Aid, institutions and economic growth in sub-Saharan Africa: Heterogeneous donors and heterogeneous responses

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Abstract
This study contributes to the aid-effectiveness debate using panel data from 43 sub-Saharan African countries over the period 1980–2013. Its novelty lies in assessing the intermediary role of institutions and the importance of recipient and donor heterogeneity. The long-run growth effect of (aggregate) aid from “traditional” donors is robustly non-positive, and the indirect effect is negative. Disaggregation reveals donor heterogeneity. Chinese aid outperforms aggregate aid from traditional donors with respect to growth; however, it has a negative institutional effect. Recipient heterogeneity is largely a short-run phenomenon, with only a few countries showing some deviations from shared long-run parameter sets. Comparing donor behavior suggests that the future of aid would benefit more from focusing on quality – particularly, specialization and donor alignment.

1 | INTRODUCTION

Throughout the evolution of development thinking since the mid-twentieth century, foreign development assistance (aid) has been prescribed (or justified) as a solution for problems of developing countries (LDCs). The inability of LDCs to accumulate enough physical or human capital and/or infrastructure and their inability to establish conducive institutions and governance have been the major reasons why LDCs need more aid. Whether these motives have practically guided aid giving is dubious. On the effectiveness side, despite lack of consensus, a number of works have revealed...
widespread failure of aid (in sub-Saharan Africa (SSA) in particular). Kanbur (2000), Easterly (2003, 2005), Ranis (2010), Rajan and Subramanian (2008), and Nowak-Lehmann et al. (2012) are among those who have documented the failure of aid. However, there are also works in favor of more aid (to Africa), either based on statistically significant aid coefficients in cross-country regressions (Arndt et al., 2010, 2011) or mentioning success stories (Crosswell, 1998; Tarp, 2006) and blaming other factors (such as policy and institutions) for any failure of aid (Burnside and Dollar, 2000; Collier, 2006; World Bank, 1998). Others have argued that aid has negatively affected LDCs via real appreciation of domestic currency resulting in loss of competitiveness, encouraging corruption, and harming institutional development (Fielding, 2007; Killick and Foster, 2007; Moss et al., 2006; Moyo, 2009). While all sides present some sort of empirical support, none has given a conclusive answer to the issue.

The aim of this study is to fill some gaps in the aid-effectiveness literature. The first gap concerns the intermediary role of institutions, and the second has to do with addressing the issue of heterogeneity. This study addresses two types of heterogeneity: recognizing donor heterogeneity (that aid from each donor is potentially unique) and recipient heterogeneity (that each aid recipient could be characterized by a unique interrelationship between aid and economic growth).

With regard to the first type of heterogeneity, it has long been recognized that *not all aid is alike* and hence been recommended that a disaggregated approach to the question of aid effectiveness be taken. For instance, Clemens et al. (2004) focus on revealing the positive growth effect of “short-impact” aid as opposed to “long-impact” or humanitarian aid, and Harms and Lutz (2004) “emphasise the desirability of taking a more disaggregate view – both with respect to the various aspects of policies/institutions and with respect to the different components of aid.” It appears that their recommendations are somewhat neglected in the subsequent literature. Besides, the emergence of new donors and new aid-giving modalities adds to the urgency to address this issue of heterogeneity. Hence, this study examines aid effectiveness at a disaggregated level. The study does not claim to be the first to take up the issue of disaggregation in aid effectiveness. For instance, Wako (2011) distinguishes between the growth effect of aid from bilateral and multilateral sources, and Okada and Samreth (2012) investigate the effects on corruption of aid from multilateral and four bilateral donors. The current study, among other contributions, takes the disaggregation down to the level of each donor and covers a larger number of donors. Moreover, it compares the growth and institutional effects of Chinese aid to the effects of aid from “traditional” donors.

Recognizing the second type of heterogeneity entails allowing each recipient to respond to more aid in a way that is different from any other recipient’s. In this respect, the aid-growth debate has evolved through the use of ordinary least squares, instrumental variables, static (FE/RE) and dynamic (GMM) panel data techniques, all of which assume that aid (or any other regressor, for that matter) has the same effect on growth across groups (of recipient countries). The current state of macroeconometrics permits the handling of parameter heterogeneity in panel data analysis. Specifically, this study allows for parameter heterogeneity using the (pooled) mean group ((P)MG) estimation technique. This technique not only allows for parameter heterogeneity but also addresses criticisms such as the issues of stationarity and cross-sectional dependence which have been forwarded against the application of GMM. To the best of my knowledge, only three papers (Asteriou, 2009; Tan, 2009; Ndambendia and Njoupouognigni, 2010) have applied such estimation technique to the aid–growth relationship.

However (and this brings us to the last research gap), these studies have not examined the transition mechanism between aid and growth. This is what both Bourguignon and Sundberg (2007) and Arndt et al. (2011) called *opening the black box*. The former study is a theoretical exposition of the “causality chain” from aid to outcomes, and the latter an empirical assessment of aid effectiveness. Some important variables (such as policy-making and governance/institutions) in
Bourguignon and Sundberg’s framework are not included in the empirical investigation by Arndt et al. On the other hand, these studies which tried to open the black box have not been concerned with the issues of parameter heterogeneity, stationarity or cross-sectional dependence.

To sum up, this study addresses the issues of donor heterogeneity (both within traditional donors and between traditional donors and China), recipient heterogeneity, and institutional intermediation in the aid–growth relationship. It recognizes the possibility of recipient and donor heterogeneity in the setting of nonstationary and cross-sectionally dependent panel data, and analyzes the growth effect of aid passing through institutional quality.

2 | LITERATURE REVIEW

2.1 | Aid Allocation

It has long been argued that the actual allocation of aid does not correspond to the need of LDCs. Recipient needs, donor political and commercial interests, shared benefits of development in LDCs, and recipient performance have all been shown to matter in practice (Radelet, 2006; Tarp, 2006; Cooray and Shahiduzzaman, 2004). In fact, the debate on whether donor interests matter in aid allocation seems less contentious than that on aid effectiveness. Alesina and Dollar (2000), Neumayer (2003), Cooray and Shahiduzzaman (2004), Radelet (2006), and Berthélemy (2006) – to mention a few – agree that donor interests matter more than recipient needs, at least among bilateral donors. Although to a lesser degree, donor interests play some role in multilateral aid allocations as well (Berthélemy, 2006; Harrigan et al., 2006; Fleck and Kilby, 2006).

However, some scholars have argued that donors have changed their behavior by moving away from geopolitical motives and towards better transparency and coordination – in favor of recipient needs (Claessens et al., 2009) – while others disagree (Howell and Lind, 2009; Bandyopadhyay and Vermann, 2006; Mascarenhas and Sandler, 2006; Easterly and Williamson, 2011). In general, changes in donor policies/practices seem to be limited. However, any such changes could be more visible for some donors than others. Donors are heterogeneous, as are recipients! For instance, Mattesini and Isopi (2008) identify dissimilarities between donors with respect to conditioning aid on corruption.

Besides the heterogeneity among the traditional donors, there is also a rise in the contribution of “new donors” such as China and India. There is a heated debate on whether the new donors are better/worse than the old ones. However, one way or the other, most scholars admit that the two are different in some respect. Besides, different or not, the rising significance of the new donors affects the whole donor–recipient relationship. In the words of Woods (2008, p. 1206), “By quietly offering alternatives to aid-receiving countries, emerging donors are introducing competitive pressures into the existing system. They are weakening the bargaining position of western donors in respect of aid-receiving countries, exposing standards and processes that are out of date and ineffectual.”

In sum, there are some (behavioral) differences within the traditional donors category itself, and between the traditional and new donors. And these differences, however small they may be, could translate into large differences in aid effectiveness.

2.2 | Aid Effectiveness

Aid may provide resources which could complement domestic savings and other financial inflows, and may be utilized to build infrastructure or physical capital or to accumulate human capital. In
addition, it may enhance a country’s capacity to import goods and technology as well as promote its technological progress domestically (Radelet et al., 2004). If provided with conditionalities, it may also help to establish good institutions or policies. On the other hand, the freely available resource may reduce government incentives to collect taxes or its efforts to attract foreign investment, undermine government accountability to its citizens, and as a fungible rent it may breed and facilitate corruption. Corruption, in turn, has the implications of discouraging entrepreneurs and investment, misallocation of talents, enhancing brain drain, choosing projects based on their potential for embezzlement, discouraging foreign direct investment, and raising the cost of borrowing (see Moyo, 2009, for a detailed discussion). The inflow of aid − through appreciating domestic currency − encourages imports and discourages exports (Rajan and Subramanian, 2011; Radelet et al., 2004; Munemo et al., 2007). Hence, theoretically, the effect of foreign aid is ambiguous.

Empirically, aid effectiveness is one of the most debated issues in economic research. Without remarkable differences in the data used, and with some differences in techniques of analysis, various authors have come up with contrasting findings. These findings could be grouped into four: the effective aid, the conditionally effective aid, the ineffective aid, and the harmful aid camps. The remainder of this subsection entertains these views.

Earlier investigations of aid effectiveness relate aid to savings/investment, and then either relate savings/investment to economic growth or take for granted that this link is positive. With the overwhelming evidence (given the scarce data) that aid reduces savings, aid proponents began to argue that the negative effect on domestic savings is not sufficient to abandon aid. In a meta-study, Doucouliagos and Paldam (2006) find out that most studies on aid and savings confirm the existence of a crowding out. However, there is no clear evidence that aid reduces total savings; nor is there a support for the claim that the net effect of aid on total savings is positive (Hansen and Tarp, 2000; Doucouliagos and Paldam, 2006). Similarly, despite the conflicting findings of positive, no, or negative relationship, the meta-significance tests of Doucouliagos and Paldam (2006) come to the conclusion that there is no statistically significant relationship between aid and investment.

The next generation of the aid-effectiveness literature has been concerned less with the intermediary variables between aid and growth, and thus included aid directly into growth regressions. In this generation, the number of groups in the conflict has gone up by one − the aid has been conditionally effective group has joined the already existing three. It was in this generation that the issues of endogeneity and nonlinearity in the aid−growth relationship, as well as the importance of policy/institutional variables for aid effectiveness, were addressed explicitly. This generation could further be split into the unconditional and conditional aid effectiveness groups. The former includes studies such as Crosswell (1998), Commission for Africa (2005), Karras (2006), Minoiu and Reddy (2010) which hold the position that aid unconditionally enhances economic growth. However, as defending the positive growth effect of aid became untenable in the face of strong methodological criticisms, other factors have started to be held accountable for the failure/success of aid. These factors include institutional quality (World Bank, 1998; Radelet, 2006), macroeconomic policy stance (World Bank, 1998; Burnside and Dollar, 2000; Denkabe, 2004), and quality of governance (Collier, 2006).

The paper by Burnside and Dollar (2000) is particularly influential in that a number of works in the area since its publication have been concerned with testing and retesting the Burnside−Dollar hypothesis. Subsequently, Easterly (2003) has shown that using more data and/or alternative definitions of some variables is all it takes for the hypothesis to perish. Murphy and Tresp (2006) have also refuted the hypothesis using exactly the same data set used by Burnside and Dollar.
(2000) but with a modified econometric technique. A study by Jensen and Paldam (2006) also rejects the hypothesis. Alvi et al. (2008) have confirmed that the hypothesis holds, but only over limited ranges of policy and aid: for policy index above \( -0.5 \) and aid–gross domestic product (GDP) ratio below 4%. Many SSA countries are unlikely to fall in the effective-aid zone. For instance, over the period 1980–2013, 34 out of 43 SSA countries were characterized by aid–GDP ratio above 4%.

The hypothesis is not thrown out of the debate yet, but it seems that the locus of academic infighting in the aid-effectiveness literature is shifting. Studies like Arndt et al. (2010, 2011) are bringing the unconditional aid-effectiveness debate back to life. The concern here is more with intermediating variables than interacting/complementing ones. The intermediating variables are, however, different from saving and investment which had been central to the first generation studies. The intermediary variables in recent generation are the conditioning variables in the previous generation, such as good policy and/or governance. As such it is a reopening rather than an opening of the black box as presented in Bourguignon and Sundberg (2007) and Arndt et al. (2011). Indeed, the former is a theoretical paper, and what is done in the latter is the addition of human capital (education and health) to the already familiar variable, investment. As Arndt et al. (2011) confined themselves to inputs into the aggregate production function, variables such as policy, institutions, and governance are not part of their analysis. Nevertheless, leaving aside the controversy surrounding the existence of an aggregate production function, it is now widely recognized that this approach provides an inadequate description of the functioning of the economy (Gwartney et al., 2004; Fingleton and Fischer, 2010).

Another dimension of the debate concerns the comparison of aid effectiveness across periods and donors. One claim of changing aid effectiveness along the time dimension comes from Bearce and Tirone (2010, p. 837) who hold that “aid has promoted economic growth, but only after 1990 when the strategic benefits associated with aid provision declined for most Western donors.” However, the issue of declining strategic interest as a determinant of aid allocation is not consensual. Another possible source of change in aid effectiveness is the introduction of new aid types like aid for trade. Research in this area is still young, but some are already arguing that “an analysis of export performance with respect to foreign aid that is exclusively targeted for trade sector improvement (Aid-for-Trade or AfT) produces favorable results” (Ghimire, 2013, p. 60). Bearce et al. (2013) also reach a similar conclusion.1

The composition of donors has also changed over time, with donors such as China and India becoming more influential. While casual observation points toward the claim that aid from these new donors is more effective than aid from traditional donors, statistical evidence is yet to be fought over.

Moreover, differences in aid effectiveness may emanate from donor heterogeneity. It has long been held that donor heterogeneity is an important factor. However, a few studies have addressed this issue using statistical analysis. And this has taken the form of comparing bilateral donors to multilateral donors (Wako, 2011) or a couple of major donors – for example, the USA, UK, Japan, and France in the study by Okada and Samreth (2012).2 The issue of donor heterogeneity has recently been gaining more attention. However, the emphasis is mainly on the supply side (see, for instance, Dreher et al., 2011; Yanguas, 2014; Jones, 2015). That is, a few have investigated whether such a heterogeneity can be mapped onto differences in effectiveness. An exception is Brazys (2013) who not only relates donor heterogeneity to differences in effectiveness but also considers a large set of donors (19 OECD members). However, he focuses on a particular type of aid (AfT) and considers only four recipients, none of which is from sub-Saharan Africa. In sum, as discussed earlier, Development Assistance Committee (DAC) donors are
heterogeneous in many respects and that warrants investigating differences in the effectiveness of their aid.

2.3 | Aid–Institutions–Growth

Common to the different sides in the aid-effectiveness debate above, aid is related to growth directly, and at best the relationship is conditioned on the quality of existing policy or institutional environment. With the exception of early studies which examined aid-saving/investment-growth and few recent studies, the intermediating role of other factors has been neglected.

On the one hand, not only has the role of institutions in development been recognized long ago but also there exist schools of thought under the rubric of institutional economics – “old” and “new.” In the context of Africa, Gyimah-Brempong (2002) provides estimates for the effect of corruption on GDP growth and per-capita income. On the other hand, the implications of (more) aid for institutional quality in general and corruption in particular have also been recognized in the development literature. For instance, some scholars argue that more aid undermines the accountability of a recipient government to the masses, makes available an easily divertible/fungible rent to officials and thus breeds and/or fosters rent-seeking behavior, and discourages the efforts to mobilize and/or utilize domestic resources efficiently (Moyo, 2009; Easterly, 2006; Werlin, 2005). At the other end of the spectrum are those who argue for more aid based on the premise of fighting corruption and improving institutions of a recipient country through providing financial means. Nonetheless, empirical investigations quantifying the impact of aid on governance/institutional quality are scarce.

Busse and Gröning (2009) and Okada and Samreth (2012) are among the few who have tried to quantify the relationship between aid and corruption/governance. The former study finds that aid hurts governance, while the latter concludes that aid reduces corruption, particularly where corruption is less serious to start with.3 According to Svensson (2000, p. 456), “expectations of aid in the future may suffice to increase rent dissipation and reduce the expected level of public goods provision.” Not only have these studies been uninterested in estimating the full transmission channel of interest in the current study (aid–institutions–growth), but they have also assumed homogeneous aid parameters across recipients and no cross-sectional dependence. In fact, Okada and Samreth (2012) have utilized the quantile regression technique to capture the possibility of different parameters (relationships) across the corruption distribution; however, there is still a restriction on parameters for countries in the same corruption quantile.

To sum up, the debate on aid effectiveness is inconclusive. However, one thing seems clear: aid is not working as much as intended. Not even aid proponents/donors are able to deny this. It is also not realistic to claim that all aid has been a waste, or at least a waste to the same extent for all donors. So, regardless of how pessimistic or optimistic one is about the future of aid, it is more pragmatic (from a policy point of view) to assess differences among donors as a step toward investigating best practices.

3 | METHODOLOGY

Following the recognition of the endogeneity of aid in growth regressions, instrumental variables techniques have taken over from least squares estimators. In the panel data context, many have resorted to the use of GMM estimators as these estimators are exempt from the justification needed
for an external instrumental variable. Instruments are internally generated from lagged levels and/ or differences of the endogenous variables.

While GMM techniques appear attractive for short panels, they are criticized on certain grounds. The first problem with using GMM is that parameters are taken as homogeneous, and homogeneous parameters signify only average relationships derived from a number of countries taken together. This practice hides the possibility of having a mixture of results for different countries. The common practice used to allow for such a possibility has been to include regional dummies. This, however, assumes that countries within a region are characterized by the same slope coefficient, or even that the only difference is the difference in the intercept between regions.

In addition to imposing parameter homogeneity restrictions, there are at least two more issues that question the reliability of results from GMM (Blackburne & Frank, 2007) in macroeconomic applications in particular. The first issue is stationarity. It has been shown that a regression involving nonstationary series can yield a spurious result. And as the time dimension of data increases, the concern of nonstationarity and spurious results becomes more pressing. Shortening the time dimension through the usual practice of averaging over four-, five- or ten-year periods does not solve the issue. Moreover, there exist techniques for estimating the long-run relationship between variables without throwing away any short-run information. The second issue is the danger posed by ignoring the possibility of cross-sectional dependence.

An alternative approach which allows for parameter heterogeneity is the estimation of a separate vector autoregressive (VAR) model for each recipient. Using this approach, Juselius et al. (2014) have assessed the long-run impact of aid on economic growth and other macroeconomic variables in the context of SSA. While they find a “broad support for a positive long run impact” of aid, their results also reveal recipient heterogeneity with respect to aid effectiveness. The limitation of such approach is the length of the data available. The time dimension of available data (running from 30 to 50 years) is too short to draw reliable inferences from purely time series analysis. Furthermore, some determinants of economic growth such as institutional quality change only slowly over time and others are time-invariant, adding to the difficulty in identifying relationships between variables.

Incorporating the cross-sectional dimension into such time series analysis would overcome these limitations. The exercise for exploiting cross-country variation begins with estimating separate time series equations and then testing whether different countries share the same parameters (at least in the long run). This seems a good compromise between time series and the common cross-sectional and short-panel data techniques in that each country is given a chance to have a unique aid–growth relationship, but also a search is made to see if the different countries share a common relationship between the variables.

To this end, the error correction modeling strategy is chosen for testing the direction and strength of causality among the variables of interest – growth, aid, and institutions. In this approach, exogeneity is not taken for granted for any variable, but is rather inferred from statistical tests. For the purpose of model specification here, the relationship is generally given by

\[
y_{it} = \alpha_0 + \sum_{l=1}^{p} \alpha_{1l} y_{it-l} + \sum_{l=0}^{p} \alpha_{2l} x_{it-l} + \sum_{l=0}^{p} \alpha_{3l} z_{it-l} + \epsilon_{it},
\]

where \(y, x, \) and \(z\) are the variables of interest, namely, economic growth, aid and institutional quality (in any order); the \(\alpha_s\) are parameters to be estimated; \(\epsilon\) is the stochastic term; and the subscripts \(i\) and \(t\) stand for country and time, respectively.\(^4\)
Equation 1 is an autoregressive distributed lag (ARDL\((p,p,p)\)) model representation of the relationship, which can be reparameterized into an error correction model (ECM):

\[
\Delta y_{it} = \gamma_0 + \alpha_0(y_{it-1} - \beta_2 x_{it-1} - \beta_3 z_{it-1}) + \sum_{l=1}^{p-1} \gamma_1 l \Delta y_{it-l} \\
+ \sum_{l=0}^{p-1} \gamma_2 l \Delta x_{it-l} + \sum_{l=0}^{p-1} \gamma_3 l \Delta z_{it-l} + \mu_{it}.
\]

Equation 2 captures both short-run (terms involving \(\Delta\)) and long-run relationships (expression within parentheses). Changing a variable (say, \(x\)) affects \(y\) both at impact (\(\Delta x \rightarrow \Delta y\)) and in the long run through disturbing the equilibrium relationship within parentheses. The disturbance to the equilibrium is corrected at a rate of \(-100x\%\) per year.

The (P)MG estimator is then applied to Equation 2. The technique has three variants: the MG estimator which separately estimates both short-run and long-run parameters for each cross-sectional unit and then averages them, the PMG estimator which restricts the long-run parameters (\(\beta\)s) to be the same across units, and the dynamic fixed effect (DFE) option with the usual assumption of homogeneous slope parameters. Using a Hausman test, results from each of the restrictive options (PMG and DFE) are compared to results from the unrestricted case (MG). As a robustness check, Chudik and Pesaran’s (2015) dynamic common correlated effects (DCCE) estimator is also implemented. This is theoretically better than the MG estimator as it accounts for cross-sectional dependence. It is also preferred to the earlier versions proposed by Eberhardt (2012) – the common correlated effects mean group and augmented mean group estimators – as it allows for dynamics/persistence (i.e., the inclusion of lagged value(s) of the dependent variable in the model). The Stata package for DCCE is due to Ditzen (2016).

**4 | DATA**

This section defines the variables of interest, their measurements and data sources. It also presents some descriptive statistics. To begin with aid, the preferred measure used in this study is net aid transfers (NAT). This refers to the amount of resources actually transferred from donors to recipients. Comparing it to the commonly used measures of gross and net official development assistance (ODA) would clarify it better. Net ODA is total grant or concessional loan (i.e., gross ODA) minus principal repayments by the recipient. Unlike net ODA which deducts principal repayments only, NAT deducts both principal and interest repayments from gross ODA. In addition, cancellation of old non-ODA loans is part of net ODA, but is not counted in NAT. Hence, NAT is a better measure of the actual development assistance efforts than both gross and net ODA (Roodman, 2006), which are more commonly used nonetheless. In this study, NAT is measured as a percentage share of the recipient’s GDP. NAT data are from Roodman (2005) and the GDP data are from the World Bank online database. The values of NAT/GDP range from \(-0.5\%\) (Gabon 2003) to 186.9\% (Liberia 1996), with an average of 15.9\%.

The second variable is institutional quality. For the purpose of this study, it is measured as the average of the Civil Liberties and Political Rights indices from Freedom House. Even though some have interpreted these indices as measures of democracy (see, for example, Knack, 2004; Jaunky, 2013; Kersting and Kilby, 2014), the indices actually include a wider range of indicators which reflect the overall institutional quality/performance of a country. They include factors like
democracy, rule of law, and property rights which are taken as institutional inputs in the literature, as well as corruption, policy-making, accountability, transparency, and bureaucratic quality which represent institutional outputs (Jones and Tarp, 2016). The measure ranges from 1 (the worst) to 7 (the best). The advantage of using these institutional quality measures over other measures – such as the Worldwide Governance Indicators (WGI) of the World Bank Group and the Economic Freedom of the World (EFW) of Fraser Institute – is the time dimension of the data. Whereas the Freedom House indicators are available from 1972, the WGI are available only starting from 1996. The EFW data set is available on an annual basis from 2000; data for 1970–2000 are generally available in five-year intervals, with many missing observations for countries in SSA.

Finally, economic growth is the annual percentage change in real GDP per capita, that is, grGDPPC = 100[(RGDPPC_t/RGDPPC_{t-1})/RGDPPC_{t-1}]. Real GDP per capita is measured in constant 2005 US dollars. The source is the World Development Indicators (WDI) of the World Bank. Its values range from –50.2% (Liberia 1990) to 142.1% (Equatorial Guinea 1997) with an average of 1.25%. For a depiction of how the three variables evolved over time, see Figure A1 in the online supplementary material.

Based on data availability, 43 SSA countries comprise the sample for analysis (see Table A1 in the online supplementary material for the list of countries). The study has chosen to focus on SSA because many have characterized it as a region where aid has been most ineffective (Easterly, 2003) or least effective (Burnside and Dollar, 2000; World Bank, 1998), and others have predicted it to be the future playfield of aid (Collier, 2006; Riddell, 1999). Besides, a lot would be “buried in the averages” if a more heterogeneous sample of countries were included in the analysis. As will become evident below, there is enough heterogeneity within the SSA region itself.

Prior to the econometric analyses, pairwise group comparisons have been undertaken. Firstly, the (average) growth performance of countries that received above-average aid is compared to the performance of those with below-average aid. As shown in Table A2, the average growth rate for the below-average group is higher than that for the above-average group. Similarly, the average institutional quality score for the below-average group is higher than that for the above-average group. Hence, countries with below-average aid are characterized by better growth and institutional quality than those with above-average aid.

Another comparison is between below-average and above-average institutional quality groups, with respect to both growth and aid receipts. With respect to the former, the average growth rate for the above-average group is higher than that for the below-average group. Regarding the latter, countries with below-average institutional quality have, on average, received more aid than the other group. The last set of comparisons in Table A2 is between below-average and above-average growth groups. The above-average growth group is characterized by better institutional quality than the below-average group. In addition, the faster-growing group seems to have received less aid than the other group. Visual depictions of these comparisons are provided in Figures A2–A4.

5 | RESULTS

5.1 | Stationarity and Cointegration Tests

Estimation of the ECM requires pre-testing for the order of integration of the variables, and the existence of a cointegrating relationship among them. Thus the first step is testing for stationarity. For this purpose, two tests are employed: the Im–Pesaran–Shin (IPS) unit-root test and the Hadri stationarity test. The test results are reported in Table 1.
For NAT/GDP and Institution tested at level, both the null of \( I(1) \) under IPS and of \( I(0) \) under Hadri are rejected. Tested at first difference, however, IPS rejects the null of unit roots while Hadri could not reject stationarity. Therefore, for these variables, stationarity is achieved after first difference. For \( \ln(\text{RGDPPC}) \) in level, both tests point toward nonstationarity. After differencing it once, even though not all panels have unit roots (IPS), not all panels are stationary (Hadri). The first difference of \( \text{grGDPPC} \) is stationary for all panels (as IPS rejects nonstationarity and Hadri cannot reject stationarity). Hence, NAT, Institution and \( \text{grGDPPC} \) are \( I(1) \) variables whereas \( \ln(\text{RGDPPC}) \) is \( I(2) \).

Subsequently, two sets of panel cointegration tests are applied to the \( I(1) \) variables: Pedroni’s (residual-based) and Westerlund’s (error-correction-based) tests. Both tests reject the null of no cointegration at the 1% level of significance (Table 2). With the use of \( \ln(\text{RGDPPC}) \) instead of \( \text{grGDPPC} \), neither rejects the null of no cointegration. Hence, for the sample of countries under investigation, using the level of per-capita income instead of its growth and estimating equations like those in Tan (2009), Asteriou (2009), and Ndambendia and Njoupouognigni (2010) would render the results spurious.

### Aggregate Net Aid Transfers (NAT) from DAC Donors

After establishing the existence of a cointegrating relationship, an ARDL(1,1,1) model is estimated, normalizing on each variable in turn. The results are summarized in Table 3.

| Variable | IPS Unit-root test | Hadri stationarity test |
|----------|-------------------|------------------------|
|          | Level | Difference | Level | Difference |
| ln(RGDPPC) | 0.9814 | 0.0000 | 0.0000 | 0.0000 |
| grGDPPC     | 0.0000 | 0.0000 | 0.0000 | 1.0000 |
| NAT/GDP     | 0.0002 | 0.0000 | 0.0000 | 0.9890 |
| Institution | 0.0605 | 0.0000 | 0.0000 | 0.8914 |

### Tests of Cointegration

| Variables Involved | Pedroni’s test* | Westerlund’s test** |
|--------------------|-----------------|---------------------|
|                    | Stat. | Panel | Group | Stat. | Value | Rob. p-value |
| ln(RGDPPC), NAT/GDP and Institution |  \( \nu \) | −2.69 | . | Gt | −1.357 | 0.990 |
|                       | \( \rho \) | 1.434 | 3.302 | Ga | −4.145 | 0.998 |
|                       | \( \tau \) | 0.6125 | 1.974 | Pt | −10.277 | 0.430 |
|                       | ADF   | 0.8103 | 1.763 | Pa | −3.435 | 0.734 |
| grGDPPC, NAT/GDP and Institution |  \( \nu \) | 5.676 | . | Gt | −3.631 | 0.000 |
|                       | \( \rho \) | −16.42 | −14.93 | Ga | −18.285 | 0.000 |
|                       | \( \tau \) | −20.67 | −25.28 | Pt | −21.270 | 0.002 |
|                       | ADF   | −19.43 | −22.47 | Pa | −13.550 | 0.002 |

* “All test statistics are distributed \( N(0,1) \) under a null of no cointegration, and diverge to negative infinity [under the alternative] (save for panel \( \nu \))” (Neal, 2014).

** Robust \( p \)-values are obtained from bootstrapping 500 times, and bootstrapping is invoked because of cross-sectional dependence (Persyn and Westerlund, 2008).
There is a bidirectional causality between aggregate aid from DAC donors and institutional quality: weaker institutions have attracted more aid, and more aid has led to weaker institutional quality.\(^5\) The former is in line with the efforts of the North to influence institutions in the South (for the better) through more aid, while the latter witnesses not only the failure of such efforts but also the ability of aid to weaken institutions. This possibility of a negative effect of aid on institutions has already been emphasized, for instance, by Moyo (2009) and Easterly (2006). Similarly, there is a bidirectional causality between growth and institutional quality: weaker institutions leading to slower growth, and faster growth leading to better institutional quality.

With regard to aid and growth, causality runs only one way – from growth to aid. Slower growth has attracted more aid, which is in line with one justification for aid. On the other hand, there is no robust evidence that aid has directly led to either faster or slower growth. The growth effect of aid is negative and significant in some specifications and insignificant in others, but is never significantly positive. However, as the causality running from aid to institutional quality and that running from institutional quality to growth are robust, there is a robust negative indirect effect of aid on growth mediated by institutions.

These long-run relationships are qualitatively robust to various specifications (in terms of including different lags of the three variables, restricting the analysis to the post-Cold-War period, and excluding the six or 10 recipients with the most frequent occurrence of missing values – see the results in Tables A4, A5, and A9). In addition, the use of net ODA as a measure of aid (instead of the preferred NAT) leaves the results in Table 3 qualitatively the same. In fact, the pairwise coefficient of correlation between the two measures is 0.9633 and is highly significant. Regression results are summarized in Table A7. The results also persist after controlling for other important variables such as human capital, net national savings, FDI, population growth and natural resource rent (Table A6). Moreover, three policy indicators – government consumption, inflation, and openness (i.e., exports plus imports, as a share of GDP) for fiscal, monetary, and trade policies respectively – have been incorporated into both growth and aid equations. While

| Dependent variable | ΔgrGDPPC | ΔNAT | ΔInstitution |
|-------------------|----------|------|-------------|
| **Long run:**     |          |      |             |
| Institution       | 0.540*** | -1.647*** | -0.023*** |
| NAT               | -0.012   |      |             |
| grGDPPC           | -0.334***| 0.068*** |
| **Short run:**    |          |      |             |
| Adjustment speed  | -0.825***| -0.243***| -0.175*** |
| ΔInstitution      | 2.132**  | -0.992 |             |
| ΔNAT              | -0.194***|      |             |
| ΔgrGDPPC          | -0.094***| 0.009*** |
| Constant          | -0.365   | 5.104***| 0.653***   |
| \(\bar{T}\)       | 1378     | 1378  | 1378        |
| \(n\)             | 43       | 43    | 43          |

* \(p < 0.1\), ** \(p < 0.05\), *** \(p < 0.01\), \(N\) = number of observations, \(\bar{T}\) = average number of observations per group, \(n\) = number of groups
government consumption and openness have expected signs in both equations, inflation does not. More importantly, the main results are not affected by controlling for these variables (see Table A8). Finally, with regard to estimation technique, using the DCCE estimator to account for cross-sectional dependence leaves unaffected the results for the growth and aid equations. In the institutional quality equation, while the coefficient of aid is still negative and the magnitude is very close to the estimate in Table 3, the level of significance rises above the conventional levels. (In the preferred model – the one with the highest adjusted $R^2$ – in column 6 of Table A3, the $p$-value for the aid coefficient is 0.152.)

Another remarkable point from Table 3 is the differences in the speed of adjustment for the different equations. The institutional quality equation has the slowest speed of adjustment to a shock, while the growth equation has the fastest. Whereas economic growth corrects about 83% of deviation from the equilibrating relation in a year, institutional quality can restore only about 18%. For aid, the adjustment is about 24% per year.

Experimenting with models of up to four lags and comparing them using the Akaike and Bayesian information criteria, the model with four lags is chosen. This leaves the results of the aid and institutional quality equations unaffected. However, the (negative) effect of aid in the growth equation becomes statistically significant (see Table A4).

Overall, the conclusion is that the effect of aid on economic growth (through channels other than institutional quality) is not robust to different lag-length specifications. Although the result here cannot discriminate between the hypotheses of negative effect and no effect, it is certainly against the positive-effect group. The negative effect of aid on institutional quality, the positive effect of institutional quality on growth, and thus the indirect negative effect of aid on growth through institutions are all robust. Another robust result is the fact that poorly performing countries (in terms of both growth and institutions) attract/receive more aid.

The results reported in Tables 3 and A4 are estimated using the PMG estimator. The choice is made based on Hausman tests. Specifically, first, MG results are compared with results from the DFE option. This comparison prefers MG, thereby confirming that there is indeed heterogeneity in slope parameters. Subsequently, MG is tested against PMG, and the test favors PMG. That is, the panels share the same long-run parameters. (The $p$-values for Hausman’s tests of MG vis-à-vis DFE and MG vis-à-vis PMG are, respectively, 0.0000 and 0.5840.) In sum, parameter heterogeneity exists and the usual homogeneous parameter techniques give unreliable results. However, the group shares a common long-run relationship (which means that the current technique has an advantage over estimating a separate time series equation for each recipient). Even though the focus is on the long-run parameters, failure to allow for heterogeneity in short-run and adjustment parameters would imply a misspecified model.

The technique used here also permits the detection of exceptions where the common long-run causal relationships break down. Accordingly, based on the unanimity between the two models presented (Tables 3 and A4) the following cases have been identified. Firstly, the endogeneity of growth cannot be rejected for any recipient. Secondly, for the aid equation, the speed of adjustment to disequilibrium is not statistically significant for Burundi, the Democratic Republic of the Congo, Kenya, and Nigeria (and, though at the margin, for Chad, Gambia, and Equatorial Guinea). For these countries the amount of aid they receive does not respond to their performance in terms of economic growth and institutional quality. With the exception of Burundi and Gambia, these are resource-rich countries (Thorborg and Blomqvist, 2015). Similarly, institutional quality is exogenous to the system for Cameroon, Chad, Ethiopia, and Togo (and, again close to the margin, for Benin, Gambia, and Kenya). Any improvement or deterioration in institutional quality for this group of countries is not correlated to their economic growth record and the amount of aid they receive.
Summing up, while the long-run growth effect of aid is non-positive its institutional effect is clearly negative. The short-run relationships are generally non-robust to alternative model specifications and estimation techniques. While the SSA countries being studied share more or less the same long-run parameters, there is a clear evidence of recipient heterogeneity as reflected in aid and institutional quality equations. Whereas aid has generally flowed to recipients with poor institutions and slow growth, this has not been the case for Burundi, the Democratic Republic of the Congo, Kenya, Nigeria, Chad, Gambia, and Equatorial Guinea. Moreover, while more aid and slow growth each contributes to deterioration in institutional quality, Cameroon, Chad, Ethiopia, Togo, Benin, Gambia, and Kenya are exceptions.

5.3 | Heterogeneity within DAC Donors

The analysis so far addresses the issue of recipient heterogeneity. We now turn to testing for donor specificity in aid effectiveness. Given the large number of donors, it is not possible to include 21 “aid” variables into a single regression equation. As a result, a separate equation relating growth, institution, and aid is estimated for each donor. However, in assessing the effectiveness of aid from one donor, aid from the other donors should be controlled for. Hence, aggregate aid from DAC donors is included in each growth/institution equation as an additional variable. In terms of specification, the following modified version of Equation (2) is estimated for each donor $j, j = 1, \ldots, 21$:

$$
\Delta y_{it} = \gamma_{0i} + x_i(y_{it-1} - \beta_2x_{it-1} - \beta_3z_{it-1} - \beta_4Aid_{jt-1}) + \sum_{l=1}^{p-1} \gamma_{1li}\Delta y_{it-l} + \sum_{l=0}^{p-1} \gamma_{2li}\Delta x_{it-l} + \sum_{l=0}^{p-1} \gamma_{3li}\Delta z_{it-l} + \sum_{l=0}^{p-1} \gamma_{4li}\Delta Aid_{jt-l} + \mu_{it},
$$

(3)

Accordingly, if $j = Ireland$ and $y = grGDPPC$, for instance, the coefficient $\beta_{4i}$ is interpreted as the marginal growth effect of one more unit of aid coming from Ireland instead of somewhere else – or keeping total aid constant. An alternative approach is to use aggregate aid minus Irish aid, in place of aggregate aid. This has been tried and the results remain intact. (It should, however, be noted that the number of observations upon which the estimations are based differs from one donor to another, since not all donors have stayed in the business for the same length of time. Nor do all donors give aid to the same number of recipients.) The results are summarized in Table 4.7

What explains the differences in aid effectiveness among donors (summarized in Table 4)? In an attempt to answer this question, a simple exercise of correlating donor ranks with effectiveness is undertaken. First, two variables – growth and institution – were constructed such that positive growth/institutional effect is given a value of 1, zero effect a value of 2, and negative effect a value of 3. That is, each of the two effects from Table 4 is ranked from 1 to 3. The total effect – total – is also ranked in the same way, but leaving out four observations (Sweden, Belgium, Australia, and Portugal) with indeterminate effect. Then, following the order of donor rankings according to various criteria from four sources (Birdsall et al., 2010; Ghosh and Kharas, 2011; Knack et al., 2011; Easterly and Williamson, 2011), the donors are ranked from 1 to 21. Subsequently, Spearman’s correlation coefficients are calculated between the donor quality rankings and their aid-effectiveness rankings. The result is summarized in Table 5. In almost all cases, there is a positive association between donor quality (whether in terms of transparency, selectivity, harmonization, specialization, etc.) and the effectiveness of its aid. However, only a few of the correlations are statistically significant. In fact, the sample size is fairly small: 21 observations each for growth and institutional effects, and 17 observations for the total effect. The limited number of
observations constrained the possibility of going beyond correlation analysis; running ordered logit/probit with 21 data points would not be meaningful. Nonetheless, this exercise reveals that the findings summarized in Table 4 are consistent with donor characteristics.

Going beyond rank correlations and examining the literature on donor behavior reveals that some donors have positive attributes which clearly outweigh negative ones, others have the opposite (negative attributes outweighing the positive), while the remaining donors cannot be easily put in either of these categories. Hence, some of the results are expected or reconcilable while others are unexpected and irreconcilable. The cases of aid from Ireland, the Netherlands, France, Italy, and Canada are among those highly consistent with the literature. Aid from Denmark and that from the USA are among those that performed respectively less and more than expected. For a detailed characterization of each donor, see Table A13.

In a nutshell, there is a clear heterogeneity in the effectiveness of aid among the traditional donors. With the exception of few cases (remarkably for Denmark and the USA, but also for Belgium and Austria), the results here are either as expected or at least plausible with the donor rankings and characterizations in the literature. In general, smaller donors provide better-quality aid: they are more transparent, provide aid with better recipient country ownership, have better selectivity, are less fragmented by recipient and/or sector, have made better efforts to influence recipients’

### Table 4: Growth, Institutional and Total Effects of Aid

| Donor   | Dependent variable: | | |
|---------|---------------------|---|---|
| France  | grGDPPC: 0/0/0/0    | | |
| Canada  | Institution: 0      | | |
| Germany | Total effect*: 0    | | |
| Italy   | 0                   | | |
| Finland | 0                   | | |
| Japan   | 0                   | | |
| Luxembourg | 0                | | |
| Austria | 0                   | | |
| Spain   | 0                   | | |
| Denmark | 0                   | | |
| Sweden  | 0                   | | |
| Belgium | 0                   | | |
| Australia | 0                | | |
| Portugal| 0                   | | |
| USA     | 0                   | | |
| Netherlands | 0               | | |
| Norway  | 0                   | | |
| Switzerland | 0            | | |
| Ireland | 0                   | | |
| New Zealand | 0         | | |

*This is based on the signs of the effects from the previous two columns.
institutions favorably, avoid ineffective channels and have lower overhead expenses, among others. Hence, the findings support the need to focus more on aid quality as opposed to the frequent call for the “scaling-up” of aid quantity. Moreover, the under- or overperformance of some donors, relative to expectations, suggests that aligning aid provision with recipient-country priorities and specializing in fewer sectors or recipients are imperative.

5.4. Growth and Institutional Effects of Chinese Aid

The final question this study intends to address is how aid from China compares with aid from traditional donors in terms of effectiveness. In general, the data for Chinese aid are too scarce to allow a similar level of investigation to that undertaken above. However, given the current state of

| Source: Criterion: | Birdsall et al. | | | | Ghosh and Kharas |
|-------------------|----------------|----------------|----------------|-----------------|----------------|
| | Burden | Institution | Transparency | Efficiency | Transparency |
| **Effect ranked** | | | | | |
| Growth | 0.2793 | 0.0000 | 0.3564 | 0.0674 | 0.4142* |
| (0.2201) | (1.0000) | (0.1128) | (0.7715) | (0.0620) |
| Institution | −0.0117 | 0.2111 | 0.1876 | 0.2580 | 0.2483 |
| (0.9598) | (0.3584) | (0.4155) | (0.2589) | (0.2778) |
| Total | 0.1059 | 0.1588 | 0.3705 | 0.0529 | 0.5028* |
| (0.6860) | (0.5427) | (0.1432) | (0.8401) | (0.0397) |

| Source: Criterion: | Knack et al. | | | | |
|-------------------|---------------|----------------|----------------|----------------|
| | Selectivity | Alignment | Harmonization | Specialization | Overall |
| **Effect ranked** | | | | | |
| Growth | 0.5201* | 0.0674 | 0.3178 | 0.1734 | 0.3756* |
| (0.0157) | (0.7715) | (0.1603) | (0.4523) | (0.0933) |
| Institution | 0.0952 | 0.1297 | 0.0476 | −0.0317 | 0.0862 |
| (0.6815) | (0.5753) | (0.8377) | (0.8914) | (0.7102) |
| Total | 0.4102 | 0.1323 | 0.3043 | 0.1985 | 0.3043 |
| (0.1020) | (0.6127) | (0.2350) | (0.4451) | (0.2350) |

| Source: Criterion: | Easterly and Williamson | | | | |
|-------------------|--------------------------|----------------|----------------|
| | Overall | Sum of ranks | Growth | Institution |
| **Effect ranked** | | | | |
| Growth | 0.1059 | 0.3178 | | |
| (0.6476) | (0.1603) | | |
| Institution | 0.1290 | 0.1269 | 0.0716 | |
| (0.5774) | (0.5836) | (0.7577) | |
| Total | 0.1588 | 0.2646 | 0.8622* | 0.8060* |
| (0.5427) | (0.3047) | (0.0000) | (0.0001) |

*p < 0.1, p-values below the correlation coefficients
affairs in international development (research), it is imperative to say whatever the data allow regarding this important “new” donor.

To begin with some words of warning, data on China’s aid to Africa are not from the Roodman (2005) data set, and thus are not the preferred NAT. Besides, what exactly constitutes aid in the case of China is not clearly defined as in the case of DAC donors. To complicate things further, unlike the DAC aid, the data are not from official sources, but rather from media reports. They are, however, the best available thanks to the efforts of Strange et al. (2013).

The aid data of Strange et al. (2013) are in 2009 US dollars, and cover the period 2000–2012. As usual the GDP comes from the World Bank’s WDI. Aid from China to Africa (data available for 21 countries) ranges from 0 to 46.5% of the recipient’s GDP, and is about 2.59% on average. The maximum value of 46.5% is for Ghana in 2010, followed by Mozambique in 2010 (22.7%) and Zimbabwe in 2009 (20.5%). Over the entire period, Niger received the smallest (average) aid (0.53% of its GDP) followed by Senegal (0.62%), and Zimbabwe received the highest (9.8%) followed by Ghana (7.6%).

The t-test for the mean comparison of aid received by above-average and below-average institutional-quality groups rejects the null of no difference in favor of the alternative that the group with poorer institutional quality received more aid than the better-performing group. Similarly, the group with above-average aid from China has a lower score on institutional quality. In terms of economic growth, it seems that, at the margin, more Chinese aid went to better-performing countries. On the other hand, the difference between the average economic growth rates of 2.78% for the below-average aid group and 3.75% for the above-average group is statistically insignificant.

An attempt to run a PMG estimation on the three variables was unsuccessful at first. Scrutinizing the data more closely reveals that some countries have to be dropped from the sample: the institutional-quality variable has no variation over the entire period for Sudan, and ten other countries (Côte d’Ivoire, Lesotho, Liberia, Mali, Malawi, Niger, Nigeria, Rwanda, Senegal, and Zambia) are characterized by discontinuous time series. This is a serious blow to an already small sample. Nonetheless, combining the temporal and spacial variations is better than keeping all the 21 recipients and resorting to the use of cross-sectional regression (averaging over time which removes the temporal dimension). Table 6 gives the results.

Inferring from the table, there is a positive unidirectional causality running from Chinese aid to economic growth – more aid leading to faster growth. Chinese aid appears to be exogenous with respect to both economic growth and institutional quality. That is, the evidence here supports the claim that, in giving aid, China does not discriminate between “good” and “bad” recipients in terms of institutional quality. Neither does it show selectivity with respect to recipient’s economic growth performance.

The positive bidirectional causality between economic growth and institutional quality (established in previous sections) is present in this model as well. Institutional quality not only fosters economic growth but also benefits from faster growth, even in a time-span roughly as short as a decade.

Just as in the case of some traditional donors, Chinese aid harms the recipients’ institutional quality. The two results (the positive effect of Chinese aid on growth and its negative effect on institutional quality) make the overall effect of China’s aid indeterminate, at least in the current sample of countries. Given the short time dimension that may question the applicability of the PMG estimator to this case, these relationships have also been estimated using system GMM. Although the results are not generally expected to be the same, the growth and institutional effects are in agreement with the PMG results (see Table A10).

In sum, Chinese aid is better than aid from traditional donors taken in aggregate, as well as that from some DAC donors taken individually (including France, Canada, Germany, Japan, Italy, Finland, and Luxembourg) but possibly inferior to aid from the others. It fits in the same group of
donors as Australia, Sweden, and Belgium. However, and once again, the poorer quality of data and the smaller sample size warn us to take the results for China more cautiously. For better comparability, the basic model for aggregate aid from DAC donors has been re-estimated for the 2000–2012 sub-period. Accordingly, the institutional effect of DAC aid is negative but insignificant and the growth effect is negative and significant in the short run (Table A11). This supports what has been said so far.

6 | CONCLUSION

The debate on aid effectiveness has evolved through various stages. It now seems that we are back to square one in searching for intermediating variables between aid and growth as in the 1960s. This study has taken up this approach of opening the black box and investigated the intermediating role of institutions. Besides, it has examined whether the effects of aid on growth and institutions are different for different recipients (parameter heterogeneity) and also whether aid from different donors displays different aid-effectiveness outcomes (donor heterogeneity).

Using the PMG estimator to allow for parameter heterogeneity reveals that the direct effect of (aggregate) aid from traditional donors on economic growth is not robust to different specifications, but always nonpositive. However, aid from these sources has a robust negative effect on institutional quality which, together with the robust positive effect of institutional quality on growth, establishes a negative indirect (and overall) effect of aid on growth. Another robust relationship is that poorer performance (in terms of both growth and institutional quality) has attracted more aid from DAC donors. With a few exceptions where either the influence of aid and growth on institutional quality or the effect of institutions and growth on the amount of aid received is insignificant, recipient heterogeneity appears to be mainly a short-run phenomenon.

Estimating a different equation for each of these donors shows that this average behavior of negative overall growth effect of aid holds for some donors but not for others. Specifically, aid

| Dep. var.: | ΔgGDPPC | ΔInstitQual | ΔAid_China |
|-----------|---------|-------------|------------|
| Long run: |         |             |            |
| gGDPPC    | 0.069***|             | 0.085      |
| Aid_China | 0.152***| −0.224 ***  |            |
| Institution| 1.522***|             | −0.107     |
| Short run:|         |             |            |
| Adj. speed| −0.865***| −0.138 **   | −0.908 *** |
| ΔAid_China| −0.049  | −0.031 *    |            |
| ΔInstitQual| 2.085   |             | −2.535     |
| ΔgGDPPC   |         | 0.005       | 0.125      |
| Constant  | −3.141***| 0.549 **    | 3.888 ***  |
| N         | 120     | 120         | 120        |
| T         | 12      | 12          | 12         |
| n         | 10      | 10          | 10         |

* p < 0.1, ** p < 0.05, *** p < 0.01
flows from France, Japan, Germany, Canada, Finland, Italy, and Luxembourg have impacted the region’s economy negatively. On the other hand, aid flows from Ireland, the Netherlands, Norway, New Zealand, and Switzerland have positive long-run effects. The effects of Danish, Spanish, and Austrian aids are insignificant. Donors with ambiguous total effect (where the direct effects are positive and the indirect effects are negative or vice versa) are Sweden, Australia, Portugal, and Belgium. The results for most of these donors are consistent with how the qualities of their aid have been evaluated in various sources. The short-run relationships are generally not robust to alternative specifications and/or estimation techniques.

Finally, the effect of Chinese aid to Africa has been assessed. While the relatively smaller number of recipient countries and the shorter time dimension (coupled with the issue of data quality) substantiate caution in taking the result too far, it appears that the direct effect of Chinese aid on growth is positive and its indirect effect is negative. Hence, like aid from four out of 21 traditional donors, the overall effect of Chinese aid is indeterminate.

Overall, this study concludes that universal praise for or disapproval of development assistance is clearly wrong. Aid from a large number of donors has neither assisted economic growth nor fostered institutional quality. However, there are donors for which there is enough statistical support in either or both of these areas. There are cases of success (failure) which are clearly reflective of good (poor) donor performance across a number of donor quality indicators: transparency, use of effective channels, poverty and policy/institutional selectivity, alignment with recipient priority areas, specialization (with respect to recipients as well as sectors), lower administrative costs, predictability, and focusing on efforts to foster institutions. Therefore, the findings of this study support policy recommendations emphasizing the quality aspect of aid over the common call for “scaling up aid.”

Another important policy lesson, which comes from the cases of donors with mixed scores on various indicators, is that two aspects of quality appear to be better predictors of success or failure than the rest: concentrating on a few recipients or sectors (i.e., better specialization or less fragmentation) and alignment of donor actions with recipient priorities and systems. The results that are above expectations (for the cases of Portugal, Spain, Austria, Switzerland, and New Zealand) and below expectations (for Denmark, Germany, and Sweden), relative to the overall ranking of each of these donors, underscore the relative importance of these two donor qualities. These are also areas where little has been achieved so far. As pointed out in the literature, despite making declarations and setting agendas, recipient ownership of aid (a prerequisite for alignment) still remains on paper (Keeley, 2012), and donor fragmentation is one of the areas where no significant improvement is taking place (Easterly and Williamson, 2011). Therefore, these should be what all parties in aid business focus on if aid is to be more effective.

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ENDNOTES

1 Comparing the effectiveness of AfT to that of traditional aid seems a promising area of investigation in the aid-effectiveness camp. However, this study abstains from such comparison.
2 The latter study relates aid from these major donors to corruption, and not to economic growth. Besides the difference in the variable of interest between Okada and Samreth (2012) and the current study, these four major donors are not so different from each other as each is from other donors like Denmark.

3 Although Okada and Samreth (2012) have found that aid reduces corruption in general, with the recognition of donor heterogeneity, only multilateral aid and bilateral aid from Japan upheld their conclusion.

4 The lag length $p$ is determined in a later section using information criteria.

5 Causality is inferred not just from the significance of coefficients. An additional requirement is for the corresponding error correction term to lie in the interval $(-2,0)$ and be statistically significant.

6 As policy stance is a reflection of institutional quality rather than its cause (Chang, 2002; Rodrik, 2008), government consumption and inflation are not included in the institution equation. Trade, however, has the potential to influence institutions as well – with a theoretically ambiguous effect. Its negative institutional effect in the current analysis is consistent with the argument of Nunn and Trefler (2014, p. 265) that “To the extent that specialization and trade enriches specific groups in society, it will provide economic power that can translate into political power and affect institutional change.”

7 Detailed regression results are provided in Table A12.

8 The $p$-value for the null hypothesis of no difference against the left-sided alternative (of less growth/less aid) is 0.0991.

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