Your development or mine? Effects of donor-recipient cultural differences on the aid-growth nexus

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Abstract

Development aid from the western world may lead to adverse growth effects in the global South due to the neglected cultural context in the development framework. There is evidence that development agendas are mainly premised upon western thought and belief systems. Therefore, I hypothesize that the expected effect of development aid on the economic growth of recipients is impaired by cultural differences between western donors and aid recipients. I test this hypothesis empirically by augmenting an aid-growth model with proxy variables of cultural distance between donors and recipients. Namely, I use donor-recipient genetic distance and western education of the chief executive of the recipient country as a measure of cultural similarity. Results of OLS panel estimation in first differences for 1961-2010 period show that a one unit increase in donor-recipient genetic distance reduces the effect of aid on growth by 0.2 percentage points. In turn, a one percentage point increase in aid yields, on average, 0.3 percentage point increase in growth after a decade, if the leader in power was educated in the West.

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1 Introduction

"*In the early stages of development it matters little to a starving African family whether they can vote or not. Later they may care, but first of all they need food for today, and tomorrows to come, and that requires an economy that is growing*." (Moyo, 2009:44)

Despite its long history and plethora of studies, no correlation between development aid and the economic growth of recipient countries is found from raw macro-level data, whereas development aid effectiveness literature exhibits varying results (Doucouliagos and Paldam, 2009). For example, several studies report positive and statistically significant effects conditional upon the economic policy and physical climate of recipient countries (Burnside and Dollar, 1997; Dalgaard et al., 2004), while others report an unconditional and positive effect of aid on growth (Hansen and Tarp, 2001) or no statistically significant effect at all (Rajan and Subramanian, 2008). Clemens et al. (2012) analyze three aid-growth models (Boone, 1996; Burnside and Dollar, 1997; Rajan and Subramanian, 2008) and show that, in the short term, aid has a positive impact on growth. Moreover, Brückner (2013) also finds that aid has a positive effect on growth, as long as the simultaneity problem – lower growth more aid – is adjusted in the empirical analysis. Thus, findings of aid effectiveness literature are inconsistent and puzzling, which leaves room for further investigation. Doucouliagos and Paldam (2009) perform meta-analysis of aid effectiveness literature and point out that even in the studies where aid has a positive impact on growth, the size of the effect is too small to matter. This paper specifically explores the causes for this negligible effect of aid on growth.

The bulk of the literature on aid effectiveness investigates the effect of foreign aid on economic growth based on recipient country characteristics only, which include a range of economic and social factors such as trade policy, inflation, budget balance, institutions, ethno-linguistic fractionalization, geography, initial GDP per capita, etc. Aid-growth models ignore the intervention aspect of development aid. This is particularly important when the intervention – development aid – comes from culturally distant societies. Western donors and aid recipients from the global South are often characterized by different belief systems and cultures due to their divergent historical, environmental and political pasts, which suggests that the assumption of homogeneity of preferences in the aid-growth economic model does not necessarily hold –

what matters most to the donor might not be a top priority for the recipient at particular point of time and place, which also drives a mismatch between supply and demand in development transactions (Easterly, 2007). In this paper I focus on the western donors and hypothesize that donor-recipient cultural differences matter and, the larger these differences between donors and recipients the less effective is aid. As a result, the theoretically expected positive effect of aid on growth is reduced or diminished due to the cultural differences between donors and recipients.

My hypothesis is based on scholarly and anecdotal evidence. Often donor objectives are in conflict with local beliefs, preferences and values at particular points of time and context. This mismatch and neglect of country-specific circumstances leads to failures of development paradigms as documented by many scholars and practitioners (Hodler and Dreher, 2013; Coyne, 2013; Altaf, 2011; Moyo, 2009; Easterly, 2001; Escobar, 1995; Bauer, 1976). Financial aid for economic development is a transaction involving two or more parties. Economic theory tells us that such economic transactions are often plagued with information asymmetry problems that harm outcomes (Gibson et al., 2005; North, 1987). The culture of the recipient and the donor and their interplay can greatly influence development aid transactions. Cultural differences may give rise to increased information asymmetry between donor(s) and recipients and negatively affect any potential growth impact of aid (Gibson et al., 2005).

Politically, development aid is an intervention from the West in the growth processes of the lower income countries in the global South with promotion of strategies premised upon western culture and values (Sen, 2004). Often these interventions are led by time-specific development paradigms (Easterly, 2001) that mostly neglect the diversity of local beliefs, cultures, grassroots' development and other country-specific circumstances in aid recipient countries (Escobar, 1995).

In sum, this paper is motivated by the aid effectiveness puzzle (Doucouliagos and Paldam, 2009) and scholarly debates on culture and development (Sen, 2004; Inglehart and Baker, 2000; Bauer, 1976; Escobar, 1995). The main hypothesis of this paper is that potential effectiveness of development aid, premised upon western culture, is undermined when uniformly applied in societies with different cultures and belief systems.

The contribution of this paper is the empirical investigation of the role of cultural differences between donors and recipients in the aid-growth nexus. While there has been a vast amount of scholarly debate on the role of culture in development, none of the previous studies in the aid effectiveness literature has empirically examined the effects of donor-recipient cultural differences on the aid-growth relationship. Hence, on the one hand, this study fills a gap in the aid effectiveness literature by including a determinant of aid effectiveness that captures an important donor-recipient interaction factor, and on the other hand, it contributes to the political economy of development literature by studying the effects of cultural differences on development intervention.

Section 2 presents an interdisciplinary view on the cultural underpinnings of development paradigms. In Section 3, I briefly discuss various measures of cultural differences and explicate my choice of using proxy variables, such as donor-recipient genetic distance and western education of a recipient country leader. Thereafter, I construct an aid-adjusted measure for genetic distance to average donor in Section 4. As detailed in Section 5, I closely follow the estimation methodology of Clemens et al. (2012) using their aid-growth model based on Rajan and Subramanian's (2008) study. I use this particular model for my analysis as it reveals no long-term effect of aid on growth, which is in line with the statistics based on raw data – i.e. it suggests no correlation between aid and growth. My contribution is the inclusion of an interaction term of aid with proxy measures of donor-recipient cultural differences. I report the empirical results in Section 6, finding that the effectiveness of aid is significantly reduced with a greater genetic distance to the average donor and that western educated leadership has a statistically significant and positive impact on the aid-growth nexus with a ten-year lag. I present tests for the robustness of my results in Section 7. Section 8 concludes with suggestions for further research and policy.

2 Cultural underpinnings of development paradigms

The early development framework, in fact, emerged from modernization theories and practices in the West during the 20th century (Radcliffe and Laurie, 2006; Gilman, 2003; Escobar, 1995; Bauer, 1976). Modernization is usually described as the transition from a traditional society into a modern one. Modernization is characterized, on one side, by cultural change (Inglehart

and Baker, 2000) and, on the other side, by democracy, the development of a welfare state, egalitarianism, universal public education, income taxation and land reform (Gilman, 2003). Modernity is premised upon rational technology and scientific knowledge: "It is the model of the West detached in some way from its geographical origins and locus" (Gilman, 2003, quoting Edward Shils, p.1).

Furthermore, development discourses in the past century have been influenced by Talcott Parsons' functional sociology theory (1951) that certain types of thinking and behavior can benefit the modernization process (Gilman, 2003; Turner, 1999). A distinct characteristic of modernization is the change in beliefs and values that took place during the 20th century in the West (Inglehart and Baker, 2000). While changes in certain cultural beliefs and values accompanying modernization were *internal* to Western economies, in particular, to the United States (Rostow, 1990), these were imposed *externally* on the diverse populations in the global South via the development processes (Escobar, 1995). As Turner (1999) notes, in the 1950s and 1960s, policymakers in donor countries were encouraged to advocate modern cultural traits in aid recipient countries following Parsonian theory. Changing the beliefs, attitudes and behaviors of local people was seen as a way of "dragging them away from 'traditional' practices and introducing them to the modern Western culture" (Schech and Haggis (2000) cited in Radcliffe and Laurie, 2006, p. 233).

In contrast to mainstream development, post-development thinking is based on perspectives of distinct cultures and 'localized, grassroots movements' (Escobar, 1995). One of the prominent exponents of post-development theory, Arturo Escobar, regards mainstream development as the imposition of Western modernity, progress and knowledge upon the diverse belief systems and cultures of the global South (Escobar, 1995; Radcliffe and Laurie, 2006). Escobar, specifically describes several development aid projects that failed due to a precarious application of Western models in Latin America (Escobar, 1995). As an alternative, he suggests that local communities should have an opportunity to address their problems locally. The West, in turn, may respond to development demands from the poor instead of supplying them with its own (western) development agenda (Escobar, 1995).

Anecdotal evidence from aid-recipient countries shows that the differences in belief systems of donor and recipient countries can be part of the reason why development aid can be ineffective

in positively influencing economic growth in the long run (Altaf, 2011; Moyo, 2009; Easterly, 2007).

In her 2009 book, Dambisa Moyo argues that foreign aid itself is largely responsible for Africa's underdevelopment. As she sees it, most aid paradigms and policies have been destructive for African economies as they have distorted incentives, perpetuated corruption and supported dysfunctional political elites. In relation to the aid paradigm for promoting democracy in African countries, Moyo writes: "In the early stages of development it matters little to a starving African family whether they can vote or not. Later they may care, but first of all they need food for today, and tomorrows to come, and that requires an economy that is growing" (Moyo, 2009, p.44).

Altaf (2011) presents a detailed account of the failure of the Social Action Program, which was developed by the government of Pakistan to fulfill the criteria of a donor organization without considering its appropriateness in the local setting. For instance, she describes a part of the program which carried out medical training for young women in rural areas. The project failed to be effective (women either emigrated for employment or were left unemployed) as it not only neglected gaps in the local healthcare system but also ignored certain circumstances related to local culture: adverse perceptions about women's education and their employment in remote areas, superstitious thinking about vaccination and 'irrational' preferences for large families. As Altaf (2011) points out, the failure of the Social Action Program is not only a story of one program in one country but it is the story of the majority of aid programs in many developing countries.

In conventional economic theory, the heterogeneity of individual beliefs, preferences and attitudes has long been neglected. Economic theory is mainly based on the assumptions of rationality and responsiveness to economic incentives. Meanwhile, scholars from other disciplines argue that the 'objective' economic rationality should not, and does not, always prevail when humans take actions in different times, places and contexts (Kahneman, 2013) rather individuals follow a subjective rationality based on the existing options and alternatives. Pioneers in the field of evolutionary psychology, Cosmides and Tooby (1994), note that "our evolved psychology may have alternative modes of operation that prompt humans everywhere to find alternative sets of rules to be reasonable, depending on how closely their particular

economic environment mimics various Pleistocene ecological conditions" (1994, p.331). That is, individuals in different societies around the globe follow subjective rationality rules that are not captured in economic models for development (Coyne, 2013).

Following this rationale, it is plausible that often development agendas which are repeatedly built upon the assumption of so-called 'objective' rationality and homogeneity of preferences, do not fully take into account the cultural differences that exist between donors and recipients when designing development strategies. On that matter, Sen (2004) stresses the importance of studying how culture affects development in the presence of aid because it is highly influenced by the mainstream economists educated in the West. Nevertheless, since its inception, development aid promoted by donor countries has often failed to sufficiently address cultural specific factors in its development agendas despites the persistent critique (Altaf, 2011; Moyo, 2009; Easterly, 2001; Bauer, 1976).

Initially, development aid was seen as the 'Big Push' necessary for poor countries to fill in their investment gaps, take off and get on the economic growth path. In his study, Boone (1996) finds that aid does not have a significant impact on investment but rather increases consumption and the size of government. Successive influential studies in the aid effectiveness literature find either positive (Clemens et al., 2012; Hansen and Tarp, 2001), conditional (Burnside and Dollar, 1997; Dalgaard et al., 2004) or no effects (Rajan and Subramanian, 2008) of development aid on growth. However, none of the aid-growth models have taken account of the differences in culture between donors and recipients[1] which, I argue, is important because the development framework is not only highly influenced but also initiated by the thinking of 'experts' in the West (Altaf, 2011; Easterly, 2001; Escobar, 2011; Moyo, 2009; Sen, 2004). Nevertheless, it is not easy to establish this (missing) link empirically since culture, as a type of local knowledge, is largely embedded in individuals and is hard to measure (Gibson et al. 2005). This characteristic of culture makes it more difficult for both the donor and the recipient to recognize its influence on development strategies. This paper attempts to fill this gap and empirically analyze the effect of donor-recipient cultural differences using data on donor-recipient genetic distance and the western education of recipient country leaders, as proxy measures for cultural

[1] Dreher et al., 2013b, study the effects of donor-recipient differences in political ideology on the aid-growth nexus.

similarity. Specifically, I test the hypothesis that donor-recipient cultural distance negatively affects the aid-growth nexus.

3 Measuring Cultural Differences

The concept of culture is defined differently depending on the type of literature and context. Cavalli-Sforza (2001, p.175), a population geneticist, defines it comprehensively as one's "ability to learn from the experience of others, [which] is a special phenomenon that relies on communication. [It] enables us to accumulate prior discoveries and helps us profit from experience transmitted by our ancestors-knowledge that we would not have on our own." In economic literature, culture is mainly defined as beliefs, values, preferences and norms, transmitted from one generation to another in a fairly unchanged manner (Bisin and Verdier, 2001; Guiso et al., 2009; Spolaore and Wacziarg, 2009). Furthermore, social psychologists, Fishbein and Ajzen (1975), show that values, attitudes, preferences and behavior, ultimately, emerge from the beliefs that one holds. Thus, in this paper culture is understood as a set of beliefs about the functioning of various aspects of life, which is shared by a group of people and is either communicated by parental teaching or learned from society at large.[2]

World Value Surveys (WVS) are opinion-based interviews designed to allow for cross-country comparison of individual beliefs, values and attitudes on a variety of topics, such as democracy, religion, gender equality, traditions, globalization, citizen empowerment and life satisfaction. The coverage of countries ranges from 21 to 70, depending on the wave. In total, there are currently six waves, starting with 1981 and the most recent wave ending in 2010. The measure of trust from the World Values Surveys has been extensively used in economic literature to analyze the impact of culture on economic outcomes (Beugelsdijk, 2006; Bjørnskov, 2009; Guiso et al., 2009; Tabellini, 2008). World Values Surveys also focus on cultural change in societies all over the world, rather than only looking at existing cultural values at certain points in time. They are therefore a useful tool for dynamic analysis. Inglehart and Welzel (2005), using WVS responses of different populations on diverse socio-political issues, find two dimensions that dominate the picture of cultural differences in the world: authority and well-

[2] Although the explanation for persistent belief systems is beyond the focus of this paper, research shows that it is most likely determined by the environmental, political and historical past of the society (Cosmides and Tooby, 1994; Inglehart and Baker, 2000).

being. The authority dimension depicts the divergence in traditional and secular-rational values. Well-being depicts the divergence in survival and self-expression values.

In regards to the first dimension, the most important values of a traditional society are religion, patriotism, respect for authority, obedience, and marriage, among others. Secular-rational societies hold the opposite stand on these values. In regards to the second dimension, societies characterized with survival values prefer security to liberty and exhibit intolerance of homosexuality, political passivism, distrust in outsiders and a low level of life satisfaction, among others. Societies characterized by self-expression values have the opposite stance. Most of the aid-recipient countries are characterized by survival and traditional values while most of the western donor countries are characterized by secular-rational and self-expression values.[3] The findings of Inglehart and Welzel (2005) also suggest that values can change with modernization, and depending on the transition mode (agrarian to industrial and industrial to knowledge-society), different sets of values may change (traditional to secular rational and survival to self-expression). This is also in line with the study that persistent political and economic institutions as well as stable (higher) income lead to cultural change in societies (Acemoglu and Robinson, 2012).

The cultural dimensions of authority and well-being would have been the most relevant measures of cultural differences for the purpose of this study because of their close association with modernization and development processes. However, inconsistency of sample sizes throughout the waves and endogeneity between cultural change and development require another exogenous method to measure cultural differences between donors and recipients.[4]

[3] An exception is the USA, which is characterized by self-expression and traditional values.

[4] Other cultural dimensions, such as Hofstede and Hofstede (2001) and Schwartz (1994) are more limited in regards to score and sample. For example, Hofstede's cultural dimensions, which include individualism, power distance, masculinity and uncertainty avoidance, were initially conducted among IBM employees in several countries (40 countries in 1994 and 80 in 2001) to measure cultural differences towards life and the workplace. However, these cultural measures do not go beyond attitudes towards work and business matters. This is a context-specific story of self-reliance and does not tell anything about prevailing beliefs and attitudes in society towards non-work related areas of life, such as politics, religion, traditions and social issues. On the other hand, Schwartz (1994) suggests an alternative measure of cultural differences. Mainly, he composes seven cultural value types (conservatism, intellectual autonomy, affective autonomy, hierarchy, mastery, egalitarian commitment and harmony) into three cultural dimensions of (1) embeddedness versus autonomy, (2) hierarchy versus egalitarianism and, (3) mastery versus harmony. The embeddedness versus autonomy dimension is highly correlated with Hofstede's individualism/collectivism dimension (Gorodnichenko and Roland, 2010). Schwartz's cultural dimensions are more comprehensive, but the fact that the samples have been obtained from student and teacher populations only, makes it restrictive when interpreting results.

Several studies have employed instrumentation methodologies to tackle the possible endogeneity of culture and establish a causal effect of culture on economic outcomes. For instance, Guiso et al. (2009) instrument trust, as a proxy for culture, with commonality in religion and ethnic origin and somatic distance.[5] However, as Guiso et al. (2009) report, these instruments can also pick up a set of other cultural, institutional and legal connections that can affect the outcome variable – economic transactions. In contrast, Gorodnichenko and Roland (2011) instrument the individualism/collectivism cultural dimension with genetic distance between populations. They base their choice of instrument on the model of Bisin and Verdier (2001) on cultural transmission.

Cavalli-Sforza (2001) establishes a conceptual framework on the relationship between genome and culture where both accumulate information to be passed on from one generation to another. Under natural selection, the fittest genetic types prevail, while culture is received from another person and is kept selectively. Cavalli-Sforza (2001) mentions two modes of cultural transmission: traditional – through observation, teaching and communication – or through resources developed by modern technology – books, computers and other media. Therefore, a measure of genetic distance can be a good proxy for cultural differences rather than an instrument as genes do not directly affect beliefs and culture but rather move along in a roughly parallel relationship.

In their model of economics of cultural transmission and dynamics of preferences, Bisin and Verdier (2001) show that globally stable heterogeneous preferences can exist among populations when children either acquire beliefs, values and preferences from their parents and/or adapt and imitate the beliefs, preferences and values most prevalent in a society. That is, family and society are considered as substitutes in the socialization process. Hence, preferences and cultural traits are either transferred from parents to offspring, vertically, along with parental genes, or acquired through imitation and adaptation processes in the society, i.e., horizontally. Bisin and Verdier's (2001) vertical cultural transmission can be related to the traditional way of cultural transmission, and their horizontal mode can be related to the resource-based cultural

[5] An indicator based on the average frequency of specific traits (hair color, height, etc.) present in the indigenous population, according to Guiso et al. (2009).

transmission discussed in Cavalli-Sforza (2001). In this study, I analyze both channels of cultural transmission.

Proxy for Vertical Transmission of Culture

Spolaore and Wacziarg (2009) develop an analytical framework linking genetic distance, as a measure for intergenerationally transmitted characteristics, with income differences across countries to explain long-term barriers to diffusion of technology. Their findings show that income differences across countries are positively correlated not only with absolute genetic distance but also with relative genetic distance to the technological frontier.[6] They use a type of genetic distance that measures the time since two populations shared common ancestors. This genetic distance captures the degree of ancestral relatedness among populations and the differences in characteristics such as beliefs and social norms that are transferred from one generation to another in a fairly unchanged manner over time (vertically transmitted characteristics). Similarity in such characteristics eases the communication and adaptation of practices conducive to socio-economic development – such as rapid human capital accumulation, lower fertility[7] and better political institutions. By extension, genetically distant populations face difficulties in interacting and communicating with one another, which translation techniques cannot fully overcome, leading to resistance to the adoption of development-conducive practices (Spolaore and Wacziarg, 2009, p.513). The correlation between genetic distance and income differences is shown to be robust to geographic differences and to the share of European ancestry in a country's population. Overall, Spolaore and Wacziarg (2009) find that larger relative genetic distance from the technological frontier is a barrier for technology adoption and diffusion of development. In addition, they point out that other cultural proxies often used in the literature such as religion, language and ethnicity are also captured by genetic distance because those are part of intergenerationally transmitted characteristics. These conclusions are linked with those of Bisin and Verdier (2000) who show that ethnic and religious minorities persist in the USA, in contrast to the "melting pot" theory,

[6] Spolaore and Wacziarg (2009) consider the US and the UK as being on the technological frontier

[7] Caldwell (1976), points out that in Southern Nigeria contraceptives are widely available but used only among a small minority of women who accept western attitudes as a result of western education, contacts and media.

due to parental preferences for transmission of certain cultural traits to their offspring, such as strong preferences for marriages within same religion and ethnicity.

Desmet et al. (2011) use genetic distance as a proxy for cultural distances within Europe, based on their finding that genetically closer Europeans give similar answers to the World Value Surveys' questions on perception of life, religion, family and morals. In their study, Desmet et al. (2011) show that genetic distance is a preferred proxy for cultural differences because, when controlling for linguistic and geographic distances, only the correlation between genetic distance and cultural distance continues to be positive and statistically significant at the 5% level.

Thus, based on the research of Desmet et al. (2011), Spolaore and Wacziarg (2009), Cavalli-Sforza (2001) and the theory of Bisin and Verdier (2001), I consider genetic distance between populations to be a reasonable proxy for measuring cultural differences between donors and recipients.

Aid-adjusted genetic distance

In different individuals genes take different forms (alleles), which are strictly hereditary, such as A, B, O and AB blood types. Certain gene forms prevail more frequently in one society than in another due to migration and isolation, these differences in allele frequencies are used by geneticists to calculate distances between populations (Spolaore and Wacziarg, 2009).[8] Following Cavalli-Sforza et al. (1994), Spolaore and Wacziarg (2009) consider a type of genetic distance measure, also known as the "co-ancestor coefficient," which captures the time-span since two populations shared common ancestors. According to Spolaore and Wacziarg (2009), these genetic distances are based on population trees, similar to family trees: after splitting apart, differentiations in genes tend to accumulate over time, which results in a linear relationship between genetic distance and the time since two populations last shared common ancestors. The authors focus on *neutral* characteristics of genetic variations (genetic markers), which are affected by random drift rather than natural selection. This implies that the genes considered in calculating this type of genetic distance and those used in Spolaore and Wacziarg

[8] A gene is commonly defined as a DNA sequence that codes for a protein (protein polymorphism). The data on allele frequencies for different genes for populations in the world can be found at http://alfred.med.yale.edu/ . Other details on specifics of genetic distances can be referred to in Cavalli-Sforza (2001), Cavalli-Sforza et al. (1994), and Spolaore and Wacziarg (2009).

(2009) have no relation to physical fitness. Moreover, as Cavalli-Sforza (2001) explains, this type of genetic difference is between individuals and not 'races': genetic differences between observable physical characteristics of populations are very small and mainly attributable to climate changes over long periods of time.

As Spolaore and Wacziarg (2009) clarify, this measure of genetic distance captures the probability that two gene forms (allele) selected randomly from two populations will be similar. The genetic distance measure takes a value of zero in the case of identical allele distributions across two populations, while it takes positive values where allele distributions differ. The larger the difference in allele distributions between two populations the higher is the genetic distance between them.

Using data from Alesina et al. (2003) and Cavalli-Sforza et al. (1994), Spolaore and Wacziarg (2009) construct a weighted genetic distance measure, which accounts for immigrant based countries, such as the United States, where the population is made up of genetically distant subpopulations. Spolaore and Wacziarg (2009) compute the weighted genetic distance between two countries in the following way:

$$wGD_{ij}^{W} = \sum_{n=1}^{N} \sum_{a=1}^{A} (s_{in} \times s_{ja} \times d_{na}), \quad (1)$$

where s_{in} is the share of group n in country i (own country), s_{ja} is the share of group a in country j and d_{na} is the genetic distance between groups n and a. It should be noted that this weighted genetic distance is the current match between populations that does not change for a donor-recipient pair over the time period considered in this paper.

The co-ancestor coefficient measure of genetic distance is an appropriate proxy for cultural differences because the longer the time since two populations split the more diverse their cultures can become. In terms of development aid effectiveness, F_{ST} genetic distance between two populations matters more or less depending on the magnitude (involvement or degree of intervention) of the aid received. To capture this influence, I follow the method used in Dreher et al. (2013b) and compute an aid-adjusted measure of the above-described weighted genetic distance:

$$AwGD_{i,t} = \sum_{i=1}^{n} s_{ij,t} * wGD_{ij}^{W} \quad (2)$$

where $s_{ij,t}$ is donor $j's$ share of total bilateral aid in country i, in year t. wGD_{ij}^{W} is the weighted genetic distance between recipient i and donor j. Thus, $AwGD_{i,t}$ is the aid-adjusted genetic distance to the average donor for each recipient in period t. The correlation coefficient between wGD_{ij}^{W} and $AwGD_{i,t}$ is 0.9. In line with the argument in the previous section, larger aid-adjusted genetic distance between the recipient and the average donor indicates bigger differences in intergenerationally transmitted characteristics, including preferences, attitudes, values and beliefs. In accordance with the hypothesis of this paper, I expect aid effectiveness to decrease with larger aid-adjusted genetic distance to the average donor.[9]

Thus, I measure vertical transmission of culture (from parents to offspring) by using a weighted genetic distance measure from Spolaore and Wacziarg (2009). Vertical transmission of culture captures the traditional way of cultural learning through parental teaching, communication and observation. This way of learning puts little weight on cross-cultural interaction and learning from alternative sources. Therefore, in this case, I expect development aid's effect on growth to decrease as genetic distance increases. I analyze the effects of non-traditional cultural learning, i.e., cross-cultural interaction and resource-based learning, by disentangling their effects from those of vertical cultural transmission.

Proxy for Horizontal Transmission of Culture

I use recipient country leaders' education in the West to analyze the effects of horizontal cultural transmission between donors and recipients. Scholarly findings show that individuals with foreign education from democratic states promote democracy in their home countries (Spilimbergo, 2009). In addition, leaders educated for a prolonged period in donor countries tend to promote the culture of the respective host country back home and attract international investors (Constant and Tien, 2010). Gift and Krcmaric (2013) find that western educated leaders tend to democratize more.

For example, Georgian president Mikheil Saakashvili, who led the country from 2004 to 2013, received his education (human rights) from universities in the US and Europe. He believed that to achieve development a cultural transformation must occur simultaneously with reforms (Lanskoy and Areshidze, 2008; "Lunch with the FT," n.d.). Gift and Krcmaric (2013) argue

[9] Appendix C includes maps for aid-adjusted genetic distance to average donor

that leaders educated in the West are more likely to push for democratization due to their democratic socialization during studies in the US and the UK.

I focus on the leaders and not on the share of individuals educated in the West because leaders are responsible for internal and external policy at large, and development aid objectives need to be coordinated with a recipient country's leadership as described in The Paris Declaration on Aid Effectiveness (2005). Also Jones and Olken (2005) study country leaders' performance in terms of economic growth and monetary policy, and find that leaders play a significant role in the growth processes of their country, especially in authoritarian regimes. A study by Dreher et al. (2009) shows that the professional background and education of the head of the government, in the context of developing economies, matters for reforms.

Following Gift and Krcmaric (2013), I code western education as studies either in the US or the UK. Both of the countries are also the two largest donors in international development, hence most development paradigms are influenced by the preferences, beliefs and culture existing in these societies at large (Sen, 2004; Coats, 1997; Escobar, 1995; Bauer, 1976; Hayek, 1973). In addition, modernization is historically seen as westernization (Hayek, 1973), and development policies are highly influenced by economics (Sen, 2004), which, in turn, is Americanized (Coats, 1997). Therefore, I hypothesize leaders' socialization in these societies, where most development agendas are shaped, should benefit the effectiveness of development aid due to cultural similarities between the western educated recipient country leaders and donors.

If my hypothesis holds, then I expect to find a positive relationship between aid and growth when a country's leader has been educated in the US/UK. This would imply decreased transaction costs in negotiating the strategies for development and growth due to the similarity of beliefs on the matter.

4 Data and Method

The data on weighted genetic distance is from Spolaore and Wacziarg (2009). Bilateral aid data for Official Development Assistance (ODA) gross disbursements from 23 Development Assistance Committee (DAC) donors is from the OECD's Aid Statistics. Economic growth data is from Penn World Tables 6.2 and The data on leaders' foreign education and education level is from Dreher et al. (2013b). As in (Dreher et al., 2014, 2013b), this paper closely follows the approach in Clemens et. al. (2012) and studies the interaction effect of genetic distance and

bilateral aid on economic growth, using the extended aid-growth model from Rajan and Subramanian (2008). Additionally, I have extended the data up to 2010. That is, the panel data covers 66 countries from the period of 1961 to 2010.

The model in Rajan and Subramanian (2008), hereafter RS, is usually categorized as belonging to the "null strand" of aid effectiveness literature as they find that aid has no effect on growth (Clemens et al., 2012; Doucouliagos and Paldam, 2009). Similarly to the original RS study, most of the aid effectiveness literature uses instrumentation methods to tackle the endogeneity of aid. However, as Clemens et al. (2012) argue, based on the findings from Bazzi and Clemens (2013), these studies are supported by invalid instrumentation and GMM methodology (a "black-box"), which undermine the accuracy of the empirical results. Instead, Clemens et al. (2012) lag aid by one period to allow for a causal effect of aid on growth and to address the problem of reversed causality. In addition to lagged aid, they use first differences to capture country specific time-invariant effects and prevent issues associated with omitted variables. However, this controls only for single effects of omitted time-invariant recipient country characteristics but not their interaction with development aid. Hence, this paper follows the methodology in Clemens et al. (2012) but attempts to distinguish the effect of donor-recipient cultural distance on the aid-growth nexus by augmenting the model of RS with aid-adjusted genetic distance between recipients and the average donor. In this case genetic distance stays constant while aid varies over time. The reduced-form empirical model is as follows:

$$\Delta G_{i,t} = \beta + \delta \Delta Aid_{i,t-1} + \gamma AwGD_{i,t-1} + \zeta \Delta Aid_{i,t-1} * AwGD_{i,t-1} + \eta \Delta\left(Aid^2_{i,t-1}\right) + \\ + \theta \Delta X_{i,t} + \epsilon_{i,t}, \quad (3)$$

where, $\Delta G_{i,t}$ – is (the change in) recipient country i's annual GDP per capita growth rate averaged over period t (five years), $\Delta \text{Aid}_{\text{i,t}-1}$ denotes the lagged (change in) total bilateral aid received by country i in the period $t-1$ as a percentage of total GDP, $AwGD_{i,t-1}$ is the lagged aid–adjusted measure of genetic distance as described in the previous section, and $\Delta Aid^2_{i,t-1}$ is (the change in) the squared term of aid to account for the nonlinear effects described in Clemens et al. (2012). $\Delta X_{i,t}$ is (the change in) the vector of control variables as

used in the original studies of RS[10] and $\epsilon_{i,t}$ is the error term. I am mainly interested in the effect of the interaction term on economic growth.

Similarly, in terms of horizontal cultural transmission, I augment the RS specification from Clemens et al. (2012) with leaders' education in the in the US or UK. Leaders' education level is also controlled for in the model. My variable of interest is the interaction term between bilateral aid and education of a leader in the US/UK. The reduced form of the empirical model is:

$$\Delta G_{i,t} = \beta + \delta \Delta Aid_{i,t-1} + \gamma \Delta F_{i,t} + \zeta \Delta Aid_{i,t-1} * \Delta F, t_i + \varphi \Delta EL_{i,t} + \eta \Delta\left(Aid_{i,t-1}^2\right) + \\ + \theta \Delta X_{i,t} + \epsilon_{i,t}\,, \qquad (4)$$

where $\Delta F_{i,t}$ indicates (the change in) whether the country leader has been educated in the US or UK. It is a continuous variable, since year's dummies have been averaged over five year periods. $\Delta EL_{i,t}$ is (the change in) the level of a leader's education ranging from illiterate to advanced (doctoral) degree. The additional variables are defined as in equation (1).

In equation (1) and (2), in addition to the RS control variables, I also include controls for multilateral aid, bilateral and multilateral repayments since the aid variable is in gross disbursement and there is no reason to assume that repayments and multilateral aid do not affect growth (Clemens et al. 2012).

Endogeneity concerns

One might argue that genetic distance is not excludable as a cause of growth or culture. According to the model of Bisin and Verdier (2001), genes, like culture, are transferred from parents to offspring but genes themselves do not determine one's culture (Cavalli-Sforza, 2001). For example, if a child is adopted by parents living in a considerably different society then he or she would adopt the culture of the adoptive parents rather than that of his or her biological parents. In relation to growth, "since there are no identified genetic reasons as to why some countries became wealthier than others, genetic distance is very likely to satisfy the exclusion restriction" (Gorodnichenko and Roland, 2010, p.3). That is genetic distance is not a cause of

[10] In the RS model the control variables are: log of initial GDP/capita, initial Sachs-Warner trade policy index, log of initial life expectancy, log of inflation, initial M2/GDP, budget Balance/GDP, revolutions and period dummies.

growth or culture but rather is just proxy for cultural differences. The latter, in turn, may lead to differences in the rate of technological adoption and explain income differences (Spolaore and Wacziarg, 2009).

In terms of leaders' education abroad it may be the case that those who go to study in the West already highly regard western values. This would indicate a self-selection problem. However, anecdotal evidence shows that study abroad decisions by country leaders is based on the prestige of western education rather than the aspiration for Western culture. For instance, autocrats in China, Russia and Africa have themselves studied in prestigious western universities or sent their children to the West without necessarily approving of western values (Braw, 2014; Tschudi, 2013; Higgins and Fan, 2012). That is, leaders' decisions for acquiring education in the West are least motivated by the acceptance of Western culture and values ex-ante.

Although Clemens et al. (2012) attest that their estimation methodology takes care of the endogeneity of aid, the concern may still persist. Nevertheless, the interaction terms in equation (1) and (2) are still exogenous as long as one of the interaction terms is endogenous, as shown in Nunn and Qian (2012). Namely, the interaction between an exogenous term (genetic distance to average donor or education in a donor country) and a potentially endogenous term (bilateral aid) can be interpreted as exogenous since the main effect of the endogenous variable is directly controlled for in the estimation[11]. Thus, in the following section, I aim to establish a causal relationship between cultural differences and aid effectiveness using the proxy variables.

5 Empirical results

5.1 Effects of Vertical Transmission of Culture

Table 1 displays OLS estimation results for equation (1). The dependent variable is the change in the average per capita GDP growth rate. All variables in the (unbalanced) panel dataset are averaged over five years, covering 66 countries, with a total of 10 periods from 1961 to 2010. The model is augmented with the variable of interest, the interaction between gross bilateral aid and the aid-adjusted co-ancestor coefficient (genetic distance). The estimation is in first

[11] Nunn and Qian cite section 2.3.4 of Angrist and Krueger (1999) for technical details.

differences while aid is also lagged once. The aid-adjusted genetic distance is lagged but not differenced.[12]

Column 1 of Table 1 displays the results without inclusion of the variable of interest and its interaction term. As one can see, gross bilateral aid is positive but statistically insignificant for the whole period. This result is in line with Rajan and Subramanian's (2008) original results as well as the result in Clemens et al. (2012) when 'long-impact' aid is considered.[13] The next column includes aid-adjusted genetic distance, which has a negative effect on growth, statistically significant at the ten percent level. In the work of Spolaore and Wacziarg (2009), the Fst genetic distance or co-ancestor coefficient is explained as a barrier to technological diffusion: distant populations find it harder to communicate and understand each other, which leads to slower adoption of the policies beneficial to human development. The further away (genetically) a population is from the technological frontier the larger the barriers for technological diffusion (Spolaore and Wacziarg, 2009). Hence, in this model the own effect of the genetic distance can also be interpreted as a barrier to technological transfers from donor countries.

In the third column of Table 1, I interact aid-adjusted genetic distance to the average donor (23 DAC donors) with gross bilateral aid received from the 23 DAC donors.[14] The coefficient of gross bilateral aid is statistically significant at the five percent level and positive once the interaction term is introduced. However, its positive effect is reduced by the aid-adjusted genetic distance to the average donor, implied by the statistical significance of the interaction term at the five percent level. Thus, an increase of one unit in the aid-adjusted genetic distance reduces the total effect of aid on growth by 0.2 percentage points. The inclusion of a squared term of aid variables in column 4 shows that the statistical significance of aid is conditional on the size of the aid received. The positive sign of the squared term of the multilateral repayment could be early signs of a self-reliant and growing economy.

[12] The difference would only capture the change in the aid weights. Nevertheless, in my test for robustness the results are also provided when the aid-adjusted Fst distance is differenced.

[13] Clemens et al. (2012) find that early-impact aid, mostly investment in infrastructure and tangible goods, has a positive impact on growth in the RS specification. However, in this study I focus on the impact of aid on long-run growth rather than short-term growth boosts.

[14] In tests for robustness an additional control variable is included for the bilateral aid received from donors who are not among these twenty-three.

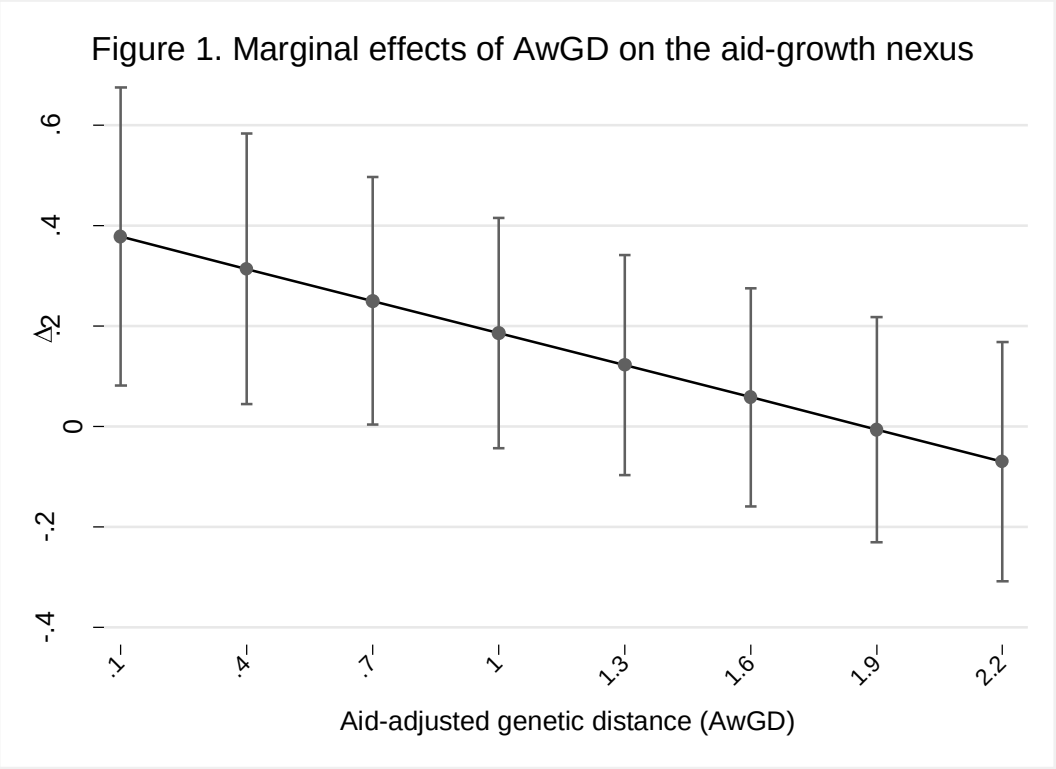
The marginal effects graph for the estimation results in column 3, depicted in Figure 1, shows that the total effect of aid remains positive to some extent, but once countries' aid-adjusted genetic distance to the average donor are larger than 1.9, the overall effect of bilateral aid gradually becomes negative. Countries with a very large genetic distance to the average donor include Tanzania and Botswana among 18 other countries, mostly from sub-Saharan Africa. Also, in the sample, on average, Poland has the smallest aid-adjusted (weighted) genetic distance to the average donor, 0.1, while The Republic of Congo has the largest aid-adjusted genetic distance to the average donor, 2.2.

The results in Table 1 suggest that aid effectiveness is significantly reduced with larger genetic distances between the recipient and the average donor. This also conforms with the notion that culturally (genetically) closer populations find it easier to communicate and understand each other, which leads to a faster adoption of growth-generating development polices.

Table 1. The effect of aid-adjusted genetic distance on the aid-growth nexus

Dependant variable: Economic Growth	(1)	(2)	(3)	(4)
Bilateral aid/GDP	0.153	0.128	0.399**	0.404
	[0.133]	[0.136]	[0.186]	[0.287]
Aid-adjusted genetic distance (AwGD)		-0.861*	-0.950**	-0.900**
		[0.457]	[0.460]	[0.452]
Bilateral Aid/GDP*AwGD			-0.213**	-0.183**
			[0.087]	[0.085]
Bilateral repayments/GDP	-0.375	-0.351	-0.446	-1.472*
	[0.282]	[0.287]	[0.293]	[0.870]
Multilateral Aid/GDP	-0.157	-0.105	-0.026	0.049
	[0.141]	[0.143]	[0.139]	[0.355]
Multilateral repayments/GDP	-1.506*	-1.114	-0.866	-4.231**
	[0.906]	[0.942]	[0.922]	[2.136]
Bilateral Aid/GDP squared				-0.001
				[0.006]
Bilateral repayments/GDP squared				0.303
				[0.211]
Multilateral Aid/GDP squared				-0.002
				[0.017]
Multilateral repayments/GDP squared				1.622*
				[0.905]
Adj. R-Squared	0.279	0.287	0.293	0.292
Number of Countries	66	66	66	66
Number of Observations	378	378	378	378

OLS panel estimation in first differences. Aid variables are lagged once. All regressions include period dummies. Control variables are: initial GDP p.c. (log), initial life expectancy (log), openness, inflation (log), initial M2/GDP, budget balance/GDP, revolutions. Significance levels * p<0.10, ** p<0.05, *** p<0.01.



Thus, on average, the expected effect of development aid on growth is impaired by 50% due to cultural differences. For example, the possible 0.4 percentage point increase in growth is, on average, reduced to 0.2 percentage points, making the growth impact of aid negligible. For very large differences the total effect of aid on growth also becomes negative as shown by marginal effects graph.

5.2 Effects of Horizontal Transmission of Culture

In this section, I replicate results of RS's specification from Clemens et al. (2012), considering horizontal transmission of culture. I am interested to see whether recipient country leaders' (chief executive) education in the US/UK matters for the effectiveness of aid. I use the leaders' location of education (environment) as a proxy for societal transmission of culture – values, preferences, attitudes, norms and beliefs – in accordance with the theory of Bisin and Verdier (2001) and findings from the related literature (Gift and Krcmaric, 2013; Constant and Tien, 2010; Spilimbergo, 2009).

First, I use binary data for the leader's education in the US and the UK (0/1) and then, to match the data with the periods in the RS model, I average the binary data over five year periods and obtain a continuous variable for education in the US/UK, ranging from 0 to 1. I expect a positive partial effect of aid on growth when the recipient country leader is educated in the US/UK, assuming he or she was exposed to the local socialization process. As a result, I suppose that leaders would promote so-called "westernization" back home (as in Georgia's example), and that development aid strategies will benefit from this.

In Table 2, I estimate equation (2) with OLS in first differences in a (unbalanced) panel setting. Recipient country leaders' education variables are also in first differences. My variable of interest is the interaction term between bilateral aid and the leader's western education. Table 2 shows the regression results for 66 countries from 1961 to 2010 averaged over five year periods. As in Table 1, column 1, aid has no significant effect on growth. In the second column I add variables for the places and levels of leaders' education, which do not have a significant effect on a country's economic growth. In the third column, bilateral aid is interacted with leaders' education in the US/UK to test whether, on average, changes in a leader's education in the US/UK affect the aid-growth nexus.

As one can see, the interaction term in column 3 is statistically significant at the ten percent level but the coefficient has a negative sign.[15] That is, western educated leadership has adverse impact on the aid-growth nexus contemporaneously. In column 4, I add another control variable for leaders' education abroad in general, including the US and UK. This helps to single out effect of the US/UK education from that of general education abroad (25% of the sample has been educated in the US/UK). The coefficient of the main variable of interest remains negative but has a stronger statistical significance in this case. The results also show that, controlled for the effect of leader's education in the US/UK, in general, education abroad has a positive effect on the aid-growth nexus.[16] In column 5, I also include squared terms of the aid and repayment variables, which increase the magnitude of the coefficient of the variable of interest and strengthen its statistical significance to the one percent level.

[15] This is in line with result in Dreher et al. (2013a), where leaders educated in the US do not vote in line with the US in United Nations General Assembly voting.

[16] When leaders' education in US/UK is not controlled for, main and the interaction effect of foreign education and bilateral aid become negative and statistically insignificant at conventional levels.

Table 2. The effect of leaders' education in the US/UK on the aid-growth nexus

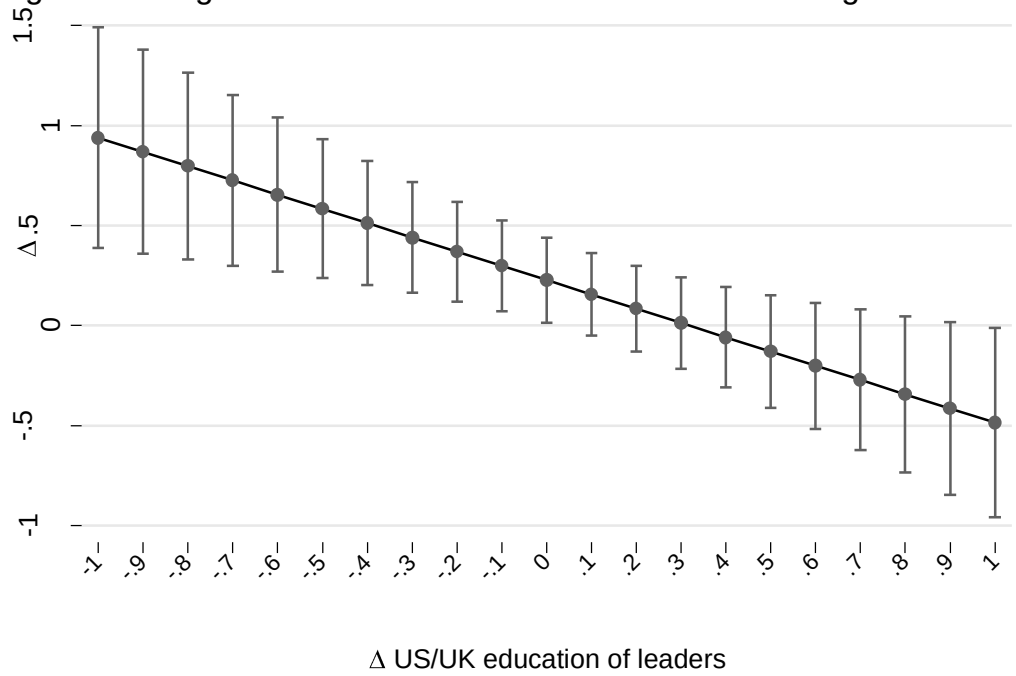
Dependant variable: Economic Growth	(1)	(2)	(3)	(4)	(5)
Bilateral aid/GDP	0.17	0.174	0.193	0.211*	0.286
	[0.137]	[0.140]	[0.133]	[0.128]	[0.254]
Ed US UK		0.472	0.551	0.374	0.261
		[0.471]	[0.455]	[0.632]	[0.636]
Education Level		0.035	-0.009	-0.026	-0.007
		[0.197]	[0.198]	[0.207]	[0.202]
Bilateral Aid/GDP*Ed US UK			-0.290*	-0.713**	-0.811***
			[0.167]	[0.284]	[0.312]
Education abroad (incl. US/UK)				0.206	0.331
				[0.667]	[0.703]
Bilateral Aid/GDP*Education abroad (incl. US/UK)				0.548*	0.623*
				[0.302]	[0.323]
Bilateral repayments/GDP	-0.393	-0.394	-0.405	-0.449	-1.919**
	[0.285]	[0.290]	[0.286]	[0.285]	[0.946]
Multilateral Aid/GDP	-0.167	-0.166	-0.176	-0.202	-0.221
	[0.143]	[0.147]	[0.143]	[0.143]	[0.371]
Multilateral repayments/GDP	-1.566*	-1.567*	-1.652*	-1.796**	-6.184***
	[0.917]	[0.937]	[0.898]	[0.911]	[2.055]
Bilateral Aid/GDP squared					-0.002
					[0.008]
Bilateral repayments/GDP squared					0.423*
					[0.230]
Multilateral Aid/GDP squared					0.006
					[0.018]
Multilateral repayments/GDP squared					2.106**
					[0.879]
Adj. R-Squared	0.28	0.277	0.281	0.283	0.288
Number of Countries	66	66	66	66	66
Number of Observations	378	378	378	378	378

OLS panel estimation in first differences. Aid variables are lagged once. All regressions include period dummies. Control variables are: initial GDP p.c. (log), initial life expectancy (log), openness, inflation (log), initial M2/GDP, budget balance/GDP, revolutions. Significance levels * p<0.10, ** p<0.05, *** p<0.01.

Looking at the marginal effects of the estimation results from column 3, depicted in Figure 2, one can see that the effect of aid on growth turns negative when a country's leadership transitions from a non-western educated to a western educated one (positive change). Assuming that leaders educated in the US/UK also promote cultural change, mainly "westernization," then the negative sign of the coefficient can indicate initial resistance to the change. This resistance may first increase costs of public transactions (reforms) and hurt growth, but then yield positive

growth effects with the adoption of cultural change by new generations (Inglehart and Welzel, 2005).

Figure 2. Marginal effects of US/UK education on the aid-growth nexus



If the seeds planted for cultural transformation by the western-educated leaders blossom/sprout with a time lag and generational change, then one should expect the coefficient to switch sign when the education variables are lagged. In Table 2a, I replicate the analysis of column 3 in Table 2, and lag leaders' education variables twice to allow for generational change. The coefficient of the interaction term in the Table 2a, column 2, becomes positive and statistically significant at the ten percent level. In column 3, I use the same sample from column 2 but without the education lags and confirm that the change in the sign is not due to the change in the sample size.

Hence, in the long-run, the education of recipient country leaders in the US/UK pays off in terms of aid effectiveness as it, presumably, promotes cultural transformation together with economic reforms, which leads to decreased information asymmetry and transaction costs

between donors and recipients. In terms of the economic significance of a leader's education in the US/UK and aid's effect on growth, results in column 2, Table 2a, show that when a US/UK educated leader was in power for the majority of prior time two periods (10 years), its contribution to aid effectiveness is an increase of 0.3 percentage points in growth, significant at the ten percent level.

Table 2a. Lagged effects of leaders' education in the US/UK on aid-growth nexus

Dependant variable: Economic Growth	(1)	(2)	(3)
Bilateral aid/GDP	0.193	0.07	0.135
	[0.133]	[0.132]	[0.129]
Ed US UK	0.551	0.437	0.42
	[0.455]	[0.503]	[0.484]
Education Level	-0.009	-0.074	-0.058
	[0.198]	[0.206]	[0.199]
Bilateral Aid/GDP*Ed US UK	-0.290*	0.320*	-0.269*
	[0.167]	[0.185]	[0.159]
Education twice lagged	No	Yes	No
Adj. R-Squared	0.281	0.306	0.304
Number of Countries	66	66	66
Number of Observations	378	338	338

OLS panel estimation in first differences. All regressions include period dummies. Aid is lagged only once. Control variables are: initial GDP p.c. (log), initial life expectancy (log), openness, inflation (log), initial M2/GDP, budget balance/GDP, revolutions, multilateral aid, bilateral and multilateral repayments. Significance levels * p<0.10, ** p<0.05, *** p<0.01.

6 Robustness tests

In Table 3, I test the robustness of the regression results in Table 1, column 3. In column 1, I use first differenced and lagged aid-adjusted Fst genetic distance rather than the distance in levels. In column 2, I control for humanitarian aid, while in column 3, I control for bilateral aid from new DAC and non-DAC donors, sourced from the OECD aid statistics.

In column 1, the differenced and lagged aid-adjusted genetic distance is significant at the ten percent level while the main effect of the gross bilateral ODA is statistically insignificant. This might signal that differenced aid-adjusted genetic distance already captures the effect of

changes in gross ODA. The regression results show that the negative coefficient of the interaction term of bilateral ODA and aid-adjusted genetic distance is robust to the inclusion of other aid controls and is statistically significant at the five percent level in columns 2 and 3.

Table 3. Robsutness test for the effect of aid-adjusted genetic distance on the aid-growth nexus

Dependant variable: Economic Growth	(1)	(2)	(3)
Bilateral aid/GDP	0.173	0.401**	0.380**
	[0.130]	[0.186]	[0.174]
Aid-adjusted genetic distance (AwGD)	-6.141**		
	[2.690]		
Bilateral Aid/GDP*AwGD	-1.633*		
	[0.954]		
Aid-adjusted genetic distance (AwGD)		-0.949**	-0.975**
		[0.461]	[0.458]
Bilateral Aid/GDP*AwGD		-0.214**	-0.216**
		[0.086]	[0.084]
Humanitarian Aid/GDP		-0.19	
		[2.083]	
Rest Bilateral Aid/GDP			1.207**
			[0.598]
Fst-differenced	Yes	No	No
Adj. R-Squared	0.285	0.291	0.305
Number of Countries	66	66	66
Number of Observations	378	378	378

OLS panel estimation in first differences. Aid variables are lagged once. All regressions include period dummies. Controls are: initial GDP p.c. (log), initial life expectancy (log), openness, inflation (log), initial M2/GDP, budget balance/GDP, revolutions as well as multilateral aid, multilateral and bilateral repayments. Significance levels * p<0.10, ** p<0.05, *** p<0.01.

In Table 4, I test the robustness of the results from column 3 and 4 in Table 2 and column 2 from Table 2a. To do so, I add additional control variables regarding the power constraints of the chief executive of the recipient country – the leader. Thus, in column 1, I control for the country's democracy level, using unified democracy scores from (Pemstein et al., 2010). Depending on the level of democracy, the power of the executive might vary and more time may be required from policy changes to the implementation and the realization of results. The coefficient of the interaction in column 1 stays robust to the inclusion of the democracy variable, which is still negative but becomes more statistically significant. It is interesting to see that

positive democratic change itself has a negative effect on growth, which is in line with several previous studies (Gerring et al., 2005; Helliwell, 1994).

Table 4. Robustness test for the effect of leaders' education in the US/UK on the aid-growth nexus

Dependant variable: Economic Growth	(1)	(2)	(3)	(4)
Bilateral aid/GDP	0.203	0.223*	0.12	0.188
	[0.138]	[0.134]	[0.147]	[0.133]
Ed US UK	0.69	0.568	1.013*	0.424
	[0.453]	[0.619]	[0.604]	[0.621]
Education Level	-0.04	-0.041	-0.055	-0.086
	[0.204]	[0.210]	[0.228]	[0.222]
Bilateral Aid/GDP*Ed US UK	-0.327**	-0.769***	0.358**	-0.699**
	[0.164]	[0.255]	[0.176]	[0.273]
Education abroad		0.123	-0.74	0.083
		[0.680]	[0.585]	[0.708]
Bilateral Aid/GDP*Education abroad (incl. US/UK)		0.573**	-0.114	0.493*
		[0.283]	[0.160]	[0.295]
Democracy	-1.025*	-1.033*	-1.086*	-1.161*
	[0.530]	[0.530]	[0.596]	[0.607]
Effective Executive	-1.882***	-1.863***	-1.706***	-1.576***
	[0.515]	[0.500]	[0.515]	[0.510]
Head of State	3.005**	3.016**	2.687**	2.472*
	[1.342]	[1.336]	[1.266]	[1.269]
Education lagged (2 periods)	No	No	Yes	No
Adj. R-Squared	0.306	0.309	0.327	0.329
Number of Countries	64	64	64	64
Number of Observations	357	357	320	320

OLS panel estimation in first differences. Aid variables are lagged once. All regressions include period dummies. Control variables are: initial GDP p.c. (log), initial life expectancy (log), openness, inflation (log), initial M2/GDP, budget balance/GDP, revolutions as well as multilateral aid, multilateral and bilateral repayments.
Significance levels * p<0.10, ** p<0.05, *** p<0.01.

In column 2, I control for the changes in the 'effective executive', which is determined by the form of governance: monarchy, presidential, parliamentarian, military or socialist. The value ranges from 1 to 5, where higher values correspond to military and socialist dictatorships (Banks, 2011). One can see that transitioning into more authoritarian regimes has a negative impact on growth. I also include a variable for the type of 'head of the state' (monarch, president, premier, military, other – i.e., general secretary in communist regimes) as another measure to control for the leader's power constraints. The inclusion of variables on executive constraints and governance forms strengthens the statistical power of the interaction term between US educated leadership and aid to the five percent level. In column 3, the leader's education variables are lagged twice. As can be seen, the interaction term is positive and significant at the five percent level. In column 4, I replicate the results in column 2, using the

sample from column 3 to confirm that the result is not driven by changes in the sample size. The coefficient of the interaction term is negative and of similar magnitude to column 2. One can see that the result is not driven by the change in sample size. In sum, the robustness checks confirm the main findings of the study.

Alternative (proxy) measures for cultural differences

In this paper, genetic distance is a proxy variable for cultural distance, measures of which suffer from endogeneity and sampling problems. Nevertheless, some measures of cultural differences across countries do exist and those can be included in the estimation to test for the robustness of aid-adjusted genetic distance as a proxy variable. As described in section 3, dimensions of the World Value Surveys seem to be most relevant for this paper. Hence, I use the WVS's cultural dimension of well-being (waves 1-5) in the regression analysis of Table 1, column 3. The number of observations is reduced to 120 in the panel analysis, and covers 42 countries. Since some countries step in and out of different waves, the values for the years where observations are absent are replaced with those of before and/or after observations. The results are shown in Appendix B, Table B1, where one can see that both genetic distance and the well-being dimension are statistically significant, while societies with higher scores of well-being seem to gain more from aid in terms of growth. The coefficient for genetic distance changes only slightly, and the coefficient for well-being is statistically significant at the ten percent level. This result tentatively suggests that certain cultural values measured by the WVS can be included in the measure of donor-recipient cultural differences used by this paper. However, results are weak and no strong conclusions can be drawn.

On the other hand, one can argue that genetic distance is only capturing differences in language, ethnicity and religion. I test this by including distance in ethno-linguistic fractionalization and religion between donors and recipients, using data from Kolo (2012). I do not find any statistically significant effect of donor-recipient differences in religion, language or ethnicity on the aid-growth nexus (see Appendix B, Table B2). That is, aid-adjusted genetic distance is robust to the inclusion of donor-recipient differences in ethnicity, religion and language. Hence, the cultural differences between donors and recipients are those beyond ethnicity, religion and language. The difference comes rather from beliefs, values and norms, such as survival and self-expression captured in the WVS, that reduce the effectiveness of development aid.

7 Conclusion

Findings of this paper provide empirical evidence for the anecdotal and scholarly debates on universalism and western-specific nature of development intervention from Western donors in the growth processes of the global South. The empirical findings show that development intervention fails when cultural differences between donors and recipients are very different. Development agendas, premised upon western culture, fail in many culturally diverse environments because underlying preferences and belief system of recipient populations are not taken into account when designing aid strategies and applying it in practice. This paper empirically shows that development strategies designed by western donors or influenced by western culture are effective only in environments that resemble western culture the most.

Given the negative effect of large cultural difference on aid effectiveness, one option for donors would be to focus on culturally closer regions and to engage in long-term commitments. For instance, since sub-Saharan Africa is the culturally most distant region from the western donor perspective, it might be wise to leave its development assistance to a culturally closer donor outside of the western league, if there is a demand for the intervention.

Another option would be to follow arguments of Thomas Bauer, Arthuro Escobar and William Easterly and leave the so-called development to the discretion of grassroots initiatives. Development assistance should come into action only, if there is an explicit and unbounded demand for it. For instance, when the government and the society in need ask for an intervention from the West and are willing to accept possible costs in terms of cultural and political change.

A third option would be to keep development as it is, i.e. “western”, but to intensify cultural exchange and communication between individuals in donor and recipient countries and allow free movement of individuals, especially from the developing countries, i.e., through more opportunities for study and work across countries. This will allow faster flow of ideas and exchange of belief systems both in the West and non-West and will help adjusting development thinking accordingly.

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Appendix A: Descriptive Statistics

Table 1, Column 3	observations	mean	std. dev.	min	max
GDP p.c. growth	378	1.55	3.05	-12.30	10.12
Bilateral Aid to GDP	378	3.01	3.87	0.01	26.69
Aid-adjusted genetic distance (AwGD)	378	1.02	0.53	0.06	2.22
Initial GDP p.c. (log)	378	8.12	0.87	5.34	10.27
Multilateral Repayments to GDP	378	0.16	0.30	0.00	2.08
Multilateral aid to GDP	378	1.68	3.07	0.00	19.01
Bilateral repayments to GDP	378	0.30	0.51	0.00	4.16
Initial life expectancy (log)	378	61.68	10.06	36.55	79.41
Openness	378	0.46	0.50	0.00	1.00
Inflation (log)	378	0.31	0.61	0.00	4.19
Initial M2 to GDP	378	5.07	12.92	0.00	105.70
Budget Balance to GDP	378	-0.09	0.51	-5.51	2.35
Revolutions	378	0.26	0.41	0.00	2.60

Table 2, Column 4					
GDP p.c. growth	378	1.55	3.05	-12.30	10.12
Bilateral Aid to GDP	378	3.01	3.87	0.01	26.69
Education in US/UK (leader)	378	0.32	0.42	0.00	1.00
Education abroad (leader)	378	0.62	0.43	0.00	1.00
Education Level (leader)	378	6.16	1.14	3.00	8.00
Initial GDP p.c. (log)	378	8.12	0.87	5.34	10.27
Multilateral Repayments to GDP	378	0.16	0.30	0.00	2.08
Multilateral aid to GDP	378	1.68	3.07	0.00	19.01
Bilateral repayments to GDP	378	0.30	0.51	0.00	4.16
Initial life expectancy (log)	378	61.68	10.06	36.55	79.41
Openness	378	0.46	0.50	0.00	1.00
Inflation (log)	378	0.31	0.61	0.00	4.19
Initial M2 to GDP	378	5.07	12.92	0.00	105.70
Budget Balance to GDP	378	-0.09	0.51	-5.51	2.35
Revolutions	378	0.26	0.41	0.00	2.60

Appendix B: Alternative measures

Table B1. WVS's well being cultural dimension and aid-adjusted genetic distance

	(1)	(2)	(3)
Aid-adjusted genetic distance (AwGD)	-0.177	-0.441	-0.496
	[0.517]	[0.500]	[0.488]
Bilateral aid/GDP	0.72	0.399	0.773**
	[0.520]	[0.386]	[0.373]
Bilateral Aid/GDP*AwGD	-0.578***	-0.562***	-0.571***
	[0.185]	[0.180]	[0.188]
Bilateral Aid/GDP*Authority	0.031		
	[0.246]		
Authority	-0.48		
	[0.295]		
Bilateral Aid/GDP*Well-being		0.351*	
		[0.204]	
Well-being		0.203	
		[0.448]	
Adj. R-Squared	0.334	0.329	0.328
Number of Countries	42	42	42
Number of Observations	152	152	152

OLS panel estimation in first differences. Aid variables are lagged once. All regressions include period dummies. Controls are: initial GDP p.c. (log), initial life expectancy (log), openness, inflation (log), initial M2/GDP, budget balance/GDP, revolutions as well as multilateral aid, multilateral and bilateral repayments. Significance levels * p<0.10, ** p<0.05, *** p<0.01.

Table B2. Distance in ethnolinguistic fractionalization versus aid-adjusted genetic distance

	(1)	(2)	(3)	(4)	(5)
Aid-adjusted genetic distance (AwGD)	-0.987**	-1.032**	-0.929**	-0.807*	-0.950**
	[0.465]	[0.465]	[0.461]	[0.447]	[0.460]
Bilateral aid/GDP	-0.286	-0.275	0.207	0.02	0.399**
	[0.498]	[1.029]	[0.231]	[1.014]	[0.186]
Bilateral Aid/GDP*AwGD	-0.172*	-0.257**	-0.14	-0.241**	-0.213**
	[0.090]	[0.101]	[0.100]	[0.101]	[0.087]
DELF	-0.234				
	[1.107]				
Bilateral Aid/GDP*DELF	0.846				
	[0.559]				
Language		1.56			
		[1.875]			
Bilateral Aid/GDP*Language		0.778			
		[1.132]			
Religion			0.334		
			[0.436]		
Bilateral Aid/GDP*Religion			0.315		
			[0.219]		
Ethnicity				-2.917***	
				[1.070]	
Bilateral Aid/GDP*Ethnicity				0.406	
				[1.138]	
Adj. R-Squared	0.293	0.291	0.294	0.302	0.293
Number of Countries	66	66	66	66	66
Number of Observations	378	378	378	378	378

OLS panel estimation in first differences. Aid variables are lagged once. All regressions include period dummies. Controls are: initial GDP p.c. (log), initial life expectancy (log), openness, inflation (log), initial M2/GDP, budget balance/GDP, revolutions as well as multilateral aid, multilateral and bilateral repayments. Significance levels * p<0.10, ** p<0.05, *** p<0.01.

Appendix C: Maps

Figure 1. Fst genetic distance to average donor (standard-deviation)

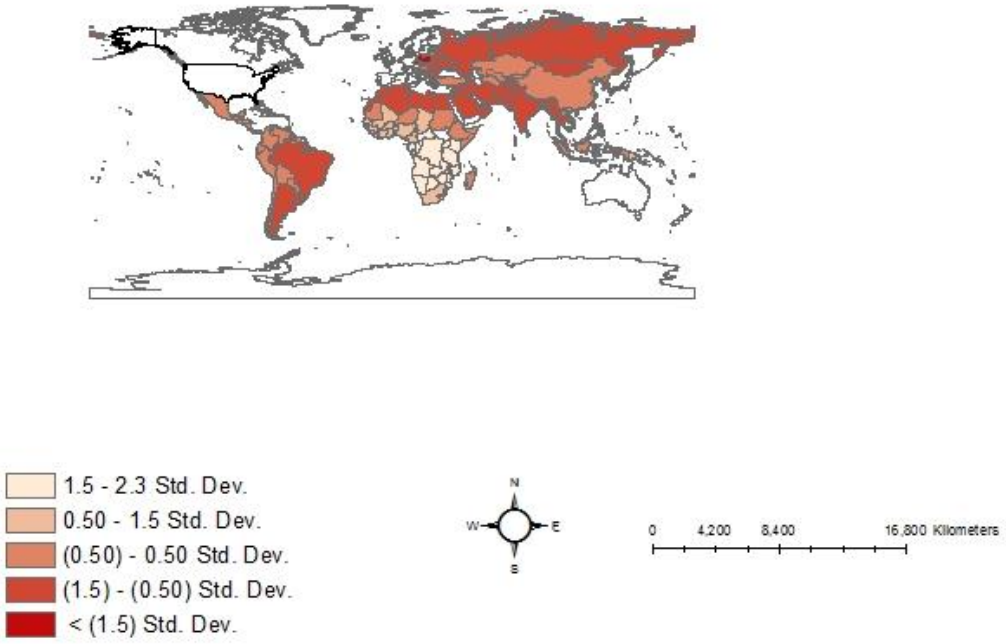


Figure 2. Fst genetic distance to average donor

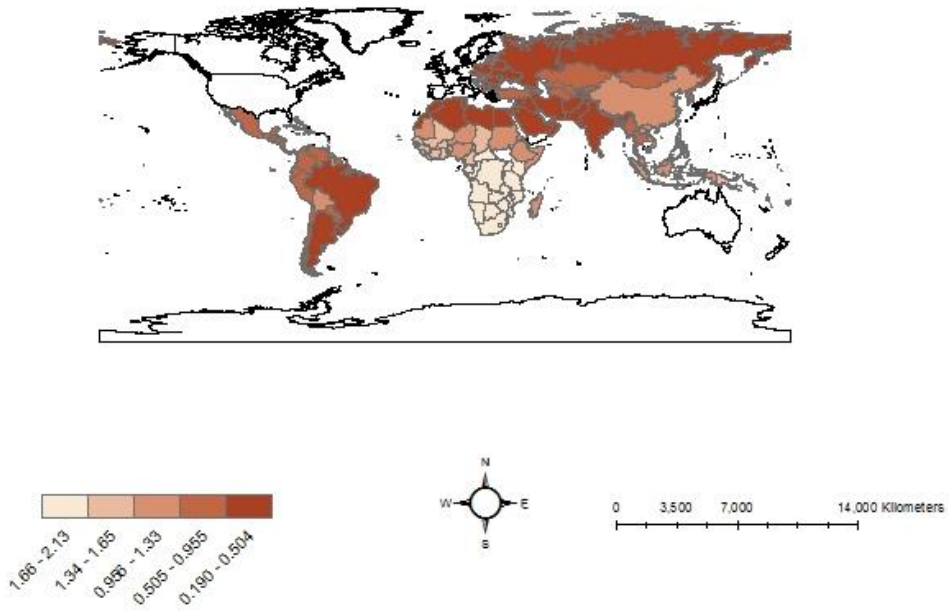
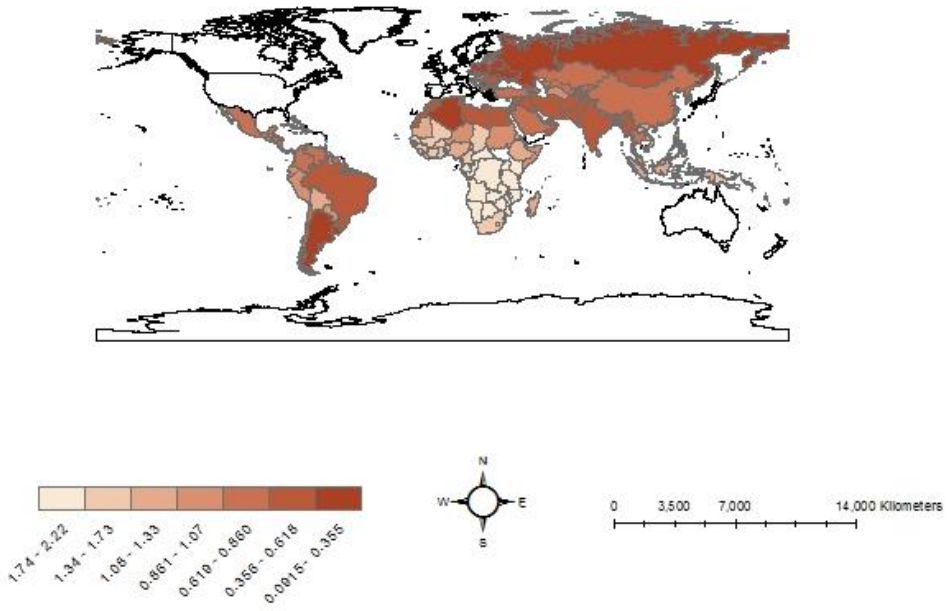


Figure 3. Aid-adjusted Fst genetic distance to average donor



Appendix D. Variable Definition and Sources

Variable	Definition	Sources
Bilateral aid/GDP	Average gross bilateral aid disbursements in percent of GDP.	OECD 2013, Table DAC2a
Weighted Genetic Distance	Weighted genetic distance between two populations, time since two populations split apart.	Spolaore and Wacziarg (2009)
Leader education abroad	Dummy variable if leader has been educated outside of home country (in the analysis it is a continuous variable due to period average).	Dreher et al. (2013a)
Leader education level	Categorical variable on the level of leaders educated starting from illiterate to doctoral level (in the analysis continuous variable due to period averages).	Dreher et al. (2013a)
GDP p.c. growth	Average annual growth rate of real GDP p.c. in constant international dollars.	Penn World Table 6.2 and World Bank (2007) for the year 2005*. Penn World Table 7.1 for 2006-2010.
Multilateral aid/GDP	Average gross multilateral disbursements as a percentage of GDP.	OECD 2013, Table DAC2a
Multilateral repayments/GDP	Average multilateral repayments as percent of GDP.	OECD 2013, Table DAC2a
Bilateral repayments/GDP	Average bilateral repayments as percent of GDP.	OECD 2013, Table DAC2a
Initial GDP p.c. (log)	Logarithm of initial GDP p.c. in international prices.	Penn World Table 6.2*, Penn World Table 7.1 for 2006-2010. (Feenstra et al., 2013)
Initial life expectancy (log)	Natural logarithm of first non-missing value in each period of total life expectancy.	World Bank (2007)*, World Bank (2012)
Openness	Wacziarg-Welch (2008) extension of the initial Sachs and Warner (1995) openness index, based on black market premium, average tariff rates, export marketing board, socialist regime and etc.	Wacziarg and Welch (2008) updated by Clemens et al. (2012)*. Extension of this index was updated as in Clemens et al. (2012), using Freedom House (2013) and IMF Staff reports for the 2006-2010 period.

Inflation (log)	Natural log of (1+consumer price) inflation.	World Bank (2005, 2007, 2012), IMF (2005) in Clemens et al. (2012)*
Initial M2/GDP	Money and quasi-money (M2) to GDP.	World Bank (2007, 2012)*
Budget Balance/GDP	Overall budget balance, including grants. Measured as cash surplus/deficit to GDP.	World Bank (2005, 2007, 2012), IMF (2005) in Clemens et al. (2012)*
Revolutions	Average number of revolutions per period.	Banks (2007,2011)*, Banks and Wilson (2012)
Variables for Robustness Tests		
Humanitarian aid	Average humanitarian aid received from all donors as percent of GDP, averaged over the relevant period.	OECD 2013, Table DAC2a
Rest bilateral aid	Average gross bilateral aid received from recent DAC member and non-member countries not included in the regressions. (United Arab Emirates, Cyprus, Czech Republic, Estonia, Hungary, Island, Israel, Kuwait, Lithuania, Latvia, Poland, Romania, Slovak Republic, Slovenia, Thailand, Turkey).	OECD 2013, Table DAC2a
Democracy	Continuous variable (-2, 2), unified measure of democracy.	Pemstein et al. (2010)
Effective Executive	Who is the person exercising primary influence in the shaping of the major decisions affecting the nation's internal and external affairs (Monarch, President, Premier, Military or Other-communist regimes or ineffective leader).	Banks and Wilson (2012)
Head of State	Who is the head of the state (Monarch, Premier, President, Military or Other-hard to identify).	Banks and Wilson (2012)