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Heterogeneous parameters and heterogeneous donors**

Hassen Abda Wako

Maastricht Economic and social Research institute on Innovation and Technology (UNU-MERIT)
email: info@merit.unu.edu | website: <http://www.merit.unu.edu>

Maastricht Graduate School of Governance (MGSoG)
email: info-governance@maastrichtuniversity.nl | website: <http://www.maastrichtuniversity.nl/governance>

Boschstraat 24, 6211 AX Maastricht, The Netherlands
Tel: (31) (43) 388 44 00

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Aid, Institutions and Economic Growth: Heterogeneous Parameters and Heterogeneous Donors*

Hassen Abda Wako[†]

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Abstract

Aid effectiveness has been a subject of long-sustained debate. This study contributes to this debate using panel data from 43 Sub-Saharan African countries. Its novelty lies in assessing the intermediary role of institutional quality between aid and growth, and in taking a disaggregated view of aid (at the level of a donor). Using estimation techniques which allow for recipient-specific (slope) parameters and suit the context of non-stationary and cross-sectionally dependent panels, the study finds that the relationship between aid and growth is characterised by heterogeneous (or recipient-specific) short-run parameters but a shared long-run coefficients. In the long-run, the direct growth effect of (aggregate) aid from ‘traditional’ donors is robustly non-positive, and the indirect effect is negative and robust to different specifications. Disaggregation reveals that there is heterogeneity in aid-effectiveness from the donor side as well: there are cases of ‘good’ aid (four donors), ‘bad’ aid (ten donors), ‘neutral’ aid (three donors) as well as cases where the total effect of aid is ‘indeterminate’ (four donors). With a lesser confidence, attributed to smaller sample size and less reliable quality of data, Chinese aid to Sub-Saharan Africa has a positive direct growth effect, a negative institutional effect, and thus an indeterminate total effect. The short-run relationships are generally not robust to alternative specifications. Comparison of the behaviour of donors with differing degrees of aid-effectiveness suggests that the future of aid would benefit more from focusing on its quality than quantity. In particular, two quality aspects – reduced fragmentation (or better specialisation) and better donor alignment (with recipient country’s policy and system) – deserve much more attention.

JEL classification: F35; O43; F63; F43

Keywords: aid; economic growth; institutions; donor/recipient heterogeneity

1 Introduction

Understanding the origins of (under)development has been at the centre of development economics. While scholars have advocated different theoretical approaches, those in line with “Modernisation Theory” have managed to push others aside. These theories see today’s developing countries [hereafter, LDCs] as the primitive form of the contemporary developed world. Consequently, LDCs are expected (and “encouraged”) to develop following the same stages through

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[†]UNU-MERIT and Maastricht University, Boschstraat 24, 6211 AX Maastricht, the Netherlands. Email: wako@merit.unu.edu

which the developed world passed (Knöbl, 2003), which is basically realised through capital accumulation. Within this broad umbrella of modernisation theory, ineffectiveness of some models to explain development disparities have, over time, led to the inclusion of more factors, like infrastructure, institutions and governance quality.

Throughout the evolution of such theories (or variants of a theory), foreign development assistance (aid) has unanimously been prescribed (or at least justified) as a solution for problems of LDCs. The inability of LDCs to accumulate enough physical/human capital and/or infrastructure, and their inability to establish conducive institutions and governance are usually in the first lines of the ‘more-aid’ lyrics. Whether these have practically been genuine motives (or just a cover) for giving aid is dubious. The debate surrounding aid-effectiveness is at the core of the motivation for this study. 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 (2006), 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 favour 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 concluding answer to the issue.

The aim of this study is to fill some gaps in the aid-effectiveness literature. The first has to do with addressing the issue of heterogeneity, and the second one relates to the intermediary role of institutions. This study addresses two types of heterogeneity: recognising donor-heterogeneity (that aid from each donor is potentially unique) and parameter-heterogeneity (that each aid recipient could be characterised by a unique interrelationship between aid and economic growth – as well as other variables – as captured by a unique set of parameters).

With regard to the first type of heterogeneity, it has long been recognised that *not all aid is alike* and hence 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” (p. 23). 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) investigates 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.

Recognising 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/impose homogeneous slope coefficient(s) in the regression equation. That is, aid (any other regressor for that matter) is assumed to have the same effect on growth across groups (recipient countries). The current state

of macroeconometrics permits the handling of parameters heterogeneity in panel data analysis. Specifically, this study allows for parameter heterogeneity using the (Pooled Mean) Group – PMG – 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 this 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 later one is 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 up 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, parameter heterogeneity, and institutional intermediation in the aid-growth relationship. More specifically, it recognises the possibility of parameter- and donor-heterogeneity in the setting of non-stationary and cross-sectionally dependent panel data, and analyzes the growth effect of aid passing through institutional quality.

2 Literature Review

Despite the heterogeneity buried within any type of (country-)grouping, there are signs that the 21st century started with the volume of aid to low- and middle-income countries being overtaken by trade, and even by FDI and remittances. Suwa-Eisenmann and Verdier (2007) compare these flows for the year 2004: net ODA/OA, remittances and FDI to low- and middle-income countries were 84 billion, 161 billion and 211 billion US dollars, respectively, while export from these countries amounted to US\$ 1,985 billion. With a slight difference, this pattern holds for Africa as well. In 2012, exports, official remittances, Net ODA disbursements and FDI amounted to 626 billion, 60 billion, 52.7 billion and 51.7 billion USD, respectively (AfDB/OECD/UNDP, 2014, p. 52, 58, 61, 75). With FDI still lagging behind, the overall picture that aid is being overtaken by other flows looks clear. However, contrary to the usual (at least, implicit) assumption, Africa is too big and heterogeneous to take as a unit – it is a continent and not a single country!

While this sounds a good news for aid-opponents and aid-pessimists, it may have also triggered a fight back from aid-proponents. Put differently, the opponents may consider the relative decline in the magnitude (or relative importance) of aid as a spontaneous realisation of Moyo’s “Dead Aid Proposal” where “systematic aid ... decreases as other financing alternatives take hold [with] the ultimate aim [being] an aid-free world” (Moyo, 2009, p. 76). On the other hand, proponents have shifted the basis of their justification for more aid from directly linking aid to capital accumulation and/or policy/institutional changes to the so-called aid for trade. While aid for trade (and though less in the headlines, aid for FDI) is still related to earlier justification like more aid for better infrastructure, the fact that it is relatively a new jargon makes it more marketable for those proponents on both the giving and receiving sides/ends of the aid business.

With the rise in the relative magnitude of non-aid financial flows between the North and the South, and the resilience of aid to criticisms, the study intends to answer some unsettled questions: (1) To what extent is aid from each (old) donor unique/different? (2) How does

aid from new donors compare to aid from the old ones? (3) Does institutional quality play a mediating role between aid and economic growth? The rest of this section reviews the literature along these lines, after first presenting a general overview of the justification for aid and donors' allocation behaviour.

2.1 Aid Allocation

This section assesses the literature to compare the aid allocation decision of donors: first, the behaviour of old donors in different periods (i.e., the behavioural evolution of the DAC-donors over time); secondly, the within heterogeneity of DAC-donors; and finally, the old versus the new donors.

From the beginning, the justification for aid to LDCs has been based on the so called gap-models which compare the required saving/investment for a desired growth of per capita income and the actual saving/investment of a country. Later on, mainly due to criticisms on these models, various other factors have been put in place, ranging from LDCs' lack of human capital, to poor infrastructure, to bad institutions and governance. More recently, with the recognition of the superiority of trade and private financial flows over aid, it is also argued that LDCs "do not have enough to offer" and therefore need support to be able to offer something. In all cases, aid has been argued to give LDCs a "big-push" out of the poverty-trap in which they have been swimming (Sharma, 1997; Dollar and Easterly, 1999; Harms and Lutz, 2004; Easterly, 2005; Wako, 2011). Nonetheless, nearly seven decades have already elapsed and the takeoff is yet to occur.

It has also 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 (1998), 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. In words of Alesina and Dollar (1998, p. 1) (a catchy statement quoted in Wako (2011) as well): "An inefficient, economically closed, mismanaged non-democratic former colony politically friendly to its former colonizer, receives more foreign aid than another country with similar level of poverty, a superior policy stance, but without a past as a colony." Although to a lesser degree, donor-interests play some role in multilateral aid allocations as well (Berthélemy, 2006; Harrigan et al., 2004; Fleck and Kilby, 2005).

However, some scholars have argued that donors have changed their behaviour in favour of recipient needs. For instance, Claessens et al. (2009, p. 187) argue that "Geopolitical changes such as the fall of the Berlin Wall in 1989 and the end of major Communist governments removed many of the geopolitical motivations for aid." These authors continue to argue that (p. 187):

... the forms and rules under which aid is being provided have changed at the multi-lateral and bilateral donor levels and at the individual recipient country level. Multilateral changes include a greater emphasis on coordination among donors and with recipient country priorities (the harmonization and alignment agenda put forward in the 2005 Paris Declaration), greater transparency, and the growing importance of alternative aid providers, such as private philanthropists engaged in health and environmental issues. Individual donors have been changing their aid composition (the mix between project and program aid, for example), and many donors have been providing grants instead of loans. A greater openness in aid allocation is common, along

with an aim for more selectivity and greater use of benchmarks and results-based allocations.

With regard to the first argument of declining geopolitical motives, [Howell and Lind \(2009, p. 1280\)](#) would respond that, “the global war on terror regime has contributed in diverse and complex ways to the increasing securitisation of development and aid policy [which means] the encapsulating of global and national security interests into the framing, structuring and implementation of development and aid.” [Bandyopadhyay and Vermann \(2013\)](#) also present evidence from the literature that War on Terror has shifted aid allocation away from recipient needs. A compromise between the two sides is (perhaps) that recipient needs and merits have mattered more than donor interests for sometime between the end of the Cold War and the inception of the War on Terror. This position is consistent with (at least with respect to recipient merits) the argument of [Easterly \(2007\)](#) that there is “... no consistent evidence of increased selectivity with respect to policies and only temporarily increased selectivity in the late 1990s with respect to corruption.” ([Claessens et al., 2009, p. 188](#)).

As for better coordination among donors, [Mascarenhas and Sandler \(2006, p. 339\)](#) do present a counter argument: “... no major donor country displays cooperative behavior with respect to multilateral or bilateral giving. For a large number of donors, noncooperative Nash-Cournot behavior best describes the underlying allocation process.” One major reason for lack of coordination is competition for export markets among donors ([Fuchs et al., 2013](#)).

[Easterly and Williamson \(2011\)](#) examined the practice of various donors in relation to their promises for better transparency, less fragmentation, and more selectivity. In spite of declaration after declaration, many donors do not report and donor agencies are still “not nearly as transparent as they need to be, making consistent and accurate monitoring all the more difficult.” (p. 1931). Based on the less than 50% response rate of donor agencies, they however found some slight improvement in transparency, but not in selectivity or fragmentation. Even OECD could not deny that at least some donors are as nontransparent as they used to be, and that recipient ownership of aid still remains on the paper ([Keeley, 2012](#)).

In general, changes in donor policies/practices seem to be limited and/or temporary. However, any such changes could be more visible for some donors than others, but have perhaps been masked in the attempts to characterise donors at aggregate level.

It is unfair to map the overall or average donor behaviour discussed above to each and every bilateral or multilateral donor. Donors are heterogeneous, as are the recipients. At an aggregate level, and as mentioned earlier, there is some difference between bilateral and multilateral aid allocation in terms of the importance of donor interest versus recipient needs/merit. For instance, a study by [Mattesini and Isopi \(2008\)](#) identifies three groups of donors with respect to conditioning aid on corruption: donors rewarding less corrupt governments with more aid (Scandinavian countries, Germany, Japan), those which give more aid to more corrupt ones (USA, France, Italy, Spain and Canada), and those with no clear or significant relationship between aid and corruption (UK, Australia and Netherlands). USA and France appear to consistently lie in self-interest-driven category of donors in other studies as well (see, for instance, [Lancaster, 2009](#)).

Another indicator of the heterogeneity within the pool of traditional donors is the Commitment to Development Index (CDI) published by the Center for Global Development on yearly basis. The list (for the aid component of CDI) is characterised by a more or less stable position of donors with countries such as Denmark, Ireland and Sweden top in the ranking, and U.S.A. and South Korea towards the bottom.¹

¹The overall ranking as well as ranking based on sub-components is available at: <http://www.cgdev.org/initiative/commitment-development-index/index>

Heterogeneity exists among multilateral donors as well. While recipients' per capita income is the major determinant of aid from some multilateral donors (e.g., for regional development banks), recipients' level of human development counts more than income/growth for others (e.g., for UN agencies) (Neumayer, 2003).

Besides the heterogeneity among the traditional donors, there is also a rise in the contribution of 'New Donors' such as China and India. The rising importance of these new donors has been seen differently by different groups.

For some, they are just like the traditional donors – they “emphasise motives like altruism and mutual benefit in public statements, but these can be difficult to disentangle from the more pragmatic strategic and economic interests.” (McCormick, 2008, p. 83). Their focus on oil/resource-rich countries (McCormick, 2008; Kilby, 2012) as well as their agreement not to compete with each other to avoid price-rises (McCormick, 2008) seem to parallel *the Scramble for Africa* set at the Berlin Conference in 1884/85. Contrary to the usual argument that new donors – unlike the old ones – do not care about the level of corruption in recipient countries, Dreher et al. (2011, p. 1961) argue that both the old and the new donors, “on average, do not favor less corrupt and more democratic recipient countries.”² Comparing China and India to the traditional donors, McCormick (2008) has a slightly different view in arguing that aid from both China and India is tied in some way, but conditionality on recipients' performance is considered interference in internal affairs. In fact, even among the traditional donors, conditionality has either been abandoned in favour of selectivity or practically been ignored in most cases (Mosley et al., 2004).

For others, the 'New Donors' are really new. The first difference is that, with the exception of debt relief and some supports to specific countries (like Angola and Ghana, from China), these two donors – unlike the traditional ones – do not focus on budget support (McCormick, 2008). Secondly, as Moyo (2009, p. 106) puts it, “China's African role is wider, more sophisticated and more businesslike than any other country's at any time in the post-war period.” Another distinction between China's aid and aid from western donors is made by Kilby (2012, p. 1006): “China's aid is generally without domestic, social and political conditions for the aid recipient, beyond recognizing and supporting China, rather than Taiwan, in international fora. China is less risk averse to bad publicity, its aid is made quickly and easily available and often targets areas and sectors that other donors avoid.”

The debate on whether the new donors are better or worse than the old ones will probably continue for sometime. However, one way or the other, it means that 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 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.” Nevertheless, the traditional donors are not disappearing. In the struggle of not losing LDCs to the new powers, they are trying to find their way around, using new arrangements. In words of Abdenur and Da Fonseca (2013), “... the North's ongoing efforts to engage with, and participate in, South-South cooperation ... include multilateral platforms that support SSC [South-South Cooperation], triangular cooperation and more *ad hoc* arrangements, especially concerning the production of knowledge about SSC” (p. 1476), and “... all of these efforts show not only an ongoing struggle to redefine the leverage of Northern donors, but also

²New donors, according to these authors, do not respond to recipient needs in aid allocation (at least, not as much as the old ones). They do, however, acknowledge the limitation of their findings as they did not have data on two major new donors: China and India.

to gain legitimacy and influence by harnessing (and reshaping) SSC.” (p. 1487).³

To wind up, big enough or not, there are some (behavioural) differences within the traditional donors’ category itself, and between the traditional and new donors. As the interest of this study lies on the effectiveness side, and not on the allocation side of aid, the size of the difference is not necessarily of importance. This is because, a small and insignificant difference in aid allocation behaviour could translate into a larger and significant difference in aid effectiveness.

2.2 Aid Effectiveness

At the theoretical level, aid has the potential to affect a recipient’s economy either positively or negatively. It may provide resources which could complement domestic savings and other financial inflows, and may be utilised to build infrastructure or physical capital (as it did under the Marshall Plan) or 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 (i.e., tied to recipient’s efforts or performance), 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 (instead of fighting it). 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 FDI, and raising 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, 2005; Radelet et al., 2004; Munemo et al., 2007).⁴ Hence, theoretically, the effect of foreign aid is ambiguous.

Empirically, the effectiveness of development aid is perhaps one of the most-debated issues in economic research. Without much 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 *aid has been effective (+)*, the *aid has been conditionally effective (?+)*, the *aid has been ineffective (0)*, and the *aid has been harmful (-)* groups. The remainder of this subsection entertains these views.

Earlier investigations of aid-effectiveness relate aid to savings or investment, and then either relate savings/investment to economic growth or take for granted that this later link is positive. With the overwhelming evidence (given the scarce data) that aid reduces savings, aid-proponents began to argue that the negative effect of aid on domestic savings is not sufficient to abandon aid. Even if aid reduces domestic savings, it can still be beneficial as long as the decline is less than one-for-one (i.e., as long as the crowding out is not full). For example, if a dollar of aid given to a developing country reduces domestic savings by 0.6 dollars, there is still a 0.4 dollar increase in the total savings of the country. In a meta-study, Doucouliagos and Paldam (2006) find out that most aid-savings studies 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.

³Without disagreeing to the aforementioned changes in the system, arguably, the side-by-side existence of old and new donors could be a better thing for the South.

⁴While the loss of competitiveness in the export sector – *the Dutch Disease* – implies a loss not just at a point in time but also dynamically, an economy highly dependent on imported inputs (and with a foreseeably reasonable trend of industrialising) may benefit from cheaper inputs.

The next generation of the aid-effectiveness literature has been concerned less by 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 non-linearity in 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), Blair et al. (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 or 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 showed 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.

Comparing a model in which aid an aid-squared are included (the so called *the Medicine Model*) to a model in which aid is accompanied by an aid-policy interaction term, Jensen and Paldam (2006, p. 147) conclude that: “Within-sample the Good Policy Model proves fragile, while the Medicine Model is more robust. Both models fail in out-of sample replications.” Overall, this study rejects the statistical significance of aid in growth. Alvi et al. (2008) have also re-assessed the Burnside-Dollar hypothesis by taking care of the nonlinearity issue, but “without imposing any particular structure on the underlying relationship.” They (partially) confirmed that the hypothesis holds, but only over limited ranges of policy and aid. Specifically, the argument that aid is effective in good policy environments does not hold for low policy index (below -0.5) as well as for high aid/GDP ratio (above 4%). However, even if one accepts the hypothesis as re-affirmed here, 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 in the sample are characterised by aid/GDP ratio of more than 4%.⁵

The hypothesis is not thrown out of the debate yet, but it seems that the spot of heated academic fighting 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 about 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 forerunning generation of aid-effectiveness literature, such as good policy and/or governance.⁶ As such it is a *re-opening* 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 later 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 recognised that this approach provides an

⁵calculated based on NAT data from Roodman (2005) and GDP data from WDI of the World Bank

⁶Perhaps, that is the main reason why we can claim that we are not back to square one.

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 different decades/periods and donors. Among the main questions for investigation in this regard are: Has aid become more/less effective over the years? Is 'new' aid (say, aid for trade) more/less effective than 'old' aid? Is South-South aid more/less effective than North-South aid? Is aid given by one OECD country more/less effective than that given by another member (e.g. USA versus Denmark)?

Studies claiming changing effectiveness of aid along the time-dimension alone (i.e., without taking into account donor heterogeneity or changing aid modality) are uncommon. One such claim 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." As discussed in the previous section, however, the issue of declining strategic interest as a determinant of aid allocation is not consensual. From a different perspective, it might be reasonable to expect changes in aid effectiveness attributable to changes in better accountability in aid design. However, as Winters (2010, p. 218) argues "... recent pushes for increased participation have not resulted in more accountability in the design of aid programs."

Another possible source of change in aid-effectiveness over time is the introduction of new aid types like aid for trade. Research in this area is still very young, but some have already started to argue 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). At a less-generalised but more-focused level, Bearce et al. (2013, p. 163) conclude that "a \$1 dollar increase in total US AfT has been associated with about a \$69 increase in recipient exports 2 years later."⁷

The composition of donors has also changed over time, with donors such as China and India gaining influence in the aid business. 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. With respect to China for instance, it is argued that its involvement in Africa since 2000 has had more impact than any other country since 1950s (Moyo, 2009). *Involvement* is an important word here. Because, China's interaction with Africa is more than just aid (in fact aid has a small share (Moyo, 2009)), and whatever amount of aid it gives is highly intertwined with and inseparable from trade and FDI (McCormick, 2008). Hence, while China's engagement with Africa could be argued to be better than that of the West, any such evidence is not tantamount to proving that aid from China is more effective.

With regard to the difference in aid-effectiveness that 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 analysis takes the form of comparing bilateral donors to multilateral donors (Wako, 2011) or a couple of major donors (for instance, US, UK, Japan and France in the study by Okada and Samreth (2012)).⁸ As discussed earlier, DAC-donors are heterogeneous in many respects and that warrants investigating into differences in the effectiveness of their aids.

⁷Comparing the effectiveness of AfT to that of the 'traditional' aid seems a promising area of investigation in the aid effectiveness camp. However, this study abstains from such comparison.

⁸The 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 than each is from other donors like Denmark.

2.3 Aid–Institutions–Growth

Common to the different sides in the aid effectiveness debate above, aid is related to growth (or less often, other development indicators like infant mortality) directly, and at best the relationship is conditioned on the quality of existing policy or institutional environment. With the exception of early studies which related aid to saving/investment and then saving/investment to growth and few recent studies, the intermediating role of other factors between aid and growth has been neglected.

On the one hand, not only the role of institutions in development has been recognised long ago but also there exist schools of thought by the name Institutional Economics – ‘Old’ and ‘New’.⁹ In the context of Africa, [Gyimah-Brempong \(2002\)](#) provides estimates for the effect of corruption (an aspect of institutional quality) 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 has also been recognised in the development literature. For instance, some scholars argue that more aid undermines the accountability of a recipient government to the mass, makes available an easily divertible/fungible rent to officials and thus breeds and/or fosters rent-seeking behaviour, and discourages the efforts to mobilise and/or utilise domestic resources efficiently ([Moyo, 2009](#); [Easterly, 2006](#); [Werlin, 2005](#)). On the other extreme 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. While both sides could push for their arguments at the theoretical level, and while some evidences have been presented from both sides, an empirical investigation trying to quantify the impact of aid on quality of governance/institutions is 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 later concludes that aid reduces corruption particularly where corruption is less serious to start with.¹⁰ 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-parameter across recipients and no cross-sectional dependence. In fact, [Okada and Samreth \(2012\)](#) have utilised 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 whether or not aid has contributed to the progression or regression of LDCs is inconclusive. However, one thing seems clear: Aid is not working as much as intended (assuming that it has been intended to work). If it had worked, there shouldn’t have been so much redefinition of its goals and approaches. Given its history, it is not of any use to expect (try to convince) aid proponents/donors to openly admit that they have failed – that looks a capital punishment to them. They are not able to deny its failure though.¹¹ It is also not realistic to claim that all aid has been a waste, or at least a waste to the same degree for all donors. So, regardless of how pessimistic or optimistic one is in relation to the future of aid, it is more pragmatical (from policy point of view) to assess differences among donors as a step towards investigating the best practices in the apparently *never-dying* aid business.

⁹The supremacy of institutions over other factors like geography is contentious; however, that institutions matter for development seems of consensus – to the extent that the word ‘consensus’ can be used in economics.

¹⁰Although [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.

¹¹In words of [Moyo \(2009, p. 47\)](#), “The evidence against aid is so strong and so compelling that even the IMF – a leading provider of aid – has warned aid supporters about placing more hope in aid as an instrument of development than it is capable of delivering”.

3 Methodology

3.1 Model Specification

The Error Correction modelling strategy is chosen for testing the direction and strength of causality among the variables of interest – growth, aid and institutions. This is basically a data-based time-series approach (extended to panel data analysis), where exogeneity is not taken for granted for any variable, but is rather inferred from statistical tests. In the current context, as there is a theoretical plausibility of causality in any direction between the possible pairs of these variables (as discussed in the literature review), the modelling approach adopted appears to be the natural way of subjecting the data to statistical judgement – i.e., to the ‘Granger’ type causality tests. Hence, a priori, each variable is given the chance to be a dependent variable. Accordingly, later in the analysis section, the model will be normalised on each variable in turn, and the directions of causality are assessed empirically. For the purpose of model specification here, however, the equation is normalised on y and is given as follows:

$$y_{it} = \alpha_{0i} + \sum_{l=0}^p \alpha_{1li} y_{it-1-l} + \sum_{l=0}^p \alpha_{2li} x_{it-l} + \sum_{l=0}^p \alpha_{3li} z_{it-l} + \varepsilon_{it}, \quad (1)$$

where y , x and z are the three variables of interest, namely, *economic growth*, *aid* and *institutional quality* (in any order); α 's are (recipient-specific) parameters to be estimated; ε is the stochastic (error) term; the subscripts i and t stand for country and time, respectively; and l is the lagged value of the variable, and runs from 0 to p for all variables. ¹²

Equation 1 is an Auto Regressive Distributed Lag – $ARDL(p,p,p)$ – model representation of the relationship among the variables. After taking the first difference, it can be manipulated to produce the following Error Correction Model (ECM) equivalent:

$$\begin{aligned} \Delta y_{it} = & \gamma_{0i} + \alpha_i (y_{it-1} - \beta_{2i} x_{it-1} - \beta_{3i} z_{it-1}) + \sum_{l=0}^{p-1} \gamma_{2li} \Delta x_{it-l} \\ & + \sum_{l=0}^{p-1} \gamma_{3li} \Delta z_{it-l} + \mu_{it}. \end{aligned} \quad (2)$$

Equation 2 captures both the short-run relationship (terms involving Δ) and the long run relationship (the 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 the speed of $-100\alpha\%$ per year.

3.2 Estimation Techniques

Following the recognition of the endogeneity of aid (and other control variables) in growth regressions, instrumental variables techniques have taken over the Least Squares estimators. In the context of panel data in particular, many have resorted to the use of variants of the GMM estimators (the Difference-GMM and the System-GMM) 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 (potentially) endogenous variables.

While the GMM techniques appear attractive for short panels, there are criticised on certain grounds. The first problem with using GMM is that parameters are taken as homogeneous, and

¹² p is determined in a later section using information criteria.

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. For instance, it is possible that aid has a positive and significant effect on income/growth in one country, a negative and significant effect in another, and no significant effect at all in a third country. The common practice to allow for such a possibility has been including regional dummies (for instance, for SSA, Asian, and Latin American countries). This, however, assumes that countries within a region are characterised by the same slope coefficient (of aid) whenever the regional dummies are interacted with the regressor of interest (aid in the current context), or even that the only difference is the difference in the intercept between regions (not within).

In addition to the unrealistic imposition of parameter homogeneity restriction on the N different countries, there are at least two more issues which question the reliability of results from the GMM techniques (Blackburne, 2007) in macroeconomic applications in particular. The first issue is that of stationarity. It has long been shown that a regression involving non-stationary series can yield a spurious result of association. And as the time dimension of data increases, the concern of non-stationarity and spurious results becomes more pressing. Shortening of the time dimension through the usual practice of averaging over four/five- or ten-year periods does not solve the issue, as the averages for two far apart periods (say, 1970-1974 and 2010-2014) cannot be argued to have come from the same population unless it is shown that the raw data points come from the same distribution. Moreover, there exist techniques for estimating the long-run relationship between/among variables without throwing away any short-run information. Such techniques for estimating short- and long-run relationships simultaneously have been in use in time-series context, and have recently been developed for panel data application. The second issue with the usual application of GMM techniques to growth regressions is the danger posed by ignoring the possibility of (unobserved) cross-sectional dependence.

A reasonable way is to allow for parameter heterogeneity in both intercept and slope parameters, test for stationarity and cointegrating relations among variables as is commonly done in time series. To exploit cross-country variation, it is then possible to test if 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. In the GMM techniques, the time-dimension is too short to allow for a unique relationship for each country.

The (pooled) mean group estimator is a technique that solves these issues. The technique has three variants: the mean group (MG) estimator which separately estimates both short-run and long-run parameters for each cross-sectional unit and then averages them over the units, the pooled mean group (PMG) estimator which restricts the long-run parameters to be the same across units but allows the short-run parameters to differ, and the dynamic fixed effect (DFE) option with the usual assumption of homogeneous short-run and long-run slope parameters. Hausman test is applied to the results from the restrictive options – PMG and DFE in turn – against the results from the unrestricted case of MG.

A few studies (Tan, 2009; Asteriou, 2009; Ndambendia and Njoupouognigni, 2010) have applied this estimation technique to the question of aid effectiveness. These studies have, however, limited themselves to testing the effect of aid on growth without testing for the direction of causality. In addition, none of them is concerned with the intermediating role of factors like institutions (as the current study aspires to). Moreover, none seems to have tested for the order of integration and cointegration of the variables.¹³

¹³For more on this last point, see the results from cointegration tests in Section 5.1 on page 15.

4 Data

This section first defines the variables of interest, their measurements, and their data sources. It then presents some descriptive statistics such as mean, minimum and maximum values, as well as t-tests for group mean comparisons.

To begin with aid, the preferred measure used in this study is Net Aid Transfers (NAT). It 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 commitments/disbursements made by a donor (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. In this study, NAT is measured as a percentage share of the recipient's GDP. NAT data are from [Roodman \(2005\)](#) (Center for Global Development) and the GDP data are from the World Bank online database.¹⁴

The second variable is institutional quality. For the purpose of this study, it is measured as the average of the two indices (Civil Liberties and Political Rights) from Freedom House. Included in the Civil Liberties index are: freedom of expression and belief (free media, freedom of religion, academic freedom, open and free private discussion); associational and organisational rights; rule of law; and, personal autonomy and individual rights (including property rights). The Political Rights index, on the other hand, includes: electoral process (free and fair elections); political pluralism and participation; and, functioning of government (policy making, corruption, accountability, transparency). The measure ranges from 1 (the worst) to 7 (the best).¹⁵

Finally, economic growth is the annual percentage change in real GDP per capita – i.e., $grGDPPC = 100 * \Delta \ln(RGDPPC)$. Real GDP per capita is measured in constant 2005 US dollars. The source is the World Development Indicators (WDI) of the World Bank.

Based on data availability, forty-three countries in Sub-Saharan Africa (SSA) comprise the sample for the analysis (see Table A1 in the Appendix for the list of countries). The study has chosen to focus on SSA for many have characterised 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](#)).

At this junction, and before formally testing for causality among the variables, some descriptive statistics are in order. With regard to aid, NAT-to-GDP ranges from -0.5% (Gabon 2003) to 186.9% (Liberia 1996) with an average of 15.9%. Based on time-averages, the minimum is 0.3% (South Africa) [followed by 0.6% (Nigeria) and 1.5% (Gabon)] and the maximum is 49.8% (Liberia).

On the other hand, growth rate of GDP per capita ranges from -50.2% (Liberia 1990) to 142.1% (Equatorial Guinea 1997) with an average of 1.25%. Based on the averages over the entire period the minimum growth rate is -2.05% (for DRC) and the maximum is 12.69% (for Equatorial Guinea).

Institutional quality ranges from 1 (the worst) to 7 (the best). The best score of 7 has been attained by Cape Verde (2003-2013) and Mauritius (2004-2005). The worst score of 1 has been scored by 15 out of 43 countries at least at some point in time between 1980 and 2013, most notably by Sudan and Equatorial Guinea.

Next, pair-wise group comparisons have been undertaken. Firstly, the (average) growth performance of countries that received above-average aid is compared to the performance of

¹⁴For Chinese aid, different source and definition are used than those stated here. See Section 5.4 for definition, source as well as description of data.

¹⁵The measure is re-scaled to simplify interpretation; the original scaling was from 1 (the best) to 7 (the worst).

Table 1: Group Average Comparison of Variables: t-test (Unequal Variance)

<i>GDP per Capita Growth:</i>	Mean (for Below Average NAT/GDP) = 1.6265 Mean (for Above Average NAT/GDP) = .6080 Difference: Mean(Below) - Mean(Above) = 1.0185 p-value: two-sided (one-sided) = 0.0203 (0.0101)
	Mean (for Below Average Institution) = 0.5788 Mean (for Above Average Institution) = 2.1649 Difference: Mean(Below) - Mean(Above) = -1.5861 p-value: two-sided (one-sided) = 0.0001 (0.0000)
<i>Institutional Quality:</i>	Mean (for Below Average NAT/GDP) = 3.3668 Mean (for Above Average NAT/GDP) = 2.9349 Difference: Mean(Below) - Mean(Above) = 0.4319 p-value: two-sided (one-sided) = 0.0000 (0.0000)
	Mean (for Below Average Growth) = 2.9317 Mean (for Above Average Growth) = 3.5291 Difference: Mean(Below) - Mean(Above) = -0.5974 p-value: two-sided (one-sided) = 0.0000 (0.0000)
<i>Net Aid Transfers:</i>	Mean (for Below Average Growth) = 16.3877 Mean (for Above Average Growth) = 15.3355 Difference: Mean(Below) - Mean(Above) = 1.0522 p-value: two-sided (one-sided) = 0.2259 (0.1129)
	Mean (for Below Average Institution) = 17.1601 Mean (for Above Average Institution) = 14.2665 Difference: Mean(Below) - Mean(Above) = 2.8936 p-value: two-sided (one-sided) = 0.0005 (0.0003)

those with below-average aid. As shown in Table 1, the average growth rate (in GDP per capita) for the below-average-aid group is higher than that for the above-average-aid group. Similarly, the average institutional quality score for the below-average-aid group is higher than that for the above-average-aid group. Hence, countries with below-average-aid are characterised by better growth and institutional quality compared to the above-average-aid group.

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 (in GDP per capita) for the above-average-institutional quality group is higher than that for the below-average-institutional quality group. Regarding the latter, countries with below-average-institutional quality have, on average, received more aid than those with above-average-institutional quality score. The last set of comparisons in Table 1 is between below-average and above-average growth groups. Accordingly, the above-average growth group is characterised by better institutional quality than the below-average group. In addition, the slower growing group seems to have received more aid than the other group; however, the difference between the two groups is not statistically significant (one-sided p-value = 0.1129). Visual depictions of these same comparisons in Table 1 are provided in Figures A2-A4 in the appendix. For depiction of how these variables evolved over time, see Figure A1 in the appendix

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 cointegrating relationship among them. Thus the first step here, as commonly the case in time series econometric analysis, is to test for stationarity. For this purpose, two tests are employed: the Im-Pesaran-Shin (IPS) unit root test and the Hadri stationarity test. The null hypothesis of the first test is that all the panels have unit root whereas the second one has the null that all panels are stationary. The tests are applied to four variables: logarithm of real GDP per capita ($\ln\text{RGDPPC}$), growth rate of GDP per capita (grGDPPC), aid (NAT/GDP) and institutional quality (Institution). The reason behind testing for both $\ln\text{GDPPC}$ and grGDPPC is that while it theoretically makes sense to study the level or growth effects of aid and institution, the choice between the two should also be informed by (or at least consistent with) tests for order of integration and cointegration. The results of the stationarity tests are reported in Table 2.

Table 2: Unit-Root/Stationarity Tests: *p-values*

Variable	IPS Unit Root Test		Hadri Stationarity Test	
	<i>Level</i>	<i>Difference</i>	<i>Level</i>	<i>Difference</i>
$\ln\text{RGDPPC}$	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
H_0 :	All panels contain unit-roots		All panels are stationary	

For NAT/GDP and Institution tested at level, both the null of $I(1)$ under IPS and of $I(0)$ under Hadri are rejected. That is, each variable is characterised by a mix of stationary and non-stationary panels. 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 towards non-stationarity. After differencing it once, even though not all panels have unit roots (IPS), not all panels are stationary (Hadri). Following from their definitions, what is true for $\ln\text{RGDPPC}$ in first difference is also true for grGDPPC in level – grGDPPC is also a mix of stationary and non-stationary series. The first difference of grGDPPC is stationary for all panels (as IPS rejects non-stationarity and Hadri cannot reject stationarity). The general inference is then that NAT/GDP , Institution and grGDPPC are $I(1)$ variables whereas $\ln\text{GDPPC}$ is an $I(2)$ variable at least for some panels.

Subsequently, two sets of cointegration tests are applied to the three $I(1)$ variables: grGDPPC , NAT/GDP and Institution. The tests are Pedroni's (residual-based) and Westerlund's (error-correction-based) panel cointegration tests. Both sets of these tests – all the seven for Pedroni and all the four for Westerlund – reject the null of no-cointegration at the 1% level of significance (Table 3). In spite of the results from unit-root/stationarity tests above, and as a cross-check for that conclusion, these cointegration tests have also been applied to $\ln\text{RGDPPC}$, NAT/GDP and Institution. None can reject 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. The tests have also been conducted with the inclusion of a trend term, and the conclusion reached based on the results in Table 3 is held up.

Rejecting the null of no-cointegration indicates the existence of a causal relationship, but not

Table 3: Tests of Cointegration

Variables Involved	Pedroni's Test*			Westerlund's Test**		
	Stat.	Panel	Group	Stat.	Value	Rob. p-value
<i>lnRGDPPC</i> ,	<i>v</i>	-2.69	.	<i>Gt</i>	-1.357	0.990
<i>NAT/GDP</i>	ρ	1.434	3.302	<i>Ga</i>	-4.145	0.998
\mathcal{E}	<i>t</i>	.6125	1.974	<i>Pt</i>	-10.277	0.430
<i>Institution</i>	<i>adf</i>	.8103	1.763	<i>Pa</i>	-3.435	0.734
<i>grGDPPC</i> ,	<i>v</i>	5.676	.	<i>Gt</i>	-3.631	0.000
<i>NAT/GDP</i>	ρ	-16.42	-14.93	<i>Ga</i>	-18.285	0.000
\mathcal{E}	<i>t</i>	-20.67	-25.28	<i>Pt</i>	-21.270	0.002
<i>Institution</i>	<i>adf</i>	-19.43	-22.47	<i>Pa</i>	-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 *v*)."

** Robust P-values are obtained from bootstrapping 500 times.

the direction of causality. The direction is established through Granger Causality tests, which are accomplished by estimating an error correction equation for each variable: economic growth, aid, and institutional quality. This is undertaken in the upcoming subsections.

5.2 Heterogeneous Response to Aggregate NAT from DAC-Donors

After establishing the existence of a cointegrating relationship, an ARDL(1,1,1) is estimated, normalising on each variable in turn. The results are summarised in Table 4.

Table 4: Economic Growth, Aid and Institutions: ARDL(1,1,1) Model

<i>Dependent Variable</i>	$\Delta grGDPPC$	ΔNAT	$\Delta Institution$
<i>Long Run:</i>			
Institution	0.540***	-1.647***	
NAT	-0.012		-0.023***
grGDPPC		-0.334***	0.068***
<i>Short Run:</i>			
Adjustment Speed	-0.825***	-0.243***	-0.175***
$\Delta Institution$	2.132**	-0.992	
ΔNAT	-0.194***		-0.031
$\Delta grGDPPC$		-0.094***	0.009***
Constant	-0.365	5.104***	0.653***
N	1378	1378	1378
\bar{T}	32.05	32.05	32.05
n	43	43	43

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

The results in the table point to the following long run relationships. There is a bidirectional causal relationship between aid and institutional quality: countries with weaker institutions have been able to attract more aid (as evidenced by the negative and significant coefficient of institutional quality in the aid equation), and more aid has led to weaker institutional quality

(negative and significant coefficient of aid in the last column of Table 4).¹⁶ The former is in line with the efforts from 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 deteriorate institutions. This possibility of negative effect of aid on institutions has already been emphasised (for instance by, Moyo, 2009; 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 the justification of aid as a tool for helping the slow-growing poor nations. On the other hand, there is no robust evidence that aid has directly led to either faster or slower growth. 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, and alternative definitions of institutional quality). Nor are the quantitative differences notable.

Another remarkable point from Table 4 is the differences in the speed of adjustment for the different equations. The institutional quality equation has the slowest speed of adjustment for a shock, while the growth equation has the fastest. Whereas growth in GDP per capita corrects about 83% of deviation from the equilibrating or cointegrating relation in a year, institutional quality can restore only about 18% of the error. For aid, the adjustment is about 24% in a year following a shock.

Unlike the common practice of relying an ARDL model of order 1 (i.e., with 1 lag for each variable), models with more lags are also tried. Experimenting with models of up to four lags and comparing them using the AIC and BIC, 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 5).

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, for sure, is 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 4 and 5 are estimated using the Pooled Mean Group (PMG) estimator. The choice is made based on Hausman tests applied to the results from the three estimators mentioned earlier. Specifically, the PMG results are compared to results from the Dynamic Fixed Effects (DFE) estimator which imposes parameter-homogeneity, and the Mean Group (MG) estimator which does not impose any such restriction but does not exploit the possibility of shared long-run parameters. First, the comparison of MG and DFE estimates (to see if there is parameter heterogeneity) confirms that there is indeed heterogeneity in slope parameters. This means that results from estimation techniques that allow heterogeneity in the intercept only are misleading. Not surprisingly, in the DFE estimation, the effect of aid on economic growth appears to be positive and significant, showing the danger of ignoring parameter-heterogeneity. Subsequently, the PMG is tested against the MG, and the test favours PMG over MG. That is, the panels share the same long-run parameters. In sum, parameter heterogeneity exists and the

¹⁶The direction of causality is inferred not just from the significance of coefficients. An additional requirement is for the error correction or speed of adjustment term of the corresponding equation to lie in the interval $(-2, 0)$ and to be statistically significant.

Table 5: Economic Growth, Aid and Institutions: ARDL(4,4,4) Model

<i>Dependent Variable</i>	$\Delta grGDPPC$	ΔNAT	$\Delta Institution$
<i>Long Run:</i>			
Institution	0.209***	-2.649***	
NAT	-0.053***		-0.028***
grGDPPC		-2.019***	0.067***
<i>Short Run:</i>			
Adjustment Speed	-0.908***	-0.157***	-0.238***
$\Delta grGDPPC$		-0.154***	0.005
L $\Delta grGDPPC$	0.049	0.080	-0.002
L2 $\Delta grGDPPC$	0.030	0.059	-0.007
L3 $\Delta grGDPPC$	0.053	0.030	-0.001
$\Delta Institution$	2.597**	0.390	
L $\Delta Institution$	0.380	-0.149	0.116***
L2 $\Delta Institution$	-0.218	0.244	-0.060*
L3 $\Delta Institution$	0.638	1.179**	0.043
ΔNAT	-0.859		0.001
L ΔNAT	-0.515	-0.265***	0.096
L2 ΔNAT	-0.275	-0.089**	0.076
L3 ΔNAT	-0.011	0.050	0.034*
Constant	1.331***	4.482***	0.891***
N	1249	1249	1249
\bar{T}	29.05	29.05	29.05
n	43	43	43

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

usual homogeneous parameter techniques give unreliable results. However, the group shares a common long run relationship between these variables (which means that is the current technique has advantage over estimating a separate time series equation for each recipient).

The technique used here also permits the detection of exceptions where the common long-run causal relationships breakdown. Accordingly, based on the unanimity between the two models presented (Tables 4 and 5) the following cases have been identified. First, the endogeneity of growth cannot be rejected for any recipient. Secondly, for the ‘aid-equation’, the speed of adjustment to disequilibrium is not statistically significantly different from zero for Burundi, Democratic Republic of Congo, Kenya, and Nigeria – and though not far from the margin – for Chad, the Gambia and Equatorial Guinea. For this countries the amount of aid they receive does not respond to their performance in terms of economic growth and institutional quality. Similarly, institutional quality is exogenous to the system for Cameroon, Chad, Ethiopia, and Togo – and again, close to the margin – for Benin, the 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.

5.3 Donor Heterogeneity within the DAC-Donors Category

The analysis so far addresses the issue of parameter-heterogeneity. Next comes testing for donor-specificity in aid effectiveness. A separate equation relating growth, institutional quality, and aid is estimated for each donor. (It should, however, be noted that the number of observations upon which the estimations are based differ 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 summarised in Table 6.

Table 6: Direct, Indirect and Total Effects of Aid on Growth

<i>Donor</i>	<i>Direct Effect</i>	<i>Indirect Effect</i>	<i>Total Effect</i>	<i>This total effect is:</i>
France	–	–	–	expected
Japan	–	–	–	expected
Germany	–	–	–	plausible
Finland	–	–	–	expected
Italy	–	–	–	expected
USA	0	–	–	expected
Canada	0	–	–	expected
Sweden	0	–	–	plausible
New Zealand	0	–	–	plausible
Luxembourg	0	–	–	plausible
Austria	0	0	0	unexpected
Spain	0	0	0	unexpected
Denmark	0	0	0	highly unexpected
Netherlands	0	+	+	expected
Switzerland	0	+	+	plausible
Portugal	0	+	+	plausible
Ireland	+	+	+	expected
UK	+	–	?	plausible
Norway	+	–	?	plausible
Belgium	+	–	?	unexpected
Australia	+	–	?	plausible

Relating the findings summarised in Table 6 to donor behaviour from the literature reveals some interesting patterns, but also some unexpected ones. The cases of aid from Ireland, the Netherlands, USA, France, Italy and Canada are among the ones highly consistent with the literature.

Ireland, to begin with, is one of the few bilateral donors ranked consistently in the top performers. For instance, it is ranked second by Ghosh and Kharas (2011) (based on transparency score), second by Knack et al. (2011) (based on multiple dimensions of aid quality) and first by Birdsall et al. (2010) (based on its focus on fostering recipients’ institutions). In fact, according to this last source, it is the only bilateral donor “that scores in the top 10 on all four dimensions of aid quality” (Birdsall et al., 2010, p. 15).¹⁷ The positive result for aid from Ireland is also consistent with its ranking in CDI.

Similarly, but to a lesser extent, the Netherlands performs well across a number of indicators (and sources). For instance, it is one of the highly transparent donors with rising transparency in recent years (Easterly and Williamson, 2011), and among the least agency-fragmented (Birdsall et al., 2010). According to Knack et al. (2011), it is the best bilateral donor in terms of selectivity and the third best in the overall rank. It is in the top ten best performers in three out of four indicators, ranks third (next to Ireland and Denmark) in fostering institutions, provides 100% untied aid, with high share of its aid recorded in recipients’ budget, and is among donors with most coordinated missions (Birdsall et al., 2010). Although relatively weak in specialisation (Easterly and Williamson, 2011; Knack et al., 2011), which is also a characteristic shared by Ireland and Denmark, its consistently high ranking makes it among the donors with the expected (positive) result.

¹⁷The four dimensions are: maximising efficiency, fostering institutions, reducing the burden on recipients, and transparency and learning.

On the other hand, USA, France, Italy and Canada consistently appear towards the bottom in the rankings of donors in terms of different dimensions of aid quality – none of them fares above the average in the rankings of [Birdsall et al. \(2010\)](#), [Ghosh and Kharas \(2011\)](#), [Knack et al. \(2011\)](#) and [Easterly and Williamson \(2011\)](#). [Mattesini and Isopi \(2008\)](#) also characterise these four donors as donors who reward corruption. Despite having one of the best aid agencies ([Easterly and Williamson, 2011](#)) and being in the list of those giving aid to less corrupt countries ([Mattesini and Isopi, 2008](#)), Japan is also not that different from this group of four, as evidenced in the rankings by [Birdsall et al. \(2010\)](#), [Ghosh and Kharas \(2011\)](#) and [Knack et al. \(2011\)](#).

Although known for donating the highest share of its GNI (in 2014 CDI), as well as providing 100% untied aid and giving the highest share of its aid to recipients with good operational strategies ([Birdsall et al., 2010](#)), there are good reasons for Luxembourg to join the preceding list of ‘bad’ donors. Firstly, its position in the CDI ranking (seventh in 2014 with a composite index of 5.6) is mainly due to the quantity sub-index (7.2) rather than quality (4.1). Secondly, less than a quarter (23%) of its aid goes to recipients’ development priorities ([Birdsall et al., 2010](#)). It is also among the least focused on fostering institutions ([Birdsall et al., 2010](#)), among the worst in aligning its aid with recipient countries’ systems, institutions and procedures ([Knack et al., 2011](#)), and has below average transparency score ([Ghosh and Kharas, 2011](#); [Birdsall et al., 2010](#)). According to [Easterly and Williamson \(2011\)](#), where its overall score is not that bad, it has high overhead costs and is very poorly specialised – it “has the same country fragmentation as the US, and slightly more sector fragmentation, even though the US aid budget is 70 times larger” (p. 1936).

New Zealand is among donors scoring high across the different rankings. It is among the most transparent in [Ghosh and Kharas \(2011\)](#) and [Birdsall et al. \(2010\)](#). It consistently scored above average transparency score in [Easterly and Williamson \(2011\)](#) and [Knack et al. \(2011\)](#) as well. It also has a good agency ranking ([Easterly and Williamson, 2011](#)) and very strong good-governance orientation in aid giving. However, there are a number of grounds on which New Zealand’s aid could turn out to be a ‘bad’ one. First, like Luxembourg, its aid is highly fragmented both by country and sector ([Easterly and Williamson, 2011](#); [Knack et al., 2011](#)). This is particularly the case in recent years as it was known for concentrating on a small number of recipients in the past ([Easterly and Williamson, 2011](#); [Birdsall et al., 2010](#)). Secondly, it fares poorly (below France, Canada and Italy) in terms of the ‘fostering institutions’ criterion of [Birdsall et al. \(2010\)](#), which is consistent with the fact that the negative result comes from the indirect effect. Thirdly, only 11% of its scheduled disbursements is recorded by recipient countries as received within one year of the scheduled time ([Birdsall et al., 2010](#)). Still an important factor is that it channels its aid through low quality multilateral agencies (as stated in the 2014 CDI briefs).

The case of Australia is also in agreement with how the literature characterises its aid and aid agency. Its positive attributes include: highly untied aid and good orientation towards recipient priority sectors ([Birdsall et al., 2010](#)), low administrative cost ([Easterly and Williamson, 2011](#); [Birdsall et al., 2010](#)), and top-rated transparency (ranked as the most transparent both in [Ghosh and Kharas \(2011\)](#) and ([Birdsall et al., 2010](#))). However, it is also among the worst performers in other areas. For instance, it is one of the worst in terms of channeling its aid through effective ways (more than 30% of its aid is in technical assistance) ([Easterly and Williamson, 2011](#)), it scores very poorly in three out of four indicators by [Birdsall et al. \(2010\)](#) including the ‘fostering institutions’ criterion. The aid component of its CDI (4.8 for 2014) is also below average. Hence, it might not be surprising if the positive and negative effects of its aid counteract each other to give an ambiguous overall effect.

United Kingdom does well across sources and indicators. Its aid agencies are rated the best overall ([Easterly and Williamson, 2011](#)), it has the best poor-country orientation and second best in terms of focusing on recipient priority areas ([Birdsall et al., 2010](#)), not that bad (ranked

10th) in Knack’s evaluation, and has above average transparency according to Ghosh and Kharas (2011). However, it is unanimously rated as poor in terms of specialisation by Knack et al. (2011), Easterly and Williamson (2011) and Birdsall et al. (2010). It also has poor selectivity (Knack et al., 2011) where selectivity encompasses both poverty selectivity and policy (and institutional) selectivity. Moreover, it has “greater than 30 percent of aggregate ODA commitments unaccounted for in [its] project-level reporting” (Birdsall et al., 2010, p. 27). Hence, the result here is not that unexpected.

German aid presents another case where the aid quality scores point towards the plausibility of any result. Among the positive aspects, Mattesini and Isopi (2008) put Germany among donors that reward less corruption. Consistent with this, it scores above average in terms of fostering institutions (Birdsall et al., 2010). It also scores above average in transparency (Ghosh and Kharas, 2011; Easterly and Williamson, 2011; Birdsall et al., 2010). Its harmonisation and alignment sub-scores in Knack et al. (2011) are also well above average. However, each of these sources has some unfavourable component in its evaluation of German aid. In Easterly and Williamson (2011), where Germany has its aid agency performance in the top five, its selectivity sub-index is below average. Similarly, in Knack et al. (2011), where the overall score is favourable, it scores poorly in selectivity and specialisation. Despite low administrative costs and untied aid, it is one of the least efficient donors (just above Spain, Korea and Greece) (Birdsall et al., 2010). According to this same source, in spite of good-predictability aid, more than 30% of its aid commitments is not accounted for in project reports. Furthermore, its 2014 score in the aid component of the CDI is below average. Given such a mix of positive and negative evaluations, the performance of aid from Germany (as in Table 6) is not that unexpected.

Portugal ranks top in terms of directing most of its aid to partner priority areas, its aid has the strongest good-governance orientation, and (like Ireland) none of its aid is realised through donor Project Implementation Units (PIUs) (Birdsall et al., 2010). Besides, its aid is characterised by very low administrative/overhead costs (Easterly and Williamson, 2011; Birdsall et al., 2010). It also fares well in terms of specialisation (Easterly and Williamson, 2011; Knack et al., 2011). In Knack et al. (2011), where it is ranked last overall (38th), its rank in specialisation is 10. All these support the result in Table 6. However, its aid is highly (71%) tied and its agencies are among the bottom performers (Easterly and Williamson, 2011), it is poor in transparency (Ghosh and Kharas, 2011), and it performs poorly in three out of four indicators (Birdsall et al., 2010). Hence, while there are good qualities of Portuguese aid to support the result, as usual, there are bad qualities to counteract it.

Conventionally, aid from Scandinavian countries (Sweden, Norway, Denmark) and Finland was considered superior to aid from other bilateral donors. For instance, they have been praised as donors that reward less corrupt recipients (Mattesini and Isopi, 2008; Alesina and Weder, 2002) and (with the exception of Finland) as the least-selfish donors (Berthélemy, 2006). Nonetheless, it turns out that there is a negative relationship between aid from Finland or Sweden and economic growth. No significant effect of either sign exists for Danish aid. In the case of Norway, the association is unclear as the direct effect is positive and the indirect one is negative.

However, the cases of Swedish, Finnish and Norwegian aid may not be that surprising given their scores in recent evaluation indices. Despite some variations in their rankings of donors in general, Knack et al. (2011), Easterly and Williamson (2011) and Birdsall et al. (2010) all evaluate Finland as a very poorly specialised or highly fragmented donor. In addition to being among donors which spend the highest proportion of their Country Programmable Aid (CPA) on administrative costs, it is also known for “the proliferation of small amounts of aid across a relatively large number of partners” (Birdsall et al., 2010, p. 60). In terms of the quality of donor agency, it is the second worst donor next to Greece, and scores very badly in terms of reducing the use of ineffective channels like technical assistance and food aid (Easterly and Williamson,

2011).

Unlike the Finnish ones, both Swedish and Norwegian aid agencies do very well in terms of reducing the use of ineffective channels. Norway does better than the other two in terms of lowering overhead administrative costs as well. However, they are both poor in terms of selectivity (focusing on poverty and better institutions) and specialisation (focusing on a limited number of recipients). Perhaps explaining the ‘unconventional’ outcome with regard to the effectiveness of Swedish and Norwegian aid is not easy, however, researchers have already challenged this ‘convention’ of superior Scandinavian/Nordic aid (for instance, see [Schraeder et al. \(1998\)](#) and [Alesina and Weder \(2002\)](#)). In all evaluations, with the exception of Easterly’s agency evaluation, however, all the three donors are at least above the average when it comes to transparency. Even in [Easterly and Williamson \(2011\)](#), it is the bilateral agencies that performed poorly; Nordic Development Fund is ranked as the best agency of all (multilateral and bilateral agencies taken together). Plus, they still remain in the top half of rankings such as the CDI which is published annually by the Center for Global Development, perhaps partly because of their generosity in terms of volume.

However difficult it might be to account for the failure of aid from Sweden, Norway and Finland, it does not come anywhere close to the difficulty in explaining the failure of Danish aid. Denmark is repeatedly ranked number one by CGD, ranked better than Ireland in [Knack et al. \(2011\)](#), and ranked just next to Ireland by [Ghosh and Kharas \(2011\)](#). It is also positively evaluated by [Birdsall et al. \(2010\)](#) as being found in the top ten in three out of four indices. (Recall that only Ireland scored in the top ten in all the four indices.) In fact, its aid agency quality is below that of Norway in Easterly’s ranking, but it still managed to be above average. Even in Easterly’s indices, it did well in selectivity and use of effective channels in particular.

Another less expected result, but of a different sort, is associated with Spanish aid. Consistently ranked towards the bottom across the sources, described as having the weakest poverty orientation, as being the least efficient, as a donor with a neighbourhood and history-based aid allocation and as a donor with the second most tied aid (next to South Korea) ([Birdsall et al., 2010](#)) and as a donor with one of the worst aid agencies ([Easterly and Williamson, 2011](#)), one would expect Spain to be in the ‘worst donors’ category. However, perhaps because of its good transparency ([Birdsall et al., 2010](#); [Ghosh and Kharas, 2011](#)), low administrative/overhead costs ([Easterly and Williamson, 2011](#); [Birdsall et al., 2010](#)) and ability to make good use of recipient country systems ([Birdsall et al., 2010](#)), the expected negative effect is neutralised.

Austrian aid is similar to the Spanish one in terms of effectiveness. However, it seems relatively harder to account for the neutrality of Austrian aid. With the exception of above average transparency score ([Ghosh and Kharas, 2011](#); [Easterly and Williamson, 2011](#); [Birdsall et al., 2010](#)) and its targeting of recipients with good Monitoring and Evaluation (M&E) frameworks, everything about Austria as a donor is negative. To mention a few, it gives the lowest share of its aid in the form of CPA (with Canada and Greece), is the second (next to Switzerland) in terms of spending the largest share of its CPA on administrative costs, has the lowest share of its aid going to recipients’ priority areas, and gives highly fragmented aid by agency ([Birdsall et al., 2010](#)). According to [Knack et al. \(2011\)](#), it is very poor overall and in every index. According to [Easterly and Williamson \(2011\)](#), it is poor overall and the poorest on selectivity. In [Birdsall et al. \(2010\)](#), it is very poor in three out of four categories. In short, unless micro or project specific evaluations shed some light on the strengths of Austrian aid (if any) which have possibly neutralised the negative aspects, the result for its aid here remains one of the inconsistent cases with macro level characterisations.

Evaluated as a donor with below-average aid quality in five out of five sources ([Knack et al., 2011](#); [Easterly and Williamson, 2011](#); [Ghosh and Kharas, 2011](#); [Birdsall et al., 2010](#), and in the CGD’s CDI ranking), one would naturally expect Belgium to fall in the group of aid with negative

effect. With almost no positive attribute associated with its name (except its poverty-orientation reported by [Birdsall et al. \(2010\)](#) where it performed poorly in all the four rankings), Belgium's defiance is one of the unexpected cases.

Switzerland consistently scores below average in a number of evaluations ([Knack et al., 2011](#); [Easterly and Williamson, 2011](#); [Ghosh and Kharas, 2011](#); [Birdsall et al., 2010](#)). CGD's evaluation of Swiss aid is also consistent with these evaluations. It scores 4.6 overall which is not only below average (5.0) but has also a very low quality sub-index (3.9). However, inconsistently with this aid component of CDI score, in its 2014 brief, CGD states that "the quality of its foreign aid is relatively strong." Switzerland scores relatively well on some aspects though. Firstly, it does well in terms of harmonisation ([Knack et al., 2011](#)), which means that it is good at aligning itself with government-led approach (good recipient ownership of aid) and coordinating its efforts with other donors. Secondly, its aid is highly untied and its score on avoiding ineffective channels is very good – the best-performer in [Easterly and Pfitze \(2008\)](#).¹⁸ Thus, the positive effect of its aid is difficult for judgement, but not implausible.

To sum up, there is a clear heterogeneity in the effectiveness of aid among the 'traditional' donors. With the exception of few cases (remarkably for Denmark, but also for Belgium, Austria and Spain), the results here are either as expected or at least plausible with the donor rankings and characterisations in five available evaluations – [Birdsall et al. \(2010\)](#), [Ghosh and Kharas \(2011\)](#), [Knack et al. \(2011\)](#), [Easterly and Williamson \(2011\)](#) and the CDI of the CGD.

5.4 Aid from 'New' Donors: the Case of Chinese Aid

The final question the study intends to address is: Where do the 'new' donors fit in? Or, how do the 'new' donors compare with the traditional donors in terms of aid effectiveness? In general, the data for the 'new' donors are scarce to allow a similar level of investigation as done above for the traditional ones. However, given the current state of affairs in international development (research), it is imperative to say what data allow regarding one 'new' donor in particular – China.

To begin with some words of warning, the data on China's aid to Africa are not from the [Roodman \(2005\)](#) dataset, and thus is not the preferred net aid transfer (NAT). Besides, what constitutes aid in the case of China is not clearly defined as in the case of OECD-DAC donors. To complicate things further, unlike the OECD-DAC aid, the data are not from official sources, but rather from media reports. It is, however, the best at hand thanks to the efforts of [Strange et al. \(2013\)](#) from the CGD. 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 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 favour of the alternative that the group with poorer institutional quality received more aid than the institutionally better performing group. This is in contrast to the claim that Chinese aid does not depend on the recipient's institutional quality. Similarly, the group with above-average aid from China has a

¹⁸However, its trade policy (in agricultural products in particular) and its poor financial transparency makes Switzerland among the bottom performers in overall CDI. That is, even if the positive effect of its aid is to be taken at face value, it is hard to hold the position that Switzerland is good at supporting Africa's development. It is an open secret that Swiss bank has been the safe haven of African dictators (Mobutu Sese Seko and Sani Abacha to mention just two) and others.

lower score on institutional quality. In terms of economic growth, it seems that, at the margin, more Chinese aid went to better performing countries.¹⁹ On the other hand, the difference between the average economic growth rates of 2.78% for below-average aid group and 3.75% for the above-average group is statistically insignificant.

An attempt to run a pooled mean group estimation on the three variables was unsuccessful at first. Scrutinising the data more closely reveals that some countries have to be dropped out of the sample: the institutional quality variable has no variation over the entire period (2000-2012) for Sudan, and ten other countries (Cote d'Ivoire, Lesotho, Liberia, Mali, Malawi, Niger, Nigeria, Rwanda, Senegal, and Zambia) are characterised by discontinuous time-series. This is a serious blow to an already small sample size. Nonetheless, combining the temporal and spacial variations (with a total of 120 observations) 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 7 gives the results.

Table 7: Economic Growth, Chinese Aid and Institutions

<i>Dep. Var.:</i>	$\Delta grGDPPC$	$\Delta InstitQual$	$\Delta Aid.China$
<i>Long Run:</i>			
grGDPPC		0.069***	0.085
Aid.China	0.152***	-0.224***	
Institution	1.522***		-0.107
<i>Short Run:</i>			
Adj. Speed	-0.865***	-0.138**	-0.908***
$\Delta Aid.China$	-0.049	-0.031*	
$\Delta InstitQual$	2.085		-2.535
$\Delta grGDPPC$		0.005	0.125
Constant	-3.141***	0.549**	3.888***
N	120	120	120
\bar{T}	12	12	12
n	10	10	10

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

Inferring from the first and third columns of 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 hypothesis/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 performance.

The positive bidirectional causality between economic growth and institutional quality 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 like the case of most (two-thirds of the) ‘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, at least in the current sample of countries, indeterminate. As such, Chinese aid is better than aid from traditional donors taken as aggregate, as well as that from some of the big DAC-donors taken individually (including USA, France, Canada, Japan, Germany, Sweden, Italy, New Zealand,

¹⁹The p-value for the one-sided null hypothesis of no difference against the left-sided alternative (of less growth - less aid) is 0.0991.

Finland and Luxembourg) but possibly inferior to aid from the others. It fits in the same group of donors as Australia, Belgium, Norway and UK. However, and once again, the poorer quality of data and the smaller sample size warn us to take the results for China more cautiously.

6 Conclusion

The debate on aid effectiveness has evolved through various stages. It now seems that we are back to square one 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 if the effect of aid on growth is different for different recipients (parameter heterogeneity) and also if aid from different donors display different aid effectiveness outcomes (donor heterogeneity).

Using the pooled mean group estimator to allow for parameter heterogeneity and cross-sectional dependence reveals that the direct effect of (aggregate) aid from ‘traditional’ donors on economic growth is not robust to different specifications, but robustly non-positive, in the sample of 43 Sub-Saharan African countries. However, aid from this 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 (both in terms of growth and institutional quality) has attracted more aid.

Estimating a different equation for each of these donors shows that this average behaviour of negative overall effect of aid on growth holds for some donors but not for others. Specifically, aid flows from USA, France, Japan, Germany, Canada, Finland, Sweden, Italy, Luxembourg and New Zealand have impacted the region’s economic growth negatively. On the other hand, aid flows from Ireland, the Netherlands, Portugal and Switzerland have positive long run growth effects. Danish, Spanish and Austrian aids do not have any effect on growth. Donors with ambiguous total effect – where the direct effects are positive and the indirect effects are negative – are Norway, UK, Australia and Belgium. The results for most of these donors are consistent with how the qualities of their aid have been evaluated in various sources. A remarkable deviation is the result for aid from Denmark.

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 (relatively poorer) quality of data on Chinese aid – 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 4 out of 21 ‘traditional’ donors, the overall effect Chinese aid indeterminate.

Overall, this study concludes that a universal praise 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 performances across a number of donor quality indicators – transparency, use of effective channels, poverty- and policy/institutional-selectivity, alignment with recipient priority areas, specialisation (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 emphasising 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 (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 specialisation* or *less fragmentation*) and *alignment* of donor decisions/actions with recipient priorities and systems. The ‘not-so-expected’ positive (for the cases of Portugal, Spain, Austria, and Switzerland) and negative (for Norway, Sweden, Luxembourg, Germany, New Zealand, and Finland) results – relative to the respective 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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7 Appendix

Table A1: Mean Values of the Main Variables

Recipient	grGDP_PC	NAT (% of GDP)	Institutional Quality
Angola	2.54	2.25	1.82
Benin	0.93	11.89	4.40
Botswana	4.33	3.94	5.82
Burkina Faso	2.22	19.07	3.21
Burundi	-0.59	31.34	2.15
Cameroon	0.02	3.93	1.99
Cape Verde	5.40	45.18	5.22
Central African Rep.	-1.10	18.17	2.87
Chad	2.57	10.69	1.90
Comoros	-0.20	23.40	3.62
Congo, Rep.	1.34	3.66	2.59
Cote d'Ivoire	-1.40	4.13	2.56
D. R. Congo	-2.05	6.74	1.81
Equatorial Guinea	12.69	19.21	1.21
Ethiopia	2.19	17.84	2.29
Gabon	-0.18	1.48	2.93
Gambia	0.12	26.09	3.72
Ghana	1.87	11.60	4.37
Guinea	0.40	16.70	2.21
Guinea-Bissau	0.13	28.05	3.09
Kenya	0.56	7.75	3.15
Lesotho	2.31	19.05	4.04
Liberia	0.20	49.83	2.91
Madagascar	-1.19	13.22	3.87
Malawi	0.46	27.67	3.40
Mali	0.69	21.21	4.04
Mauritania	0.27	26.95	2.15
Mauritius	3.61	2.15	6.29
Mozambique	2.47	36.40	3.37
Niger	-1.00	18.73	3.12
Nigeria	0.97	0.60	3.35
Rwanda	2.01	31.56	2.04
Senegal	0.19	13.94	4.60
Seychelles	2.19	5.06	3.85
Sierra Leone	0.16	18.14	3.49
South Africa	0.41	0.29	4.82
Sudan	1.56	8.83	1.51
Swaziland	2.46	3.96	2.41
Tanzania	2.14	15.92	3.31
Togo	-0.19	11.73	2.50
Uganda	2.46	17.68	3.25
Zambia	0.86	14.16	3.75
Zimbabwe	-0.30	8.83	2.66
Total	1.25	15.94	3.20

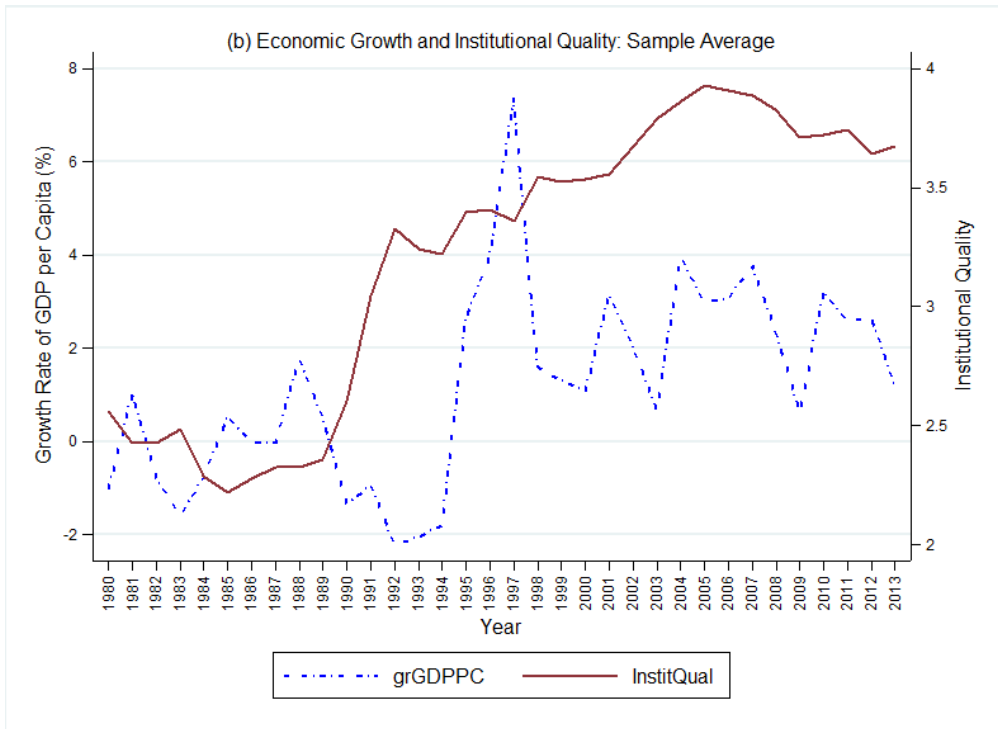
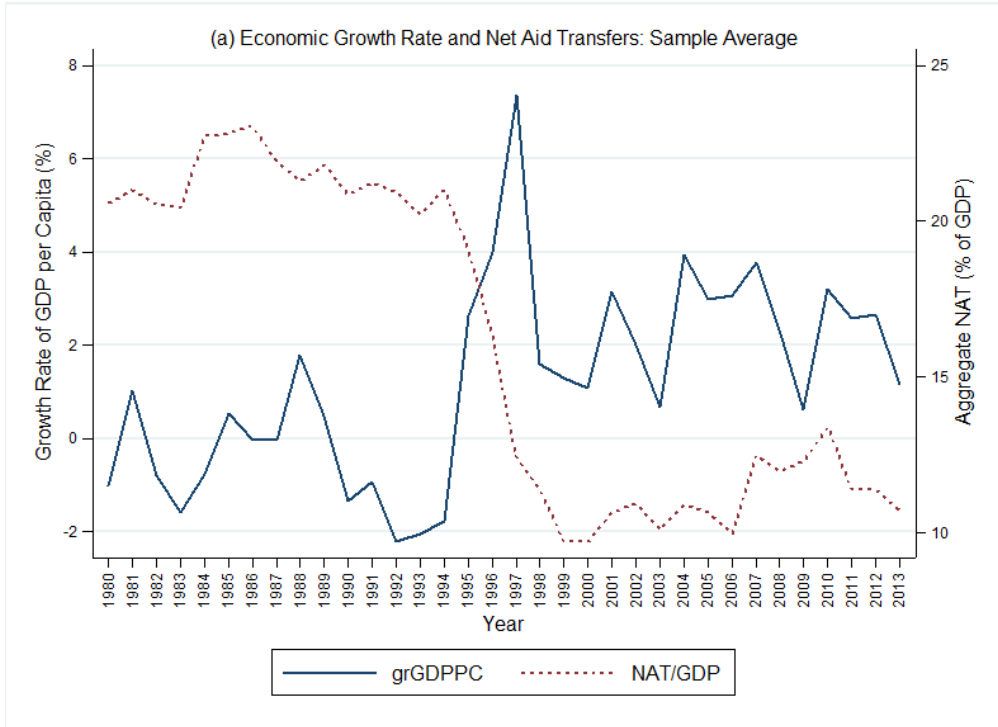


Figure A1: Economic Growth, Institutional Quality and Aid in the Sample of Countries

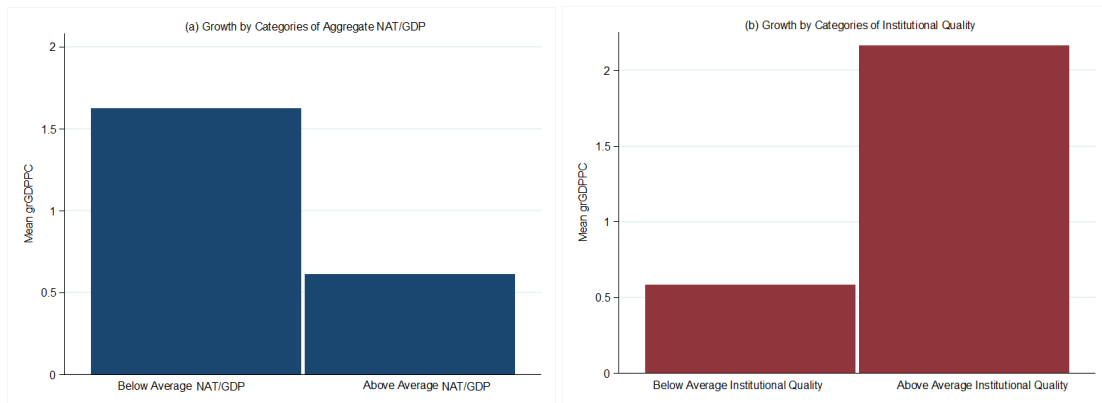


Figure A2: Economic Growth by Categories of Aid and Institutional Quality

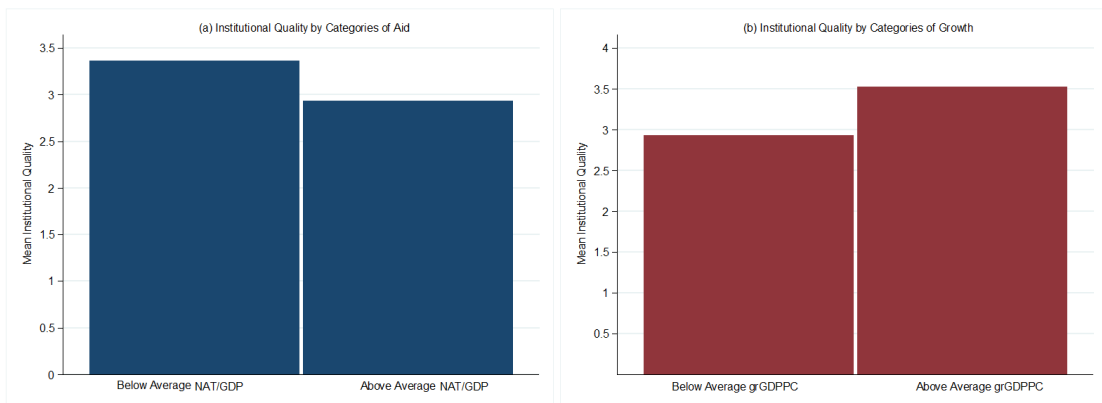


Figure A3: Institutional Quality by Categories of Aid and Economic Growth

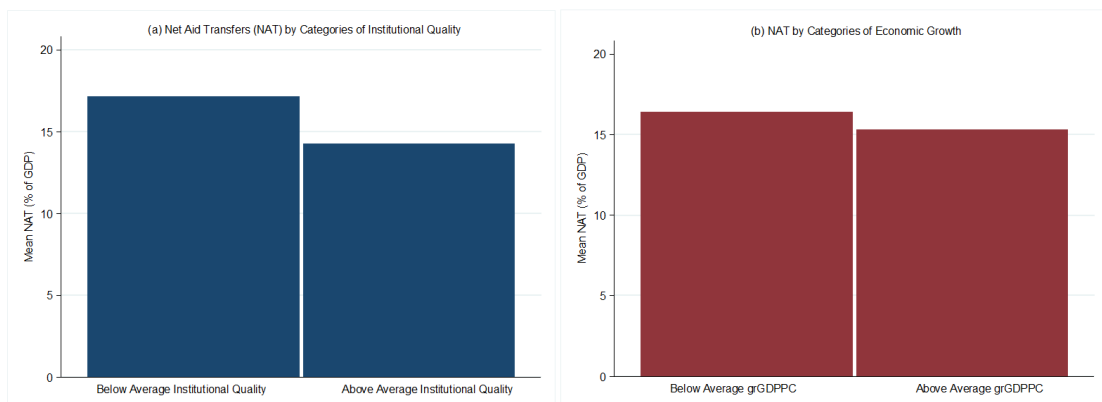


Figure A4: Aid by Categories of Institutional Quality and Economic Growth

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