

**Benevolent intentions, detrimental effects?**  
**Assessing the short run effects of aid on governance**

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**Abstract**

We estimate the short-term impact of aid on the quality of governance using yearly panel data of 30 sub-Saharan African countries for the period 1985-2005. We control for the potential endogeneity of aid using exogenous variation in GDP of important donor countries to instrument for foreign aid flows. Unlike most earlier studies, our estimates show that aid has a positive effect on the quality of governance. Aid specifically seems to be effective in decreasing corruption and improving the quality of bureaucrats. Our findings are robust to various specification changes.

**Keywords:** overseas development assistance, institutions, Sub-Saharan Africa

**JEL Codes:** O1, O19, N47

**1. Introduction**

Over the past 50 years, sub-Saharan Africa (SSA) has been the largest recipient of foreign aid. In many African countries aid makes up a large share of the government budget. Yet, the region suffers from more political instability, civil wars and stagnant economic development than any other continent. While these phenomena need not be related in any causal sense, the observation of a negative correlation between aid and development outcomes has motivated vast amounts of research in recent years. It is hard to overstate the relevance of such research now that global aid flows have fully recovered from the 1990s post cold war drop, and are expected to increase substantially in the coming decade (Riddell, 2007). However, the overall picture of research efforts linking aid to economic growth appears mixed (e.g., Boone, 1996,

Burnside and Dollar, 2004, Easterly *et al.*, 2004, amongst others). The literature is replete with methodological pitfalls, including multicollinearity issues and endogeneity concerns (Roodman, 2006). However, research has progressed and is increasingly able to capture such concerns. Interestingly though, as the degree of econometric sophistication increased, conclusive evidence has become scarcer. The most recent studies find no evidence of any effect of aid on growth (e.g. Rajan and Subramanian, 2005).

However, the absence of an aggregate growth effect does not imply that aid is neutral to development. Evidence suggests foreign aid might contribute to important causes such as poverty alleviation (e.g. Collier and Dollar 2002) and the promotion of peace (de Ree and Nillesen 2007). Another lively field of research concerns the impact of aid on institutional quality. Scholars now widely acknowledge the pivotal role of institutions in development (e.g., Mauro 1995), Acemoglu et al. 2001, Hall and Jones 1999, Easterly and Levine 2003, Acemoglu *et al.* 2003, and Rodrik et al. 2004). A natural question, then, is whether development assistance affects institutional quality, thereby affecting development in an indirect sense. To date, empirical results in this field have also been mixed. Many of the early studies on the aid-institution nexus have found a negative effect of aid on institutions. For example, Knack (2001) demonstrated for a sample of developing countries, that aid decreased institutional quality for the period 1982-1995. Bräutigam and Knack (2004) examined aid and institutional quality in SSA, again concluding that aid reduces institutional quality, arguing that high aid inflows creates moral hazard type problems, impedes budget reforms and weakens the development of local pressures for accountability and reform. Aid may also undermine institutions by poaching of qualified staff, or fragmentation of recipient countries' policy agendas. Their study was based on a cross-section analysis, regressing the change in institutional quality over the period 1985-1997 on average (scaled) aid flows. Djankov (2006) attempts to explain variation for an extended period, and accounts for shorter term influences on institutions by decomposing the sample period into blocks of 4 years. He then shows that aid is negatively associated with political freedom, and attributes the negative effect to rent-seeking activities of bureaucrats. A related channel by which aid may reduce the quality of governance is through corruption. Alesina and Weder (2002) use a yearly panel (1984-1995) and report that aid increases corruption. Svensson (2000) reports similar results but finds that the negative effect of aid is limited to ethnically fragmented countries.<sup>1</sup>

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<sup>1</sup> Svensson (2000) actually finds a marginal *positive* effect of aid on corruption for countries that are less ethnically diverse.

There is, however, some contrasting evidence. Tavares (2003) finds that aid actually *decreases* corruption. He provides two reasons for this result. First, aid flows may temporarily relax binding budget constraints. Increased salaries for example, may reduce incentives for corruption by civil servants (Tavares, 2003). Second, many of today's aid flows are earmarked and conditional on fulfilling specific donors needs. Monitoring aid disbursements to recipient institutions decreases possibilities for corruption. Similarly, incentives for corruption are attenuated as current institutional performance serves as a condition for continued assistance. This conditionality argument is developed further by Dunning (2004). Using a yearly panel over 1975-1997 he shows that after the end of the cold war, aid decreased corruption. Dunning concludes that the collapse of the East-West divide caused recipient governments to lose their bargaining position so that withholding future aid flows became a credible threat. This allowed large donors to allocate aid more selectively, based on performance rather than geopolitical alliances. At the same time, institutional improvement became an objective of aid. From the 1990s bilateral donors and the international financial institutions (such as the World Bank and IMF) began to actively pursue the reduction of corruption, improvement of rule of law, and administration in recipient countries.

In sum, the literature on aid and institutions has produced inconclusive results. In part, these conflicting findings are due to the simple fact that the exact interpretation of the term "institutions" is open to debate. Institutions refer to a broad spectrum of social constructs, ranging from 'deep and durable' rules governing decision-making in societies, such as norms, mores and traditions, to more transient institutional arrangements reflecting policy choices and contracts (Williamson, 2000). The former view, associated with Glaeser *et al.*, (2004), sees institutions as durable features of economies – reasonably permanent and relatively unchanging. The latter view sees institutions as stock variables in a state of constant flux with dynamics governed by policy choices (as argued by Knack and Keefer, 1995 and Rodrik *et al.*, 2004). We take the latter view and focus on the analysis of governance (i.e., the most transient segment of the institutions universe) using annual governance data. We emphasize that this does not preclude the fact that other institutional elements are more persistent and tend to change much more slowly in response to outside pressures but rather that both are present.

In this paper we investigate whether variation in annual governance data can be explained by foreign aid flows. We create a yearly panel to capture any short term impacts of aid, possibly obscured when the focus is on average values over longer time frames. Using panel data with sufficient within-country-variation enables us to hone in on certain variable(s) of interest by controlling for unobserved persistent particularities of recipient countries. We hereby substantially reduce the potential danger of falsely attributing significance to our findings. We extend upon existing studies by looking at the effect of aid on institutions along four dimensions. We (i) increase the time frame of the analysis, (ii) use fixed effects estimators to control for unobserved country characteristics correlated with aid flows as well as the quality of governance, (iii) employ a broader measure of governance, and (iv) address the looming endogeneity issue by using a novel and appropriate instrument.

Our results are strong and robust. We find a positive and significant impact of aid on the quality of governance in the short run. Our results are robust to using alternative measures of aid dependency (e.g. aid per capita, and aid over government budget), and using different instruments. Following Tavares, we speculate these effects are due to income and conditionality effects. We decompose our institutional quality variable into its three components, (i) corruption, (ii) rule of law and (iii) bureaucratic quality to account for potential differential impacts of aid that may be obscured by looking at the composite ICRG index. Running separate regressions on these variables, we find the governance results are driven by a substantial decline in corruption and improvements in bureaucratic quality.

## 2. Estimation Framework

### 2.1 Identification strategy

We assess the impact of (lagged) aid flows on institutional quality in country  $i$ , at time  $t$  using annual data. We start with a simple OLS specification which looks as follows:

$$G_{it} = \alpha + \beta_1 \frac{Aid}{GDP_{it-5}} + \beta_2 X_{it-1} + \varepsilon_{it}, \quad (1)$$

where  $G_{it}$  denotes the composite ICRG index at time  $t$  (our governance measure),  $\alpha$  is a constant,  $\frac{Aid}{GDP_{it-5}}$ , is the 5 year (moving) average of aid to GDP ratio in year  $t-1$ ,  $X_{it-1}$  is a

vector of time-variant country characteristics lagged one year, and  $\varepsilon_{it}$  is a normally distributed error term.

Since unobserved country-specific effects including colonial history, ethnic and religious fractionalization, culture, are likely correlated with both institutional quality and aid flows, OLS estimates of equation (1) leads to biased estimates. This is confirmed by a Hausman test, which rejects the random effects model in favor of a fixed effects specification. We therefore look at variation within countries and across time, by including country dummies (fixed effects) to capture additional variation at the country-level that is constant over time. To our knowledge we are the first within the aid-governance literature to explicitly control for this. Equation (2) gives the transformed model:

$$G_{it} = \alpha_i + \beta_1 \frac{Aid}{GDP_{it-5}} + \beta_2 X_{it-1} + \varepsilon_{it}, \quad (2)$$

where  $\alpha_i$  denotes the country-specific intercept. While a fixed effect estimation (partially) controls for omitted variable bias, it does not address potential reversed causality concerns. Aid may influence a recipients' country level of governance, but donors may also direct aid to countries that already demonstrated to have sound institutions, i.e., the selectivity effect.<sup>2,3</sup>

Most existing work has either ignored endogeneity concerns, or tackled it via instruments that capture countries' initial conditions. For example, Alesina and Weder (2002) argue that reversed causality "is not problematic", as corrupt governments are unlikely to attract more aid. However, this conjecture is not supported by our data. Brautigam and Knack (2004) and others use variables like initial population and income, infant mortality, literacy, and colonial dummies as instruments. We however, argue against the use of these variables as research has shown that they are likely endogenous to institutional quality. Acemoglu et al. (2001) and Hall and Jones (1999) for instance demonstrate that colonial ties affect today's governance.

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<sup>2</sup> Dollar and Levin (2006) for example find suggestive evidence for increased selectivity amongst donors over time.

<sup>3</sup> Our identification strategy however prevents us to shed further light on this issue as we explicitly control for the potential effect that runs from institutions to aid flows.

Following de Ree and Nillisen (2007), we address reversed causality by using GDP levels of important donor countries (OECD member countries) to instrument for the endogenous aid variable. Donor GDP is likely to be correlated with aid flows as many donors commit to official development assistance as a certain fraction of their income.<sup>4</sup> In addition, unlike country-specific instruments as the aforementioned colonial ties, infant mortality, recipients' income, or even lagged aid flows, this instrument is not correlated to observed (e.g. authoritarian leader) and unobserved factors (e.g. anticipated donor behavior) influencing institutional quality, hence the exclusion restriction is unlikely to be violated.

Others have used similar rationales to identify plausible instruments for aid. Tavares (2003) uses the sum of total aid flows  $Aid_{dt}$  from ten important OECD donors  $d$  in year  $t$  multiplied by characteristics of each donor-recipient country pair (e.g. the inverse of geographical distance, common religion, common language, shared border and colonial ties). This yields a time-variant and country-specific instrument for foreign aid. Along similar lines, Rajan and Subramanian (2005) use (predicted) total aid outflows multiplied by the predicted share of outflows from donor  $d$  for recipient  $r$  in year  $t$ . Outflows of aid from a particular donor in a particular year are predicted from a donor's macroeconomic and budgetary conditions in that year. The share recipients receive depends on common strategic alliances, colonial ties with the donor, the contemporaneous colonial relation between the donor and recipient, and a common language.

While these types of instruments are intuitively plausible and conveniently vary both over time and recipient countries, there are some potential pitfalls we circumvent by using an instrument not specific at the recipient country-level. As argued above, colonial ties may affect the quality of governance directly. Also, using geographical distance as an instrument may be problematic. Worldwide maps provided by Kaufmann *et al.*, (2007) for example show that corruption and rule of law are both highly spatially clustered in SSA which simply causes correlation between distance and our dependent. Also distance is correlated with landlocked versus coastal countries in SSA, and as such may directly affect today's quality of governance. We therefore decided against using a country-specific instrument. However, the absence of a recipient country specific instrument implies we cannot include time dummies to

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<sup>4</sup> Following the recognition that aid is a prerequisite for development, donor countries at the end of the 1960s agreed to allocate 0.7% of GNI to development assistance. Even though only a couple of countries actually meet or exceed the agreed target (e.g. Denmark, Luxembourg, the Netherlands and Sweden, donors do commit to a certain fraction.

capture worldwide changes to donor GDP and institutional quality. We therefore include oil prices  $oil_{it}$  and a linear time trend  $year_t$  as additional controls (see equation 3). In (3),

$\frac{Aid^*}{GDP_{it-5}}$  reflects predicted aid flows.

$$G_{it} = \alpha_i + \beta_1 \frac{Aid^*}{GDP_{it-5}} + \beta_2 X_{it-1} + \beta_3 oil_{it} + \beta_4 year_t + \varepsilon_{it} \quad (3)$$

First stage regressions show a strong positive correlation between aid flows and GDP of OECD member states (F-value 19.09, significant at 99% confidence levels). First stage results are robust to including fixed effects and a linear time-trend. In fact, correlations become even stronger (F-value 21.02, significant at 99% confidence levels). Representative first stage results are provided in appendix Table A.

## 2.2 The data

We use data from 30 sub-Saharan African countries for the period 1985-2005.<sup>5</sup> Table 1 summarizes our key variables. For a detailed description of our data and sources, please refer to Appendix A.

A key variable in the analysis is our proxy of governance. Over the last few decades several indicators have been developed aiming to capture the quality of institutions. The most often used index is the International Country Risk Guide (ICRG), which has data for the post 1985 era. The ICRG is constructed and published monthly by the Political Risk Services (PRS) group, rating information on political risks for overseas investors and lenders. Glaeser *et al.*, (2004) show that the ICRG index reflects short-term changes in governance, such as policies to reduce corruption, maintain the rule of law and invest in human capital of bureaucrats. Other studies have related the ICRG data to income (e.g. Acemoglu *et al.*, 2001; Knack and Keefer, 1995), aid effectiveness (Bräutigam and Knack, 2004) and aid allocation (Alesina and Weder, 2002; Dollar and Levin, 2006).

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<sup>5</sup> While we initially included South Africa, and Somalia as well, covering all SSA countries for which the ICRG index is available. However, SSA received no aid until the year 1993 and for Somalia hardly any data for our control variables are available. We therefore excluded these countries from our final estimations. Results are qualitatively the same, albeit less strong if these countries are included.

The ICRG index is a composite measure of three variables: rule of law, corruption and bureaucratic quality, measuring institutional quality in a scale ranging 0-18. We also use these indicators separately as dependents, each measured on a 6 point scale. January ratings are used for each year between 1985 and 2005. Looking at the data reveals that there are only a few countries that have high ICRG at the beginning of our sample period; South Africa and Botswana had a 1985 score of 12.5 and 12 points respectively. By contrast the Democratic Republic of the Congo, Ghana, Liberia, Mali, Sudan and Uganda all had 1985 scores below 4. Mean ICRG score for our sample is 7.3 with a standard deviation of 2.75 (see Table 1).

[Insert Table 1 about here]

The 1985 and 2005 values of the ICRG (start and end-points in our sample) do not differ much when looking at the SSA averages. However, focusing on these values, as one would do in a cross-sectional specification, would obscure the variation of institutional quality for the years in between. Simple graphs as depicted in Figure 1 confirm this variation, revealing that annual ratings have been rather volatile.

[Insert Figure 1 about here]

Our main explanatory variable  $\frac{Aid}{GDP_{it-5}}$  is the ratio of five-year averages of aid relative to GDP, up to the year t-1 in constant US \$. Our measure of foreign aid is Official Development Assistance (ODA) in proportion to recipient countries' GDP in constant US dollars. About 75% of ODA flows consists of bilateral aid. Some countries are highly aid dependent, and countries like Guinea-Bissau, Liberia, Mozambique and Somalia received on average over 50% of their GDP as aid during some years of the sample period. Moreover, as bilateral aid makes up the lions' share of ODA, counties may be strongly dependent on particular donors.

The aid to GDP ratio reflects the magnitude of aid flows relative to other resources at a governments' disposal. Sudden spurts of GDP growth can influence this ratio. If aid flows are stable over time, increasing levels of recipient GDP translates to a smaller ratio. We control for this potential effect by using alternative measures of aid dependency, including aid per capita, and aid relative to government budgets. We include per capita GDP levels lagged one year to account for a potential income effect of aid on institutional quality. A plausible

channel through which increased economic activity may positively affect institutional quality is through the development of commercial codes and their associated contracting and enforcement (Bräutigam and Knack, 2004). Furthermore, they argue that where corruption, bureaucratic quality and rule of law are less observable for the ICRG surveyors, they may partially impute its value from a countries' economic performance. We therefore include per capita income to control for the influence of income levels on governance as well as to account for a possible false correlation between aid and governance. Population levels (lagged one year) are included to capture potential effects associated with the size of a country; (i.e., smaller countries receive relatively more aid than larger countries and governments in smaller countries may be held accountable more easily, see Bräutigam and Knack, 2004). In addition, corruption ratings are often only reported for large countries, as these tend to be the countries in which multinational investors have the greatest interests (Knack and Azfar, 2003). This leads to an over-sampling of 'large' nations. Our sample is therefore limited to 30 SSA countries excluding small nations like Burundi, Rwanda, Djibouti and Equatorial Guinea.

As additional controls we include a measure of political violence (civil conflict) from the PRIO-Uppsala database and a primary export dependence variable. Conflict can attract aid flows for humanitarian needs and post-conflict rehabilitation, or temporarily put aid on hold if a country is in conflict. Violence can simultaneously affect governance (e.g. overthrowing the government currently in power, destruction of the bureaucratic apparatus, high levels of corruption in a state of chaos), hence not controlling for violence could lead to spurious inferences between aid and governance. We use a dummy variable which is unity when a country experienced more than 25 battle-related deaths during a particular year. Primary exports relative to GDP are included to capture resource-curse type effects. We distinguish between natural and mineral resources based on the Standard International Trade Classification codes as we expect these types to have a differential impact.<sup>6</sup>

### **3. Results**

#### **3.1 Main regression results**

We estimate OLS and 2SLS models to analyze the effect of aid on the quality of governance using the composite ICRG index. The main results are presented in Table 2. The first two

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<sup>6</sup> Empirical work by Brunnschweiler and Bulte (2008) justify this distinction.

columns present OLS results, and column 3 presents 2SLS results to account for endogeneity and omitted variables bias. OLS results in column (1) reveal a positive correlation between aid and governance, significant at 95% confidence levels. However, this effect disappears when we include fixed effects, a linear time trend and country-specific controls (column 2). The OLS results in first two columns are however likely to be inconsistent due to potential reversed causality, i.e., significant results have no causal interpretation but rather reflect (unconditional) correlations between aid and governance. Indeed, the null hypothesis of getting consistent estimates with OLS is strongly rejected (p-value 0.00) using the Durbin-Wu-Hausman test for endogeneity.

In column (3) we tackle endogeneity by using donor GDP as an instrument for aid. The aid coefficient now shows a strong positive effect on institutional quality, significant at 95% confidence levels. Note that the coefficients in our IV-estimates are substantially larger than those in the OLS regressions, which is possibly due to measurement error in the aid to GDP ratio, causing OLS estimates to be biased towards zero (attenuation bias).

Aid increases the quality of governance. Our coefficients are similar in magnitude to those reported by Tavares (2003). A one standard deviation change in aid relative to GDP leads to, all else equal, a 0.58 standard deviation improvement in ICRG. For example, in 2005, the final year in our sample, Angola received comparatively low levels of aid; 4.39% relative to GDP. An increase of 6.45% in aid would raise the aid to GDP ratio to 4.67% and raise its ICRG level with one full point, bringing Angola to a governance of 7.5; above SSA average.<sup>7</sup>

Consistent with earlier studies (Rigobon and Rodrik 2005; Tavares, 2003), we also find that higher (lagged) incomes are associated with improvements in governance. A plausible explanation is that ‘richer’ societies are more likely to demand accountability from their government, inducing a higher level of governance quality (Acemoglu *et al.*, 2001). Also, if civil servants receive a higher salary they might be less susceptible to corruption and have a greater incentive to perform well in their job (Van Rijckeghem and Weder,

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<sup>7</sup> As most cross-country regression results appear to be sensitive to specification changes (see Roodman, 2008) for extensive discussion and empirical evidence) we check for outliers using the commonly applied method of Hadi (1993). Outcomes are qualitatively the same (results not shown).

2001). Furthermore, strong per capita income effects may be due to ‘halo-effects’ described by Kaufmann *et al.*, (2005): experts rating governance assign a high score to richer countries.<sup>8</sup>

[Table 2 about here]

To check for the robustness of our results we have also used alternative instruments (e.g. the GDP level of France),<sup>9</sup> two alternative measures of aid dependency, and alternative measures of economic performance as extra controls (income and income growth). Our results are provided in Table 3, and do not appear to be sensitive to these changes. Column (1) displays the results using GDP levels as a control instead of GDP per capita. Results are qualitatively the same, albeit somewhat stronger when controlling for the size of the economy. Our results also hold up when including per capita GDP growth instead of per capita GDP level. The coefficient for aid is even slightly larger than for the other two cases. Two alternative measures of aid dependency, i.e., aid relative to population and aid relative to government expenditure, lead to qualitatively similar results for our primary variable of interest. However, the coefficients of interest are logically smaller following from the fact that the aid ratio relative to population and government budgets are sizably larger than the aid to GDP ratio (see Table 1). The overall conclusion is that the positive effect of aid on institutions remains.

[Table 3 about here]

### 3.2 Regression results for sub-indices of governance

We now regress our aid variable on each of the three sub-indices that make up the ICRG composite index. That is, we regress aid on corruption, bureaucratic quality, and rule of law separately. Limiting our analysis to the ICRG index alone could potentially mask a differential effect of aid on these components. Results are provided in Table (4). Column (1) shows higher levels of aid reduce corruption. Increases in aid appear to lower demand for illegal payments, such as bribes, by government officials (Knack, 2001). Specifically, a one standard deviation change in aid relative to GDP leads to a 0.5 standard deviation change in corruption. The aid coefficient indicates that a 7.5% rise in the aid-to-GDP ratio decreases corruption by one point. Similarly, aid positively affects bureaucratic quality, column (2), and

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<sup>8</sup> A similar point has been made earlier by Acemoglu *et al.*, (2001).

<sup>9</sup> Not reported, results are available from the authors upon request.

the effect is similar in magnitude as corruption or the composite ICRG index. An increase in bureaucratic quality reflects improvements in management and training of bureaucrats, and increased autonomy of political pressure for the bureaucracy (Knack, 2001). In addition, column (2) shows that countries with higher per capita GDP levels in year  $t - 1$  have a better functioning bureaucracy, compatible with our earlier finding for the composite ICRG variable.

Interestingly, these results do not spill over to the case where we use rule of law as the dependent variable. Higher levels of aid negatively affect the rule of law variable (column 3). The result is however only marginally significant at 90% confidence levels. It is not evident why rule of law would move in an opposite direction compared to the other sub-indices. However, Dollar and Levin (2006) find similar conflicting results. They find that aid in the second half of the 1980s was favorably allocated to countries that had poor rule of law and at the same time to countries with sound institutions (low corruption and bureaucratic quality). If donors for some reason favor countries with a poorly developed rule of law, aid and rule of law are obviously negatively correlated when looking at cross-country averages. This is also true for our data (results not shown). Likewise we would observe a positive correlation with bureaucratic quality and corruption. Knack (2001) offers an explanation in that aid may have a detrimental effect on a countries' rule of law through a governments' reduced dependence on its citizens for tax collection.

[Table 4 about here]

#### **4. Discussion**

We explore the short-run effect of aid on the quality of governance for the SSA region using annual data for the period 1985-2005. We extend earlier work by controlling for time-invariant country characteristics that may affect both aid flows and the quality of governance in the recipient country. We also correct for potential simultaneity bias, and use a longer time frame. Our within-country results suggest that quality of governance as measured by the ICRG index captures changes in policy choices, and shows that restricting analyses to medium-term impacts only may mask potential short-run effects of aid. The outcomes may be important to donors and policymakers especially when considering the time frame to assess the effectiveness of aid.

Our 2SLS-regressions suggest a strong positive effect of aid on the quality of governance – aid ‘works,’ and it works in the short run. Increasing aid levels with 7%, will, all else equal, lead to a one-point increase in the composite ICRG index. Our results are robust to various specification changes. Our results are driven by substantial reductions in corruption and improvements in the quality of the bureaucracy. Our findings resonate with Tavares (2003), who also finds a positive effect on aid on governance with coefficients similar in magnitude.

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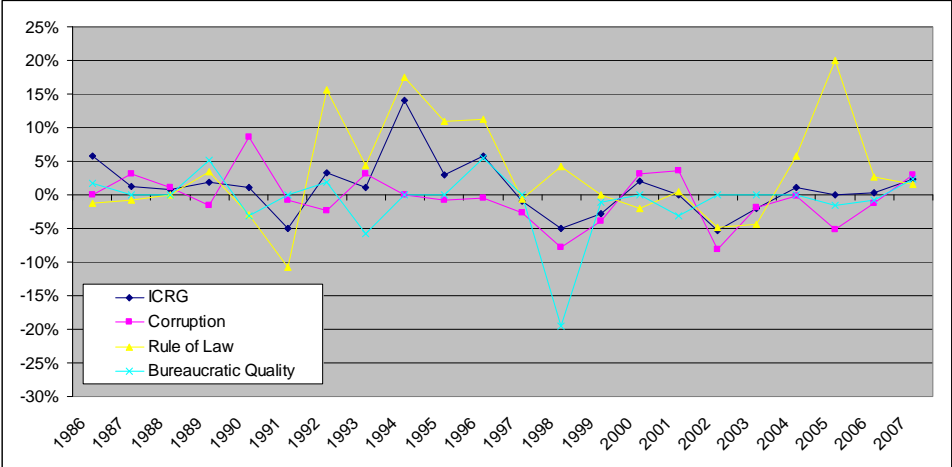
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## **Appendix A - Data definitions**

- Institutional quality. The index monthly measures institutional quality on an 18-point scale, with higher scores indicating higher levels of institutional quality. The index composes of three ICRG indicators: rule of law (6 points), corruption (6 points) and bureaucratic quality (6 points, transformed from a 4 point scale by multiplying with 3/2). A detailed description is available at [http://www.prsgroup.com/ICRG\\_methodology.aspx](http://www.prsgroup.com/ICRG_methodology.aspx)
- ODA (Official Development Assistance) five year moving averages up to t-1.  
Source: OECD statistics table 2a. Available at:  
[http://www.oecd.org/document/33/0,2340,en\\_2649\\_34447\\_36661793\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/33/0,2340,en_2649_34447_36661793_1_1_1_1,00.html)
- GDP levels (ln and five year averages) are from the World Development Indicators (WDI).
- Per capita growth (t-1) data are from the World Development Indicators 2007.
- Government final consumption expenditure data are from the WDI 2007.
- Population (ln and five year moving averages) data are from the WDI 2007.
- Data on civil conflict is from the Armed Conflict Database available at <http://www.prio.no>.
- Oil prices. Oil prices were taken from the Federal Reserve Bank of St. Louis available at <http://research.stlouisfed.org/>
- Mineral exports relative to GDP: GDP share of total mineral exports according tot the SITC classification. Source: World Development Indicators 2007
- Natural resources exports relative to GDP: GDP share of total food and agricultural raw materials exports according to the SITC classification. Source: World Development Indicators 2007

Figures and Tables

Figure 1



Governance (ICRG) data, annual percentage change

**Table 1 Descriptive statistics**

| <b>Variable</b>                |                 | <b>Mean</b> | <b>Std. Dev.</b> | <b>Observations</b> |
|--------------------------------|-----------------|-------------|------------------|---------------------|
| Institutional quality          | <i>ICRG</i>     | 7.34        | 2.97             | 619                 |
| Corruption                     | <i>corr</i>     | 2.50        | 10.5             | 619                 |
| Rule of law                    | <i>rule</i>     | 2.79        | 1.17             | 619                 |
| Bureaucratic quality           | <i>buqa</i>     | 2.05        | 1.43             | 619                 |
| Aid to GDP                     | <i>aidgdp</i>   | 11.85       | 10.32            | 619                 |
| Aid per capita                 | <i>aidcap</i>   | 3939.44     | 3136.35          | 630                 |
| Aid to government expenditure  | <i>aidgov</i>   | 108.60      | 105.88           | 511                 |
| Population (mln)               | <i>pop</i>      | 16.29       | 20.62            | 630                 |
| GDP per capita                 | <i>gdpcap</i>   | 597.57      | 854.14           | 624                 |
| Violence (% obs with violence) | <i>violence</i> | 0.23        |                  | 672                 |
| Mineral exp to GDP             | <i>minxo</i>    | 12.89       | 26.21            | 630                 |
| Nat Resources to GDP           | <i>natxp</i>    | 10.47       | 12.42            | 630                 |

*Notes:* Countries included in our sample are Angola, Botswana, Burkina Faso, Cameroon, Congo, Dem. Rep., Congo, Rep., Cote d'Ivoire, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Senegal, Sierra Leone, Somalia, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe.

**Table 2 OLS and IV-2SLS regressions of foreign aid on ICRG levels**

|                       | (1)                | (2)                 | (3)                |
|-----------------------|--------------------|---------------------|--------------------|
|                       | ICRG               | ICRG                | ICRG               |
| <i>Aidgdp</i>         | 0.029**<br>(0.014) | 0.010<br>(0.019)    | 0.155*<br>(0.083)  |
| <i>Pop</i>            |                    | 0.021<br>(0.063)    | 0.029<br>(0.064)   |
| <i>Minxp</i>          |                    | 0.025**<br>(0.010)  | 0.006<br>(0.016)   |
| <i>Natxp</i>          |                    | -0.043**<br>(0.021) | -0.029<br>(0.027)  |
| <i>Violence</i>       |                    | -0.164<br>(0.250)   | -0.110<br>(0.266)  |
| <i>Gdpcap</i>         |                    | 0.763<br>(0.466)    | 1.067**<br>(0.498) |
| Country-fixed effects | no                 | yes                 | yes                |
| Linear time trend     | no                 | yes                 | yes                |
| F                     | 4.38***            | 5.33***             | 4.59***            |
| Observations          | 613                | 576                 | 576                |
| Countries             | 30                 | 29                  | 29                 |

Notes: HAC robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Column (3) includes oil price

**Table 3 Specification changes to our 2SLS regressions**

|                       | (1)                 | (2)                | (3)               | (4)                |
|-----------------------|---------------------|--------------------|-------------------|--------------------|
|                       | ICRG                | ICRG               | ICRG              | ICRG               |
| <i>Aidgdp</i>         | 0.162*<br>(0.084)   | 0.164**<br>(0.073) |                   |                    |
| <i>Aidcap</i>         |                     |                    | 0.001*<br>(0.000) |                    |
| <i>Aidgov</i>         |                     |                    |                   | 0.027**<br>(0.012) |
| <i>Pop</i>            | 0.030<br>(0.064)    | 0.013<br>(0.066)   | 0.056<br>(0.067)  | 0.090<br>(0.077)   |
| <i>Minxp</i>          | 0.007<br>(0.016)    | -0.003<br>(0.015)  | 0.019<br>(0.013)  | 0.006<br>(0.018)   |
| <i>Natxp</i>          | -0.024<br>(0.028)   | -0.032<br>(0.027)  | -0.020<br>(0.029) | 0.059<br>(0.092)   |
| <i>Violence</i>       | -0.013<br>(0.274)   | -0.143<br>(0.266)  | 0.014<br>(0.292)  | 0.396<br>(0.359)   |
| <i>Gdpcap</i>         |                     |                    | 0.847<br>(0.533)  | 1.512<br>(1.077)   |
| <i>Gdp</i>            | 1.558***<br>(0.522) |                    |                   |                    |
| <i>Gdpgrowth</i>      |                     | 0.034**<br>(0.015) |                   |                    |
| Country-fixed effects | Yes                 | yes                | yes               | yes                |
| Linear time trend     | Yes                 | yes                | yes               | yes                |
| F                     | 4.84***             | 6.06***            | 3.88***           | 3.09***            |
| Observations          | 576                 | 574                | 576               | 471                |
| Countries             | 29                  | 29                 | 29                | 24                 |

Notes: HAC robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 Regressions include oil price.

**Table 4 IV-2SLS regressions on ICRG components**

|                       | (1)<br>Corruption   | (2)<br>Bureaucratic<br>quality | (3)<br>Rule of law  |
|-----------------------|---------------------|--------------------------------|---------------------|
| <i>aidgdp</i>         | 0.134***<br>(0.036) | 0.116***<br>(0.044)            | -0.109*<br>(0.057)  |
| <i>pop</i>            | 0.001<br>(0.028)    | 0.012<br>(0.036)               | 0.008<br>(0.033)    |
| <i>minxp</i>          | 0.038<br>(0.024)    | -0.010<br>(0.027)              | -0.041**<br>(0.016) |
| <i>natxp</i>          | -0.002<br>(0.006)   | -0.004<br>(0.007)              | 0.016**<br>(0.007)  |
| <i>violence</i>       | 0.024<br>(0.116)    | 0.030<br>(0.162)               | -0.241*<br>(0.123)  |
| <i>gdpcap</i>         | -0.416<br>(0.305)   | 1.133***<br>(0.372)            | 0.351<br>(0.346)    |
| Country-fixed effects | yes                 | yes                            | yes                 |
| Linear time trend     | yes                 | yes                            | yes                 |
| F                     | 12.09***            | 7.11***                        | 4.71***             |
| Observations          | 567                 | 567                            | 546                 |
| Countries             | 29                  | 29                             | 29                  |

Notes: HAC robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Regressions include oil price.

Appendix

**Table A First stage regression of GDP on foreign aid**

|                       | <i>aidgdp</i>         |
|-----------------------|-----------------------|
| <i>gdp_oecd</i>       | 75.800***<br>(13.855) |
| <i>pop</i>            | -0.017<br>(0.146)     |
| <i>minxp</i>          | 0.147***<br>(0.029)   |
| <i>natxp</i>          | -0.117***<br>(0.063)  |
| <i>violence</i>       | -0.432<br>(0.707)     |
| <i>gdpcap</i>         | -0.235<br>(0.498)     |
| Country-fixed effects | yes                   |
| Linear time trend     | yes                   |
| F                     | 28.73***              |
| Observations          | 576                   |
| Countries             | 29                    |

Notes: *gdp\_oecd* is the five year (moving) average of the sum of the GDP of the ten largest OECD countries.