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# Dissecting Aid Fragmentation

## Development Goals and Levels of Analysis

*Ruth Carlitz*
*Sebastian Ziaja*

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## Abstract

Aid fragmentation is widely denounced, though recent studies suggest potential benefits. To reconcile these mixed findings, we make a case for studying differences across aid sectors and levels of analysis. Our cross-national time-series analysis of data from 141 countries suggests aid fragmentation promotes child survival and improves governance. However, just looking across countries has the potential to blur important within-country differences. We analyse subnational variation in Sierra Leone and Nigeria and find that the presence of more donors is associated with worse health outcomes, but better governance outcomes. This suggests that having more donors within a locality can be beneficial when they are working to improve the systems through which policies are implemented, but harmful when they target policy outcomes directly. A survey of Nigerian civil servants highlights potential mechanisms. Fragmentation in health aid may undermine civil servants' morale, whereas diversity in governance aid can promote meritocratic behaviour.

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# Abbreviations

| | |
|---|---|
| CRS | Creditor Reporting System |
| GCS | government and civil society |
| GDP | gross domestic product |
| GNI | gross national income |
| ODA | official development assistance |
| OECD | Organisation for Economic Co-operation and Development |
| SDG | Sustainable Development Goal |
| USD | United States dollar |
| WGI | Worldwide Governance Indicators |

# 1 Introduction

Foreign aid effectiveness has been a central concern of both practitioners and scholars for many decades (Doucouliagos & Paldam, 2009). Particularly since the end of the Cold War, foreign aid has increasingly been given for the express purpose of promoting development, rather than for advancing geopolitical aims (Robinson & Tarp, 2003). As a result, donors have become more concerned with improving the quality of aid and its impact on development. Such efforts culminated in the 2005 Paris Declaration on Aid Effectiveness, a global commitment to improve the quality of aid and its impact on development (Dabelstein & Patton, 2013). Among other threats to aid effectiveness, the Paris Declaration highlights aid fragmentation and recommends that donors coordinate their efforts in terms of comparative advantage at the sector or country level. In spite of this, aid fragmentation has shown no signs of abating since 2005 and, in fact, appears to be on the rise (Annen & Moers, 2017). The average number of bilateral donors from the Organisation for Economic Co-operation and Development (OECD) present in a given aid-recipient country has risen from 9 in 1995 to 19 in 2013 (and from 12 to 30 when multilateral donors are included) (Tierney et al., 2011).

Empirical evidence for fragmentation's impact on aid effectiveness is mixed. On the one hand, studies have shown that aid fragmentation is negatively associated with bureaucratic quality and economic growth, and that it can increase the level of corruption and hamper the effectiveness of technical assistance (Annen & Kosempel, 2009; Djankov, Montalvo, & Reynal-Querol, 2009; Kangoye, 2013; Kimura, Mori, & Sawada, 2012; Knack & Rahman, 2007). On the other hand, recent work suggests that fragmentation can be beneficial when it comes to promoting child survival (Han & Koenig-Archibugi, 2015) and democracy (Ziaja, 2020). In addition, Gutting and Steinwand (2017) show that fragmentation significantly reduces the risk of political destabilisation associated with aid shocks. We posit that these mixed findings may reflect differences across aid types, which Jones and Tarp (2016) demonstrate can have different political economy implications. Furthermore, we examine how the level of analysis conditions results – comparing the effects of fragmentation across and within countries.

Our analysis focusses on how fragmentation relates to the achievement of two outcomes with widespread donor buy-in: child survival and good governance. These outcomes also represent indicators of progress towards the Sustainable Development Goals (SDGs) – specifically, SDG 3 (Good Health and Well-Being) and SDG 16 (Peace, Justice and Strong Institutions). Cross-national analysis of panel data for 141 countries from 1995 to 2014 suggests aid fragmentation can facilitate the achievement of health and governance goals. However, just looking across countries has the potential to blur important subnational variation. The assumption that donor diversity and target outcomes develop uniformly within countries does not hold when looking at where specific donors engage.

To more precisely identify the consequences of aid fragmentation, we analyse subnational variation in donor diversity and development outcomes in Sierra Leone and Nigeria, leveraging geo-coded data on the location of aid projects. We thereby extend the research frontier on aid fragmentation, which to date has primarily examined cross-national variation, and add to emerging literature on subnational aid effectiveness (Briggs, 2017; Dreher & Lohmann, 2015; Kotsadam, Østby, Rustad, Tollefsen, & Urdal, 2018). Within countries, we find that donor proliferation is associated with worse health outcomes, but

better governance outcomes. This suggests that having more donors within a locality can be beneficial when they are working to improve the systems through which policies are implemented, but harmful when they try to influence policy implementation directly to achieve measurable goals.

Finally, we analyse data from a recent survey of 4,100 Nigerian civil servants to better understand the mechanisms through which fragmentation exerts differential effects. We find that in states where more donors are present in the health sector, local health officials report facing increased pressure to change the locations and specifications of projects. They also report being unable to identify quality contractors for their own projects – suggesting a form of internal "brain drain". These findings are consistent with theoretical expectations that fragmentation can reduce efficiency and hinder bureaucratic quality (Djankov et al., 2009; Knack & Rahman, 2007).

In contrast, local officials in states with more donors in the government and civil society (GCS) sector face fewer barriers to policy implementation across a range of subnational public institutions. In particular, interviewees report less pressure to modify policy implementation and fewer instances of civil servants breaking rules. That governance aid should perform better in more fragmented, complex settings may reflect greater diversity in ideas feeding into trial-and-error reform processes (Ziaja, 2020). In addition, reduced pressure to deliver measurable results (compared to more outcome-focussed forms of aid) allows for "navigation by judgement" (Honig, 2018).

This paper proceeds as follows. Section 2 reviews the literature on aid fragmentation, highlighting recent empirical work. Section 3 then presents our argument, outlining conditions under which fragmentation can be expected to have a beneficial or harmful effect on the achievement of different development goals. Section 4 describes our research design. Section 5 presents the results of our cross-country analysis, and Section 6 our subnational study. Section 7 investigates mechanisms at the level of subnational organisations, and Section 8 concludes.

## 2 Benefits and drawbacks of aid fragmentation

The Paris Declaration includes 56 commitments to enhance aid effectiveness. Of these, one of the most well-known relates to aid harmonisation. This is justified by the notion that "Excessive fragmentation of aid at global, country or sector level impairs aid effectiveness. A pragmatic approach to the division of labour and burden sharing increases complementarity and can reduce transaction costs" (Organisation for Economic Co-operation and Development, 2005, p. 6).

This justification reflects what has emerged as near consensus regarding the negative effects of aid fragmentation, which are generally understood to stem from a set of collective action problems. That is, when there are many donors contributing to a given goal, responsibility for success or failure is diffused, and thus each individual donor has only a limited stake in the recipient country's progress. Accordingly, as the number of donors increases, so do incentives for any one donor to shirk on activities that maximise overall wellbeing in favour of activities that contribute to donor-specific goals. Focussing on donor-specific goals can reduce aid effectiveness by wasting resources, for example by tying aid to the employment

of donor-country contractors. In the longer term, aid fragmentation can undermine the quality of governance or slow the development of public-sector capacity if it leads donors to provide aid through projects rather than general budget support, rely on expatriates instead of contributing to local knowledge by hiring local staff and fund unsustainable investment projects (Knack & Rahman, 2007). Moreover, Gibson, Andersson, Ostrom and Shivakumar (2005) argue that having more donors increases the recipient government's negotiation power. As a result, donors become less demanding in selecting and supervising projects, and it is easier for corrupt officials in recipient countries to expropriate resources.

There is considerable empirical support for these propositions. For instance, Djankov et al. (2009) study the supply of foreign aid in 112 developing countries over the period 1960-1999 and find that having more donors in a given country renders aid less effective in terms of its impact on economic growth. Furthermore, they find that donor fragmentation is associated with increased corruption in the recipient country's government, a result confirmed by Kangoye (2013). Similarly, Kimura et al. (2012) find that aid proliferation has a negative effect on the economic growth of recipient countries, especially in Africa. In addition, Annen and Kosempel (2009) find that aid fragmentation can undermine the effectiveness of foreign technical assistance.

In contrast to such evidence, some recent empirical work suggests that fragmentation can be beneficial to the achievement of particular development goals. For instance, Han and Koenig-Archibugi (2015) show that countries with a moderate number of donors in the health sector fare better than those with either few or many donors when it comes to child survival. Ziaja (2020) finds that fragmentation can enhance the effectiveness of democracy aid. He argues that democracy aid fosters democratisation by empowering local actors with resources and information. Having more donors makes this process more effective by generating a "marketplace for idea support" to help build a resilient democratic regime, rather than a top-down blueprint approach emanating from one or few donors.

Although they make somewhat different theoretical arguments, both of these studies rely on the notion that the presence of multiple donors allows for a free exchange of ideas, from which recipient country governments can draw to craft locally appropriate policy solutions. What has yet to be shown is why these positive results do not appear to transfer to other development goals, and more generally under what conditions we can expect the benefits of fragmentation to outweigh the costs. The present discussion paper aims to shed light on such questions.

## 3 Theorising diverse effects of donor diversity

In this section, we devise a theoretical framework to understand when fragmentation is likely to benefit or hinder aid effectiveness. We consider two features of aid and discuss each in turn: (i) whether aid is targeted towards specific policy sectors that have measurable targets or towards improving governance processes that facilitate policy implementation, and (ii) the level of government at which donors are present.

## 3.1 Development goals: Policy vs. process

Although much of the aid effectiveness literature has analysed the impact of aggregate aid, more recent contributions call our attention to the diversity of aid types, and the implications of such diversity for different outcomes. For instance, aid flows can differ in terms of time horizon: As Clemens, Radelet, Bhavnani and Bazzi (2012) note, whereas funding for a new road may have immediate economic impacts, supporting public health campaigns may only have an effect decades later. Jones and Tarp (2016) further show how different types of aid hold different political economy implications.

We argue that an important consideration is whether aid is given to further the implementation of a given policy (e.g. one to reduce child mortality), or whether aid is provided with the objective of improving the institutions and processes through which various policy outcomes are achieved (e.g. capacity-building in tax administration). This latter form of aid has become increasingly popular with the rise of the "good governance" agenda in international development. The international development community's interest in good governance has been growing steadily since the 1990s, when development practitioners increasingly realised that initiatives which looked good on paper frequently failed due to gaps in policy implementation (Rakner, 2017). This shift in thinking led international financial institutions such as the World Bank and the International Monetary Fund to focus on governance reforms as a linchpin of their development assistance programmes. The Bretton Woods institutions' embrace of this concept has, in turn, influenced the development policy of multiple bilateral donors, including both European countries and the United States (Carbone, 2010).

The term "governance" today features in almost every aid project description, having been mainstreamed into all aid provided by OECD donor countries. Nonetheless, most aid sectors remain heavily outcome-oriented. This reflects increased attention to evaluating the effects of aid (Manning & White, 2014), which is baked into the SDGs via an explicit global indicator framework (United Nations, s.a.). That outcome focus, however, may counteract the emphasis on governance in everyday policy implementation. "Whether" one achieves an outcome takes precedence over "how" this was done. For example, Baldursdóttir, Gunnlaugsson and Einarsdóttir (2018) show that the "NGO-ization" of community health care in Guinea-Bissau yielded the desired health results. The Ministry of Health, however, was bypassed, missing the opportunity to strengthen the main actor in health policy in a sustainable (see Dietrich, 2013). In Malawi, Fischer and Chasukwa (2020) show how donor-funded and NGO-led programming in the health system creates parallel structures that undermine donors' stated goal of "health system strengthening".

The one sector in which governance remains of central concern is GCS aid, often referred to as "governance aid". Governance aid flows tend to represent a smaller proportion of donor portfolios than the sectors of "economic" aid, but they have been on the rise in the past two decades. GCS aid amounted to about 3 per cent of all aid flows in the mid-1990s and has increased since to more than 17 per cent in 2013.[1] Practically speaking, governance aid comprises aid for the strengthening of government policies and plans, public-sector and civil society institutional development, as well as human rights and conflict-prevention

1 Own calculations based on the AidData research release 3.1 (Tierney et al., 2011).

activities. GCS aid empowers a variety of actors to better monitor the political process and participate in it (Svolik, 2013, p. 698). This includes political parties, civil society organisations and media outlets. Governance aid can also empower the general population via political education. For example, Finkel and Smith (2011) show that participants in a large-scale, donor-funded democracy education programme became opinion leaders, multiplying growth in democratic knowledge and values.

GCS aid activities usually do not have a clearly identifiable output that can be easily quantified. Rather, governance aid is successful when public institutions become more effective, where accountability increases, and where norms around impartiality and rule of law are strengthened. We argue that such diversity and inherent ambiguity in assessing the effectiveness of governance aid is a strength, as meaningful and more comprehensive reforms are less likely to be sacrificed for a quick demonstration of measurable results. Honig (2018) shows that "navigation by judgement" – giving local development actors the authority to use their own judgments to guide aid delivery – is a particularly effective strategy in complex environments. We argue that fragmented settings constitute such complex environments, and that donor agencies are forced to allow their staff leeway in governance aid, given the difficulty of establishing measurable targets.

The empirical literature provides some support for this mechanism, as GCS aid has been shown to be effective when administered continually and by many donors. Looking across countries, Jones and Tarp (2016) show that, in contrast to other types of aid, stable flows of governance aid display a positive association with the quality of political institutions on average. Furthermore, aid flows tend to be more stable when fragmentation is higher, as Gutting and Steinwand (2017) have shown in relation to the effect of aid shocks on political conflict. But the benefits of fragmentation in governance aid likely go beyond stability. The complexity of government administration and state–society interactions make it very difficult to design a singular intervention that will suit a given recipient country. Having a multitude of governance donors thus increases the chances that some donors will provide aid that improves the process. Ziaja (2020) shows this for the effect of democracy aid, as noted above: The presence of more donors supports endogenous institution-building processes by creating a "marketplace for democracy support". In such a setting, local actors are more likely to find suitable support for their own, locally crafted ideas than in situations with fewer donors. The chances that donor proliferation in governance aid causes unsurmountable dissent are low, as there is a consensus on the importance and principles of "good governance" within the (traditional, Western) donor community. Indeed, SDG 16 (Peace, Justice and Strong Institutions) includes a specific call to promote good governance as a means of achieving sustainable development. Moreover, governance aid tends not to be partisan, and it is often directed towards more technocratic aspects of governance, including public finance, public-sector management and decentralisation (Hout, 2012).

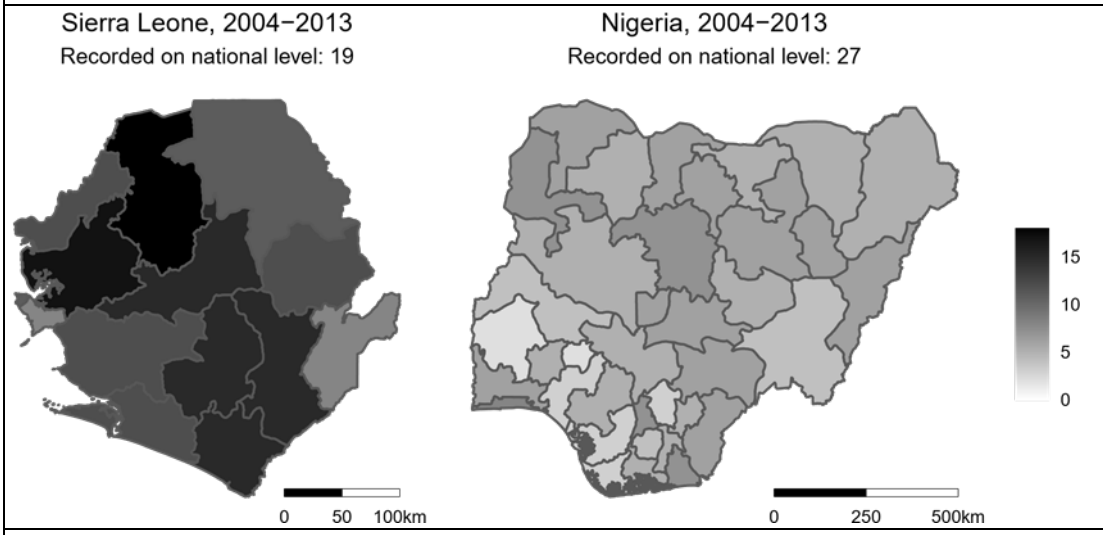
## 3.2 Level of analysis: Countries, administrative units, organisations

Cross-national analysis comprises the bulk of the empirical literature on aid fragmentation. However, just looking across countries has the potential to blur important subnational variation. The assumption that donor diversity and target outcomes develop uniformly within countries does not hold when looking at where specific donors engage. As an example, Figure 1 shows the number of bi- and multilateral donors in the health sector for

the two countries that we investigate in further detail. Each plot's subtitle lists the total number of unique health donors reported in the national-level dataset provided by AidData (Tierney et al., 2011). The maps show the number of unique health donors present within each subnational unit, as reported by the respective Aid Information Management Systems.[2] Sierra Leone records 19 donors in the health sector on the national level, and from 8 to 18 in each district, resulting in a substantial standard deviation of 3.0. In Nigeria, a much larger country, the density is much lower and more uniform, ranging from 2 to 8 per state, with a standard deviation of 1.4. In contrast, the number of donors recorded on the national level amounts to a much higher number of 27. Any analysis of aid fragmentation conducted at only one level of analysis would thus be vulnerable to the "modifiable areal unit problem". That is, fragmentation may manifest in very different ways – within and across countries – depending on the level of spatial aggregation, which can, in turn, affect inferences drawn from using different indicators (Lee & Rogers, 2019).

Furthermore, the level of government at which aid fragmentation manifests has important implications for whether it will hinder or advance aid effectiveness. Disagreements over the most appropriate policy to achieve a given goal seem most likely to occur at the central government level – among high-level country representatives of donor agencies and the representatives of relevant central government ministries and agencies. Even in countries that have undergone substantial decentralisation reforms, the bulk of government policymaking still occurs at the central government level (Bossert, 1998; Dickovick, 2005; Olowu & Wunsch, 2004). Health policies, for example, tend to be made at the national level, and thus vary little across regions (Bossert & Beauvais, 2002; Cabral, 2011).

**Figure 1: Number of health donors by subnational administrative units**




Source: Authors

One might argue that fragmentation at the local level should thus matter little. Indeed, a recent study of subnational health aid allocations in Malawi found that although aid was targeted to areas with greater existing health infrastructure, having more donors in these areas led to reductions in malaria prevalence and more people reporting that health care was

2 See empirical section below for specific sources.

more than adequate (Marty, Dolan, Leu, & Runfola, 2017). Furthermore, the aid agency employees deployed to the local government level are more likely to be technocratic staff tasked with implementing a given programme. This suggests their presence is less likely to cause gridlock of the sort that can hamper policy implementation.

However, at the local level, various detrimental mechanisms of project proliferation seem likely to materialise.[3] For example, a study of Global Health Initiatives found that donors frequently bypass local governance structures, leading to service duplication (Spicer et al., 2010). More donors with more projects hire more qualified local staff, draining recipient institutions of their best personnel (Lemay-Hébert, Marcelin, Pallage, & Cela, 2020). The desire of aid managers to guarantee the success of their projects decreases concerns for collateral damage and opens doors for corruption. Add to that the possibility of having seasoned experts with strong and mutually incompatible views on how to implement particular policies, a local vicious circle of project competition may emerge, undermining aid effectiveness in fragmented settings. In sum, expecting results found on the national level to hold when we look at the subnational level may be misguided, depending on how donors are distributed within a country.

## 4 Empirical strategy

We study the impact of these different dynamics of aid fragmentation – process-vs.-outcome focus and level of government – using data in two aid sectors and at three different levels of aggregation. For the aid sectors, we first examine an outcome-oriented type of aid: health aid, which contributes to reducing child mortality. Next, we examine GCS aid, which, as discussed above, is a more explicitly process-oriented aid sector. Table 1 summarises our sectoral setup.

As for the level of aggregation, we assess the consequences of aid fragmentation at the national level, at the level of subnational administrative divisions and at the level of organisations in recipient countries. Our multi-level approach has a combined methodological and conceptual purpose. Methodologically, using several spatial levels decreases vulnerability to the modifiable areal unit problem. We can see whether results differ at different spatial resolutions. Conceptually, we already expect such differences, as argued above. Many donors engaging in a large country such as Nigeria must not translate into donor crowding in specific project locations. Donor crowding at the national level may distort recipient policies in different ways than it does on the local level. Finally, we analyse survey responses of Nigerian civil servants across local (state) organisations, which shed light on the mechanisms driving the varied impacts of fragmented aid.

**Table 1: Target type, aid sector and code, and target outcome**

| Target type | Aid sector | Target outcome |
|---|---|---|
| Policy outcome<br>Process | Health (general and basic)<br>Government and civil society | Child mortality<br>Government effectiveness / financial sustainability |

Source: Authors

3 These mechanisms are formally modelled by Knack and Rahman (2007).

Our main measure of aid fragmentation is the number of donors present within a unit of observation. To count donors and measure aid by sector, we draw on data provided by AidData (Tierney et al., 2011). AidData builds largely on the OECD's Creditor Reporting System (CRS) and on national Aid Information Management Systems, and it also attempts to fill gaps and include additional information (such as data on previous recipients that is deleted from the CRS). AidData only documents aid commitments, not disbursements, as the former are much more reliably reported. To identify the sectors, we use the "coalesced purpose codes", which employ original AidData coding where available but fill gaps with CRS coding (where available). For basic and general health aid, the range of codes is 12000-12999. For governance aid, the range is 15000-15999. At the national level, we count donors to be present in an aid sector only if they commit to spending at least USD 100,000 per year. We expect that this is approximately the level at which donor engagement becomes notable, for example, via the presence of an expatriate expert. At the subnational level, we abstain from setting such a threshold. Donor personnel could travel regularly from neighbouring regions, even where low amounts of money are spent. We include all bilateral OECD donors recorded in the data, as well as multilateral and private donors.[4] The universe of cases we study comprises all countries eligible to receive aid according to the official list of recipients from the OECD's Development Assistance Committee.

The estimation methods we employ for assessing the relationships between explanatory and explained variables are designed to strike a balance between data quality, data availability and inferential rigor. In the absence of a true or a natural experiment, we cannot establish strict causality. Insights about temporal patterns in aid allocation and aid effectiveness, however, allow us to design correlational analyses that approximate what we expect to be the underlying data-generating processes (Clemens et al., 2012). We thus draw on bivariate correlations with substantial time lags, estimate fixed-effects regressions and analyse a range of complementary indicators from the survey of civil servants.

## 5 The macro view: Cross-country analysis

We begin by looking across countries to compare the consequences of fragmentation in the two aid sectors of concern. As most outcomes considered here are rather slowly moving, and since we want to guard our analysis from the most obvious channels of self-selection and reverse causation, we look at 10-year averages and lag the number of donors by one 10-year period. Specifically, we observe the average number of unique donors in a particular sector in the period 1995-2004, and the change in the average level of the respective development outcome from that same 10-year period to the following 10-year period, that is, the change from 1995-2004 to 2005-2014. Although this does not provide a causal estimate, this approach nonetheless provides us with a first impression as to whether there is a sustained association between the number of donors and outcomes.

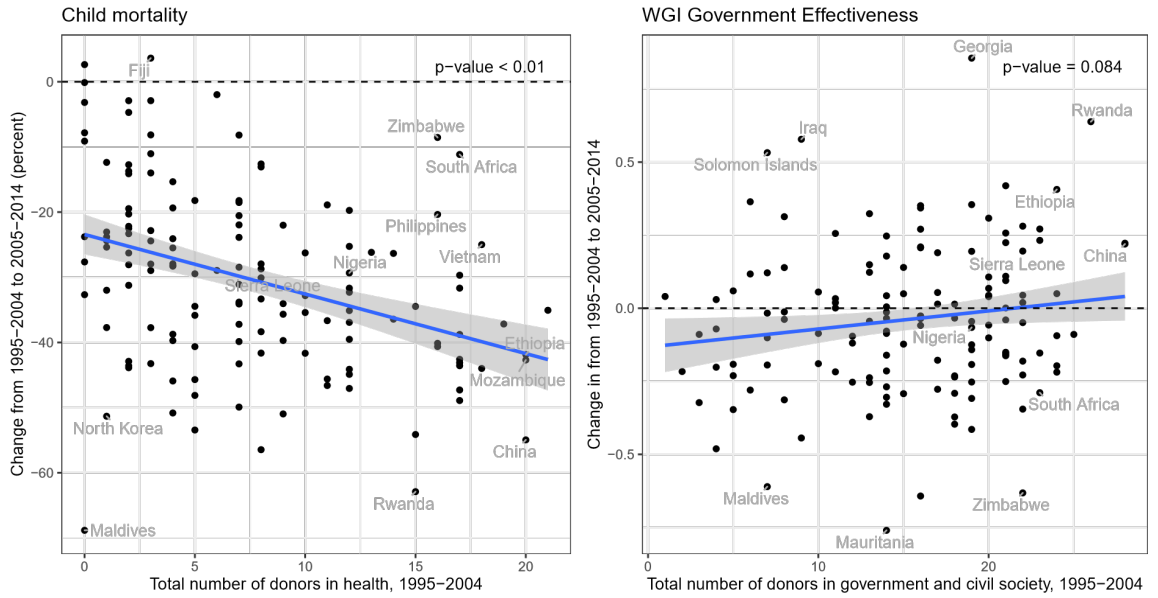
Child mortality – our target for outcome-focussed aid – declined in virtually all countries in our sample from the period 1995-2004 to the period 2005-2014, as shown in the first panel in Figure 2. Change is also strongly associated with the number of unique donors that had

4 So-called new donors, such as China and Saudi Arabia, played only a minor role during the time period studied here and may follow a different logic of allocation and interaction on the ground.

worked in health aid in the period 1995-2004. We see that a greater number of donors is correlated with greater reductions. Child mortality is expected to be 10 percentage points lower when 10 donors or more are present. This relationship is significant at the 0.99 level.

The number of donors in GCS aid – our process-oriented aid sector – and its relationship with government effectiveness (as measured by the Worldwide Governance Indicators, WGI) is shown in the second panel. Countries with many GCS donors exhibit considerable variation: South Africa and Zimbabwe deteriorated, whereas China, Ethiopia and Rwanda improved. On average, having 10 more donors results in an increase of about 0.1 on the government effectiveness scale (which ranges from -2.2 to 2.0 across the two 10-year periods considered here). The relationship is significant at the 0.9 level. In sum, both long-term correlations reach a significance level that we consider suitable for the number of observations in our sample, and both imply that having more donors in a given sector tends to promote better outcomes. This is at odds with the received wisdom about the negative consequences of aid fragmentation, but in line with the more recent studies we cite above.

**Figure 2: Relationships between the number of donors and outcomes at the national level**




Source: Authors

Our bivariate snapshots at the country level are vulnerable to omitted variable bias, as a number of country-specific factors matter for explaining development outcomes. Some of these are slow to change, and thus can be accurately captured through country fixed-effects. Some are global shocks that can be captured with year fixed-effects. Others show movement within countries in ways that could affect our outcome variables of interest. We thus turn to a multivariate analysis that can incorporate fixed-effects and the relevant control variables.

The first – and perhaps most obvious – important factor to control for is the overall amount of aid being directed towards a given goal in each country. A lack of sufficient resources can undermine the implementation of policy outcomes even when there is no conflict over goals or means. For instance, Matland (1995) contrasts the World Health Organization's programme to eliminate smallpox with the US programme to contain tuberculosis. In each case, both the goals (eradication of disease) and means (mass vaccination and quarantine)

were clear. In the case of smallpox, there were sufficient resources to continue effective implementation until the disease was eliminated. However, in the case of tuberculosis, federal funding was cut off in the early 1980s, leading to a resurgence of the disease in the following decade and the appearance of a drug-resistant strain.

Relatedly, income per capita has been identified as a critical variable in explaining variation in key summary measures of population health, such as infant mortality, under-5 mortality and life expectancy at birth (Croke, 2012). Conflict prevalence has also been cited as a historical driver of poor child health outcomes (Croke, 2012), and it may affect the achievement of other development goals. We include a dummy for ongoing civil war, as defined by the 25-battle-deaths threshold of the Uppsala Conflict Data Programme (Themnér & Wallensteen, 2012). Finally, larger countries tend to have more donor countries than smaller countries. To avoid having the number of donors acting as a proxy for country size, we also control for the logged number of inhabitants. Table A1 in the appendix provides summary statistics for all variables included in this dataset.

Employing these control variables leaves us with data for 152 countries over the period 1995-2014. The temporal restriction is due to the availability of sector-specific aid data: Before the early 2000s, sectoral decomposition of aid is fairly unreliable; before 1995, it is unacceptably incomplete. Instead of relying on two 10-year cross-sections, as for the scatterplots above, we now want to learn from temporal variation and thus consider shorter time periods. Given that our data is based on commitments, however, we need to allow for a certain lag, as aid commitments are frequently realised several years after the decision was recorded. This also makes commitments more volatile than disbursement data.

Moreover, the effects we want to observe are unlikely to materialise after just one year. We thus opt for three-year periods as our temporal unit of observation. Combined with a one-period lag, we are confident that at least the most pressing endogeneity concerns are addressed by our specification (see Clemens et al., 2012).

Table 2 presents the regression results, which we present without and with controlling for aid per capita (Panels A and B, respectively). Results are presented in this manner because controlling for aid when examining the effects of the number of donors in the same sector causes a statistical problem (Ziaja, 2020, p. 441). The amount of aid is an intermediate outcome on the path from the number of donors to the target outcome: A donor decides first to start relations with a recipient country (contributing to the number of donors) and then to commit a certain amount of aid (contributing to the overall amount). Intermediate outcomes constitute “bad controls” that introduce additional selection bias into the comparison of recipient country democracy conditional on the number of donors (Angrist & Pischke, 2009, pp. 64-68). At the same time, controlling for aid is essential from a substantive point of view, as argued above. A solution to this dilemma is focussing on the interaction between the amount of aid and the number of donors as the main explanatory variable. Unlike in most applications, we do not even need to include the constitutive terms of this interaction: The number of donors is only and always zero when the amount of aid is zero, by definition. This relieves us of the duty to include constituting terms, and of the necessity to interpret the interaction results visually. The mere significance of the interaction’s coefficient

provides substantial evidence of a relationship pattern not induced by chance.[5] Panel C implements this specification.

**Table 2: Regression results: The number of donors and outcomes on the country level**

| Dependent variable: | Child mortality | Government effectiveness** |
|---|---|---|
| Aid sector: | Health | Government and civil society |
| Intended effect of aid: | Decrease | Increase |
| *Panel A: Number of donors (amount of aid not included)* | | |
| Number of donors | −0.99*<br>[−1.55; −0.43] | 1.11*<br>[0.33; 1.90] |
| Adj. R2 | 0.96 | 0.93 |
| *Panel B: Number of donors, controlling for the amount of aid* | | |
| Number of donors | −0.90*<br>[−1.48; −0.32] | 1.02*<br>[0.21; 1.84] |
| Aid per capita (log) | −2.30*<br>[−4.46; −0.15] | 1.98<br>[−2.87; 6.83] |
| Adj. R2 | 0.96 | 0.93 |
| *Panel C: Number of donors interacted with the amount of aid* | | |
| Number of donors*<br>aid per capita (log) | −0.86*<br>[−1.24; −0.48] | 0.56*<br>[0.20; 0.92] |
| Adj. R2 | 0.96 | 0.93 |
| *All panels:* | | |
| Number of observations | 836 | 833 |
| Number of countries | 152 | 152 |

* 0 outside the 95 per cent confidence interval; calculated from standard errors clustered at the country level.
** Dependent variable rescaled by factor 100 to display significant digits.
All models include country and year fixed-effects and the following control variables (coefficients not shown): population (log), GDP per capita (log) and a civil war dummy.
The temporal unit is three-year periods.
Source: Authors

Panel A shows models with the number of donors in the respective sector as the only explanatory variable. The amount of aid is not yet included. Fragmentation in the provision of both health and governance aid is significantly related to their respective outcomes and has the desired effect (more donors, better outcomes). Panel B repeats the same specification controlling for the amount of aid. Aid amounts are measured in per capita terms, as our outcome child mortality is an individual-level trait. The same level of absolute aid would mean very different things for a country with a small population than for a much larger country. Amounts are also logged to account for decreasing marginal returns. Results from Panel A are largely confirmed: The number of donors providing health and GCS aid is significantly related to better outcomes. Aid per capita is only significant in the model using health donors as an explanatory variable. Finally, Panel C reports the estimates of the

5 Note that we checked results including the constituting terms, and there was no difference to the conclusions we draw.

interaction of the number of donors in the respective sector and the logged amount of aid per capita provided in this sector. Both interactions are significant and each sector maintains its coefficient's sign.[6]

These findings confirm the picture obtained from the scatterplots above. Our results on the national level thus complement the findings of Han and Koenig-Archibugi (2015) and Ziaja (2020): Health aid effectiveness can benefit from donor diversity, as can GCS aid. In the next section, we proceed to investigate whether these associations hold when we look within countries.

## 6 Zooming in: Subnational analysis

How does aid fragmentation affect outcomes when we lift the veil of methodological nationalism? In order to come closer to identifying the true consequences of aid fragmentation on the ground, we turn to subnational aid allocation patterns in two countries in sub-Saharan Africa. We focus on this region as it is home to the largest recipients of net official development assistance (ODA), and it is also where many prior studies on the pernicious effects of aid fragmentation have focussed (Bräutigam & Knack, 2004; Kimura et al., 2012; O'Connell & Soludo, 2001). Moreover, the availability of reliable subnational aid data restricts our case selection.

AidData provides subnational data on aid flows for about 14 countries. Six of those have excellent coverage, with almost all aid projects in the country geocoded from the early 1990s until around 2014: Afghanistan, Iraq, Somalia, Burundi, Nigeria, Sierra Leone. The first three were all suffering from ongoing conflict during the period of investigation. Burundi is the smallest of the remaining countries. We were also not able to identify a sufficiently valid outcome indicator for governance aid for Burundi. This left us with two countries for the subnational analysis: Sierra Leone and Nigeria.

Sierra Leone is small in terms of geography and population in addition to being poor and aid-dependent. Net ODA accounts for 13 per cent of gross national income (GNI) in 2018, or USD 66 per person. As of 2013, Sierra Leone registered 42 bi- and multilateral donors, including 19 in health and 27 in GCS aid.[7] The country's post-conflict status presents particular opportunities and challenges for donor diversity. Following the 1991-2002 civil war, the country's peace process is seen as having benefited greatly from an "eclectic mix" of donors, whose substantial contributions addressed critical needs such as the resettlement of refugees, the disarmament and reintegration of combatants, and the rebuilding of state and civil institutions (Kanyako, 2016). As in many other post-conflict settings, both the government of Sierra Leone and its donors recognised the need to rapidly rebuild the health system and increase health service provision, both as a goal in itself as well as a catalyst for peace-building. However, many of the policies that emerged during this time were seen as

6 One could argue that these results are driven by our decision to aggregate to three-year periods. When we repeat the above exercise with yearly data, results remain substantially the same (not shown).

7 Donors are here counted without the aid threshold employed in the cross-country analysis above. The respective worldwide country averages were 34 general, 17 health and 20 governance donors in 2013.

externally driven, lacking the local ownership necessary for their effective implementation (Bertone, Samai, Edem-Hotah, & Witter, 2014).

Nigeria, in contrast, is large in territory and population. Nigeria also records large income streams from oil exports, dwarfing the substantial amounts of absolute aid that it receives to just under 1 per cent of GNI and USD 17 per person in 2018. As of 2013, Nigeria had registered 44 bi- and multilateral donors, including 27 in health and 25 in GCS aid. Notably, various interventions have been put in place in recent years to address donor coordination – particularly in the health sector. These include developing a National Strategic Health Development Plan, which established a Health Development Partners Forum as a mechanism for donors and the government to coordinate interventions. The plan further identified the need for coordinating funding mechanisms using a sector-wide approach. The country has also undergone a rationalisation exercise aimed at allocating different donors to different geographic areas (Makinde et al., 2018). However, recent studies have characterised the harmonisation of aid as "dismal", finding that Nigeria's donors have failed to align with the country's reporting and monitoring systems (Chiegil, 2017) and that a duplication of efforts persists (Makinde et al., 2018).

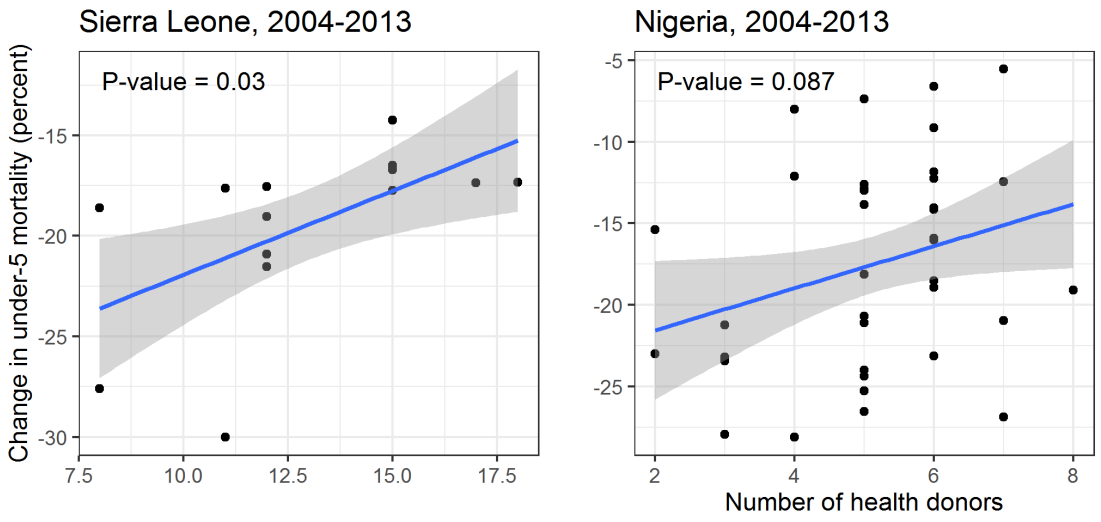
In considering Sierra Leone and Nigeria, our paper spans the range of variation in aid fragmentation on the continent. In one case, aid dependence is high, suggesting donors play an important role in governance and service delivery. In the other, donors' overall presence and expected influence is much more limited. Thus, we can think of the two countries as representing one most-likely and one least-likely case for aid fragmentation to affect policy or processes. As for choosing the level of spatial disaggregation that is most appropriate for our analysis, we turn to the lowest level with sufficient variation in donor presence. For Sierra Leone, we examine variation across secondary administrative divisions, which comprise 16 districts.[8] For Nigeria, we base our analysis on the variation between the 36 states and the Federal Capital Territory.

Given the data limitations mentioned above, we do not use the same time periods as in the national-level scatterplots above. We instead restrict ourselves to the time period for which the data seems most reliable. This levels out fluctuations that may be due to different reporting patterns between donors rather than the actual engagement we want to trace. We thus count all donors that were present from 2004 to 2013.[9]

8 Zooming in one more level is not possible, as only a fraction of tertiary divisions (chiefdoms) report aid activity. Also note that our analysis pre-dates the 2017 administrative revisions that separated the North West Province from the Northern Province and created two additional districts.

9 See Tables A2 and A3 in the appendix for summary statistics of the three subnational datasets.

**Figure 3: Health donor proliferation and change in under-5 mortality**



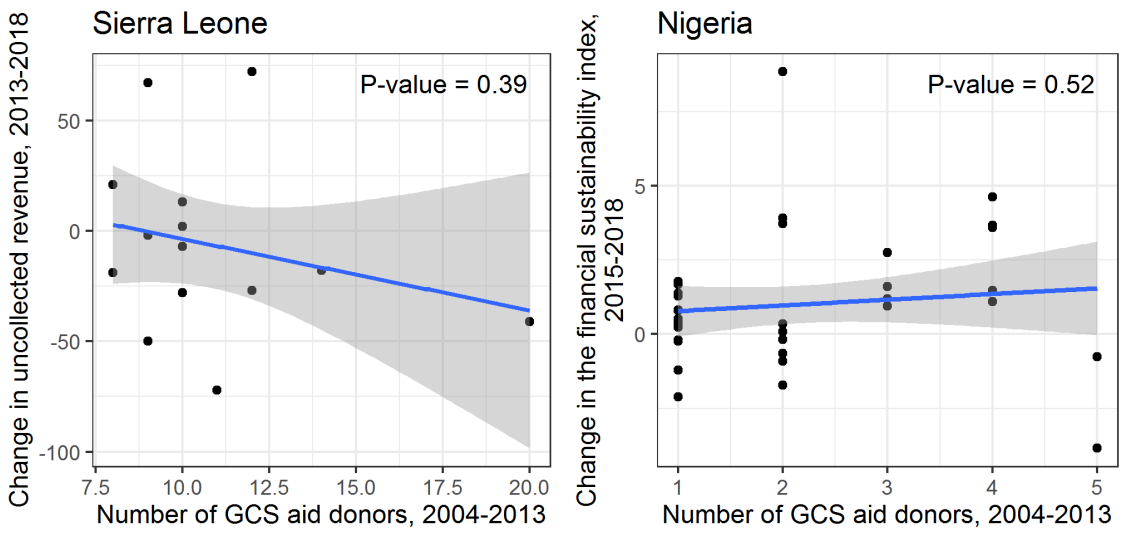

Source: Authors

We measure under-5 mortality across subnational units with new fine-grained data (Golding et al., 2017). This data is available at high levels of resolution and can thus be aggregated to the respective administrative-unit levels and merged with the subnational aid data. Figure 3 shows how trends in under-5 mortality relate to the number of health donors present in subnational administrative divisions in both countries. As we cannot fit another 10-year period after 2013, we opt to measure changes in the explained variable in five-year averages. Change in under-5 mortality is thus calculated as the average rate from 2013 to 2017 minus the average rate between 2008 and 2012, expressed as a percentage of the average rate between 2008 and 2012. Note that for all subnational units in both countries, child mortality has decreased by between 5 and 30 per cent (see the range covered by both y-axes). The x-axis reports the number of health donors. For both Sierra Leone and Nigeria, more donors correlate significantly with slower declines in child mortality. This stands in contrast to the cross-national results reported above: Whereas countries with many health donors saw faster declines in child mortality, regions within both Sierra Leone and Nigeria saw slower declines.

Lacking a common indicator to assess how aid fragmentation correlates with governance at the subnational level, we draw on two country-specific data sources. For Sierra Leone, we extracted data from the annual report of the Auditor General, which provides information on own-source revenues of districts. The report distinguishes amounts that were budgeted from those that were actually generated (Auditor General Sierra Leone, s.a.). We use the gap in uncollected revenue to measure the performance of districts in planning and collecting revenue. As we aim to observe change in the explained variable, we calculate differences between 2013 and 2018 performance. For Nigeria, we identified an index of financial sustainability developed by the Nigerian NGO BudgIT, which aggregates information on state expenditures, revenues and debts into an index. The data is available for the years 2015 and 2018, from which we calculated the differences to assess change (BudgIT, s.a.).[10]

10 Due to changes in methodology, other editions of the index could not be used.

**Figure 4: Government and civil society donor proliferation and change in fiscal performance**




Source: Authors

Figure 4 suggests a positive impact of subnational fragmentation in governance aid for both countries. Districts reduced the amount of uncollected revenue in Sierra Leone as the number of donors increased. Likewise, the financial sustainability index improved in Nigerian states in which more donors were present. These relationships, however, are not statistically significant. Moreover, the downward slope for Sierra Leone is largely driven by the Western Area Urban District, which includes the capital Freetown, where a large number of GCS donors and a substantial drop in uncollected revenue were recorded. As with subnational health outcomes, the beneficial effects of donor proliferation on outcomes do not receive additional support from the subnational analysis. Unlike for health, however, results are merely insignificant and still point in the same direction. In sum, the results from the subnational analysis do not confirm findings from the national level. This implies that getting the spatial level of analysis right matters for studies of aid fragmentation. Neither the national nor the subnational level of analysis is suitable for all questions, and researchers will have to argue at which level their implied data-generating process plays out.

## 7 Exploring mechanisms through surveys with bureaucrats

In order to better understand the mechanisms underlying the relationship between aid fragmentation and development outcomes presented in the two preceding sections, we leverage data from a recent survey of 4,100 Nigerian civil servants. The survey focussed on the management practices of 63 organisations of the Federal Civil Service in Nigeria, including central ministries and regional development authorities.[11] The survey sheds light on how civil servants perceive their job situation and what kind of obstacles hamper policy implementation. Although the effects of aid and fragmentation were not surveyed explicitly,

11 Greater detail on the survey is provided in Rogger (2017) and Rasul and Rogger (2018). The authors kindly provided us with an excerpt from the raw survey data.

information on the location of particular organisations and the distinction of organisation types allows us to investigate the relationship between sector-specific aid fragmentation in different Nigerian states and the organisations that are located there.

We select 12 questions from the survey that represent concerns discussed in the fragmentation literature. They proxy issues such as country ownership, alignment between recipient and donor priorities, aid effectiveness and corruption. For example, civil servants are asked whether they have control over their organisations, whether they have access to sufficient funds and qualified personnel, and whether they were pressured to change specifics of their own projects, such as location, project design or contractors. All responses are coded to represent the share of respondents providing undesirable answers, such as loss of control, dissatisfaction or being pressured to modify a project.

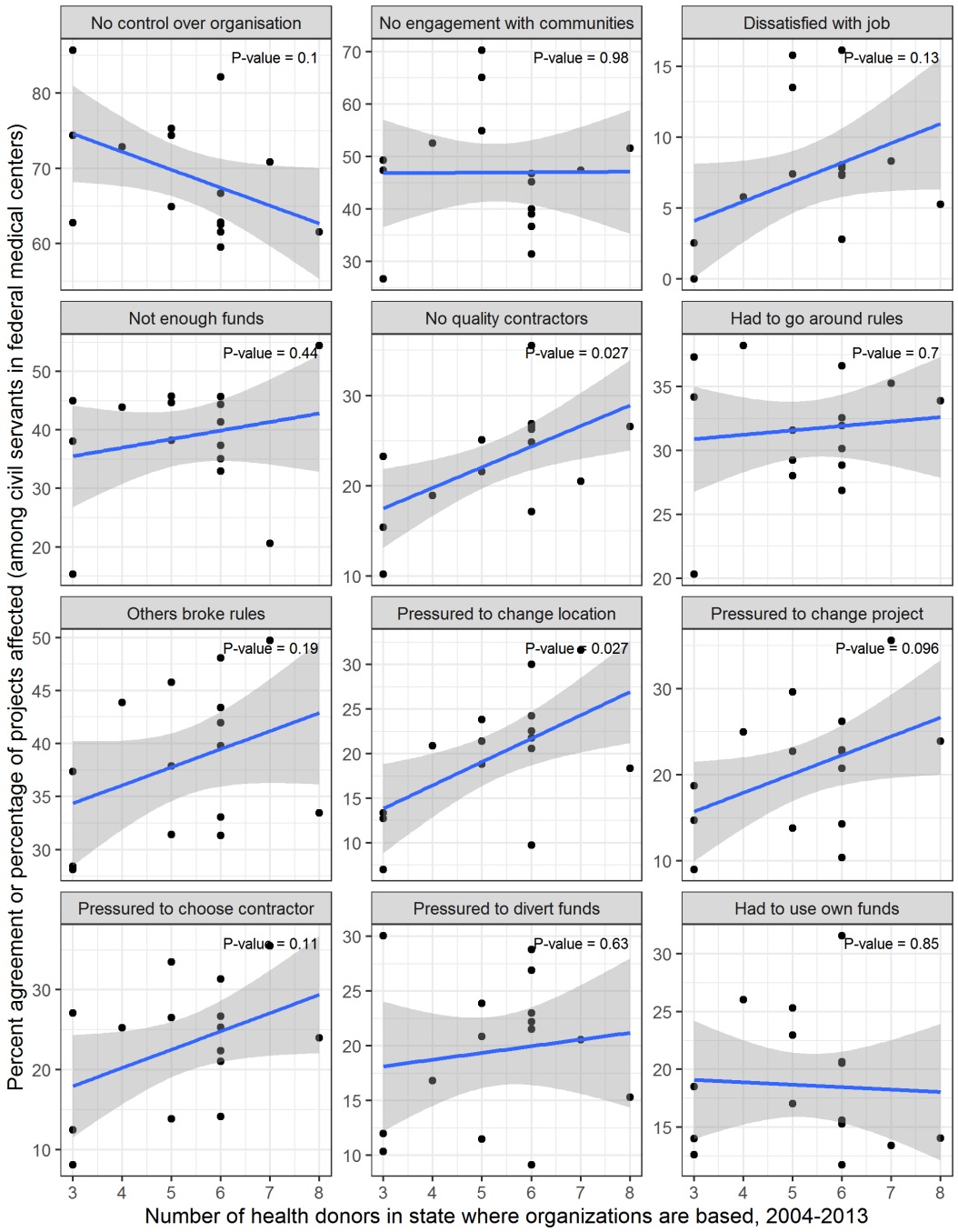
As in the preceding subnational analysis, we examine relationships at the level of Nigerian states. We plot the number of donors present in each state against the average responses provided by members of organisations based in these states. We first consider state-level fragmentation in health aid and look at how this relates to responses from employees of 16 federal medical centres spread over 15 states. Between 2004 and 2013, these states had between three and eight unique health donors. Figure 5 shows that across almost all 12 questions, undesirable outcomes increase with the number of health donors present in the state. Only the perception of not having control over their own organisation (top left panel) and the necessity to use own funds decreases (bottom right panel).

Only three of the twelve indicators relate to the number of donors at a statistically significant level. They all represent detrimental effects, and they directly link back to the fragmentation literature. The average share of civil servants reporting a lack of quality contractors or consultants tendering for projects increases from below 20 per cent when three donors are present to almost 30 per cent when eight donors are present (panel in row 2, column 2). This pattern is consistent with the "internal brain drain" hypothesis: donors hiring away the most talented local staff. Pressure to change the location of projects increases in similar quantities (row 3, column 2), as does pressure to change other project specifications (row 3, column 3). Such pressure in states where more donors are present is consistent with the expectation that donors will prioritise achieving outcomes for their projects over local ownership.

To assess the impact of fragmentation in governance aid, we consider all 95 organisations surveyed. Governance aid not only targets core political institutions such as parliament and the judiciary, it also aims to improve administrative procedures between all institutions that are part of the government or owned by it. [12]

12 In Figure A1 in the appendix, we repeat the analysis with a subsample of 29 state and local governments only, as these can be considered "core recipients" of governance aid. The specific institutions were selected randomly for the survey out of all state and local governments in Nigeria. Almost all effects in this sample have the same direction, but uncertainty is greater due to the low number of organisations in this subsample.

**Figure 5: Donor proliferation in health aid and civil servant satisfaction in federal medical centres in Nigeria**

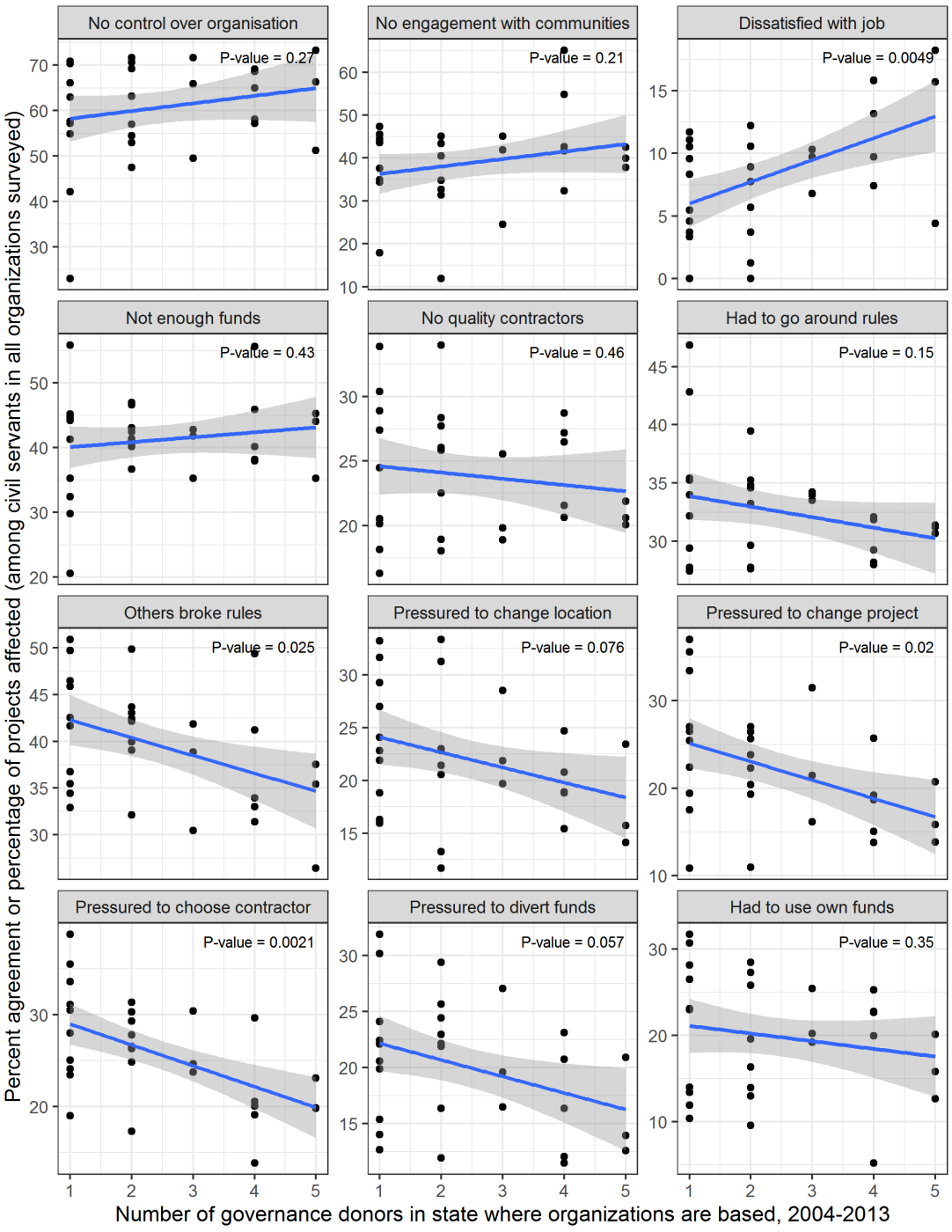



Source: Authors

Figure 6 shows the relationship between the number of governance aid donors and civil servant responses across all organisations surveyed. The results differ fundamentally from the health sector. Eight of twelve questions yield lower shares of negative answers when more governance donors are present (panels 5 to 12, counting from the top left row-wise). Five of these relationships are statistically significant (row 3 and the first two panels of row 4). They again comprise specifications of project implementation – pressure to change project location or project design, pressure to select specific contractors and pressure to

divert funds. All of these issues are notably less frequent in organisations located in states that host many governance aid donors. Moreover, respondents report "others breaking rules" less frequently than in settings with fewer donors. These patterns provide substantial support for a beneficial impact of fragmentation in governance aid. We ascribe this to governance aid being focussed on improving the process by which outcomes are achieved, rather than achieving outcomes by any means. Having multiple donors providing governance aid increases the options on offer, and thus the chances of improving processes.

**Figure 6: Donor proliferation in governance aid and civil servant satisfaction in Nigeria**




Source: Authors

Curiously, the patterns that are most likely beneficial for organisational performance coincide with a significantly lower job satisfaction of individuals (row 1, column 3). One may ask whether a shift to a merit-based organisation causes discontent, as leeway for discretionary action is reduced; albeit this conjecture cannot be answered with the present data.

## 8 Conclusion

In recent years, the received wisdom that aid fragmentation is harmful has been challenged. Scholars increasingly emphasise conditionally beneficial effects (e.g. Gutting & Steinwand, 2017). But our understanding of the impact of aid fragmentation is still piecemeal. In this paper, we take a step towards generating a more comprehensive understanding of the dynamics of aid fragmentation. First, we distinguish outcome-focussed from process-focussed aid. We also vary the spatial level of analysis. Aid flows from two sectors – health and governance – allow us to explore the impact of these factors.

Our analysis at the national level suggests that more fragmented aid can be more effective. We show this for health and governance aid. The finding is in line with recent literature that attributes positive effects of fragmentation in fostering creativity (Han & Koenig-Archibugi, 2015; Ziaja, 2020). Zooming in on the local level, the picture changes – particularly when we look at the level of organisations. Our results here suggest that targeting policy outcomes is less effective than supporting policy implementation. Given the incentives facing donors on the ground, attributable and quantifiable project success may trump concern for overall benefits (Knack & Rahman, 2007, p. 178). Project managers are not judged for how the recipient country fares, but whether they achieve the deliverables of their terms of reference (Isenman & Shakow, 2010; Nunberg & Taliercio, 2012). Having multiple implementers in the same sector in the same location blurs responsibility for negative externalities. This mechanism applies particularly to outcome-focussed aid.

Studying the perceptions of Nigerian civil servants allows us to further pursue this line of inquiry. For organisations in the health sector, we note patterns in line with various detrimental dynamics suggested by the aid fragmentation literature. Respondents in states where many health donors are present report pressures to adapt project locations and design. They also report a lack of quality contractors, suggesting internal brain drain where donors hire the most qualified local staff and leave recipient institutions stripped of their best managers (Knack & Rahman, 2007, p. 179). In contrast, respondents in localities with high levels of fragmentation in governance aid report mostly desirable outcomes. They see less interference with various project specifications and less rule-breaking. This is in line with our expectation that diversity can be beneficial for finding sustainable solutions in complex environments. A "marketplace" for reform ideas offers higher chances of providing solutions that may fit recipient needs (Ziaja, 2020, p. 436). As there is less pressure on "getting it done" than in outcome-focussed aid, competition between projects does not hamper overall aid quality as it does where quality assessments are linked more closely to deliverables. Moreover, sectors without clear development goals in complex, fragmented settings favour making best use of the good judgement of field agents (see Honig, 2018).

As aid fragmentation is "far too complicated" to overcome anytime soon (Spicer, Agyepong, Ottersen, Jahn, & Ooms, 2020) and emerging donors such as China and Russia will further increase complexity (Gulrajani & Swiss, 2019), the consequences of aid fragmentation

become even murkier. Our paper shows that fragmentation's effects vary as a function of aid type and level of analysis. Evidence from two sectors and three levels of analysis implies that fragmentation may spur creativity at the national level in outcome-oriented aid sectors. However, local implementation of outcome-oriented aid projects requires clear attribution of responsibility. Otherwise, detrimental patterns of rivalry and collusion may make aid behave less like a market and more like a cartel (see Easterly, 2002; Harford, Hadjimichael, & Klein, 2004).

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# Appendix

**Table A1: Summary statistics for the country-level dataset with three-year time periods**

| | N | Mean | Std. dev. | Median | Minimum | Maximum |
|---|---|---|---|---|---|---|
| Number of health donors | 993 | 5.98 | 5.29 | 4.00 | 0.00 | 23.00 |
| Number of GCS donors | 993 | 11.19 | 7.40 | 10.00 | 0.00 | 34.00 |
| Health aid per capita (USD ’000) | 993 | 21.67 | 67.05 | 7.34 | 0.00 | 888.01 |
| GCS aid per capita (USD ’000) | 993 | 45.81 | 151.99 | 12.67 | 0.00 | 2496.55 |
| Child mortality (per 1,000 live births) | 997 | 59.00 | 50.67 | 39.37 | 4.35 | 266.10 |
| WGI government effectiveness | 984 | -0.41 | 0.67 | -0.49 | -2.16 | 1.99 |
| Population (mil.) | 997 | 37.62 | 146.28 | 7.27 | 0.01 | 1360.83 |
| GDP per capita (USD ’000) | 997 | 4.31 | 5.17 | 2.66 | 0.16 | 62.76 |
| Civil war* | 997 | 0.23 | 0.38 | 0.00 | 0.00 | 1.00 |

GCS: Government and civil society
WGI: Worldwide Governance Indicators; *) 1 if > 25 battle deaths

Source: Authors

**Table A2: Summary statistics, subnational data from Sierra Leone**

| | N | Mean | Std. dev. | Median | Minimum | Maximum |
|---|---|---|---|---|---|---|
| Number of health donors* | 14 | 12.93 | 3.02 | 12.00 | 8.00 | 18.00 |
| Number of GCS donors* | 14 | 10.86 | 3.11 | 10.00 | 8.00 | 20.00 |
| Health aid* | 14 | 381.27 | 291.91 | 233.09 | 53.21 | 747.54 |
| GCS aid* | 14 | 108.47 | 33.99 | 111.31 | 46.54 | 173.32 |
| Change in child mortality** | 14 | -19.49 | 4.36 | -17.68 | -30.02 | -14.26 |
| Change in uncollected revenue*** | 14 | -6.36 | 40.51 | -12.50 | -72.00 | 72.00 |

GCS: Government and civil society
*) averages, 2004-2013; **) change from 2008-2012 averages to 2013-2017 averages; ***) actual vs. budgeted state revenue, per cent change from 2013 to 2018.

Source: Authors

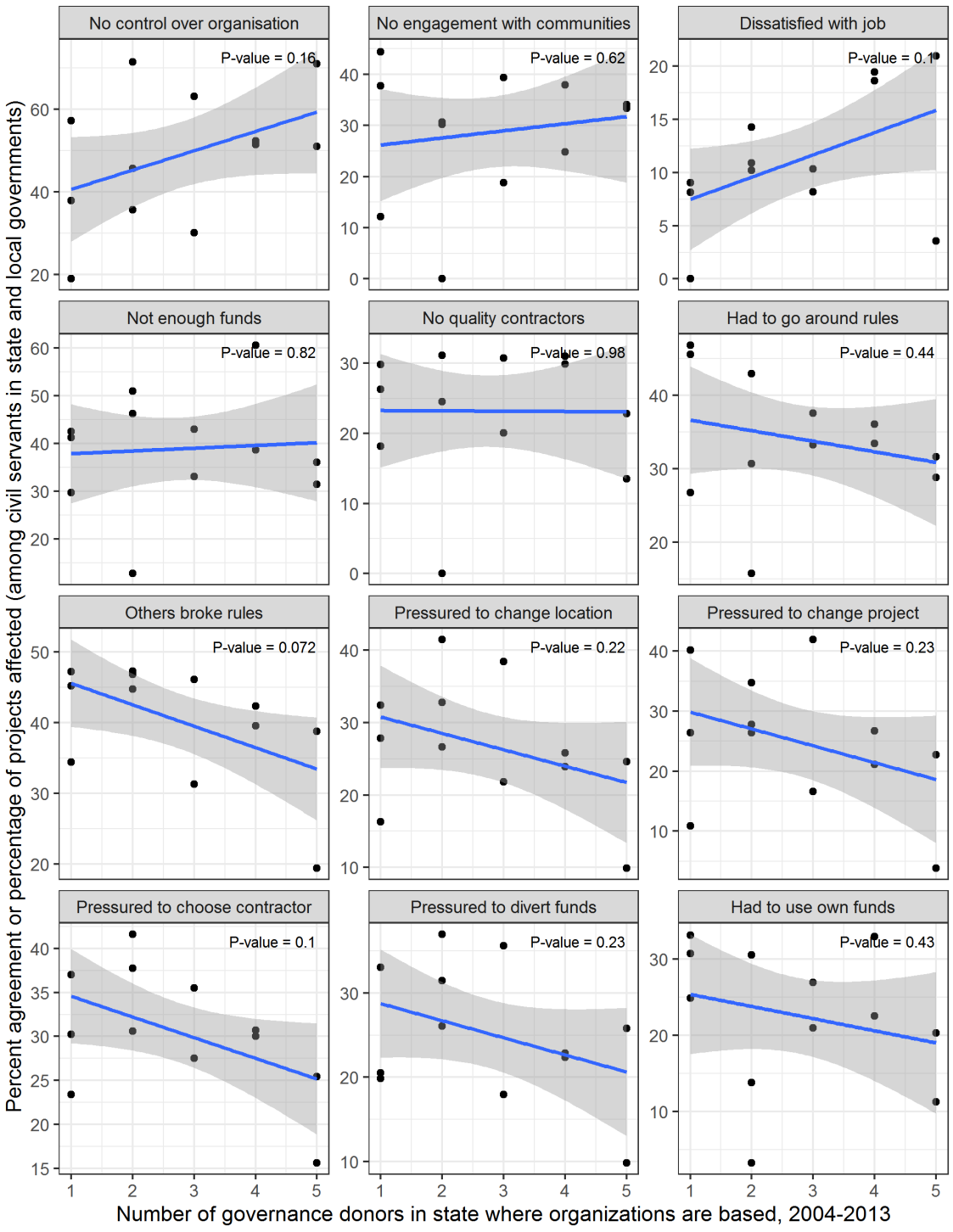
**Table A3: Summary statistics, subnational data from Nigeria**

| | N | Mean | Std. dev. | Median | Minimum | Maximum |
|---|---|---|---|---|---|---|
| Number of health donors* | 37 | 5.14 | 1.42 | 5.00 | 2.00 | 8.00 |
| Number of GCS donors* | 37 | 2.22 | 1.34 | 2.00 | 1.00 | 5.00 |
| Health aid* | 37 | 73.50 | 75.00 | 42.84 | 0.00 | 248.17 |
| GCS aid* | 37 | 2.73 | 13.16 | 0.00 | 0.00 | 78.44 |
| Change in child mortality** | 37 | -17.51 | 6.41 | -18.11 | -28.13 | -5.54 |
| Change in financial sustainability index*** | 36 | 1.00 | 2.22 | 0.65 | -3.84 | 8.84 |
| CSS No control over organisation | 29 | 60.60 | 11.12 | 63.17 | 22.95 | 73.28 |
| CSS No control over department | 29 | 34.66 | 9.14 | 34.15 | 12.50 | 55.39 |
| CSS No engagement with communities | 29 | 38.76 | 10.23 | 40.48 | 11.84 | 65.12 |
| CSS Dissatisfied with job | 29 | 8.46 | 4.80 | 8.92 | 0.00 | 18.23 |
| CSS Not enough funds | 29 | 41.16 | 6.99 | 41.81 | 20.56 | 55.86 |
| CSS No quality contractors | 29 | 23.91 | 4.80 | 22.53 | 16.27 | 34.00 |
| CSS Had to go around rules | 29 | 32.60 | 4.61 | 32.10 | 27.43 | 46.86 |
| CSS Others broke rules | 29 | 39.60 | 6.43 | 39.92 | 26.43 | 50.87 |
| CSS Pressured to change location | 29 | 22.07 | 5.98 | 21.84 | 11.68 | 33.32 |
| CSS Pressured to change project | 29 | 22.18 | 6.87 | 21.46 | 10.86 | 36.98 |
| CSS Pressured to choose contractor | 29 | 25.77 | 5.80 | 25.06 | 13.84 | 38.73 |
| CSS Pressured to divert funds | 29 | 20.06 | 5.77 | 20.75 | 11.48 | 31.86 |
| CSS Had to use own funds | 29 | 19.87 | 6.93 | 20.10 | 5.23 | 31.71 |

GCS: Government and civil society; CSS: civil servants' survey 2010 (Rasul & Rogger, 2018; Rogger, 2017);
*) averages, 2004-2013; **) change from 2008-2012 averages to 2013-2017 averages; ***) change from 2015 to 2018.

Source: Authors

**Figure A1: Donor proliferation in governance aid and civil servant satisfaction in 29 randomly selected state and local governments in Nigeria**




Source: Authors

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