, 2013). The data include information on the day of the contribution, the donor government and the receiving fund. I use the same data as Reinsberg et al. (2015), obtained from the World Bank's Trust Funds and Partnership Department. In the sample period, 13,209 individual contributions were made by the Donor Assistance Committee (DAC) donors to any type of fund, and 7,919 were made to International Bank for Reconstruction and Development (IBRD) / IDA trust funds. To create monthly and quarterly indicators, I use the variable *PostingDate*, which corresponds to the date of the financial transaction. [23] Table 1 shows descriptive statistics.

The World Bank categorizes funds according to their topic and the services it provided. These funds may support the projects of or be implemented by the IBRD and the IDA, or by the International Finance Corporation (IFC). Alternatively, contributions are made to Financial Intermediary Funds (FIFs), which may also use organizations other than the World Bank for implementation. FIFs are pass-through multilaterals as described in the introduction of this thesis. They are institutionally less dependent from the World Bank than trust funds, relying mainly on its financial management service. Figure 2 shows the importance of the different types of funds over the sample period. Because contributions to one or the other type are likely to be substitutes when donor agencies spend 'left-over' funds at the end of the FY, all fund types are included in the analysis.[24] The analysis is limited to the 27 donor countries organized in the OECD's DAC during the sample period for a number of reasons: First, all OECD countries are democracies, making their budgetary processes relatively comparable. Second, some of the covariates are available only for this group of countries. Third, the vast majority of the aid allocation literature analyzes aid by this donor group. While non-DAC countries, private companies,

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[21]One type of trust fund (International Bank for Reconstruction and Development (IBRD) / IDA trust funds) is funded almost entirely by donors' foreign aid units. Sensitivity analyses using IBRD/ IDA trust funds only are shown in Table 29 –Table 32 in the Appendix. The coefficient size increases substantially while signs and significance levels are unchanged or increase The fiscal year at the World Bank runs from July 1 to June 30. All amounts are in constant 2013 US$.

[22]The fiscal year at the World Bank runs from July 1 to June 30. All amounts are in constant 2013 US$.

[23]I consider the variable as trustworthy because whenever a transfer was reimbursed to a donor government, probably because funds were wired by mistake, in the large majority of cases funds were returned on the same day in the large majority of cases. In eleven cases, reimbursements were made in a different quarter within a donor's fiscal year except for two transactions. We drop observations when the reimbursement was not completed on the same date. Any remaining negative flows at the aggregate level are set to one before logarithms are taken. Results are robust to these decisions.

[24]Clearly, there are other spending categories within the foreign aid budgets that are substitutes for trust fund contributions. However, no sub-annual data on these spending categories are available.

Table 1: Descriptive statistics

Variable	Obsv.	Mean	St. Dev.	Min.	Max.
Quarterly contributions*	1294	60.541	124.998	0.000	1479.981
First fund contributions	1296	1.288	2.620	0.000	36.000
Mean contributions in last quarter*	323	86.513	150.151	0.000	1163.747
Bureaucratic quality, ICRG	1215	3.657	0.503	2.500	4.000
Yearly bureaucratic quality, ICRG	1248	3.660	0.501	2.500	4.000
Corruption, ICRG	1215	4.166	1.121	2.000	6.000
Transparency, IMF	1134	53.126	23.224	0.000	100.00
Control of corruption, WGI	1242	1.497	0.751	-0.255	2.553
Government effectiveness, WGI	1242	1.502	0.499	0.214	2.357
Regulatory quality, WGI	1242	1.393	0.351	0.484	1.971
Average governance, WGI	1242	1.338	0.423	0.232	1.985
Total disaster-affected people, million	1296	224	141	97	659
Asylum seekers	1296	14294	17052	35	109580
Battle-related deaths	1296	25293	12143	12207	71981
Total aid disbursements*	1296	4313	5837	14	32398
Election quarter	1296	0.069	0.253	0.000	1.000
Election year	1296	0.346	0.476	0.000	1.000
Government change	1296	0.017	0.130	0.000	1.000
Year of government change	1296	0.118	0.323	0.000	1.000
Aid minister change	1296	0.018	0.132	0.00	1.000
Year of aid minister change	1296	0.067	0.250	0.000	1.000
Late budget	1296	0.486	1.730	0.000	14.00
Accounting type	924	0.418	0.493	0.000	1.000
Primary balance (% of GDP)	1234	-1.266	3.198	-13.197	5.999
GDP per capita, constant 2005 US$	1044	36434	11208	17847	90889
Economic crisis	1150	0.063	0.242	0.000	1.000

Note: *in constant 2013 US$ million.

Figure 2: Different types of funds
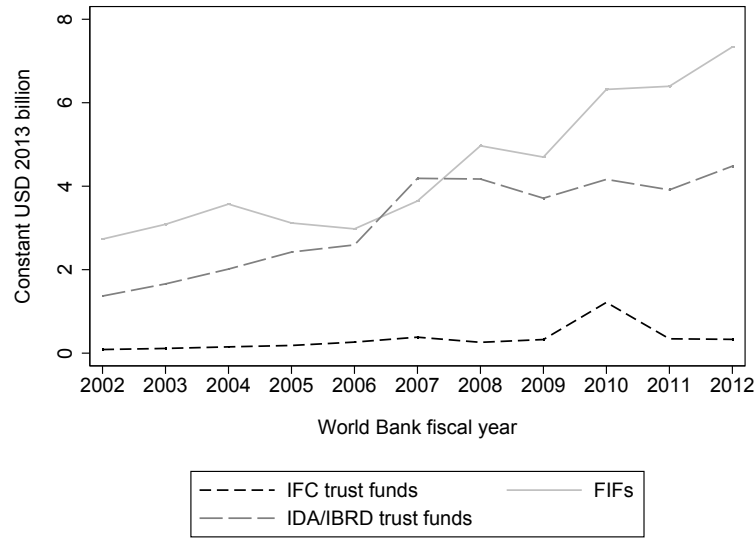
multilateral organizations, and non-governmental organizations (NGOs) also contribute to these funds, figure 3 shows that donor countries organized in the DAC are by far the most important donor type in terms of volume (Figure 3, see also Eichenauer 2015).[25]

Given that I analyze a specific budget item within the aid budget, readers might be concerned about both the importance of the trust fund aid relative to donors' aid budgets and about the representativeness of the data. Regarding the first concern, it is important to note that although trust fund aid might be a small fraction of a donor's aid budget, it is a much larger fraction of the discretionary part of the aid budget for which bulk spending is likely.[26] YESS are generally observed for capital or investment expenditures rather than operative or current expenditures. YESS are less likely to occur in demand-driven or pre-committed or regular expenditure categories such as wages paid to staff. (Liebman and Mahoney, 2013; Baumann, 2015). A large chunk of multilateral core aid consists of mandatory membership contributions and of additional voluntary (unearmarked) funding committed in previous years. Similarly, much of bilateral aid is already programmed for multi-annual development projects. Finally, an important share of the agency's budget covers current expenditures such as wages.

A second concern might be the representativeness of the data. First, note that the internal validity of results obtained for the specific and narrow budget item 'trust fund aid' is high. Given that the data are provided by an accounting unit of the World Bank, there is no reason to doubt that they are complete and reflect actual financial flows.

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[25]OECD / DAC countries in our sample (in alphabetic order) are: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Slovakia, Sweden, Switzerland, the United Kingdom, and the United States.

[26]Trust fund aid as share of donors' total disbursements ranges from 0.07 percentage for the United States in 2013 to 12 percentage for the United Kingdom in 2007. The average percentage share in 2012 was 2.23.

Figure 3: Different types of donors
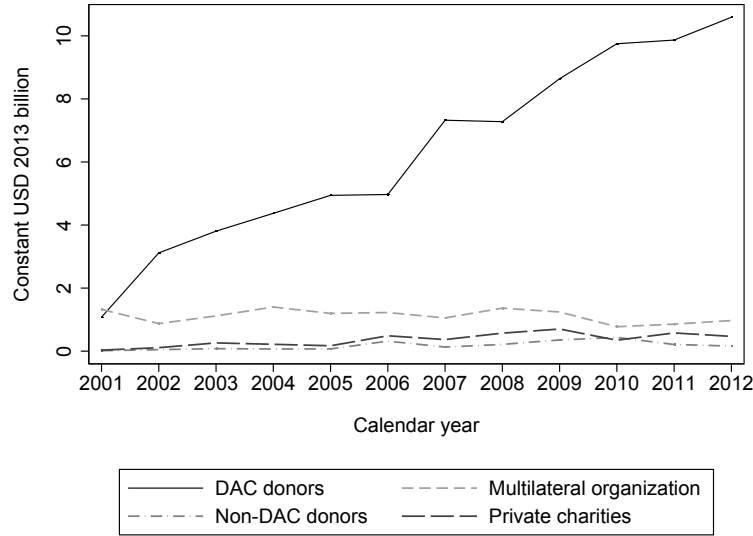
The generalizability of the findings to other budgets and types of expenditures is less straightforward. On the one hand, the data is neither randomly sampled from the set of all government expenditures nor representative of these expenditures. However, sampling error would be present for all department-specific and thus non-comprehensive government disbursements. On the other hand, there is no reason to expect that the effectiveness of the bureaucracy, the behavior of bureaucrats in donor aid agencies and their pay, career and other incentives systematically differ from other departments within the same government in ways that might affect YESS. Thus, the sampling error is likely to be random rather than systematic. In sum, the analysis of trust fund aid gives us the chance to learn about the different explanations for YESS and in particular the factors that vary across countries.

Figure 4 – Figure 8 provide a first impression of the data. As can be seen from Table 2, donors rely on different fiscal years for budgeting. I define donor-specific fiscal quarters (FQ) by assigning donors' contributions in a calendar quarter to the FQ according to the fiscal year used by the donor. Figure 4 shows the ratio of actual average quarterly contributions as a share of average quarterly contributions if these were disbursed evenly over the donor-specific fiscal year. The horizontal line at one marks balanced spending over the fiscal year. Contributions in the last quarter are significantly above the line of balanced spending while contributions in the second and third quarter are significantly below it. Figure 5 shows the same ratio at the monthly level. Contributions in the first and last month are significantly above the line of balanced spending. Figure 6 shows the evenness of weekly expenditures in the eight weeks before and after the end of the fiscal year. While the confidence interval is large and includes the line of balanced spending, the end of the fiscal year clearly marks a break.Figure 7 shows contributions to funds by donor-specific FQ. The grey-shaded area marks the last fiscal quarters. Visual inspection thus suggests that trust fund contributions augment in the last FQ.

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Table 2: Budget years of DAC donors

Fiscal year	1.4. - 31.3.	1.7. - 31.6.	1.10. - 30.9.	1.1. - 31.12.
Calendar quarter corresponding to the last fiscal quarter	1	2	3	4
Donor countries	Canada, Japan, United Kingdom	Australia, New Zealand	United States	Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Korea, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland
Number of countries	3	2	1	21

Figure 4: Contributions to trust funds by donor-specific fiscal quarter
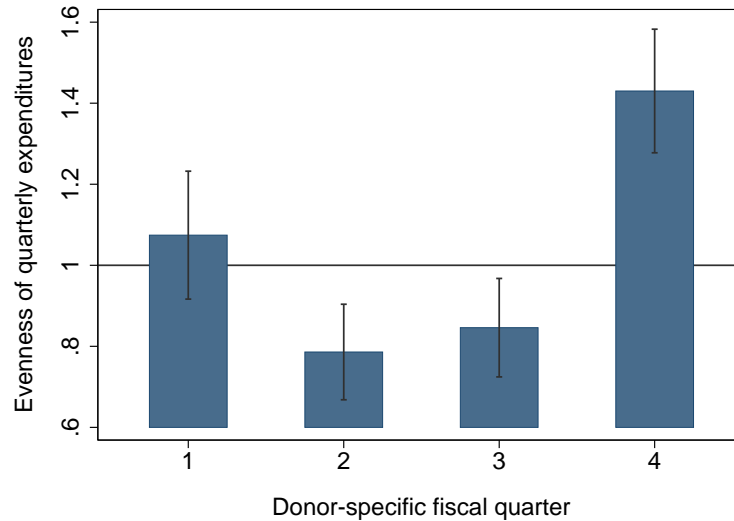
Notes: The y-scale shows the evenness of spending within the fiscal year and is defined as the actual quarter trust fund contributions divided by the average quarterly contributions (i.e. annual trust fund contributions divided by 4). The vertical line at one corresponds to even spending.

Figure 5: Contributions to funds by donor-specific fiscal month
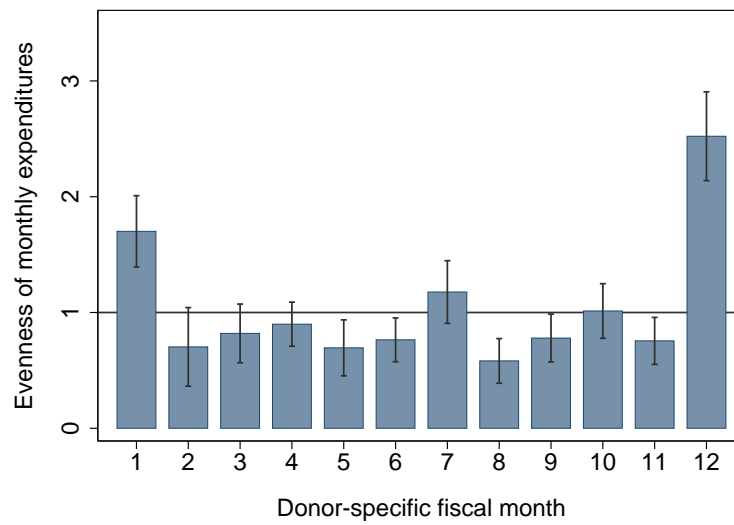
Notes: The y-scale shows shows the evenness of spending within the fiscal year and is defined as the actual monthly contributions divided by the average monthly contributions (i.e. annual fund contributions divided by 12). The vertical line at one corresponds to even spending.

Figure 6: Weekly contributions to funds around the end of the donor-specific fiscal year
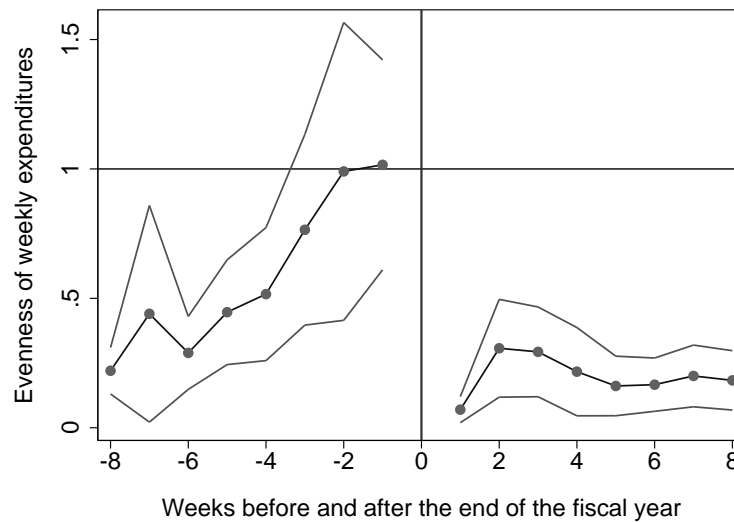
Notes: The y-scale shows the evenness of spending which is defined as the actual weekly fund contributions divided by the average weekly contributions (i.e. annual fund contributions divided by 52). The x-scale depicts the number of weeks before and after the end of the donor-specific fiscal year. The vertical line at one corresponds to balanced spending while the grey-shaded lines represent the 95% confidence bands.

Figure 7: Aggregate quarterly contributions by donor-specific fiscal quarter
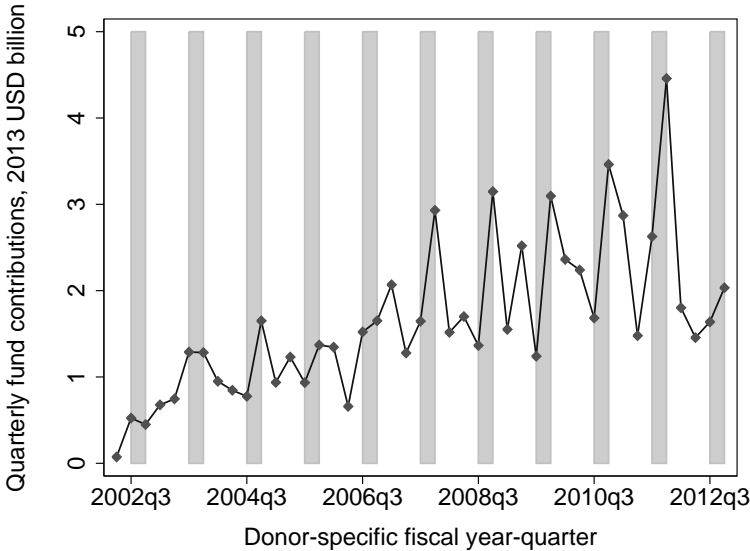
Notes: The grey-shared area highlights changes in contributions between the third and the last fiscal quarter.

Figure 8: Evenness of spending within the fiscal year by donor country
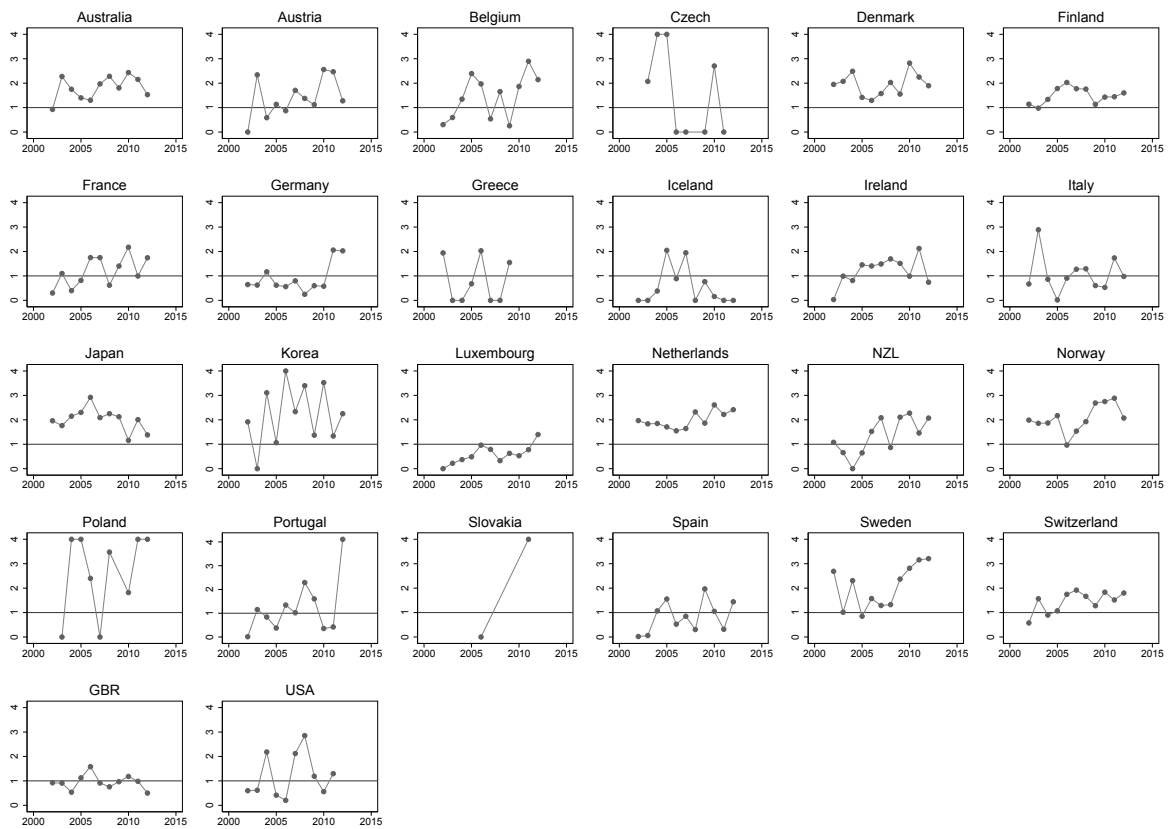
Notes: The y-axis shows the evenness of spending within the fiscal year and is defined as the actual quarterly trust fund contributions divided by the average quarterly contributions (i.e. annual trust fund contributions divided by 4). The vertical line at one represents even spending.

4.2 Identification Strategy

In contrast to existing research on year-end spending in the public sector, I use panel-econometric analysis with various fixed effects rather than calibration to test my and the alternative explanations for spending spikes. I exploit variation in donors' fiscal years to control for seasonal effects (Table 2). My main dependent variable is (logged) quarterly amounts contributed to trust funds by donor-specific FQ. Given the availability of the exact contribution date, I analyze the data at different levels of temporal aggregation to test the robustness of the main results. The use of quarterly data over more disaggregated data, however, is preferable for two reasons. First, trust fund contributions are not observed every day and are of substantial size. Temporal aggregation thus helps to reduce the effect of outliers. Second, quarterly data are more adequate for testing the explanations for YESS. In particular, the variables I use to approximate the uncertainty present are typically not associated with a precise date while they can reasonably be assumed to occur within a given quarter.

I start with testing for a raw YESS effect. (Logged) *quarterly amounts* in constant US\$ are regressed on a dummy for the last FQ and on various fixed effects. My preferred regression equation takes the following form:

$$Log\ (Quarterly\ amount)_{iq_if_i}\ =\ \alpha + \beta\ Last\ fiscal\ quarter_{iq_i}\ +\ \delta_{if_i}\ +\ \epsilon_{iq_if_i} \quad (1)$$

The index i refers to the donor country, q_i to the donor-specific fiscal quarter, and f_i to the donor-specific fiscal year. Table 2 shows that a majority of countries uses the calendar year as their budget year but that six major donors start their fiscal years in April, July, or October. The dummy $Last\ fiscal\ quarter_{iq_i}$ is one in the fourth donor-specific fiscal quarter. The baseline categories are thus the quarterly contributions in the first, second, and third fiscal quarters (i.e., the remainder of the fiscal year). A positive coefficient β would provide evidence for a YESS. My preferred specification relies on donor-fiscal year fixed effects (δ_{if_i}) that account for time-invariant donor characteristics and donor-specific time-variant shocks. As many of the co-variates of interest described below do not vary within the donors' fiscal year, I have to rely on donor- and fiscal-year fixed effects instead of their interaction. Errors are robust to heteroscedasticity and clustered at the donor country level. Potential reverse causality is discussed in Section 5.2.

Despite potentially substantial YESS, I do not expect (but cannot thoroughly test) that these contributions are substantially less efficient than contributions made at other times of the year. As described above, financial resources kept in trust funds do not lapse so that disbursements can be undertaken whenever high-quality projects are on offer.[27] Year-end contributions to trust funds should thus be no less effective than contributions made at other times of donors' fiscal years. Furthermore, consider the alternatives: returning funds to the treasury implies no efficiency loss but is unrealistic. Year-end disbursements to NGOs or for consultants are probably of low-priority and -necessity and therefore likely to be less efficient than if undertaken at other times of the year. Regarding the effectiveness of trust fund aid relative to bilateral and multilateral aid, the literature

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[27]Some large FIFs have multi-annual budgets. In Table 29 and 30, I thus focus only on contributions to IBRD/ IDA trust funds, where the timing of disbursements is not constrained.

has not yet provided hard evidence.[28] Given that a large chunk of trust fund aid provided to funds is ultimately implemented by the World Bank, it is reasonable not to expect significant differences in the effectiveness of 'pure' multilateral and trust fund aid.[29]

5 Empirical Analysis

The phenomenon of heightened year-end spending is widely recognized and has attracted many nicknames. In particular, YESS is often referred to by the season associated with the end of a country's financial year. Nicknames such as 'March Madness', 'Spring Sale', 'Christmas Season,' 'December Fever,' or as 'Grand Piano Syndrome' suggest that end-of-year spending tends to be of the 'unhealthy' and wasteful type.[30] In stark contrast to public awareness about end-of-year spending spikes, the academic literature on its causes and consequences is scarce. In particular, there is no systematic empirical evidence for sub-annual fiscal budget cycles across countries. The next section establishes that sub-annual budget cycles in fund contributions across donor countries exist. Subsequent sections will assess the explanatory power of the different explanations for (the size of) heightened year-end contributions to trust funds.

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[28]Eichenauer and Knack (2016) show that trust fund aid is less politically motivated than traditional bi aid than traditional bilateral aid. If politically motivated aid is less effective (e.g., Dreher et al., 2016), then trust fund aid might be more effective than bilateral aid on average. For evidence on multi-donor trust funds see Barakat (2009) and Barakat et al. (2012).

[29]This is true in particular for IBRD/ IDA and IFC trust funds and less so for FIFs.

[30]The British Council coined the term 'Grand Piano Syndrome' to suggest that British Council offices around the world purchased grand pianos, an extravagant and largely unnecessary expense, in March, the final month of the British fiscal year. While it is possible that bureaucrats strategically spend less during the year to make such luxury shopping possible, this is rather unlikely because such misappropriation might lead to dismissal. Due to the re-election constraint, politicians certainly would not approve of such spending unless it benefits them directly.

Table 3: Last fiscal quarter effect

	(1)	(2)	(3)	(4)	(5)	(6)
Last fiscal quarter	1.039***	0.998***	1.040***	1.238***	1.214***	1.679**
	(0.306)	(0.301)	(0.350)	(0.402)	(0.418)	(0.649)
Fiscal year FE	No	Yes	Yes	Yes	Yes	Yes
Donor-fiscal year FE	No	No	Yes	Yes	Yes	Yes
Donor-calendar year FE	No	No	No	No	Yes	Yes
Calendar year FE	No	No	No	Yes	Yes	Yes
Calendar quarter FE	No	No	No	No	No	Yes
Adjusted R-squared	0.00428	0.00406	0.711	0.710	0.697	0.702
N°of observations	1296	1296	1296	1296	1296	1296
N°of donors	27	27	27	27	27	27

Notes: The dependent variable is (logged) quarterly contributions to all funds and covers the World Bank's fiscal years 2002-2013. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Last fiscal month effect

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Last fiscal month	2.985***	2.994***	3.042***	3.041***	2.974***	2.736***	3.212***
	(0.534)	(0.539)	(0.555)	(0.554)	(0.549)	(0.561)	(0.731)
Fiscal year FE	No	Yes	Yes	Yes	Yes	Yes	Yes
Donor-fiscal year FE	No	No	Yes	Yes	Yes	Yes	Yes
Calendar year FE	No	No	No	Yes	Yes	Yes	Yes
Donor-calendar year FE	No	No	No	No	Yes	Yes	Yes
Calendar quarter FE	No	No	No	No	No	Yes	Yes
Month FE	No	No	No	No	No	No	Yes
Adjusted R-squared	0.0120	0.0186	0.525	0.524	0.523	0.524	0.544
N°of observations	3879	3879	3879	3879	3879	3879	3879
N°of donors	27	27	27	27	27	27	27

Notes: The dependent variable is (logged) monthly contributions to funds and covers the World Bank's fiscal years 2002-2013. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5.1   Cross-country Evidence for End-of-Year Spending Surges

This section establishes the existence of heightened year-end contributions to trust funds at the quarterly, monthly and weekly level. Table 3 shows that contributions to trust funds are significantly higher in the last FQ. The coefficient β is statistically and economically significant across columns and robust to the introduction of increasingly stringent fixed effects. Column 1 shows the relationship between the logged contributions by donor-quarter and the dummy for the last FQ without any fixed effects. Contributions are estimated to almost double in the last quarter relative to the other quarters of the fiscal year.[31] Due to donors' heterogeneous use of trust funds, the estimated adjusted R-squared is extremely small. The smallest trust fund donor in the sample, Slovak Republic, contributed less than US\$ 60,000 over the sample period whereas the largest donor, the United States, provided constant 2013 US\$ 15.7 billion. Column 2 accounts for fiscal-year-specific shocks, absorbing factors such as the general popularity of trust funds in a given fiscal year. The adjusted R-squared slightly decreases relative to column 1.

The introduction of donor-fixed effects alone barely affects the estimated coefficient because the last FQ dummy is essentially uncorrelated with unobserved donor characteristics as it mechanically occurs every fourth quarter. Column 3 thus directly adds donor-fiscal year fixed effects to control for the level of trust fund contributions by a given donor in a given fiscal year. Identification thus comes from the within-country-within-fiscal year variation in contributions. This is my preferred specification because it accounts for the most important sources of omitted variables. The estimated coefficient is of similar size as in column 1, suggesting a doubling of contributions in the last FQ. To rule out that omitted variables drive the result, columns 4-6 include increasingly stringent fixed effects. Column 4 adds calendar-year fixed effects to control for time-variant changes that affect all donors equally and are not yet captured by the fiscal year effects. For example, they would account for the introduction of a new regulation on trust fund contributions by the World Bank, or a joint trust fund initiative by several donors. As the adjusted R-squared is lower in column 4, any bias from potential omitted variables must be minor relative to the high number of additional dummies.

Seasonal effects such as lower staff productivity in the Christmas season are further potentially important sources of unobserved heterogeneity. I exploit the fact that some countries' fiscal years deviate from the calendar year, which allows for the inclusion of calendar-quarter fixed effects (column 6). The identification of this coefficient mainly originates from the five donor countries with fiscal years departing from the calendar year. It is thus less precisely estimated while its increase suggests that YESS in these five donor countries is more pronounced than in donor countries with a calendar-based fiscal year. Although the deviation from the calendar year is unlikely to be the main explanation for higher year-end contributions in these countries, it should be noted that in all sample countries government staff tend to work a lower number of days in the last month of the calendar year due to holiday days taken for Christmas and New Year festivities. This implies that there are less working days in December to spend. Because the fiscal year coincides with the calendar year in the majority of the sample countries, this would bias β downwards. To examine whether the length of the month has any effect, Table 4 analyzes the data at the monthly level. The results show that, irrespective of

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[31]Percentage: $100 * \left(e^{1.039} - 1 \right) = 183$.

fixed effects, contribution amounts in the last month of the fiscal year are statistically and economically significantly higher: On average about eighteen times as high as in the other eleven months of the year.[32] Moving from column 1 to column 6, the same set of increasingly stringent fixed effects used in the previous table are introduced. Column 7 adds month-fixed effects to account for more fine-grained seasonality effects as well as the differences in the number of days per month. The coefficient is remarkably stable across columns.

To explore in more detail what drives the effect at the quarterly and monthly levels, Table 5 analyzes the contribution data at the daily level. As mentioned above, the lack of aggregation increases the noise in the data so that more imprecise estimates must be expected. Coefficients are consistently positive in the eight weeks prior to the end of the fiscal year and increase as the fiscal year draws to a close. The coefficients turn significant at the latest five weeks before the end of the fiscal year irrespective of the included fixed effects. In some weeks in the new fiscal year, the weekly dummies are still positive and statistically significant although with substantially smaller coefficients. There are several reasons that may explain this pattern: Transfers made by donor countries at the end of the fiscal year need several working days to be wired to the World Bank account; World Bank staff post the date of receipt with delay due to the holiday season, in particular around the end of the calendar year, when the fiscal year of a majority of donors ends, and Christmas and New Year festivities take place; or donors made transfers later than intended due to delays in their bureaucracies. Finally, it is common practice that disbursements ordered prior to the fiscal year but undertaken up to sixty days (i.e., up to 7 weeks) after its end may be counted as disbursements of the elapsed fiscal year (OECD, 2003, 109). Indeed, the estimated coefficients and significance levels decrease as the elapsed fiscal year moves further away. Note that heightened spending in the first weeks of the new fiscal year is not a threat to the identification as it would bias the estimated coefficient downwards.

Table 5: Daily contributions to trust funds at the end of the fiscal year

	(1)	(2)	(3)	(4)	(5)
Before: week 8	0.0976*	0.0706	0.0828	0.101**	0.101**
	(0.0561)	(0.0597)	(0.0556)	(0.0485)	(0.0485)
Before: week 7	0.0455	0.0186	0.0308	0.0485	0.0485
	(0.0498)	(0.0642)	(0.0551)	(0.0534)	(0.0534)
Before: week 6	0.159*	0.133	0.145*	0.162	0.162
	(0.0839)	(0.0836)	(0.0846)	(0.0986)	(0.0986)
Before: week 5	0.135***	0.108***	0.120***	0.174***	0.174***
	(0.0416)	(0.0362)	(0.0362)	(0.0581)	(0.0581)
Before: week 4	0.186***	0.159**	0.171***	0.273***	0.273***
	(0.0600)	(0.0634)	(0.0603)	(0.0952)	(0.0952)

Table 5: (continues on next page)

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[32]Percentage: $100 * \left(e^{2.985} - 1 \right) = 1,878$.

	(1)	(2)	(3)	(4)	(5)
Before: week 3	0.353***	0.326***	0.338***	0.440***	0.440***
	(0.113)	(0.105)	(0.108)	(0.154)	(0.154)
Before: week 2	0.369***	0.342***	0.355***	0.457***	0.457***
	(0.105)	(0.0997)	(0.101)	(0.137)	(0.137)
Before: week 1	0.458**	0.431**	0.443**	0.545**	0.545**
	(0.177)	(0.163)	(0.170)	(0.207)	(0.207)
After: week 1	0.0964	0.112	0.0998	0.223	0.223
	(0.0951)	(0.103)	(0.0981)	(0.137)	(0.137)
After: week 2	0.185**	0.201**	0.189**	0.312**	0.312**
	(0.0853)	(0.0870)	(0.0879)	(0.129)	(0.129)
After: week 3	0.128*	0.143*	0.131*	0.254*	0.254*
	(0.0701)	(0.0797)	(0.0748)	(0.131)	(0.131)
After: week 4	0.117**	0.133**	0.120**	0.243**	0.243**
	(0.0537)	(0.0618)	(0.0569)	(0.108)	(0.108)
After: week 5	0.0935*	0.109**	0.0969*	0.198**	0.198**
	(0.0508)	(0.0518)	(0.0523)	(0.0856)	(0.0856)

Table 5: (continues on next page)

	(1)	(2)	(3)	(4)	(5)
After: week 6	0.112**	0.128**	0.116**	0.199**	0.199**
	(0.0452)	(0.0486)	(0.0471)	(0.0731)	(0.0731)
After: week 7	0.0921	0.108	0.0955	0.179*	0.179*
	(0.0645)	(0.0735)	(0.0674)	(0.104)	(0.104)
After: week 8	0.112*	0.127*	0.115*	0.198**	0.198**
	(0.0591)	(0.0669)	(0.0606)	(0.0816)	(0.0816)
Aggregation level	Daily	Daily	Daily	Daily	Daily
Calendar year FE	No	Yes	Yes	Yes	Yes
Fiscal year FE	No	Yes	Yes	Yes	Yes
Donor-fiscal year FE	No	No	Yes	Yes	Yes
Calendar quarter FE	No	No	No	No	Yes
Calendar month FE	No	No	No	Yes	Yes
Adjusted R-squared	0.00214	0.00313	0.0299	0.0303	0.0303
N°of observations	118341	118341	118341	118341	118341
N°of donors	27	27	27	27	27

Notes: The dependent variables are (logged) daily contributions to all funds and cover the World Bank's fiscal years 2002-2013. Robust standard errors in parentheses clustered at the donor country level. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

As the variable of interest does not vary across donor-specific fiscal years but only within the fiscal year, it is not a 'true panel variable'. In these cases, Angrist and Pischke (2009) suggest checking whether results hold in the cross-sectional setting. Table 6 shows that they do. The coefficient is substantially smaller than in Table 3, suggesting that last quarter expenditures are about three-quarters higher than in the other FQs rather than doubling. Typically, cross-sectional estimates are larger than coefficients in fixed effect estimations due to bias from measurement error or selection effects (Angrist and Pischke, 2009, 167). This does not seem to be a problem in this case.

Next, I explore the heterogeneity across donors and years. Figure 8 shows that yearly spending moments vary substantially across years for some donors but not for others. The horizontal line represents balanced spending within the fiscal year. While dots above or below the line represent uneven spending by definition and compensate each other to aggregate to one within a fiscal year, higher spending in the last fiscal quarter indicate a YESS. Figure 9 explores donor heterogeneity statistically. I obtain the donor-specific coefficients for the YESS effect from interactions of each donor dummy with the last quarter dummy. The regression uses fiscal year- and donor- fixed effects. The Slovak Republic is the smallest provider of trust fund aid in our sample and I thus use the last quarter effect in the Slovak Republic as the baseline. As these coefficients are based on variation in twelve observations, it surprising that they lack precision. Almost all point estimates are positive and in the four cases where they are not, the coefficients are close to zero (except for Luxembourg, a small donor) and even their 90% confidence intervals include zero. One of the two top trust fund donors, the United Kingdom, does not experience any YESS on average. This might be due to the possibility of (partial)

Table 6: Cross-section analysis

	(1)	(2)
Last fiscal quarter	0.551**	0.551***
	(0.220)	(0.126)
Collapse dimension	FY-FQ	FY-FQ
Calendar year FE	No	Yes
Donor FE	No	No
R-squared	0.0866	0.848
Adjusted R-squared	0.0683	0.795
N°of observations	52	52

Notes: The dependent variable is (logged) quarterly contributions to all funds. Robust standard errors in parentheses clustered at the donor country level..

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 7: First contributions to funds

	(1)	(2)	(3)	(4)
Last fiscal quarter	0.810**	0.617***	0.817*	0.777*
	(0.375)	(0.180)	(0.425)	(0.424)
End of IDA cycle				-0.403**
				(0.157)
Inflated model				
G8 participant		-20.14***		
		(1.632)		
Model	OLS	Zero-inflated Negative Binomomial	OLS	OLS
Fiscal year FE	Yes	Yes	Yes	Yes
Donor-fiscal year FE	No	No	Yes	Yes
Adjusted R-squared	0.110		0.593	0.595
N°of observations	1296	1296	1296	1296
N°of donors	27	27	27	27

Notes: The dependent variable is the quarterly number of first contributions and covers the World Bank's fiscal years 2002-2013. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

roll-overs to the next financial year. In contrast, large donors like Denmark, Japan, the Netherlands, Norway and Sweden have significant year-end budget spikes. Not only the estimated size of the coefficient but also the width of the confidence intervals vary widely across donor countries. The small confidence intervals observed for some large trust fund donors imply that they make regular use of trust funds to spend lapsing budgets (Switzerland, Denmark, Japan, Norway, New Zealand and Sweden). This can also be seen from Figure 8. In sum, there is substantial heterogeneity in donors' use of trust funds to spend lapsing budgets in both regularity and extent.

Trust funds allow donors to store funds programmed for a specific bilateral project but where circumstances do not allow full disbursement within their fiscal year. For example, signatures on the project contract may be missing or preconditions required for disbursements may not be met. Under such circumstances, donor countries might resort to setting up a trust fund with a narrow mandate. According to World Bank staff, the creation of a single-donor trust fund can be done within a few months under some circumstances.[33] While I hypothesize that trust fund creation timed to the end of the donor's fiscal year is higher, the data does not provide information about the creation of trust funds. I thus test for a last quarter effect in trust fund creation by constructing the variable *quarterly number of first contributions*. In the disaggregated data, I define first contribution as the first transfer ever received by a given trust fund. Aggregating to the donor-specific FQ in a given year, I obtain a cardinal variable ranging from zero to thirty-six and interpret this variable as the number of new trust funds created in a given quarter. Figure 10 shows that most trust funds are created in the early years of the sample and that within fiscal years, most trust funds receive their first contribution in the last quarter of the fiscal year as highlighted by the grey-shaded areas. The process of trust fund creation is described below.

Donors create significantly more trust funds in the last quarter. According to column 1 in table Table 7, more than 0.8 additional first-time contributions are made in the last quarter. Given the standard deviation of 2.6 for the dependent variable, this corresponds to about 30 percent of a standard deviation change. Because the dependent variable is zero in most donor-quarters, column 2 re-estimates the main effect using a zero-inflated negative binomial regression, which is most adequate for over-dispersed cardinal dependent variables.[34] I model the logit part of the model with donors' quarterly participation in G8 summits and the count part with the dummy variable of interest and fiscal-year fixed effects.[35] The coefficient of interest in column 2 is slightly smaller but similar to the point estimate obtained using ordinary least squares (OLS) regressions. This suggests that the use of OLS is relatively unproblematic and column 3 thus adds donor-fiscal year

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[33]The creation of a trust fund is easier if the donor knows his goal, if the issue is not a sensitive one, if there is interest within the Bank and staff on both sides are prompt in carrying out the administrative tasks. The process of setting up a fund takes longer if multiple or 'complicated' donors are involved.

[34]The Vuong test indicates that the zero-inflated model is preferable to an ordinary negative binomial regression model and according to the likelihood test the zero-inflated negative binomial model is more adequate than the zero-inflated Poisson model.

[35]The G8 variable is inspired by an observation of the World Bank's evaluation unit (IEG, 2011, vii): "For large multi-donor funds, the decision [about trust fund contributions] generally comes at the initiative of senior government officials or international groups of officials such as the G-7." Russia joined the G7 group in 1997 and was expelled from the G8 group following its annexation of Crimea in March 2014. We thus only observe G8 meetings in our sample period.

fixed effects to the model of column 1. The coefficient is similar to previous columns. In informal conversations, World Bank staff suggested that institutional restrictions in their organization might affect the creation of trust funds. In particular, the World Bank has discontinued solicitations of trust funds during recent replenishment negotiations for the next three-year funding period of IDA.[36] The IDA replenishment period might thus be an omitted variable. Column 4 includes the variable *End of IDA cycle*, which is one in the last quarter of an IDA replenishment period. The last quarter effect is robust to the inclusion of the variable. For the IDA variable, I find a negative coefficient, implying that the intended purpose of the restriction was achieved.

In sum, there is substantial evidence for the existence of a year-end spike in trust fund contributions from econometric analysis at three different levels of temporal aggregation. The use of trust funds to spend lapsing budgets is also acknowledged by staff at bilateral aid agencies. As a French aid official put it: "[The fiscal year] is of course only one element of explanation for trust funds. But a powerful one."[37]

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[36] As the Bank's fiscal year runs from July 1 to June 30 and the IDA budget is replenished for a three-year period, the end period of IDA12-IDA16 fall in our sample period, which, respectively, ended on June 30 of the years 2002, 2005, 2008, and 2011.

[37] Statement in an e-mail exchange in October 2014, translated by the author.

Figure 9: Last fiscal quarter effects for individual donor countries
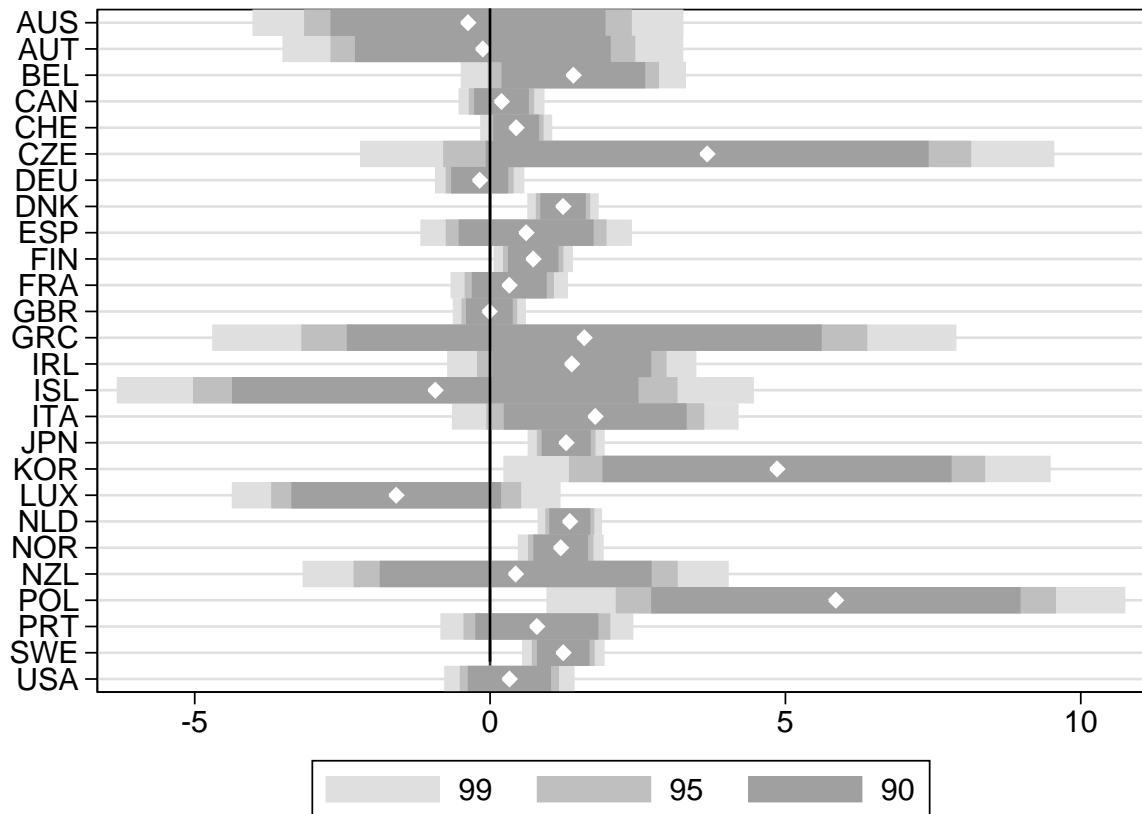
Notes: Donor-specific coefficients for the last fiscal quarter from individual interactions of donor dummies with the last quarter dummy. The regression uses the last quarter effect in the Slovak Republic, the smallest donor of trust fund aid in the sample, as baseline category and includes calendar-year and donor fixed effects. The graph shows 90, 95, and 99% confidence intervals. The acronyms refer to Australia (AUS), Austria (AUT), Belgium (BEL), Canada (CAN), Czech Republic (CZE), Germany (DEU), Denmark (DNK), Spain (ESP), Finland (FIN), France (FRA), Great Britain (GBR), Greece (GRC), Ireland (IRL), Island (ISL), Italy (ITA), Japan (JPN), Korea (KOR), Luxembourg (LUX), Netherlands (NLD), Norway (NOR), New Zealand (NZL), Poland (POL), Portugal (PRT), Sweden (SWE), and the United States of America (USA).

Figure 10: Number of first contributions by donor-specific fiscal quarter
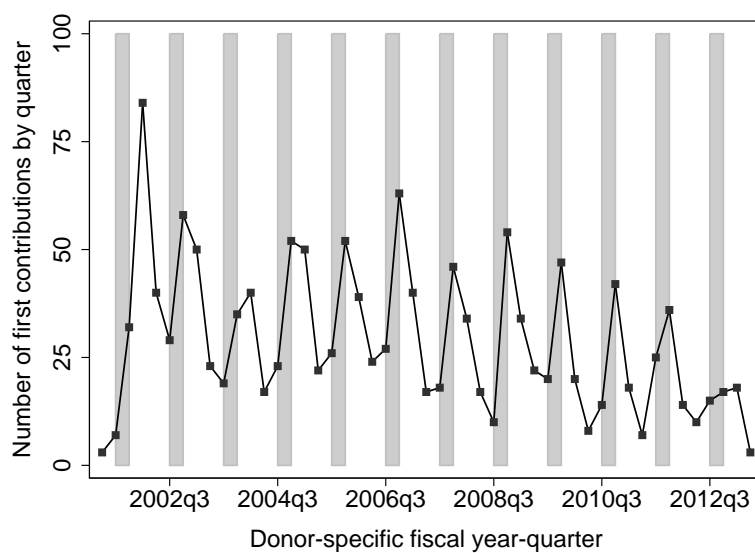
Notes: The grey-shaded area highlights the change in the number of funds receiving first-time contributions between the third and the last fiscal quarter. Trust funds are identified by the variable *Trustee-FundName.*

5.2 Empirical Evidence for the Bureaucracy Hypothesis

As suggested above, the simplest explanation for spending surges at the end of the budget year is probably a failure to plan. This section tests this argument formally by using bureaucratic quality as a measure of planning capacity and interact it with the dummy for the last FQ. I expect better bureaucracies to reduce YESS and therefore a negative interaction term. Several measures of governance and, more specifically, government capacity exist. As the quality of governance in general and of subcomponents of governance in particular are notoriously hard to measure (Langbein and Knack, 2010), I provide extensive sensitivity analysis. For the main regressions, I use the variable *Bureaucratic Quality*, the only governance measure available at the monthly level, from the ICRG (Howell, 2011), a commercial service providing information on political risks to investors and lenders. The variable corresponds most closely to the theoretical mechanisms underlying the argument. Values range from zero to four with higher scores indicating the presence of regular, meritocratic recruitment and advancement processes, insulation from political pressure, and the ability to continue service provision during government changes (Howell, 2011). Because no more details about the definition are given and the scores are based on expert ratings, further research was conducted to validate the measure against alternative ones, although only for developing countries.[38] Given that the bureaucratic quality score is based on expert surveys, there is also small risk of reverse causality with YESS. Surveyed experts might observe inefficient projects that are due to YESS and attribute lower scores to the bureaucracy as a consequence. I lag the bureaucratic quality variable by one year to mitigate these concerns. A further concern is the ordinal nature of the ICRG and most governance variables. While it is common in the literature has used the ICRG variables as interval data (e.g., Knack and Rahman, 2007). Therefore, I dichotomize bureaucratic quality at the sample mean and replicate the results with the binary measure. As there is relatively little variation in bureaucratic quality over the time-frame and across the sample countries, I test the robustness of the results by using alternative measures of governance and government effectiveness. For adequate comparison with these annual variables, I also run regressions with the annual average of the ICRG bureaucratic quality variable and do not include fiscal year-donor dummies in regressions with annual variables. Table 1 shows descriptive statistics for the different governance measures and Table 9 the correlation matrix.

Table 8 shows that the interaction effect of bureaucratic quality and last FQ is negative and economically and statistically significant. This result is independent of the included fixed effects (columns 1-4). In terms of magnitude, YESS is reduced by 81 percent if bureaucratic quality increases by one point or 40 percent if the quality increases by one standard deviation.[39] For the average donor, this would translate into a reduction of last quarter funding by, respectively, 70 and 35 million US$.[40] Put differently, the results pre-

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[38]Knack and Rahman (2007) find bureaucratic quality to be highly correlated with Evans and Rauch's (1999) more detailed "Weberian scale" of bureaucratic development. Hendrix (2010) assesses the construct validity of operationalization of state capacity in the civil conflict literature and concludes by suggesting that survey-based variables of bureaucratic quality are among the two most theoretically and empirically justified measures.

[39]Percentage: $100 * \left(e^{-1.674} - 1\right) = -81.25; 100 * \left(e^{-1.674} - 1\right) * 0.50 = -41.63$.

[40]Average contributions in the last quarter are US$ 86.51 million. Thus, $-0.8125 * 86.51 = -70.29$ and $-0.82 * 86.51 * 0.503 = -35.35$.

dicts that YESS is 160 percent lower for a donor with the maximum level of bureaucracy in the sample (e.g., New Zealand in 2010) compared to a country with the lowest level in the sample (e.g., Italy in 2010).[41] Figure 11 shows the marginal effect of the last quarter for the different levels of bureaucratic quality occurring in the sample of OECD countries. Although there is a year-end effect for all levels of bureaucratic quality, YESS is smaller for better bureaucracies.

Given the strong increase in contributions over time, I want to test the robustness of the main result to changes in the time period. Column 5 includes contributions during the second half of the World Bank's fiscal years 2008-2013 while column 6 focuses on the start of the sample period (2002-2007). The results are robust to these modifications. I also analyze the sensitivity of the results to the exclusion of individual donor countries controlling for donor-fiscal year effects.The main result is not sensitive to excluding any of the donors. In particular, the result is robust to the exclusion of the United States, a special case because its budgets are delayed and more micro-managed by the legislature than other aid agency's. (Table 20–Table 22). Column 7 excludes the five smallest donors.[42] Column 8 excludes the two donors, which share the budget year of the World Bank (i.e., Australia and New Zealand). The result is robust to their exclusion.

Results are also robust to using the one-year lag (Table 23) and the yearly average of bureaucratic quality (Table 25). The mitigating effect of bureaucratic quality scores on fund contributions is also present for the last fiscal month (Table 26). The interaction is significantly negative and similar in magnitude to Table 8. In sum, there is robust evidence that smaller end-of-year spending spikes are observed in countries with better bureaucracies. In the following, the robustness of this finding to alternative measures of bureaucratic quality is tested.

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[41] $\frac{4}{2.5} = 1.6$.

[42] The Slovak Republic, Poland, Iceland, the Czech Republic and Greece each provide less than US\$ 40 million to funds over the sample period. The next largest donor, Portugal, provides almost three times as much as Greece, the largest donor among the excluded donors.

Table 8: The effect of bureaucratic quality on contributions in the last quarter

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Last fiscal quarter	7.154***	7.197***	7.238***	6.707**	6.303**	7.871**	5.072*	7.061***
	(2.433)	(2.460)	(2.490)	(2.856)	(2.991)	(3.626)	(2.559)	(1.631)
Last fiscal quarter	-1.674**	-1.683**	-1.688**	-1.549**	-1.530*	-1.733*	-1.126*	-1.636***
* bureaucratic quality	(0.617)	(0.623)	(0.631)	(0.723)	(0.762)	(0.920)	(0.641)	(0.445)
Bureaucratic quality	6.254**	6.284**	-0.337	1.864***	-0.479	2.325***	-0.382	-0.500
	(2.404)	(2.412)	(0.390)	(0.238)	(0.352)	(0.233)	(0.335)	(1.202)
Fiscal year FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Donor FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Donor-fiscal year FE	No	No	No	Yes	No	No	No	No
Adjusted R-squared	0.222	0.225	0.710	0.714	0.712	0.722	0.391	0.722
N°of observations	1296	1296	1296	1296	712	584	1056	1200
N°of donors	27	27	27	27	27	27	22	25
Notes					≤ 2007	> 2007	5 minor	WB year

Notes: The dependent variable is (logged) quarterly contributions to all funds to funds the World Bank's fiscal years 2002-2013. Column 5 excludes observations after the World Bank's fiscal year 2007 while column 6 excludes contributions prior to the year 2007. Column 7 drops the five smallest trust funds donors (The Slovak Republic, Poland, Iceland, the Czech Republic and Greece) and column 8 the two donors that have the same fiscal year as the World Bank (Australia and New Zealand). Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Figure 11: Marginal effects for regressions with different sets of fixed effects

(a) Without fixed effects
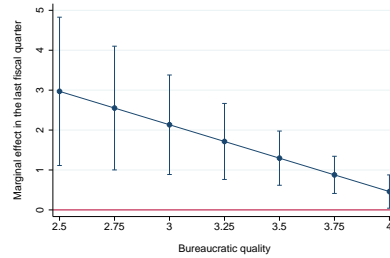
(b) With fiscal year-fixed effects
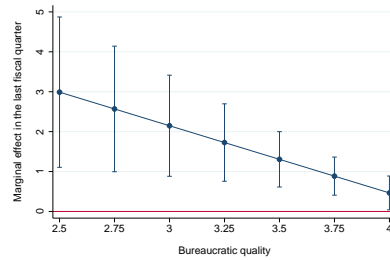
(c) With donor- and fiscal year- fixed effects
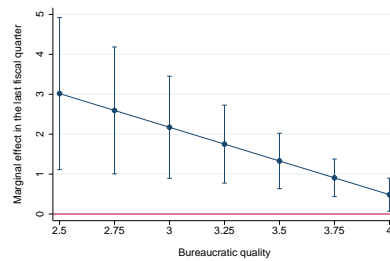
(d) With donor-fiscal year-fixed effects
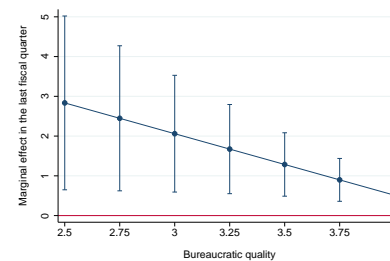
Notes: Marginal effect of bureaucratic quality on (logged) fund contributions in the last fiscal quarter. Figures a, b, c and d correspond to columns 1, 2, 3 and 4 in Table 8 respectively.

In particular, it is also possible that it is good governance more generally that drives the result for the bureaucratic quality variable. As alternative and broader measures of the quality of the bureaucracy, three different governance measures from the World Governance Indicators (WGI) are used (Kaufmann et al., 2011). The WGI consist of six annual indicators that aim to capture different dimensions of governance. The indicators are constructed using an Unobserved Components Model which weights the information contained in more than thirty existing data sources. Each governance measure is distributed between -2.5 and 2.5 with a mean of zero and a standard deviation of one. Higher values correspond to better governance. (Langbein and Knack, 2010) examine the dimensionality of the WGI indexes and conclude that the individual WGI indicators do not generally capture distinct aspects of governance. Their result supports averaging the six indices in a broader index (e.g., Bjørnskov, 2006). I use the *average WGI* value as one sensitivity check but as the goal is not to test a specific hypothesis but to show the robustness of these results, I also use the relevant indicators individually. The WGI *government effectiveness* indicator aims to capture "the capacity of the governments to effectively formulate and implement sound policies" (Kaufmann et al., 2011). It includes the ICRG bureaucratic quality variable as one source of information. Government effectiveness is defined more broadly than bureaucratic quality while clearly encompassing it. This is less clear for the WGI *regulatory quality* variable that measures "perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development" (Kaufmann et al., 2011).

One channel for the negative relationship between bureaucratic quality and YESS is the absence of political interference that disturb the implementation of the disbursement plan. One relatively indirect measure for such political interference is the level of government corruption. I thus alternatively use the WGI *control of corruption* indicator that should capture "perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests" (Kaufmann et al., 2011). A significant negative interaction could cautiously be interpreted as evidence that political interference introduces uncertainty to the planning process. Thus, a significant negative interaction would simultaneously provide evidence for the precautionary savings hypothesis of Liebman and Mahoney (2013), while a positive one would support the procrastination argument of Baumann (2015). As alternative measure of corruption, I use the monthly available *ICRG corruption* score, which is mostly "concerned with actual or potential corruption in the form of excessive patronage, nepotism, job reservations, 'favor-for favors', secret party funding, and suspiciously close ties between politics and business." The lower the value, the more widespread corruption is.

Finally, transparency of government finances might reduce the opportunities for corrupt activities, signal statistical capacity, and increase the accountability of the government to taxpayers for the efficient use of taxes. Alt and Lassen (2006) find that political business cycles in 19 OECD countries in the 1990s are reduced by fiscal transparency. Fichtner and Greene (2014) note that YESS may also be curbed through heightened budget transparency such as via a midyear budget execution review as introduced in Taiwan in 2002. However, as information about sub-annual government spending is generally not available, there are no public discussions about YESS and the channels through which transparency decreases political business cycles are not (readily) applicable to sub-annual

spending cycles. Nevertheless, one could expect that the more transparent donors are the more likely it is that they will be held accountable for rushed end-of-year spending, especially if it is of the wasteful kind. Due to a lack of alternative measures, I use a new measure of fiscal *transparency* that is based on the comprehensiveness of governments' reporting to the International Monetary Fund (IMF) (Wang et al., 2015).[43] Table 9 shows the correlation of the various governance measures. The interaction of the alternative governance measures with the last quarter is negative and significant for all alternative governance indicators for different sets of fixed effects (Table 27 and Table 28). The interaction with the IMF fiscal transparency measure is negative but far from being statistically or economically significant.

To reduce concerns about omitted variable bias, Table 10 conducts two types of sensitivity analysis. On the one hand, I examine the potentially most important common determinant of bureaucratic quality and YESS: the level of development as measured by income per capita. Despite the high correlation of income per capita and bureaucratic quality (0.64) also noted by previous research (e.g., Knack and Rahman, 2007; Acemoglu et al., 2001), Column 1 of Table 10 shows that the finding about bureaucratic quality is robust to the inclusion of gross domestic income (GDP) per capita (OECD, 2016a) and its interaction with the last quarter dummy even though the interaction with income is also statistically significant. On the other hand, bureaucratic quality may reduce YESS through a specific (budgetary) institution rather than bureaucratic quality more generally.

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[43]Using the Aid Transparency Index, which assesses the state of aid transparency among major donor organizations, would be most appropriate here but it is only available since 2011. Measuring budget transparency more generally, the Open Budget Index (OBI), a biannual survey measure of budget transparency, participation, and oversight, is available from 2006 for some donor countries. However, fourteen donors are not included in any year. Independent of using the raw or interpolated values of the OBI, the interaction with the last FQ dummy is insignificant. Further alternative indicators of fiscal transparency are not available for the sample period (e.g., the indicator of Alt and Lassen 2006) or limited to EU countries (Hallerberg et al., 2009).

Table 9: Correlation matrix for governance measures

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1)	Bureaucratic quality, ICRG	1								
(2)	Yearly bureaucratic quality, ICRG	0.998	1							
(3)	Binary bureaucratic quality, ICRG	0.984	0.982	1						
(4)	Government effectiveness, WGI	0.851	0.852	0.834	1					
(5)	Regulatory quality, WGI	0.785	0.786	0.79	0.831	1				
(6)	Average governance, WGI	0.866	0.867	0.862	0.948	0.897	1			
(7)	Corruption, ICRG	0.76	0.762	0.758	0.857	0.765	0.903	1		
(8)	Control of corruption, WGI	0.854	0.855	0.852	0.928	0.86	0.974	0.929	1	
(9)	IMF transparency index	0.2	0.2	0.196	0.162	0.192	0.213	0.221	0.224	1

First, the accounting system and the option to carry-forward funds into the next fiscal year might affect the size and existence of spending spikes. During the sample period, many OECD governments transitioned from cash to accrual accounting. Cash accounting records a transaction when the monetary transfer occurs while accrual accounting registers the activity when the product or service is consumed or produced. Experts suggested that rushing expenditures at the end of the budget year might be more difficult under accrual accounting. However, time-series information on countries' transition between accounting systems and on the existence (and type) of roll-over rules are difficult to obtain. While there is currently not enough internationally comparable information to code the introduction, presence and type of roll-over rules, Table 10 shows the effect of accrual accounting on YESS. The binary indicator is one in country-years accrual accounting is used (Table 19). Column 2 shows that the interaction with accounting type is statistically insignificant while the bureaucratic quality effect remains. A further relevant factor might be the fiscal space available to the government. It is likely that programming is more generous when the budgetary situation of the country is relatively good and tight in periods of fiscal austerity. Moreover, expenditures might be more closely monitored by the parliament in the latter case so that all funds are already used up at the end of the fiscal year. As first approximation of fiscal space available to the government, I use the primary balance (as a share of GDP) (IMF, 2015). According to column 3 of Table 10, the interaction with bureaucratic quality stays negative and significant while the interaction with the primary balance is insignificant.

Given that it takes several months to negotiate a trust fund's founding contract and to complete the administrative paper-work, this implies that staff in bilateral aid agencies need to plan ahead if they want to have a trust fund ready at the end of the fiscal year. This would imply that first-time contributions at the end of fiscal year should be higher for donors with higher bureaucratic quality. Given that these donors are less likely to have 'left-over' funds in the first place due to higher planning capacity, the two effects may counter each other, resulting in a zero effect, on average. Table 11 shows that, controlling for the level of bureaucratic quality, there is no longer a statistically significant last quarter effect.

In sum, there is robust support for the hypothesis that a lack of planning capacity as measured by the general quality of bureaucracy, and, more generally, the quality of governance reduces year-end spending sprees substantially. However, bureaucratic quality reduces YESS only by around 86 percent in a country with average bureaucratic quality. The following sections thus explore whether alternative explanations for YESS, namely the uncertainty about spending demands, have additional explanatory power.

Table 10: Income per capita, accounting type, and fiscal space

	(1)	(2)	(3)
Last fiscal quarter	26.56**	7.507***	5.889**
	(11.23)	(2.588)	(2.292)
Last fiscal quarter * bureaucratic quality	-0.910*	-1.831**	-1.374**
	(0.472)	(0.706)	(0.585)
Bureaucratic quality	-0.812*	-0.336	-0.146

Table 10: (continues on next page)

	(1)	(2)	(3)
	(0.426)	(0.463)	(0.352)
Last fiscal quarter * GDP p.c. (ln)	-2.104*		
	(1.086)		
GDP p.c. (ln)	6.920*		
	(3.786)		
Last fiscal quarter* accounting system		0.504	
		(0.615)	
Accounting system		0.112	
		(0.606)	
Last fiscal quarter * primary balance			-0.0337
			(0.0679)
Primary balance (% of GDP)			-0.147**
			(0.0556)
Fiscal year FE	Yes	Yes	Yes
Donor FE	Yes	Yes	Yes
Adjusted R-squared	0.710	0.706	0.746
N°of observations	1268	1264	1234
N°of donors	27	27	26

Notes: The dependent variable is (logged) quarterly contributions to all funds and covers the World Bank's fiscal years 2002-2013. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 11: First contributions to funds and bureaucratic quality

	(1)	(2)	(3)
Last fiscal quarter	-2.314	-2.406	-1.954
	(1.890)	(1.931)	(1.943)
Last fiscal quarter	0.908	0.882	0.758
* bureaucratic quality	(0.592)	(0.602)	(0.620)
Bureaucratic quality	1.103***	1.043***	
	(0.339)	(0.330)	
Model	OLS	OLS	OLS
Fiscal year FE	No	Yes	Yes
Donor-fiscal year FE	No	No	Yes
Adjusted R-squared	0.0976	0.174	0.598
N°of observations	1296	1296	1296
N°of donors	27	27	27

Notes: The dependent variable is the quarterly number of first contributions and covers the World Bank's fiscal years 2002-2013. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5.3 Empirical Evidence for the Precautionary Savings and the Procrastination Hypotheses

This section seeks to assess the explanatory power of the two main alternative theories for end-of-year spending spikes, which make opposed predictions about the relationship between uncertainty and YESS. Liebman and Mahoney's (2013) model predicts a positive association between the size of spending spikes and uncertainty. Heightened year-end spending is driven by uncertainty about demands in the later months of the fiscal year, leading to the build-up of reserves to meet unexpected demands and expenditures. If no shock occurs, these reserves are nevertheless spent before the end of the budget year as the funds would otherwise lapse and there are no incentives for returning them to the central treasury. In contrast, Baumann's (2015) model suggests a negative relationship between YESS and uncertainty. Bureaucrats procrastinate over strenuous tasks until their evaluation at the end of the year but will take advantage of beneficial shocks during the fiscal year to disburse the budget earlier.

As Baumann (2015) notes, it is variation in unpredictability of future demands that explains precautionary savings in Liebman and Mahoney (2013). This interpretation makes it possible to empirically test their hypothesis against real world measures of uncertainty but neither Liebman and Mahoney (2013) nor Baumann (2015) propose variables to measure uncertainty. It is indeed a daunting task. Uncertainty is omnipresent, hard to measure and may vary in intensity both within countries over time and across countries so that the use of fixed effects in the econometric specification is not a solution. In the emerging literature of YESS, this paper provides the first attempt to identify and measure major sources of uncertainty affecting the size of YESS. Controlling for bureaucratic quality, the following sections use interactions with the last FQ dummy to test whether the size of the budget, late budget approvals, and uncertainty regarding domestic politics and the economic situation are associated with YESS. I then discuss the lack of evidence in favor of either of the two competing hypotheses before considering whether realized demand shocks affect year-end spending.

5.3.1 The Size of the Budget and Late Appropriations

The ability of a government agency to deal with uncertainty might depend on the agency's budget and in particular on the discretionary part of the budget. Agencies with large budgets may absorb spending shocks better by dispersing the unexpected demands across their programmed expenditures, leading to minor cuts for all projects. Large agencies might thus require lower levels of precautionary savings and may avoid large YESS. This absorption advantage of large agencies is especially pronounced for shocks that are not proportional to the size of the agency. Table Table 12 considers whether agencies with large (logged) ODA disbursements (column 1) (OECD, 2016a) or higher (logged) annual fund contributions (column 2) experience lower YESS. Both variables are lagged by one fiscal year to reduce endogeneity. While the interaction is insignificant in column 1, column 2 suggests that fiscal year spikes increase in the size of total contributions. The interaction between bureaucratic quality and the last quarter dummy remains significantly negative in both columns.

For a government department, the most important source of uncertainty is probably

Table 12: Institutional controls

	(1)	(2)	(3)	(4)
Last fiscal quarter	7.773*	6.847**	7.411***	17.36**
	(3.932)	(2.909)	(2.505)	(6.563)
Last fiscal quarter * bureaucratic quality	-1.712**	-2.296**	-1.711**	-2.456**
	(0.662)	(0.950)	(0.632)	(0.943)
Bureaucratic quality	-0.491	-0.125	-0.613	-0.486
	(0.368)	(0.371)	(0.384)	(0.381)
Last fiscal quarter* aid (ln)	-0.0220			-0.596*
	(0.166)			(0.315)
Total aid (ln)	2.153**			1.777*
	(1.004)			(0.877)
Last fiscal quarter* yearly contributions (ln)		0.155**		0.322***
		(0.0591)		(0.0952)
Yearly contributions (ln)		0.211**		0.129
		(0.101)		(0.0968)
Last fiscal quarter* late budget			-0.194	-0.191
			(0.122)	(0.123)
Late budget			0.000604	-0.000913
			(0.0363)	(0.0252)
Fiscal year FE	Yes	Yes	Yes	Yes
Donor FE	Yes	Yes	Yes	Yes
Adjusted R-squared	0.716	0.720	0.710	0.726
N°of observations	1296	1296	1296	1296
N°of donors	27	27	27	27

Notes: The dependent variable is (logged) quarterly contributions to all funds and covers the World Bank's fiscal years 2002-2013. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

a lack of information about the size of the budget in general and the budget allocated to the department in particular. One reason is late budget approval by parliament. Liebman and Mahoney (2013) find that in the U.S., where budgets are agreed on notoriously late, delayed appropriations heighten spending at the end of the year. In the majority of OECD countries, appropriations in the sample period were never delayed. Column 1 of table Table 12 tests whether the number of months by which the budget is delayed affects last quarter contributions (own coding, see table 1 in the appendix).The interaction with late budget is insignificant, suggesting that delayed approval of the budget does not systematically increase YESS across countries.[44] As it is possible that all three variables affect YESS conditionally on one another, column 4 includes them together. While significance levels partly change, the main effect of bureaucratic quality is preserved. Given the high correlation between total aid and yearly contributions (0.76), these variables will not jointly included in subsequent regressions due to multicollinearity concerns. In sum, there is no evidence that the size of the departmental budget or late appropriations affect YESS.

5.3.2 Domestic Politics

Beyond late approval of budgets, politics are a major source of uncertainty in government administrations. As evidenced by the large literature on political business cycles (see Eslava, 2011), politics affect fiscal performance particularly in election years. Moreover, elections instill uncertainty in government agencies by creating the possibility of imminent changes to department policy and direction, which in turn affects the size of the total and the agency's budget, top staff and spending priorities. The uncertainty surrounding elections increases if the outcome is close or if the exact date of the vote is unclear.[45] However, there are no cross-country measures for the ex-ante degree of closeness of election results to test this argument. An alternative interpretation of the election effect would be that governments that are bound to lose may spend all remaining discretionary parts of the budget according to their priorities before the election. While political business cycles are also a candidate explanation for uneven spending within the fiscal year, it is unlikely that election-related disbursement manipulations affect foreign aid in general and trust fund aid in particular: These financial flows target neither the marginal voters nor strengthen support from major voting blocs.[46] The possibility of an election effect unconditional on closeness is tested in table Table 13: It shows the interaction of the last fiscal quarter dummy with an election quarter dummy (column 1) and an election year dummy (column 2) (Beck et al. 2001, own coding of 2013) conditional on bureaucratic

[44]Austria is a special case. Although biannual budgeting has been constitutionally allowed in exceptional cases only since 2009, budgets have been appropriated for two-year-periods since the beginning of the 2000s (Austrian Parliament, 2016). Setting the late approval dummy for Austria to zero halves the interaction coefficient to -0.097. Although statistically significant at almost the five percent level, the effect is economically insignificant.

[45]In the sample period, several EU countries held more than one election per year because no coalition governments could be formed. This led to the announcement of new elections on short notice.

[46]Despite these theoretical doubts, I econometrically tested for heightened spending in the two quarters before the election. The coefficient is insignificant independent of the inclusion or not of an interaction with the last quarter dummy, which also is insignificant.

quality. The interaction is insignificant in both cases, offering no support for either the precautionary savings or the procrastination hypothesis.

Once elections are held, the high level of uncertainty persists if the government changes because of the aforementioned uncertainty about the budget size, personnel, and the new strategic focus. Government changes may also affect spending within the fiscal year for a reason other than uncertainty. Outgoing governments may use the months they remain in office after the lost election and before the inauguration of the new government to allocate any remaining (discretionary) funds according to their priorities. The average number of months between a lost election and the subsequent inauguration of the new government is 1.4 months. Thus, such spending must be made expeditiously. For the same reasons as for year-end spending, trust funds are particularly attractive because they separate the allocation and the disbursement stage and thus allow for rapid disbursements. In other words, trust funds allow for the intended earmarking of funds according to the outgoing government's priorities without compromising on quality.[47] Column 3 tests the 'in-between-government' effect at the quarterly level while column 4 includes a dummy equaling one in those election years with a government transition.[48] Both interactions are insignificant.

With a new government generally comes a new minister but rotations in ministerial positions also occur in non-election years. A change in ministerial leadership affects the agency directly by instilling uncertainty about continuation in the annual strategic goals and the expenditure plan. Columns 5 and 6 consider this possibility by respectively including dummies for the quarter and the year of a change in the aid minister (Fuchs and Richert, 2015) and their interaction with the last quarter dummy. The interaction with aid minister quarter is highly significant in column 5 while this effect does not persist in column 6, raising doubts about the robustness of the finding. Finally, column 7 includes all variables related to domestic uncertainty at the same time because omission of alternative sources of uncertainty would lead to omitted variable bias if uncertainty simultaneously arises from different sources. In this column, the more fine-grained measures of election, minister change, and government change at the quarterly level are used. The results confirm the findings of previous columns: all interactions except the aid minister one are statistically insignificant at conventional levels of statistical significance. As column 8 shows, the interactions with domestic politics variables remain insignificant when using the annual variables.

One reason why uncertainty associated with domestic politics might not affect aid agencies' YESS on average is institutional protection from political interference in some countries. If those countries, the interaction between the last quarter dummy and a measure of institutional independence would be negative. Column 9 includes a time-invariant dummy for an independent aid agency as defined in Bertoli et al. (2008). Four countries drop from the sample.[49] the interaction with last quarter dummy has the expected significantly negative coefficient while the main result for bureaucratic quality is preserved. In sum, year-end trust fund contributions do not appear to be systematically and robustly

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[47]See Section 5.3.7 for a discussion of the quality of trust fund aid in general and relative to alternative aid channels.

[48]A government change is defined as a change in government ideology (Beck et al. 2001, own extension to 2013).

[49]The coding by Bertoli et al. (2008) is based on OECD (2009) and no information for the Czech Republic, Island, Poland, and the Slovak Republic is available.

related to uncertainty in domestic politics in average. However, there is some evidence that this lack of a result for the average country might be associated with different degrees of institutional independence.

Table 13: Uncertainty and domestic politics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Last fiscal quarter	7.117***	7.346***	7.198***	7.212***	7.236***	7.140***	7.122***	7.216***	5.042**
	(2.415)	(2.411)	(2.446)	(2.463)	(2.479)	(2.444)	(2.413)	(2.358)	(1.937)
Last fiscal quarter	-1.675**	-1.694**	-1.679**	-1.683**	-1.692**	-1.673**	-1.678**	-1.669**	-0.961**
* bureaucratic quality	(0.616)	(0.629)	(0.621)	(0.625)	(0.630)	(0.625)	(0.617)	(0.618)	(0.455)
Bureaucratic quality	-0.293	-0.319	-0.315	-0.309	-0.333	-0.346	-0.274	-0.319	-0.591
	(0.397)	(0.389)	(0.385)	(0.389)	(0.390)	(0.395)	(0.399)	(0.392)	(0.369)
Last fiscal quarter	1.157						0.961		
* election quarter	(1.444)						(1.215)		
Election quarter	-0.430						-0.450		
	(0.545)						(0.561)		
Last fiscal quarter		-0.286						-0.408	
* election year		(0.535)						(0.578)	
Election year		0.191						0.183	
		(0.198)						(0.251)	
Last fiscal quarter			-0.170				-0.366		
* government change			(1.388)				(1.207)		
Government change			1.160				1.210		
			(0.776)				(0.803)		

Table 13: (continues on next page)

Table 13: (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Last fiscal quarter				0.0453				0.230	
* year of government change				(1.000)				(1.162)	
Year of government change				0.274				0.197	
				(0.294)				(0.431)	
Last fiscal quarter					2.412***		2.438***		
* quarter of aid minister change					(0.777)		(0.776)		
Aid minister change					-0.611		-0.643		
					(0.822)		(0.824)		
Last fiscal quarter						0.620		0.691	
* year of aid minister change						(0.966)		(0.993)	
Year of aid minister change						-0.346		-0.425	
						(0.726)		(0.753)	
Last fiscal quarter									-1.072***
* independent agency									(0.358)
Fiscal year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Donor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.710	0.709	0.710	0.709	0.709	0.709	0.710	0.709	0.527
N°of observations	1296	1296	1296	1296	1296	1296	1296	1296	1104
N°of donors	27	27	27	27	27	27	27	27	23

Notes: The dependent variable is (logged) quarterly contributions to all funds and covers the World Bank's fiscal years 2002-2013. Robust standard errors in parentheses clustered at the donor country level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5.3.3 Economic Factors

In periods of economic uncertainty, such as in the wake of financial and economic crises, tax revenues and costs of lending at financial markets are less predictable. With the revenue side of the budget being uncertain, so might be the expenditure side. In such periods, agencies need to plan and monitor particularly cautiosly to assure a zero balance at the year-end. Table 14 considers uncertainty stemming from a country's economic situation. Column 1 tests these channels by including an indicator marking the start of a sovereign, banking or currency crisis (Valencia and Laeven, 2012) and its interaction with the last fiscal quarter dummy. The interaction is significantly negative as expected. During crisis times, budgeting is further complicated by particularly imprecise macroeconomic projections.[50] This relationship is tested by including the deviation from projected government spending, measured as the difference between projected and realized values (OECD, 2016b), and its interaction with the last quarter dummy. A positive interaction would imply that YESS increases with the projection error. Column 2 shows the results for the deviation between the realized value and the last projected value available at least two months before a donor's budget year starts.[51] The interaction is insignificant. To reduce omitted variable bias, the last column includes all variables related to economic uncertainty simultaneously. All interactions remain at their previous significance levels.

Even though there is a general lack of a relationship between unpredictability and YESS, I do not conclude that the two proposed theories have no explanatory power. There are a number of reasons for this interpretation.

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[50]I thank Jan-Egbert Sturm for suggesting this channel.

[51] The OECD Economic Outlook reports projections biannually in June and November. For donors with fiscal years starting on July 1, I thus use the December projection of the previous calendar year (see also appendix table 1). Results are robust to calculating the deviation from the most recent projection available prior to the start of the budget year (i.e. the June one in the exemplifying case) or any of the two-year forward projections.

Table 14: Economic uncertainty

	(1)	(2)	(3)
Last fiscal quarter	7.355***	6.753**	6.931***
	(2.446)	(2.446)	(2.410)
Last fiscal quarter * bureaucratic quality	-1.695**	-1.547**	-1.566**
	(0.617)	(0.618)	(0.605)
Bureaucratic quality	-0.339	0.0269	0.0326
	(0.395)	(0.397)	(0.405)
Last fiscal quarter * economic crisis	-1.627*		-1.808*
	(0.933)		(0.994)
Economic crisis	0.261		0.417
	(0.718)		(0.696)
Last fiscal quarter * Deviation from projected government net lending		0.0635	0.0646
		(0.0805)	(0.0804)
Deviation from projected government net lending		-0.118*	-0.119*
		(0.0649)	(0.0646)
Fiscal year FE	Yes	Yes	Yes
Donor FE	Yes	Yes	Yes
Adjusted R-squared	0.710	0.690	0.690
N°of observations	1296	1198	1198
N°of donors	27	27	27

Notes: The dependent variable is (logged) quarterly contributions to all funds and covers the World Bank's fiscal years 2002-2013. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5.3.4 Discussion of Results About the Relationship Between Uncertainty and YESS

Using measures of political and economic uncertainty and realized demand shocks, I aimed to test the two main alternative theories about year-end spending surges. There are a number of reasons why I do not find systematic support for either hypothesis. First, two types of bureaucrats might work in a government agency: procrastinating and/or saving bureaucrats. As the analyzed data is the aggregated outcome of the individual behaviors of bureaucrats, their behaviors could counteract each another, leading to a null effect on average. Second, the level of precautionary savings may not be optimal for empirically observable levels of uncertainty. In particular, the level might be too high in some years but too low in other years and this may vary across countries. Non-optimality of precautionary savings would make it impossible to detect a relationship with uncertainty. Third, the proposed measures for uncertainty and demand shocks may be inadequate or too few. Uncertainty prior to events might differ from ex-post measures. Moreover, the proposed variables might not be specific enough as in the case of close elections, where no ex-ante measures of closeness are available. The regressions might also be underspecified, leading to omitted variables and an imprecise estimation of the interaction coefficients. Fourth and last, the trust fund data cover only one discretionary budget item within the aid budget and might be too narrow to investigate the competing hypotheses about the relationship between uncertainty and YESS.[52]

Budget holders at various type of organizations generally find the precautionary savings argument convincing.[53] They note that they often face uncertainty about spending demands, the timing of expenditures, and even the budget size. One major issue in bilateral aid budgeting is delays in high-level officials in donor countries signing contracts with recipient governments. Anecdotal evidence from aid agencies suggests that in such cases trust funds are created at the end of the budget year. In contrast, budget holders find the procrastination hypothesis less convincing although lazy co-workers exist. Interviewees repeatedly remarked that managers observe the performance of their staff throughout the year and that the quality, and not only the amount of expenditures, matters. It was also proposed that workers might procrastinate on some particularly painstaking or boring tasks until the year-end.[54] This may explain YESS if these tasks are systematically associated with financially significant amounts.

5.3.5 Alternative Explanations for YESS

There exist alternative and additional explanations about YESS unrelated to uncertainty. These arguments are not fully developed and seem difficult to test empirically. A first

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[52] As trust fund aid is only one among probably multiple discretionary items in the aid budget, demand shocks would thus not necessarily affect the trust fund budget. As demand shocks are unlikely to affect trust fund spending, the trust fund budget represents an ideal store for "emergency" funds. YESS in trust fund contributions would thus only be observed in years without demand shocks (i.e., precautionary savings were not used or procrastinating bureaucrats were not presented with opportunities to easily spend funds earlier).

[53] During the spring and summer of 2016, the author informally asked at least a dozen people with budget responsibility in private companies, government administration, international organizations, and universities about their experiences and explanations for YESS.

[54] I thank Stephen Knack for suggesting this interpretation of procrastination.

alternative explanation is that in some organizations learning about the size of the remaining budget is costly in terms of time, effort and money. In these situations, it is optimal to collect information about the lapsing funds only as the fiscal year draws to a close, which results, if sizeable funds are still available, in heightened spending at the end of the year.[55] In other organizations, information about the remaining budget is provided regularly to project managers. For example, the German implementing aid agency reports at least monthly to the project team whether their spending targets are reached. Testing this alternative explanation for YESS would require information about the (different types of) costs associated with up-to-date information about remaining funds. Second, treasury or budget holders may seek to maximize income from interest by keeping funds as long as possible.[56] As it is unclear what the relevant interest rate would be, this last explanation is not tested in the paper. Finally, it is possible that the majority of trust fund contributions are determined in a meeting in the end of the donor-specific FY. According to the OECD (2012) report and anecdotal evidence on the decision-making processes in donor agencies regarding trust funds, contribution decisions are taken in a decentralized manner.

5.3.6 Exogenous Demand Shocks

The previous sub-sections tested measures of political and economic uncertainty and found no support for any relationship with YESS. This section considers the effect of realized demand shocks on year-end spending. Liebman and Mahoney's (2013) and Baumann's (2015) model both predict that demand shocks lower year-end spending, implying a negative interaction between unexpected spending demands and YESS. Empirical findings in this section thus do not allow to discriminate between the two theories but may provide evidence for a relationship between YESS and unexpected spending demands.

Demand shocks generally arise from the beneficiaries of public services and are exogenous to the type of government. Table 15 analyzes demands shocks to which OECD governments are likely to respond via their aid agency. The occurrence of natural disasters is probably the most exogenous international demand shock and leads to a rapid promise by OECD government to help with emergency relief and reconstruction aid (Fuchs and Klann, 2013). Independent of the underlying theoretical mechanism, an effect on YESS is likely. First, budgeting optimally for the response to the consequences of large-scale disasters is impossible and even high levels of precautionary savings might be insufficient in cases of severe disasters. Second, procrastinating bureaucrats may profit from such a large-scale spending shock to deplete the budget. Column 1 includes the (logged) number of people in developing countries affected by natural disasters (Guha-Sapir et al., 2015) in a given calendar year. The interaction term with last quarter is significantly negative.

While the persistence of conflicts in developing countries is slightly more predictable than the occurrence of natural disasters, their onset and intensity represent a source of uncertainty in the programming process. Aid agencies usually provide humanitarian assistance to refugees via the United Nations specialized agencies such as the World Food Programme or the United Nations Refugee Agency. Column 2 includes the (logged) annual number of battle-related deaths, which is used as a measure of conflict intensity

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[55]I thank Christoph Vanberg for suggesting this alternative explanation for YESS.

[56]I thank Jan-Egbert Sturm for suggesting this additional explanation.

(World Bank, 2016b). The interaction with the last quarter dummy is insignificant at conventional levels of statistical significance but has a positive coefficient, which would support the procrastination hypothesis.

These international events as well as economic crises in developing countries are associated with increased migration to OECD countries (e.g., Neumayer, 2005). The OECD / DAC's definition of official development assistance allows donor countries to count some of the expenses associated with asylum seekers in donor countries as foreign aid.[57] Thus, unexpected surges in the (logged) annual number of asylum seekers might lead to lower YESS. Column 3 shows that there is no statistical evidence for a reduction of YESS due to refugee inflows. The last column includes all three demand shock measures simultaneously. The interaction with disaster-affected people remains statistically significant while the other two interactions are insignificant. In summary, there is some evidence that realized demand shocks decrease the size of year-end trust fund contributions. The only exception is the occurrence of natural disasters, the demand shock most exogenous to the donor countries' governments.

Table 16 includes these major factors of uncertainty for the aid agency simultaneously to minimize any potential omitted variable bias.[58] Columns 1 and 2 include the variables measuring politics in the donor country at the quarterly and annual level respectively. Because of the high collinearity between annual trust fund contributions and total ODA, I include only (logged and lagged) ODA, which, arguably, is slightly less exogenous. The last column only includes those variables that were statistically significant in the regressions they were individually included in. Thus, (logged and lagged) annual trust fund contributions rather than ODA is included. Arguably, Column 3 might thus be closest to the 'true' model. Table 16 shows that the interaction between the last quarter dummy and the ICRG bureaucratic quality variable remains significantly negative in all three columns. In columns 1 and 2, the last quarter dummy increases in size but is marginally insignificant (the p-values are 0.102 and 0.101 respectively). In column 3, the last quarter dummy increases even further and is statistically significant at the one-percent level. Regarding the covariates, their level and their interaction with the last quarter dummy are mostly insignificant as in the previous regressions. The negative interaction with the number of disaster-affected people is highly significant in all columns while per capita income is significant only in column 2. The dummy for the quarter with a change in the aid minister is omitted in columns 1 and 2 because of collinearity. This is analogous to Altonji et al.'s (2005) approach of assessing the importance of potentially omitted variables. The idea is to approximate how large a bias there would need to be in order to make the interaction of interest indistinguishable from zero. Specifically, one compares how large the relative impact that unobserved variables would need to have on the interaction relative to the impact of observable variables. This is exactly what I do in column 3 Table 16, when I include all variables interacting significantly with the last quarter dummy in the baseline specification. The coefficient of interest increases in size and is more precisely estimated. Overall, I thus consider unlikely that there is important

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[57]See OECD Methodological Note on refugees:
http://www.oecd.org/dac/stats/RefugeeCostsMethodologicalNote.pdf (accessed on September 15, 2016).

[58]Regarding the potential omitted variables tested in Table 10, I include those variables that interact significantly with the last quarter dummy. This turns out to be GDP per capita only. Furthermore, I do not include the independent aid agency dummy tested in Table 13 because it is available only for a limited number of countries.

Table 15: International demand shocks

	(1)	(2)	(3)	(4)
Last fiscal quarter	39.235***	-3.270	7.259**	34.678*
	(11.338)	(7.728)	(2.614)	(17.257)
Last fiscal quarter	-1.673**	-1.710**	-1.688**	-1.686**
* bureaucratic quality	(0.631)	(0.629)	(0.644)	(0.640)
Bureaucratic quality	-0.353	-0.352	-0.383	-0.403
	(0.387)	(0.390)	(0.396)	(0.394)
Last fiscal quarter*	-1.678***			-1.612**
disaster affected (ln)	(0.542)			(0.605)
Last fiscal quarter*		1.056		0.326
battle deaths (ln)		(0.680)		(0.762)
Last fiscal quarter*			-0.002	0.009
asylum seekers (ln)			(0.149)	(0.153)
Asylum seekers (ln)			0.238	0.239
			(0.222)	(0.221)
Fiscal year FE	Yes	Yes	Yes	Yes
Donor FE	Yes	Yes	Yes	Yes
Adjusted R-squared	0.713	0.710	0.710	0.712
N°of observations	1296	1296	1296	1296
N°of donors	27	27	27	27

Notes: The dependent variable is (logged) quarterly contributions to all funds and covers the World Bank's fiscal years 2002-2013. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

omitted variable bias.

Table 16: Robustness of bureaucratic quality to the inclusion of all covariates

	(1)	(2)	(3)
Last fiscal quarter	45.09	45.74	65.76***
	(26.63)	(26.88)	(19.70)
Last fiscal quarter	-1.007*	-0.971*	-0.862*
* bureaucratic quality	(0.541)	(0.515)	(0.483)
Bureaucratic quality	-0.792*	-0.835*	-0.757*
	(0.456)	(0.412)	(0.384)
Last fiscal quarter	-1.362	-1.500	-1.196
* economic crisis	(1.018)	(1.046)	(0.960)
Economic crisis	0.405	0.544	0.347
	(0.610)	(0.616)	(0.635)
Last fiscal quarter	0.0890	0.0842	
* Deviation from projected government net lending	(0.0871)	(0.0871)	
Deviation from projected government net lending	-0.0924	-0.0875	
	(0.0633)	(0.0616)	
Last fiscal quarter	0		0
* quarter of aid minister change	(.)		(.)
Aid minister change	-0.481		-0.533
	(0.792)		(0.746)
Last fiscal quarter	0.153		
* government change	(1.173)		
Government change	1.044		
	(0.937)		
Last fiscal quarter	1.974		
* election quarter	(1.529)		
Election quarter	-0.473		
	(0.641)		
Last fiscal quarter*	-0.268	-0.163	
late budget	(0.163)	(0.136)	
Late budget	-0.0170	-0.0196	
	(0.0466)	(0.0477)	
Last fiscal quarter*	-0.0434	-0.0736	
aid (ln)	(0.342)	(0.342)	
Total aid (ln)	1.754**	1.629*	
	(0.804)	(0.804)	
Last fiscal quarter*	0.662	0.693	
battle deaths (ln)	(0.846)	(0.842)	
Last fiscal quarter*	0.117	0.123	
asylum seekers (ln)	(0.315)	(0.308)	
Asylum seekers (ln)	0.247	0.265	
	(0.224)	(0.222)	

Table 16: (continues on next page)

Table 16: (continued)

	(1)	(2)	(3)
Last fiscal quarter*	-1.397*	-1.358**	-1.840***
disaster affected (ln)	(0.681)	(0.638)	(0.574)
Last fiscal quarter	-1.923	-2.030	-2.579**
* GDP p.c. (ln)	(1.181)	(1.245)	(1.119)
GDP p.c. (ln)	3.972	4.864	6.513*
	(3.561)	(3.573)	(3.274)
Last fiscal quarter		0.764	
* year of aid minister change		(1.012)	
Year of aid minister change		-0.0930	
		(0.730)	
Last fiscal quarter		-0.407	
* year of government change		(0.550)	
Year of government change		0.640*	
		(0.346)	
Last fiscal quarter		-0.0794	
* election year		(0.550)	
Election year		-0.137	
		(0.216)	
Yearly contributions			0.0600
(ln)			(0.0916)
Last fiscal quarter*			0.0542
yearly contributions (ln)			(0.0427)
Donor FE	Yes	Yes	Yes
Fiscal year FE	Yes	Yes	Yes
Adjusted R-squared	0.695	0.693	0.714
N°of observations	1170	1170	1268
N°of donors	27	27	27

Notes: The dependent variable is (logged) quarterly contributions to all funds and covers the World Bank's fiscal years 2002-2013. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5.3.7 Evidence for Differential Use of Trust Funds at the End of the Fiscal Year

Although hard evidence is scarce, year-end spending is generally considered less efficient than funds spent in the remainder of the fiscal year because they are undertaken in a rush and finance low-priority projects.[59] Liebman and Mahoney (2013) show that IT projects contracted in the last weeks of the financial year receive lower performance evaluations on average. From an accounting perspective, trust fund contributions represent spending but, as I described above, contributions to trust funds are different from the common

[59]Fichtner and Greene (2014) review the little evidence available.

understanding of 'spending'. This also has implications for the expected effects of YESS on the quality of spending. Trust fund aid might not be less efficient than spending in the rest of the fiscal year. While I provide evidence that year-end contributions to trust funds might be qualitatively different, I do not claim that this affects the quality of subsequent disbursements by these trust funds.

However, it is not possible to evaluate the effectiveness of trust fund aid provided at different moments within the fiscal year as there is no systematic information about the quality of this type of aid. Therefore, this section can only analyze differences in the types of trust funds used in the last FQ. A priori, there is no reason to expect year-end contributions to be less efficient than contributions made at other times during the fiscal year because trust funds can be disbursed whenever good projects are ready without any timing concerns. But under the assumption that contributions to trust funds in the first three quarters of the fiscal year are the most expedient way of providing such aid, deviations from this spending pattern could be interpreted as inefficient and wasteful.[60] Nevertheless, there is too little evidence to be able to draw such a strong conclusion. Moreover, year-end trust fund contributions are likely to be more efficient than any alternatives within the aid budget. In the unlikely case of lapsing funds being returned to the general treasury, the efficiency of trust fund aid and other aid would need to be compared to that of public resources used in other sectors in the next fiscal year. Thus, any conclusion on efficiency needs to be a cautious one.

First, I consider trust funds that are used only once or twice at all. Such contributions might be less efficient because these types of funds tend to be small while set-up costs are largely fixed.[61] Table Table 17 shows that of the 445 trust funds that received only one contribution in the sample period, more than 40 percent were used in donors' last FQ (row 1). Row 2 shows that contributions to trust funds that were used twice in the sample period were most frequently made in the last quarter, although the percentage share is lower than in row 1. Rows 3 and 4 allow for the possibility that newer trust funds might not yet have received additional trust funds but will soon by excluding the last three years of the sample. The percentage shares in rows 3 and 4 correspond to rows 1 and 2, respectively. Row 5 shows that donors made unique contributions to any given trust fund in every quarter but that single usage peaks in the last FQ.

At the end of the year, donors might prefer to contribute to single-donor trust funds that allow them to maintain control of the future allocation of funds (Eichenauer, 2016). For the purpose of the de-annualizing funds, single-donor trust funds are the better "savings accounts" than multi-donor trust funds. Column 1 in Table 18 finds contributions to single-donor trust funds to more than double in the last FQ.[62] Michaelowa's (2003) finding raises moreover the question whether donors use lapsing funds for debt-related issues. Although general information about the sectors targeted by each trust fund is not available, in the case of debt it is relatively easy to identify the relevant trust funds

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[60]The transaction costs and the efficiency of trust funds are a discussion of their own (e.g., IEG, 2011; Reinsberg et al., 2015; Reinsberg, 2016).

[61]Smaller trust funds are likely to be less efficient because transaction costs are high in relative terms as reflected by management fees. Recent World Bank reforms have increased the minimum size of trust funds and have sought to dissolve small trust funds (no threshold until the World Bank fiscal year (WBFY) 2007; US$ 1 million threshold effective from WBFY 2008 to 2013; US$ 2 million threshold since WBFY 2013).

[62]In percentage: $100 * \left(e^{0.998} - 1\right) = 171.29$.

through a key word search of the trust fund names. Column 2 compares last quarter usage of debt-related trust funds with contributions to all other funds. The interaction is significantly negative. This suggests that donors consider debt relief as an important issue, one that is to be addressed earlier in the fiscal year rather than with left-over funds at its end. In sum, there is some tentative evidence that trust fund use in the last quarter is different while it cannot be determined whether year-end contributions are less efficient than trust fund aid provided in other quarters, other types of foreign aid or public funds spent elsewhere.

Table 17: Evidence for differential use at the year end

		1st quarter		2nd quarter		3rd quarter		4th quarter		Total
(1)	N°of funds used only once	126	28%	65	15%	66	15%	188	42%	445
(2)	N°of funds used only twice	149	27%	85	15%	102	18%	216	37%	552
(3)	N°of funds used only once (< 2010)	100	30%	54	16%	44	13%	140	43%	338
(4)	N°of funds used only twice (< 2010)	120	30%	66	16%	72	18%	147	37%	405
(5)	N°of funds used only once by a given donor	293	30%	140	14%	135	14%	407	43%	975

Table 18: Nested model for IDA/IBRD trust funds

	(1)	(2)
Last fiscal quarter	0.998***	1.108***
	(0.327)	(0.324)
Last fiscal quarter	0.894*	
* single-donor TFs	(0.493)	
SDTF	-6.076***	
	(0.743)	
Last fiscal quarter		-0.964**
* debt trust funds		(0.358)
Debt trust funds		-13.27***
		(1.096)
Constant	19.66***	15.76***
	(0.372)	(0.548)
Trust fund type	ALL vs. SDTF	ALL vs. DEBT
Donor-fiscal year FE	Yes	Yes
Adjusted R-squared	0.649	0.765
N°of observations	2592	2592
N°of donors	27	27

Notes: The dependent variables are (logged) contributions to the respective types of IDA/IBRD trust funds (and cover the World Bank's fiscal years 2002-2013. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

6 Concluding Remarks

Although end-of-year spending spikes in budgets with lapsing budgets are observed in different types of organizations, academic research into the causes of heightened spending at the end of fiscal years and the consequences for the quality of such spending is scarce. Exploiting variation in donors' budget years, I showed that contributions to trust funds at the World Bank, a discretionary spending item within donors' foreign aid budgets, almost double in the last FQ. This suggests that trust funds are used by donor countries to de-annualize budgets, which is a new and additional explanation for the rising popularity of trust funds. From a legitimacy perspective, the use of trust funds as 'saving accounts' raises questions about the violation of the *bona fide* principle which requires that appropriated budgets are used within the budget period.

Failures in planning due to a lack of administrative capacity are proposed as a new and comparatively trivial explanation for year-end spending surges. Using various measures of administrative capacity and governance quality, I showed that higher levels of bureaucratic quality are associated with lower year-end contributions to YESS. No indisputable causal relationship between bureaucratic quality and year-end spending spikes can be established although extensive sensitivity analyses were undertaken to mitigate endogeneity concerns. The paper did not attempt to disentangle the precise channels through which administrative capacity reduces YESS but claims that the analysis offers some externally valid evidence despite the narrow budget item analyzed. Specifically, there are no reasons to expect the behavior of bureaucrats in aid agencies to systematically differ from those in other government departments. The main finding of the paper is thus that bureaucratic quality substantially decreases YESS and if year-end spending spikes are less efficient, also improves fiscal performance.

Bureaucratic quality today is recognized as a core element of governance and administrative capacity building already features high on the agenda of the OECDand in particular EU countries. It is probably that administrative capacities in these countries increase further, which, this analysis suggests, should curb YESS substantially. To reduce YESS even further, more (comparative) research about the reasons for YESS and the effects of budget institutions is needed because different explanation(s) for YESS could lead to distinct policy recommendations. This paper contributed to this research agenda by using the case of trust fund aid to assess the explanatory power of recent theories for YESS: precautionary savings and procrastination by bureaucrats. These theories make opposing predictions about the relationship between uncertainty and year-end spending spikes. Controlling for bureaucratic quality, I found no conclusive evidence in favor of either hypothesis. Both theories predict a negative association between demand shocks and YESS and I find indeed evidence that the occurrence of natural disasters in developing countries reduce year-end contributions to trust funds. However, I do not conclude from the general lack of a relationship between unpredictability and YESS that the two theories have no explanatory power. First, the behaviors of two types of bureaucrats, procrastinating and saving ones, may compensate each other, resulting in a null effect on average. Second, the level of precautionary savings made by bureaucrats may not be optimal for the empirically observed level of uncertainty, making it impossible to detect a relationship. Third, the proposed measures for uncertainty and demand shocks may not be sufficiently comprehensive. Omitted variables would lead to an imprecise estimation

of the interaction coefficients. Fourth, the data might be too narrow to investigate these competing hypotheses.

The paper also provided evidence that year-end contributions are qualitatively different from those in the remainder of donors' fiscal years. Nevertheless, it is not possible to determine whether year-end contributions are of lower quality. A priori, there is no reason to expect year-end contributions to be less efficient than contributions made at other times during the fiscal year because trust funds can disburse whenever good projects are ready without any timing concerns. Moreover, any assessment of the efficiency of year-end trust fund contributions depends on the other spending channels available to bureaucrats to quickly disburse the aid budget. On the one hand, it is possible that the alternatives available to spend the lapsing aid budget are less efficient than trust fund aid because projects or consultancies must generally be undertaken immediately, allowing for little time for preparation and assessment. On the other hand, these alternative ways of spending lapsing budgets might not (or to a lesser extent) violate the *bona fide* principle of spending funds during the period in which they are appropriated.

By providing cross-country evidence for YESS and exploring three explanations of YESS, this paper aims to be a starting point for analyzing the reasons of uneven government expenditures within the fiscal year. The importance of fiscal-year effects can be researched in many areas of economics. Because the fiscal year ends simultaneously for all public sector agencies within a country and because the public sector accounts for almost half of many of the OECDcountries' GDP, YESS may explain some of the macroeconomic seasonality. The heightened public sector demand at the year-end might also affect stock returns for firms with high public exposure.[63] In a similar vein to Oyer's (1998) suggestion for the private sector, I posit that future research in public finance should investigate whether the efficiency loss associated with lapsing budgets justifies the introduction of budget institutions that, as empirical evidence suggests, typically create additional paperwork. If the efficiency loss is indeed as substantial as suggested in Liebman and Mahoney (2013), there are two ways of improving public performance. First, carry-over rules, within fiscal year 'taxes', and managerial accountability may be effective in curbing YESS. Second, the reasons underlying the inefficiency of year-end spending could be studied addressed directly. For example, one might hypothesize that firms with high public sector exposure might be overburdened with work at the end of the fiscal year. These firms might thus stop competing for government contracts at the year-end, leaving them to less competent competitors. In this case, staggering the end of fiscal years across government agencies could even out the amount of services demanded of firms with high public sector exposure across the calendar year. With the increasing availability of data on sub-annual government spending, our understanding of the causes of year-end spending spikes and their consequences will deepen. This will enable governments to design the budgetary institutions that necessary to curb YESS and improve fiscal performance.

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[63]Belo et al. (2013) find that stock returns for firms with high government exposure is higher during Democratic presidencies.

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7 Appendix: Figures and Tables for "December Fever in Public Finance"

Figure 12: Individual donors' contributions by donor-specific fiscal quarter
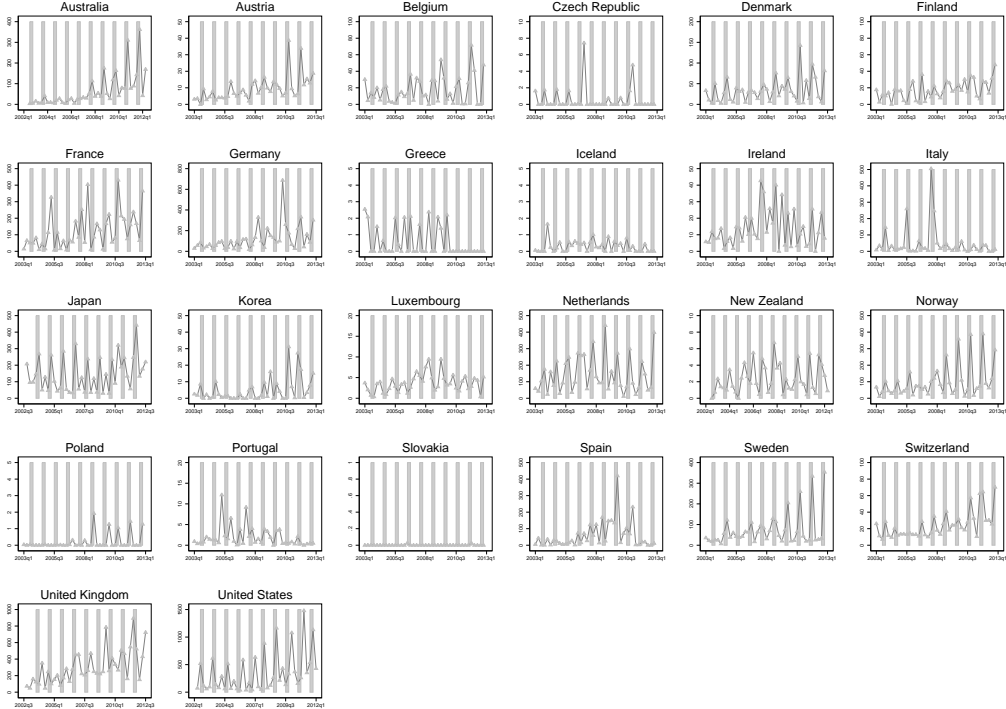
Notes: The grey-shared area highlights changes in contributions between the third and the last fiscal quarter.

Figure 13: Extent of spending spike for three main contributors to funds

Variable	Definition	Original Source
Dependent Variables		
Quarterly fund contributions (ln)*	Quarterly transfers from a donor country to (a certain type of) World Bank funds (identified by PostingDate), logarithm.	World Bank (2013).
Monthly TF contributions (ln)*	Monthly transfers from a donor country to (a certain type of) World Bank funds, logarithm.	World Bank (2013).
Number of first contributions (ln)	Number of first transfers to a specific fund (identified by TrusteeFundName) by any donor in a fiscal quarter.	World Bank (2013).
Independent variables		
Monthly variables		
Last fiscal month	Binary variable indicating the last month in the fiscal year of the donor.	See Table 2: own coding.
Bureaucratic quality	Monthly score of Bureaucratic Quality.	International Country Risk Indicators by Howell (2011).
Quarterly variables		
Last fiscal quarter	Binary variable indicating the last quarter in the fiscal year of the donor.	Table 2: own coding.
End of IDA cycle	Binary variable equal to 1 for all donor countries in the final quarter of a replenishment cycle of the IDA. As the Bank's fiscal year runs from July 1 to June 30 and the IDA budget is replenished for a three-year period, the end period of IDA12-IDA16 fall in our sample period. They respectively ended on June 30 in the years 2002, 2005, 2008, and 2011.	Own coding based on World Bank (2016a); Tenney and Salda (2013); World Bank (2003) .

Table 19: (continues on next page)

Variable	Definition	Original Source
Bureaucratic quality	Quarterly mean of the monthly scores of bureaucratic quality.	International Country Risk Indicators by Howell (2011).
G8 participant	Binary variable that takes the value of one for G8 members in quarters a G8 meeting is held.	G7/8 Information Centre.
Late budget	Number of months the annual budget is appropriated late. Early and on-schedule budget approvals are coded as zero.	Own coding based on internet research (sources available on request).
Election quarter	Binary variable equal to 1 in the election quarter. Legislative elections are used for parliamentary and presidential systems because budget authority is always held by parliaments. In the U.S. case, biannual legislative elections to the House of Representatives take place biannually.	Beck et al. (2001), own update for 2013.
Government change	Binary variable equal to 1 in the quarter between a lost election and the inauguration of the new government.An election is lost if the party of the Chief Executive changes as consequence of the election. Elections are all legislative elections.	Beck et al. (2001), own update for 2013. Own coding of inauguration date based on internet research (sources available on request).
Aid minister change	Binary variable equal to 1 in the quarter the minister responsible for the aid budget changes.	Fuchs and Richert (2015).
Annual variables		
Government effectiveness	Governance indicator measuring "the capacity of the governments to effectively formulate and implement sound policies."	World Governance Indicators (Kaufmann et al., 2011).

Table 19: (continues on next page)

Variable	Definition	Original Source
Regulatory quality	Governance indicator measuring "perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development."	World Governance Indicators (Kaufmann et al., 2011).
Avg. WGI score	Average of the six World Governance Indicators (Control of Corruption; Government Effectiveness; Law and Order; Political Stability; Regulatory quality; Voice and Accountability).	World Governance Indicators (Kaufmann et al., 2011).
Control of corruption, WGI	Governance indicator capturing "perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests."	World Governance Indicators (Kaufmann et al., 2011).
GDP p.c.*	Gross Domestic Product per head in constant US$, fixed PPPs, seasonally adjusted, expenditure approach [HVPVOBARSA]*	OECD (2016a) via OECD.Stat.
Primary balance (% of GDP)	Cyclically adjusted primary balance as share of GDP	IMF (2015).
Total aid (ln)*	Official Development Assistance disbursements by donor country, lagged by one fiscal year, logarithm	OECD (2015) via OECDWizard.
Yearly contributions (ln)*	Sum of total fund contributions by a donor within a donor's fiscal year, lagged by one fiscal year, logarithm	World Bank (2013).
IMF transparency	Score for the comprehensiveness of government finance statistics, available since 2003	Wang et al. (2015).
Economic crisis	Binary variable equal to 1 in years countries are affected by a banking, sovereign or currency crisis	Valencia and Laeven (2012).

Table 19: (continues on next page)

Variable	Definition	Original Source
Deviation from projected government net lending	Difference between the projected government net lending as a percentage of GDP [NLGQ] as available at least two full months before the beginning of the donor's fiscal year (see footnote 51) and realized values as reported in November 2014.	OECD (2016b).
Accounting system	Binary indicator equal to 1 if the federal government uses accrual accounting systems and 0 for cash accounting systems and years of transition. Countries using accrual accounting in all sample years: Australia, Canada, Denmark, Spain, Finland, Iceland, New Zealand, Sweden, United States.Âă Countries using cash accounting in all sample years: Germany, Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, Norway. First year of full accrual accounting for switching countries: Austria (2013), Czech Republic (2010), France (2006), Poland (2010), Republic of Korea (2006), Switzerland (2007), United Kingdom (2004), Slovak Republic (2010). No country switched from cash to accrual accounting during the sample period. I was unable to determine the accounting system for the following country-years: Finland (2001), Japan (2006-2013).	Own coding based on OECD(2003; 2004; 2005; 2013); confirmed through correspondence with accounting experts in different countries.
Total affected (ln)	Total number of people affected by natural disasters, logarithm	EM-DAT: The OFDA/CRED International Disaster Database by Guha-Sapir et al. (2015)
Aylum seekers (ln)	Number of asylum seekers per donor country, logarithm	OECDInternational Migration Statistics

Table 19: (continues on next page)

Variable	Definition	Original Source
Battle deaths (ln)	Number of battle deaths [VC.BTL.DETH]	World Bank (2016b) via wbopendata module.
Independent aid agency	Binary variable based on the classification of the four organizational models of bilateral aid provision, one-year lag. Independent aid agency as defined in Fuchs et al. (2014) and combines the management models 3 and 4. Model 1: Development co-operation is an integral part of the ministry of foreign affairs, which is responsible for policy and implementation. Model 2: A Development Co-operation Directorate has the lead role within the ministry of foreign affairs and is responsible for policy and implementation. Model 3: A ministry has overall responsibility for policy and a separate executing agency is responsible for implementation. Model 4: A ministry or agency, which is not the ministry of foreign affairs, is responsible for both policy and implementation.	Definition from Fuchs et al. (2014); Classification from OECD (2009).
IDA replenishment year	Binary variable equal to 1 for all donor countries in the World Bank's fiscal year of replenishment of the IDA. As the Bank's fiscal year runs from July 1 to June 30 and the IDA budget is replenished for a three-year period, the end period of IDA12-IDA16 fall in our sample period. They respectively ended on June 30 in the calendar years 2002, 2005, 2008, and 2011.	Own coding based on World Bank (2016a); Tenney and Salda (2013); World Bank (2003) .

Table 19: (continued)

Variable	Definition	Original Source
Election year	Binary variable equal to 1 in the election year. Legislative elections are used for parliamentary and presidential systems because budget authority is always held by parliaments. In the US case, biannual legislative elections to the House of Representatives take place biannually.	Beck et al. (2001), own update for 2013.
Year of government change	Binary variable equal to 1 in the year between a lost election and the inauguration of the new government. An election is lost if the party of the Chief Executive changes as consequence of the election. Elections are all legislative elections.	Beck et al. (2001), own update for 2013. Own coding of inauguration date based on internet research (sources available on request).
Year of aid minister change	Binary variable equal to 1 in the year the minister responsible for the aid budget changes.	Fuchs and Richert (2015)

Table 20: Excluding one donor at the time I, quarterly level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Last fiscal quarter	6.566**	6.605**	6.872**	6.674**	6.713**	6.141*	6.609**	6.836**	7.150**	6.750**
	(2.853)	(2.855)	(2.861)	(2.861)	(2.862)	(3.049)	(2.856)	(2.863)	(3.059)	(2.863)
Last fiscal quarter	-1.501**	-1.514**	-1.605**	-1.538**	-1.551**	-1.409*	-1.515**	-1.593**	-1.655**	-1.564**
* bureaucratic quality	(0.722)	(0.724)	(0.724)	(0.725)	(0.726)	(0.769)	(0.724)	(0.725)	(0.774)	(0.726)
Bureaucratic quality	1.865***	1.865***	1.862***	1.864***	1.864***	1.815***	1.865***	1.863***	2.207***	1.864***
	(0.238)	(0.238)	(0.239)	(0.238)	(0.238)	(0.256)	(0.238)	(0.239)	(9.09e-11)	(0.238)
Donor	AUS	AUT	BEL	CAN	CHE	CZE	DEU	DNK	ESP	FIN
Donor-fiscal year FE	No	No	No	No	No	No	No	No	No	No
Adjusted R-squared	0.715	0.720	0.723	0.710	0.712	0.706	0.710	0.712	0.717	0.713
N°of observations	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248
N°of donors	26	26	26	26	26	26	26	26	26	26

Notes: The dependent variable is (logged) quarterly contributions to all funds and covers the World Bank's fiscal years 2002-2013. Each column excludes the donor country mentioned below the table. ed effects. The acronyms refer to Australia (AUS), Austria (AUT), Belgium (BEL), Canada (CAN), Czech Republic (CZE), Germany (DEU), Denmark (DNK), Spain (ESP), and Finland (FIN). Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 21: Excluding one donor at the time II, quarterly level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Last fiscal quarter	6.750**	7.400**	6.634**	7.081**	6.790**	6.540**	7.637**	6.833**	5.388*
	(2.863)	(3.079)	(2.858)	(3.145)	(2.864)	(2.848)	(3.568)	(2.863)	(2.623)
Last fiscal quarter	-1.564**	-1.720**	-1.524**	-1.641**	-1.577**	-1.492**	-1.789*	-1.592**	-1.223*
* bureaucratic quality	(0.726)	(0.779)	(0.725)	(0.794)	(0.726)	(0.721)	(0.904)	(0.725)	(0.665)
Bureaucratic quality	1.864***	1.924***	1.865***	1.896***	1.863***	1.866***	1.934***	1.863***	1.751***
	(0.238)	(0.256)	(0.238)	(0.263)	(0.239)	(0.238)	(0.293)	(0.239)	(0.219)
Donor	FIN	FRA	GBR	GRC	IRL	ISL	ITA	JPN	KOR
Donor-fiscal year FE	No	No	No	No	No	No	No	No	No
Adjusted R-squared	0.713	0.711	0.707	0.721	0.724	0.727	0.723	0.709	0.739
N°of observations	1248	1248	1248	1248	1248	1248	1248	1248	1248
N°of donors	26	26	26	26	26	26	26	26	26

Notes: The dependent variable is (logged) quarterly contributions to all funds and covers the World Bank's fiscal years 2002-2013. Each column excludes the donor country mentioned below the table. ed effects. The acronyms refer to Finland (FIN), France (FRA), Great Britain (GBR), Greece (GRC), Ireland (IRL), Island (ISL), Italy (ITA), Japan (JPN), and Korea (KOR). Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 22: Excluding one donor at the time III, quarterly level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Last fiscal quarter	6.391**	6.833**	6.826**	6.695**	5.123**	7.274**	7.346**	6.829**	6.688**
	(2.823)	(2.863)	(2.863)	(2.863)	(2.369)	(3.111)	(3.094)	(2.863)	(2.861)
Last fiscal quarter	-1.441*	-1.592**	-1.590**	-1.545**	-1.157*	-1.689**	-1.707**	-1.591**	-1.543**
* bureaucratic quality	(0.710)	(0.725)	(0.725)	(0.726)	(0.603)	(0.786)	(0.782)	(0.725)	(0.725)
Bureaucratic quality	1.867***	1.863***	1.863***	1.864***	1.728***	1.913***	1.919***	1.863***	1.864***
	(0.237)	(0.239)	(0.239)	(0.238)	(0.197)	(0.260)	(0.258)	(0.239)	(0.238)
Donor	LUX	NLD	NOR	NZL	POL	PRT	SVK	SWE	USA
Donor-fiscal year FE	No	No	No	No	No	No	No	No	No
Adjusted R-squared	0.717	0.709	0.710	0.725	0.703	0.721	0.656	0.711	0.707
N°of observations	1248	1248	1248	1248	1248	1248	1248	1248	1248
N°of donors	26	26	26	26	26	26	26	26	26

Notes: The dependent variable is (logged) quarterly contributions to all funds and covers the World Bank's fiscal years 2002-2013. Each column excludes the donor country mentioned below the table. ed effects. The acronyms refer to Luxembourg (LUX), Netherlands (NLD), Norway (NOR), New Zealand (NZL), Poland (POL), Portugal (PRT), the Slovak Republik (SVK), Sweden (SWE), and the United States of America (USA). Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 23: The effect of lagged bureaucratic quality on year-end contributions

	(1)	(2)	(3)	(4)	(5)	(6)
Last fiscal quarter	7.235***	7.293***	7.388***	6.847**	7.871**	6.490**
	(2.476)	(2.513)	(2.533)	(2.899)	(3.626)	(3.112)
Last fiscal quarter	-1.694**	-1.703**	-1.726**	-1.584**	-1.733*	-1.576*
* bureaucratic quality (lagged)	(0.628)	(0.637)	(0.642)	(0.734)	(0.920)	(0.793)
Bureaucratic quality	6.430**	6.490**	0.147	1.121*	2.325***	0.0320
(lagged)	(2.404)	(2.405)	(0.506)	(0.603)	(0.233)	(0.465)
Fiscal year FE	No	Yes	Yes	Yes	Yes	Yes
Donor FE	No	No	Yes	Yes	Yes	Yes
Donor-fiscal year FE	No	No	No	Yes	No	No
Adjusted R-squared	0.231	0.236	0.710	0.714	0.722	0.712
N°of observations	1296	1296	1296	1296	584	712
N°of donors	27	27	27	27	27	27
Notes					> 2007	≤ 2007

Notes: The dependent variable is (logged) quarterly contributions to all funds to funds the World Bank's fiscal years 2002-2013. The quarterly mean of the ICRG bureaucratic quality is lagged by one year. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 24: The effect of the binary ICRG bureaucratic quality indicator on year-end contributions

	(1)	(2)	(3)	(4)	(5)	(6)
Last fiscal quarter	2.294***	2.315***	2.339***	2.211***	1.910**	2.798**
	(0.659)	(0.668)	(0.674)	(0.781)	(0.774)	(1.036)
Last fiscal quarter	-1.868**	-1.878**	-1.887**	-1.729**	-1.778**	-1.871*
* bureaucratic quality dummy	(0.685)	(0.693)	(0.699)	(0.810)	(0.815)	(1.075)
Binary bureaucratic	7.347***	7.384***	-0.287	1.914***	-0.412	2.357***
quality	(2.276)	(2.274)	(0.392)	(0.260)	(0.351)	(0.270)
Fiscal year FE	No	Yes	Yes	Yes	Yes	Yes
Donor FE	No	No	Yes	Yes	Yes	Yes
Donor-fiscal year FE	No	No	No	Yes	No	No
Adjusted R-squared	0.266	0.270	0.710	0.714	0.713	0.722
N°of observations	1296	1296	1296	1296	712	584
N°of donors	27	27	27	27	27	27
Notes					≤ 2007	> 2007

Notes: The dependent variable is (logged) quarterly contributions to all funds to funds the World Bank's fiscal years 2002-2013. The bureaucratic quality dummy is one for country-year observations above the sample mean of the ICRG bureaucratic quality variable. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 25: The effect of the yearly average of the bureaucratic quality variable on year-end contributions

	(1)	(2)	(3)	(4)	(5)	(6)
Last fiscal quarter	6.959***	6.990***	7.292***	6.749**	7.871**	6.380**
	(2.465)	(2.498)	(2.507)	(2.874)	(3.626)	(3.042)
Last fiscal quarter	-1.623**	-1.628**	-1.702**	-1.560**	-1.733*	-1.549*
* yearly bureaucatic quality	(0.625)	(0.633)	(0.635)	(0.728)	(0.920)	(0.775)
Yearly bureaucratic	6.284**	6.318**	-0.516	32.39***	2.325***	-0.765*
quality	(2.406)	(2.413)	(0.424)	(0.632)	(0.233)	(0.403)
Fiscal year FE	No	Yes	Yes	Yes	Yes	Yes
Donor FE	No	No	Yes	Yes	Yes	Yes
Donor-fiscal year FE	No	No	No	Yes	No	No
Adjusted R-squared	0.223	0.227	0.710	0.714	0.722	0.712
N°of observations	1296	1296	1296	1296	584	712
N°of donors	27	27	27	27	27	27

Notes: The dependent variable is (logged) quarterly contributions to all funds to funds and covers the World Bank's fiscal years 2002-2013. The yearly bureaucratic quality variable is the average of the monthly ICRG bureaucratic quality within a donors' fiscal year. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 26: The effect of bureaucratic quality on contributions in the last fiscal month

	(1)	(2)	(3)	(4)	(5)
Last fiscal month	9.113***	9.215***	9.218***	8.856***	8.930***
	(2.923)	(2.929)	(2.937)	(3.090)	(3.087)
Last fiscal month	-1.676*	-1.691*	-1.687*	-1.588*	-1.614*
* bureaucratic quality	(0.847)	(0.848)	(0.849)	(0.890)	(0.888)
Bureaucratic quality	6.267***	6.320***	-2.195***	5.479***	5.479***
	(2.049)	(2.050)	(0.368)	(0.0693)	(0.0694)
Fiscal year FE	No	Yes	Yes	Yes	Yes
Donor FE	No	No	Yes	Yes	Yes
Donor-fiscal year FE	No	No	No	Yes	Yes
Calendar year FE	No	No	No	No	Yes
Adjusted R-squared	0.183	0.193	0.514	0.526	0.525
N°of observations	3879	3879	3879	3879	3879
N°of donors	27	27	27	27	27

Notes: The dependent variable is (logged) monthly contributions to all funds and covers the World Bank's fiscal years 2002-2013. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 27: Alternative governance measures at the quarterly level I

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Last fiscal quarter	3.336***	3.232***	3.119**	3.928***	3.869**	3.825**	3.512***	3.468***	3.364**
	(1.073)	(1.074)	(1.261)	(1.366)	(1.393)	(1.701)	(1.150)	(1.172)	(1.403)
Last fiscal quarter * government effectiveness	-1.549**	-1.476**	-1.406*						
	(0.612)	(0.609)	(0.716)						
Government effectiveness	7.171***	0.370							
	(2.058)	(1.066)							
Last fiscal quarter * regulatory quality				-2.113**	-2.055**	-2.018*			
				(0.863)	(0.883)	(1.082)			
Regulatory quality				9.358***	3.871***				
				(2.338)	(1.372)				
Last fiscal quarter * Avg. WGI score							-1.880**	-1.835**	-1.761*
							(0.739)	(0.755)	(0.906)
Avg. WGI score							7.994***	5.284**	
							(2.247)	(2.240)	
Fiscal year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Donor FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Donor-fiscal year FE	No	No	Yes	No	No	Yes	No	No	Yes
Adjusted R-squared	0.287	0.711	0.717	0.245	0.715	0.717	0.259	0.715	0.717
N°of observations	1242	1242	1242	1242	1242	1242	1242	1242	1242
N°of donors	27	27	27	27	27	27	27	27	27

Notes: The dependent variable is (logged) quarterly contributions to all funds and covers the World Bank's fiscal years 2002-2013. Government effectiveness and regulatory quality are annual variables from the World Governance Indicators (WGI) (Kaufmann et al., 2011). Avg. WGI score is the annual averageof all six WGI indicators. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 28: Alternative governance measures at the quarterly level II

	(1)	(2)	(3)
Last fiscal quarter	3.839**	2.490**	1.881*
	(1.554)	(0.993)	(1.045)
Last fiscal quarter * corruption, ICRG	-0.672*		
	(0.329)		
Last fiscal quarter * control of corruption, WGI		-0.990*	
		(0.528)	
Last fiscal quarter * IMF transparency			-0.0131
			(0.0148)
Fiscal year FE	Yes	Yes	Yes
Donor FE	Yes	Yes	Yes
Donor-fiscal year FE	Yes	Yes	Yes
Adjusted R-squared	0.714	0.717	0.719
N°of observations	1296	1242	1134
N°of donors	27	27	27

Notes: The dependent variable is (logged) quarterly contributions to all funds and covers the World Bank's fiscal years 2002-2013. Column 1 includes the quarterly average of the monthly ICRG corruption variables, column 2 the WGI control of corruption measure, column 3 the IMF fiscal transparency index (Valencia and Laeven, 2012) and column 4 and 5 the open budget index, with interpolated values in column 5. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 29: Last fiscal quarter effect for IBRD/IDA trust funds

	(1)	(2)	(3)	(4)	(5)	(6)
Last fiscal quarter	1.663***	1.653***	1.717***	1.679***	1.618***	3.152**
	(0.372)	(0.391)	(0.438)	(0.423)	(0.443)	(1.356)
Fiscal year FE	No	Yes	Yes	Yes	Yes	Yes
Donor-fiscal year FE	No	No	Yes	Yes	Yes	Yes
Donor-calendar year FE	No	No	No	No	Yes	Yes
Calendar year FE	No	No	No	Yes	Yes	Yes
Calendar quarter FE	No	No	No	No	No	Yes
Adjusted R-squared	0.00909	0.0154	0.636	0.634	0.629	0.635
N°of observations	1296	1296	1296	1296	1296	1296
N°of donors	27	27	27	27	27	27

Notes: The dependent variable is (logged) quarterly contributions to IBRD/IDA trust funds and covers the World Bank's fiscal years 2002-2013.Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 30: Last fiscal month effect for IBRD/IDA trust funds

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Last fiscal month	3.133***	3.166***	3.205***	3.179***	3.137***	2.955***	3.389***
	(0.598)	(0.618)	(0.625)	(0.613)	(0.619)	(0.717)	(1.208)
Fiscal year FE	No	Yes	Yes	Yes	Yes	Yes	Yes
Donor-fiscal year FE	No	No	Yes	Yes	Yes	Yes	Yes
Calendar year FE	No	No	No	Yes	Yes	Yes	Yes
Donor-calendar year FE	No	No	No	No	Yes	Yes	Yes
Calendar quarter FE	No	No	No	No	No	Yes	Yes
Month FE	No	No	No	No	No	No	Yes
Adjusted R-squared	0.0130	0.0188	0.516	0.515	0.515	0.517	0.519
N°of observations	3874	3874	3874	3874	3874	3874	3874
N°of donors	27	27	27	27	27	27	27

Notes: The dependent variable is (logged) monthly contributions to IBRD/IDA trust funds and covers the World Bank's fiscal years 2002-2013. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 31: The effect of bureaucratic quality on contributions in the last quarter for IBRD/IDA trust funds

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Last fiscal quarter	4.806*	4.840*	4.809*	4.154	2.367	7.355	5.740	5.299**
	(2.635)	(2.643)	(2.674)	(3.146)	(3.056)	(4.870)	(3.372)	(2.109)
Last fiscal quarter	-0.861	-0.858	-0.847	-0.667	-0.279	-1.412	-1.039	-1.019*
* bureaucratic quality	(0.710)	(0.711)	(0.718)	(0.840)	(0.854)	(1.240)	(0.872)	(0.575)
Bureaucratic quality	6.854***	6.913***	-8.826***	-1.071***	-8.358***	4.468***	-8.793***	-8.824***
	(2.340)	(2.348)	(0.454)	(0.245)	(0.478)	(0.334)	(0.507)	(1.554)
Fiscal year FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Donor FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Donor-fiscal year FE	No	No	No	Yes	No	No	No	No
Adjusted R-squared	0.221	0.233	0.625	0.636	0.623	0.647	0.435	0.635
N°of observations	1296	1296	1296	1296	712	584	1056	1200
N°of donors	27	27	27	27	27	27	22	
Notes					≤ 2007	> 2007	5 minor	WB year

Notes: The dependent variable is (logged) quarterly contributions to IBRD/IDA trust funds the World Bank's fiscal years 2002-2013. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 32: The effect of bureaucratic quality on contributions in the last fiscal month for IBRD/IDA trust funds

	(1)	(2)	(3)	(4)	(5)
Last fiscal month	4.766	4.908	4.845	4.472	4.590
	(4.307)	(4.300)	(4.310)	(4.465)	(4.445)
Last fiscal month	-0.446	-0.467	-0.450	-0.346	-0.386
* bureaucratic quality	(1.189)	(1.189)	(1.190)	(1.231)	(1.222)
Bureaucratic quality	5.831***	5.888***	-5.491***	2.167***	2.166***
	(1.776)	(1.774)	(0.341)	(0.106)	(0.106)
Fiscal year FE	No	Yes	Yes	Yes	Yes
Donor FE	No	No	Yes	Yes	Yes
Donor-fiscal year FE	No	No	No	Yes	Yes
Calendar year FE	No	No	No	No	Yes
Adjusted R-squared	0.162	0.170	0.496	0.516	0.514
N°of observations	3874	3874	3874	3874	3874
N°of donors	27	27	27	27	27

Notes: The dependent variable is (logged) monthly contributions to all funds and covers the World Bank's fiscal years 2002-2013. Robust standard errors in parentheses clustered at the donor country level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$