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## Aid and growth. New evidence using an excludable instrument

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# **Aid and growth. New evidence using an excludable instrument**

PRELIMINARY AND INCOMPLETE DRAFT

February 2015

## **Abstract:**

We use an excludable instrument to test the effect of foreign aid on economic growth, in a sample of 73 countries over the 1966-2009 period. We interact donors' legislature fractionalization with a recipient country's probability to receive aid. The results show fractionalization to increase donors' aid budgets, representing the over-time variation of our instrument, while the probability to receive aid introduces variation across recipient countries. Controlling for country- and period-specific effects that absorb the levels of the interacted variables, the interaction provides a powerful and excludable instrument. Making use of this instrument, our results show that aid increases growth.

**Keywords:** aid effectiveness, legislature fractionalization, economic growth

**JEL codes:** O19, O11, F35, F53

## 1. Introduction

In a previous paper we started with an apology for adding yet another paper investigating the effect of foreign aid on economic growth to what is already a long list of articles (Dreher et al. 2014). We frankly admitted that we were unable to provide an unbiased estimate of aid's effect on growth – as is the preceding literature, contrary to claims of the opposite. Since then, a number of innovative contributions have added to our understanding of whether and to what extent aid causally affects growth and institutions. Jackson (2014) suggests natural disasters in “neighbor” countries as instrument, with “neighbor” being defined as receiving aid from the same donor. Galiani et al. (2014) instrument aid flows with the International Development Association's (IDA) threshold for receiving concessional aid. While interesting and innovative, we remain unconvinced of these identification strategies. Jackson's suggestion of increased short-term aid for countries unaffected by disaster as a consequence to disasters in other aid recipients from the same donor, while empirically powerful, lacks theoretical foundation. Galiani et al.'s instrument is arguably correlated with growth for reasons other than aid, as countries' rates of growth might be influenced by factors other than aid at the time they exceed the IDA's income threshold.<sup>1</sup> The lack of a plausibly excludable instrument plagues the aid effectiveness literature at large. The question of whether aid affects growth remains wide open.<sup>2</sup>

In this paper, we aim to fill this gap. We are inspired by the identification strategies of Werker et al. (2009), Ahmed (2013), and Nunn and Quian (2014). These studies rely on plausibly excludable variables that do not vary at the recipient-country level and interact it with a proxy for the probability to receive aid. We borrow from Ahmed (2013) who exploits variation in the composition of the United States' House of Representatives to instrument US aid in explaining recipient country democracy. To the extent that fractionalization leads to larger government budgets and larger overall budgets to an increase in the aid budget, fractionalization can serve as powerful instrument. In line with Ahmed (2013) and Nunn and Quian (2014) we introduce variation at the recipient-country level by interacting

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<sup>1</sup> This would be even if the decision to pass the IDA's income threshold could not be manipulated by aid receiving governments. Consider a reform-oriented government that achieves substantially higher growth rates that eventually lead to passing the exogenous threshold. Growth dynamics will be different in these years compared to years the country does not grow, even with an exogenous income threshold. What is more, governments can manipulate GDP data, which makes reaching the threshold endogenous (see Kerner et al. 2014, who show this for aid-dependent countries).

<sup>2</sup> Among prominent recent attempts to investigate the effect of aid, Clemens et al. (2012) do not use instruments. Brückner (2013) relies on rainfall and commodity price shocks which can easily affect growth via channels other than aid. Werker et al. (2009) is an exception to which we return below.

fractionalization with the number of years a country receives aid from the donor.<sup>3</sup> To the extent that variables correlated with donor fractionalization do not affect recipients' growth differently in regular and irregular recipients of aid, controlled for country- and period fixed effects and a battery of control variables, the resulting instrument is excludable. Contrary to Ahmed (2013) and Nunn and Quian (2014), we focus on growth rather than democracy or conflict, and aid from a group of major donors rather than (food) aid from the United States exclusively. As we outline in more detail in Section 2, we investigate the link between legislature fractionalization and the effectiveness of aid as a chain of cause-and-effect relationships. Starting with the effect of fractionalization on government budgets, we further investigate the relation between overall budgets and aid budgets, as well as aid budgets and aid disbursements at the recipient country level.

We describe our data and method in more detail in Section 3. To foreshadow our results (Section 4), we find that the interaction of government fractionalization and a country's probability to receive aid is a powerful instrument for aid. Using this instrument, we find aid to increase growth. The final section summarizes the paper and provides policy implications.

## **2. The argument**

Most of the previous literature pursues one of three strategies to identify the effect of aid on growth. One group of papers relies on instruments that relate to the size of the recipient country's population (as a proxy for the ease to exercise power, e.g., Rajan and Subramanian 2008). A second group of papers focuses on bilateral political relations, for example employing voting coincidence in the United Nations General Assembly to instrument for aid (Bjørnskov 2013). The third uses internal instruments and estimates difference or system GMM regressions (Kilby and Dreher 2010). Either of these strategies is misguided. Population size can affect growth by many channels researchers cannot control for and is thus not excludable (Bazzi and Clemens 2013). Lagged levels and differences of aid are also hardly excludable to growth, invalidating them as (internal) instruments. Political-relations based variables might be excludable, but to the extent that the motive for granting aid affects the outcome, the resulting Local Average Treatment Effect (LATE) reflects the effect of politically motivated aid rather than those of all aid (Dreher et al. 2014).

A couple of recent papers suggest alternative identification strategies, based on interactions between an excludable instrument and a potentially endogenous variable (Werker et al. 2009, Ahmed

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<sup>3</sup> Werker et al. (2009) focus on aid from Arab donors and rely on a binary indicator identifying Muslim recipient countries, which are more likely to receive such aid compared to non-Muslim countries.

2013, Nunn and Quian 2014). Of these, only Werker et al. (2009) investigate the question that we address in this paper, the effect of foreign aid on economic growth. Werker et al. make use of oil price fluctuations that substantially increase the aid budgets of oil-producing Arab donors, in particular to Muslim countries. Specifically, their instrument for Arab aid is the interaction of the oil price with a binary indicator for Muslim recipient countries, which receive the bulk of Arab donors' aid. They find recipient-country growth to be unrelated to aid. While we are convinced of Werker et al.'s identification strategy, their results can hardly be generalized to represent the effects of aid more broadly. As they point out, their results show the LATE for oil-price-induced increases in aid to Muslim countries, which might be unrepresentative for aid by a broader set of donors to a broader set of recipients. In particular, the modalities of aid delivery as well as the political motivations of this aid might reduce its effectiveness, as might the particular set of policies and institutions in the largely authoritarian recipient countries of aid from Arab donors (Werker et al. 2009, Dreher et al. 2014). We rely on Werker et al.'s identification strategy, closely following Nunn and Quian (2014) and, in particular, Ahmed (2013), but focusing on aid's effect on growth for a large set of aid donors and recipients, over a long period of time.

In this paper, we make use of two additional strands of previous literature to motivate our instrument for aid. The first investigates the effect of legislature fractionalization on governments' budgets. Roubini and Sachs (1989) propose that coalition governments will be more reluctant to reduce expenditures compared with single-party governments, as each party of the coalition will resist pressure to cut expenditure in its own area, even if being in favor of overall spending cuts. Volkering and de Haan (2001) and Scartascini and Crain (2002) show that parliamentary fragmentation increases governments' expenditures. We make use of the relationship between fractionalization of the legislature and government budgets, hypothesizing that the larger budgets arising due to fractionalization will increase aid budgets, which in turn affect aid disbursements at the recipient country level. Most importantly, controlled for period fixed effects and other control variables, legislature fractionalization in the donor countries is clearly excludable in growth regressions at the recipient-country level.

The effect between overall government budgets and their aid budgets, the second strand of literature we rely on, is well established. Round and Odedokun (2004) show that overall expenditures significantly determine aid budgets. Interestingly, in line with our hypothesis in this paper, regressions excluding government expenditures show government fractionalization to increase aid budgets,

“apparently to satisfy the various interests of the coalition” (p. 308).<sup>4</sup> Obviously, larger overall aid budgets increase aid disbursements to recipient countries (e.g., Dreher and Fuchs 2011).

While we prefer fractionalization as our main instrument for aid – given that it is most clearly excludable to recipient country growth – we also suggest two obvious alternative instruments resulting from our hypothesized transmission channels: government expenditures and aid budgets. These instruments are less clearly excludable compared to fractionalization, given that growth shocks in recipient countries could directly affect the donors’ aid budgets (and thus their overall budgets). We however enforce the excludability of our three instrumental variables by interacting them with a proxy for recipient governments to receive aid. As Nunn and Quian (2014: 1632, 1638) explain, the resulting regressions resemble difference-in-difference approaches, where we compare regular aid recipients to irregular recipients, as (e.g.) the donors’ legislature fragmentation changes. We explain our identification strategy in more detail in the next section, where we introduce our data and method of estimation.

### 3. Method and data

Our growth models closely follow the approach in Clemens et al. (2012). Clemens et al. do not use instruments, but claim to address the endogeneity of aid by differencing the regression equation and lagging aid, so that it can reasonably be expected to cause growth rather than being its effect.<sup>5</sup> We base our analysis on their permutations of Burnside and Dollar (2000), the study that arguably gained most attention in the literature on aid and growth. In terms of timing, we follow Clemens et al. (2012) and assume that disbursed aid takes one four-year-period to become effective to increase or decrease economic growth. However, we estimate the regressions in levels with country fixed effects rather than in first differences (without fixed effects). Our reduced-form empirical model is at the recipient-period level:

$$Growth_{i,t} = \beta_1 Aid_{i,t-1} + (\beta_2 Aid_{i,t-1}^2) + \beta_3 X_{i,t} + \beta_4 \eta_i + \beta_5 \tau_t + \varepsilon_{i,t} \quad (1)$$

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<sup>4</sup> Overall government budgets and government fractionalization do not show to be robust determinants of aid budgets in the large-scale robustness analysis in Fuchs et al. (2014). Their regressions however include various measures of fractionalization and fiscal policy at the same time, posing a high bar on the identification of the individual effects.

<sup>5</sup> We believe their estimates could be biased in either direction. For example, donors might grant more aid to a new reform-oriented government. Increased growth resulting from these reforms could then spuriously be attributed to the increases in aid. On the other hand donors might give more aid to countries where they anticipate shocks to reduce future growth rates (Dreher et al. 2014).

where  $Growth_{i,t}$  is recipient country  $i$ 's average yearly real GDP per capita growth over a four-year period  $t$ .  $Aid_{i,t-1}$  denotes the amount of net aid (as a percentage of GDP) disbursed by the 28 bilateral donors of the OECD's Development Assistance Committee (DAC) in the previous period. Some specifications also include aid squared to test for decreasing returns to aid, following Clemens et al. (2012). All regressions include the complete set of contemporaneous control variables used in Burnside-Dollar, which we denote  $X_{i,t}$ .<sup>6</sup> Finally,  $\eta_i$  represent recipient country fixed effects,  $\tau_t$  period fixed effects, and  $\varepsilon_{i,t}$  the error term. We cluster standard errors at the recipient country level.

We estimate the first stage regression as follows:

$$Aid_{i,j,t} = \beta' Y_{i,j,t} = \gamma_1 FRAG_{j,t} * p_{i,j} + \gamma_2 X_{i,t} + \gamma_3 \eta_{i,j} + \gamma_4 \tau_t + \varepsilon_{i,j,t} \quad (2)$$

$Aid_{i,j,t}$  denotes the amount of aid (as a percentage of GDP) from donor  $j$  disbursed to recipient  $i$  in period  $t$ .  $X_{i,t}$  includes the same variables as the second stage regression (1) above, and  $\eta_{i,j}$  are donor-recipient fixed effects. Our instrument is the interaction of donor fragmentation  $FRAG_{j,t}$  and the probability to receive aid  $p_{i,j}$ , which varies across donor-recipient pairs and periods. We replace it with government expenditures and aid budgets (each in percent of GDP and interacted with the probability to receive aid) in alternative specifications.

Readers might raise a number of concerns with respect to the excludability of our instrument. Fragmentation might be correlated with a range of changes in donor countries' policies that affect regular and irregular recipients of aid differently. In our robustness tests, we therefore control for donor government ideology, donors' GDP per capita growth, their economic freedom, all interacted with the probability to receive aid. One might also be concerned about potential direct effects of the probability to receive aid on economic growth. However, the fixed effects capture the effect of the probability to receive aid (as well as the level of donor fragmentation). Given that the effect of the endogenous variable is controlled for, the interaction of the endogenous variable with an exogenous one can be interpreted to be exogenous (Angrist and Krueger 1999, Nizalova and Murtazashvili 2012, Nunn and Qian 2014).

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<sup>6</sup> To reduce clutter, we do not show them in all tables. Burnside and Dollar include Initial GDP/capita, Ethnic Fractionalization, Assassinations, Ethnic Fractionalization\*Assassinations, dummies for Sub-Saharan Africa and East Asia, Institutional Quality, M2/GDP (lagged), Policy, and period dummies. The time-invariant variables are removed here (as in Clemens et al.) through the inclusion of country fixed effects. Appendix A reports descriptive statistics.

We measure donor government fragmentation with the probability that two randomly-chosen deputies from among the parties forming the government represent different parties (Beck et al. 2001). Given that government fractionalization is zero in the United States and Canada throughout our sample we instead use legislature fractionalization for these countries.<sup>7</sup>

We proxy a country's probability to receive aid with the number of years the country received aid from a particular donor over the whole sample period, following Ahmed (2013) and Nunn and Quian (2014). The probability to receive aid from a particular donor  $j$  is thus  $\overline{p_{i,j}} = \frac{1}{44} \sum_{t=1966}^{2009} p_{i,j,t}$ , with  $p_{i,j,t}$  indicating whether recipient  $i$  received positive amounts of aid from donor  $j$  in year  $t$ . We argue that the extent to which changes in aid budgets affect aid receipts depends on a country's probability to receive aid. Both Nunn and Quian (2014) and Ahmed (2013) show that the probability of receiving aid is indeed highly correlated with the amount of US (food) aid a country receives. The same holds for our sample for a broad set of donors.

We aggregate equation (2) across donors, resulting in the predicted value of aid as a share of GDP at the recipient-period-level (in analogy with Rajan and Subramanian 2008, for example):

$$\frac{\overline{Aid_{i,t}}}{GDP_{i,t}} = \sum_j \hat{\beta}' Y_{i,j,t}.$$

We then substitute predicted aid for actual aid in equation (1). We discuss test statistics relating to our instruments when we show the results below. To establish the link between fractionalization and aid disbursements in our data, we proceed with re-estimating specifications from the previous literature establishing this link with our data, at the donor-recipient-period level.<sup>8</sup>

Table B1 in Appendix B closely follows the regressions in Scartascini and Crain (2002), and Roubini and Sachs (1989), respectively, including our measure of fractionalization. The dependent variable is annual central government expenditure as a share of GDP for the 28 donor countries in our sample over the 1974-2009 period, focusing on four-year averages, as in our main regressions. As can be seen, government expenditures increase significantly with fractionalization, at the one-percent level of significance. The estimated effect of an increase in fractionalization from zero to one is in the range of a 0.8-2.8 percentage point increase in central government expenditures (with a sample average of 31.4 percent).

<sup>7</sup> Our results are not affected by this.

<sup>8</sup> We focus on the donor-recipient-period level as this is the framework we instrument for aid in equation (2). Note that we do not aim to sharply identify causal effects but show these regressions to motivate the correlation between our variables of interest.



Figure 1 shows the partial leverage plot for fractionalization corresponding to the regression of Column 1 in Table B1. The figure shows that the results are not driven by obvious outlying observations.

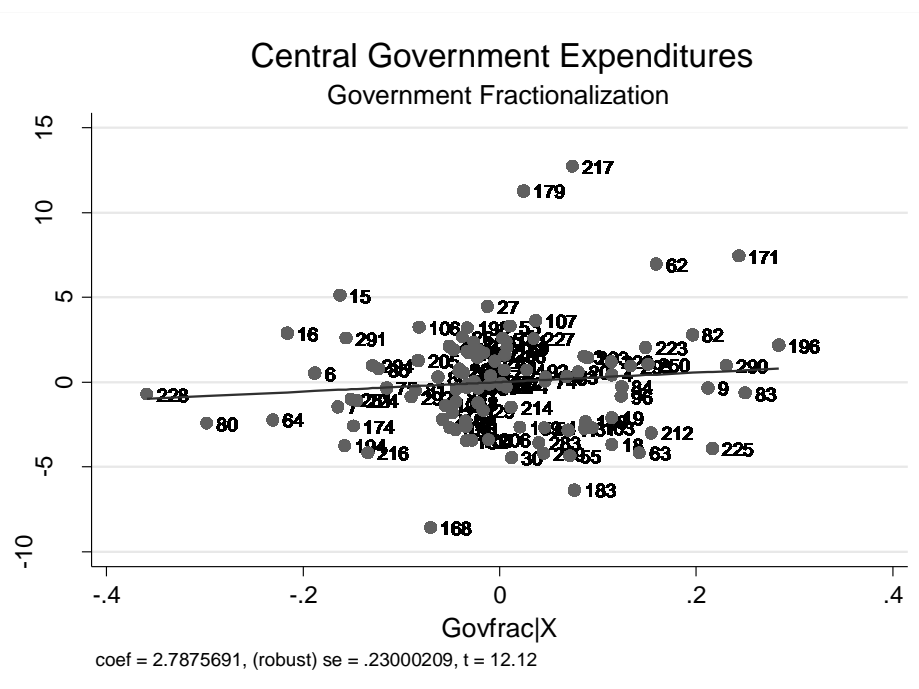


Figure 1: Fractionalization and Central Government Expenditures, Table B1, column 1

We next turn to the effect of government budgets on their aid budgets. Table B2 shows how an increase in central government expenditures translates into larger aid budgets, broadly following the regressions of Fuchs et al. (2014). As can be seen, an increase in central government expenditures by one percentage points increases governments' aid budgets by between 0.003 and 0.007 percentage points, at the one percent level of significance. This well reflects the ratio of ODA to central government expenditures in our sample (0.004).

Figure 2 shows the partial leverage plot between government expenditures and aid budgets, based on column 1 of Table B2. The outlying observation represents Italy over the 1974-1977 period. When we remove this observation our results are unchanged. We will below show that these larger aid budgets indeed transform to larger aid disbursements at the individual country level.<sup>9</sup>

<sup>9</sup> When we include the aid budget in a typical aid allocation model, its coefficient is highly significant. These results are available on request.

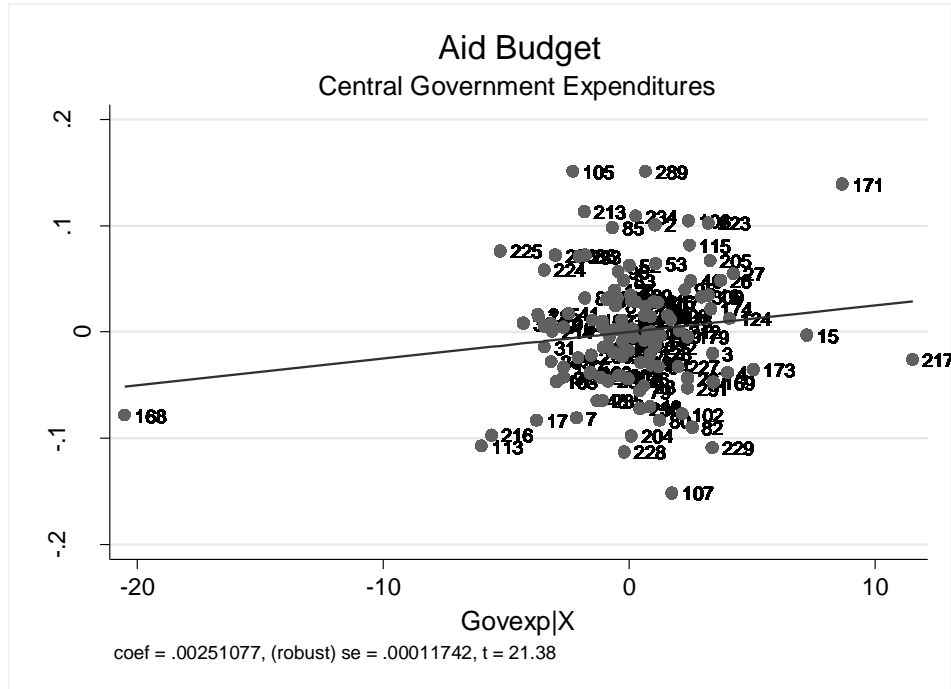


Figure 2: Central Government Expenditures and Aid Budgets, Table B2, column 1

The next section reports the results for the effect of aid on growth, as well as the first stage results.

#### 4. Results

Table 1 shows the results for our main regressions, estimated with OLS for comparison. As can be seen, GDP per capita growth does significantly increase with contemporaneous aid (column 1), at the five-percent level of significance. In line with Clemens et al. (2012), the impact of aid on growth turns stronger when aid is lagged, at the one percent level of significance (column 2). The coefficient shows that an increase in ODA by one percentage point comes along with higher growth of a magnitude of 0.2 percentage points. In column 3, we include aid squared, which turns out to be insignificant at conventional levels. These estimates are not causal, as omitted variables could easily explain the positive correlation.

Table 2 shows the results using predicted aid instead of actual aid. The control variables from Table 1 are included in all first- and second-stage regressions, but we exclude them from the table to reduce clutter. Column 1 focuses on contemporaneous aid, instrumented with  $FRAG_{j,t} * p_{i,j}$ . Column 2 uses donors' Central Government Expenditures instead, and column 3 their aid budgets (all interacted

with  $p_{i,j}$ ). The table also shows the corresponding first-stage results, based on the disaggregated data (see equation (2) above).

As can be seen in the table, the first-stage F-statistics easily exceed Staiger and Stock's (1997) rule-of-thumb threshold of ten. The results of the underidentification test (Kleibergen-Paap rk LM statistic) easily reject the Null hypothesis that the equation is underidentified. The results show that an increase in fractionalization from zero to one increases aid to recipient countries that receive aid in all years by 0.17 percentage points. In contrast, countries receiving aid only half of the time can expect an increase in aid inflows of 0.08 percentage points only. An increase in central government expenditures by 10 percentage points translates to an increase in aid of 0.06 percentage points for regular aid recipients, while an increase in the aid budget by ten percentage points increases their aid by 4.2 percentage points.

The results show that growth increases with aid when aid is instrumented with our preferred instrument, fractionalization, at the one percent level. The estimated coefficient is substantially larger compared to the corresponding OLS estimate of Table 1 and indicates that an increase in aid by one percentage point of GDP increases growth by 0.9 percentage points. Average bilateral aid in our sample of 0.12 percent of GDP would thus translate into more than a 0.1 percentage point increase in growth. As can be seen from columns 2 and 3, aid is not however significant at conventional levels when we replace fractionalization by government expenditures or aid budgets (each interacted with the probability to receive aid), respectively.

Columns 4-6 replicate the analysis including aid lagged by one period instead of contemporaneous aid. The first-stage regressions (now instrumenting lagged aid with lagged instruments) are almost unchanged and again demonstrate the power of our instruments. In the outcome equation, growth increases with aid independent of the instrument we use. According to column 4, where we employ fractionalization as instrument, the coefficient shows that growth increases by 1.13 percentage points with an increase in aid by one percentage point of GDP, significant at the five percent level. At the one percent level, column 5 shows a corresponding increase of 1.17 percentage points when we instrument aid with government expenditures (and its interaction with the probability to receive aid). Column 6 uses aid budgets as instrument. It shows the largest increase (2.1 percentage points), but at the ten percent level only. Comparing the coefficients with those of contemporaneous aid in columns 1-3 show a substantial increase in magnitude. The same holds (to a larger degree) when we compare them with the OLS estimate in column 2 of Table 1. Overall, we find striking evidence that using an excludable instrument shows the effect of aid to be positive.

## **5. Robustness**

tbd

## **6. Falsification tests**

tbd

## **7. Heterogenous effects of aid (incomplete)**

Our instrumental variables regressions estimate the effect of variation in aid flows resulting from differences in legislature fractionalization that go disproportionately to regular and irregular recipients of aid. We have no reason to believe that the LATE cannot be generalized to be representative of aid more generally. However, the previous literature suggests the effects of aid to vary with recipient country policies and institutions. Most importantly, aid has been suggested to be effective in countries with good economic policies (Burnside and Dollar 2000), in democracies (Svensson 1999), or after the end of the Cold War (Headey 2008), but ineffective otherwise. Rather than introducing interaction effects, we split the sample according to the median of Burnside and Dollar's (2000) good policy index (based on inflation, the budget balance, and openness to trade), Cheibub et al.'s (2010) binary indicator of democracy, and the years after 1991, respectively.

Clemens et al. (2012) categorize aid in those parts that they expect to affect growth within the four-year periods they use for their analysis, and those that can reasonably be expected to affect growth over longer periods only. A major drawback with this measure is that disaggregated aid disbursements are not available for the entire period, so that disbursements have to be estimated based on commitments. Sector-specific data on commitments in the earlier periods also suffer from severe underreporting, which is not addressed in Clemens et al. (2012). Still, we use their measure of early-impact aid to allow for the possibility that these aid flows are more effective than other flows, and the noise resulting from including flows of aid that only affect growth in the longer-run reduces the magnitude of our estimated coefficients.

## **8. Where does the aid go? (incomplete)**

In the final substantive section of the paper we investigate the effects of aid on components of GDP, with the aim of testing where the aid is spent. We investigate the effect of aid on investment, overall consumption, private sector consumption, and government consumption. We also investigate the effect

of aid on domestic savings, testing whether aid inflows are substituted by equivalent decreases in domestic savings.

## **9. Conclusion (incomplete)**

This paper has proposed an excludable instrument to identify whether and to what extent foreign aid affects economic growth. Cross-sectional variation arises due to changes in aid disbursements following differences in donor countries' legislature fractionalization. Temporal variation is introduced by interacting fractionalization with the probability of a certain recipient country to receive aid. The approach resembles a difference-in-difference approach, the difference being that our treatment variable (fractionalization) is a continuous rather than a binary indicator.

Using aid disbursement data for all bilateral donors of the OECD's DAC to a maximum of 73 recipient countries over the 1966-2009 period, we find our instrument to be powerful. The F-statistics easily exceed the threshold of 10 proposed in Staiger and Stock (1997). An increase in fractionalization from zero to one increases aid to recipient countries that receive aid in all years by 0.17 percentage points. In contrast, countries receiving aid only half of the time can expect an increase in aid inflows of 0.08 percentage points only. Applying the instrument to our growth models, we find aid to be effective in increasing economic growth. Specifically, growth increases by 1.13 percentage points with an increase in aid by one percentage point of GDP.

The significant coefficients in our growth models are likely to represent a lower bound for the effect of aid on growth. Large parts of the effect of aid on growth are too indirect to be measurable within four-year periods. Donors pursue a multitude of objectives when granting aid, with growth being just one of them. To the extent that donors prioritize geo-strategic over developmental goals the effects of "true" ODA will be higher than those of all aid (Dreher et al. 2014).

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**Table 1:** Aid and Growth, 1966-2009, OLS

	(1)	(2)	(3)
Aid/GDP	0.155** (0.060)		
Aid/GDP (t-1)		0.211*** (0.064)	0.280** (0.132)
Netoda/GDP squared (t-1)			-0.002 (0.003)
Log Initial GDP/capita	-1.517** (0.666)	-1.165 (0.705)	-1.084 (0.747)
Assassinations	-0.222 (0.173)	-0.208 (0.173)	-0.210 (0.176)
Ethnic*Assassinations	-0.090 (0.723)	-0.153 (0.723)	-0.154 (0.727)
M2/GDP	-0.005 (0.016)	-0.004 (0.016)	-0.004 (0.016)
Policy	1.134*** (0.235)	0.995*** (0.226)	0.966*** (0.238)
Number of observations	550	550	550
Adjusted R-squared	0.223	0.236	0.236

Notes: Data are averaged over four years and at the recipient-period level. Recipient- and period-fixed effects included. Standard errors in parentheses (significance levels: \* 0.10, \*\* 0.05, \*\*\* 0.01). Models are based on Burnside and Dollar (2002).



**Table 2:** Aid and Growth, 1970-2010, IV

	(1)	(2)	(3)	(4)	(5)	(6)
	Govfrac	Centgovexp	Aidbudget	Govfrac	Centgovexp	Aidbudget
Aid/GDP	0.879*** (0.237)	0.173 (0.427)	1.407 (0.883)			
Aid/GDP (t-1)				1.128** (0.473)	1.166*** (0.438)	2.093* (1.172)
Number of observations	550	550	550	550	550	550
Adjusted R-squared	0.222	0.208	0.217	0.236	0.222	0.223
First Stage						
Fractionalization*Prob	0.166*** (0.038)			0.177*** (0.055)		
Centgovexp/GDP*Prob		0.006*** (0.001)			0.006*** (0.001)	
Aidbudget/GDP*Prob			0.416*** (0.069)			0.363*** (0.061)
Test Statistics						
Cragg-Donald Wald F statistic	24.54	19.67	99.53	26.47	17.43	102.37
Kleibergen-Paap rk Wald F statistic	19.35	22.59	36.88	10.23	21.03	35.85
Kleibergen-Paap rk LM statistic	18.72	21.65	36.69	10.04	20.40	35.65
Chi-sq(2) p-val	0.0000	0.0000	0.0000	0.0015	0.0000	0.0000

Notes: Data are averaged over four years and at the recipient-period level. Recipient- and period-fixed effects included. First- and second stage include as control variables: Initial GDP/capita, Assassinations, Ethnic Fractionalization\*Assassinations, M2/GDP (lagged), and Policy. Standard errors in parentheses (significance levels: \* 0.10, \*\* 0.05, \*\*\* 0.01). Models are based on Burnside and Dollar (2002).

## Appendix A: Descriptive Statistics

Variables Tables 1 and 2	count	mean	sd	min	max
GDP p.c. growth	17787	1.63	3.86	-32.42	17.05
Oda Total Net in % of GDP	17787	0.12	0.50	-0.92	16.85
Multilateral, Total as Percentage of recipient GDP	17360	1.84	3.39	-0.19	33.43
Fractionalization Index (Donor Country)	15596	0.67	0.13	0	0.89
Government Fracionalization Index (Donor Country)	15748	0.29	0.26	0	0.81
Polarization	15133	1.12	0.84	0	2
Effective Number of Electoral Parties nationally	15071	4.42	1.71	2.11	12.45
Total Expenditure, Cash, Central Government in % of GDP	10078	31.42	10.04	11.89	54.01
Total aid budget of a donor country in % of GDP	17069	0.34	0.26	0	1.03
Log Initial GDPpc	17787	8.01	0.95	5.14	11.08
Budget Balance	15097	-0.24	3.82	-89.43	4.71
Inflation	9507	0.22	0.38	-0.04	3.22
M2/GDP, lagged	17787	5.77	21.13	0.02	236.93
Institutional Quality	17787	4.46	1.59	1.58	9.50
Assassinations	17787	0.34	1.06	0	11.50
Ethnolinguistic Franctionalization	17787	0.47	0.30	0	0.93
Policy	13967	-2.65	0.82	-6.86	-1.63
Openness	9116	0.24	0.41	0	1

Variables Table B1	count	mean	sd	min	max
GDP growth (annual %) WDI	25060	2.937284	1.884195	-4.01986	9.777167
loggdppc_const	25060	10.09644	.525802	8.026136	11.00195
Trade (% of GDP) WDI	25060	70.52761	35.94277	16.07017	201.4826
pop_dependent	25060	33.57188	2.37659	27.88665	41.24069
Population ages 65 and above (% of total) WDI	25060	12.92358	2.832853	3.512721	17.72288
Unemployment	20406	7.073611	4.099986	1.8	22.3
Proportional Representation? (1 if yes, 0 if no)	25060	.8	.400008	0	1
Are closed lists used? (1 if yes, 0 if no)	19690	.6068182	.486721	0	1
Total Seats in the Legislature	25060	265.5536	170.6119	58	669.75
Dummy 1 if country is a Presidential country	25060	.1035714	.3017653	0	1

Variables Table B2	count	mean	sd	min	max
GDP per capita (constant 2005 US\$) of donor country	21838	29275	9509	14499	59991
Aid Agency	21838	0.37	0.48	0	1
Party orientation	17184	2.01	0.94	1	3
Population Total WDI of donor country	21838	40100000	61200000	365963	281000000
Population of former colonies of ODA recipients	21838	139000000	352000000	0	1850000000
Trade (% of GDP) WDI of recipient country	15346	79.07	49.89	0.43	412.82

## Appendix B: Additional Regressions

**Table B1:** Fractionalization and Central Government Expenditures, 1974-2009, OLS

	(1)	(2)
Fractionalization	2.788*** (0.230)	0.848*** (0.173)
GDP Growth		-0.306*** (0.021)
Trade Openness	-0.045*** (0.005)	
Unemployment		0.385*** (0.019)
Cent.Gov.Expenditure (t-1)		0.147*** (0.007)
(log) Population	-11.919*** (0.905)	
Population (share>64)	1.560*** (0.043)	
(log) GDPpc	-10.967*** (0.471)	
Closed Lists	2.549*** (0.165)	
Total Seats	0.038*** (0.002)	
Presidential	6.929*** (0.417)	
Number of observations	19869	18795
Adjusted R-squared	0.902	0.949

Notes: Data are averaged over four years and at the donor-recipient-period level. Donor- and period-fixed effects included. Standard errors in parentheses (significance levels: \* 0.10, \*\* 0.05, \*\*\* 0.01). Model (1) is based on Scartascini and Crain (2002), Model (2) on Roubini and Sachs (1989).

**Table B2:** Central Government Expenditures and Aid Budgets, 1966-2009, OLS

	(1)	(2)	(3)
Aidbudget/GDP (t-1)	0.61192*** (0.004)		
Cent.Gov.Exp./GDP	0.00251*** (0.000)	0.00655*** (0.000)	0.00320*** (0.000)
GDP p.c.	0.00001*** (0.000)	0.00002*** (0.000)	0.00002*** (0.000)
Agency	0.05788*** (0.003)	0.03263*** (0.005)	0.12916*** (0.004)
Colony	-0.00000*** (0.000)	-0.00000*** (0.000)	-0.00000*** (0.000)
Population			-0.00000*** (0.000)
Party Orientation			-0.00868*** (0.001)
Number of observations	21838	21838	17184
Adjusted R-squared	0.950	0.884	0.934

Notes: Data are averaged over four years and at the donor-recipient-period level. Donor- and period-fixed effects included. Standard errors in parentheses (significance levels: \* 0.10, \*\* 0.05, \*\*\* 0.01). Models are based on Fuchs et al. (2014).