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Aid, Development and the Role of Culture

Abstract

The role of culture is often overlooked in economics. Despite culture permeating every part of society and differing greatly between countries, economists have had little time for it. However, as economics slowly move away from the neoclassical assumptions of perfectly functioning markets, culture is becoming more and more relevant. The aim of this thesis is to look into the connections between culture, development and foreign aid. Through the use of panel regressions these connections are investigated between 58 countries over 30 years. As opposed to many previous studies, including Burnside and Dollar (2000 and 2004), Dollar and Collier (2001 and 2002) and Kosack (2003), both time and country specific effects are used. Three parameters are used for measuring culture and three parameters are used for measuring development. As a robustness check the sample is divided three times into different groups. The results found give some support for the hypothesis that culture matters for development and aid efficiency although the exact relationship is still unclear. The most consistent result is that countries who benefit from a religious culture at the same time become less efficient at handling aid the more religious they are and vice versa. This implies that not only is there a connection between aid efficiency and culture, but a rather complex one at that. This leaves room for further investigation into the subject.

Keywords: Aid conditionality, Development aid, Culture, Achievement motivation

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List of Abbreviations

2SLS	Two-stage least squares
DAC	Development Assistance Committee
HDI	Human Development Index
ICRG	International Country Risk Guide
ODA	Official Development Assistance
WDI	World Development Indicators
WVS	World Value Survey

1. Introduction

Development aid is today distributed to and from a large number of countries. The rationale behind these nowadays-huge international transfers can be found in neoclassical economic theory. Considering that poor countries are abundant in labor but have scarce capital an influx of foreign funds should, according to these theories, make a country develop until they are on par with the rich world. Yet many countries have received aid for decades without experiencing such convergence. The inability of neoclassical models to explain this lack of convergence has led to the advancement of institutional economics in development economics and elsewhere. 'Institutions' is a broad term encompassing both formal institutions and cultural phenomena, like religion and traditions. Models that take differences in institutions into account are in many cases better at explaining differences in aid efficiency between countries than neoclassical models. Different studies have put forward different institutions as the most prominent both for aid efficiency and for development in general (e.g. Knack and Keefer (1997), Burnside and Dollar (2001 and 2004), Hodler (2007) and Baliamoune-Lutz and Mavrotas (2009)). Whereas formal institutions like the judiciary system and the bureaucracy have been mostly in focus, informal institutions such as corruption and social trust have also been investigated in some of these studies and they generally find that these too are connected to how well aid is used. Despite the acceptance of institutions' importance when it comes to aid efficiency there is one type of institution that so far has been ignored, namely culture. Culture is the most informal level of institutions, it sets the constraints for more formal institutions, which in turn constrains the actors of an economy. As such culture is likely to be an equally important factor for aid efficiency as more formal institutions. This thesis is thus an attempt to bring culture into the aid efficiency debate, investigating the connection between culture and development in general and aid efficiency in particular.

The neglect of culture is true not only in the aid efficiency debate, but also in economics as a whole. Despite an almost universal acceptance of institutional economics among mainstream economists, culture is still left out in the cold. Some studies in related fields that have looked into the link between culture and economic development have found significant results (e.g. McClelland (1953/2008), Franke et al. (1991) and Granato et al. (1996)), yet economists have remained reluctant to look into the matter. One possible reason for this lack of interest could be that culture is sometimes seen as deterministic, leaving little room for economist to have a say. However, if culture does have an effect on aid efficiency, it needs to be taken into account when forming and implementing development policies. Another reason for the lack of research could be a perceived

absence of data but, as can be found in this thesis, such data is available, even if not to such an extent as one could hope.

1.1. Research question

The aim of this thesis is to answer the question whether or not a recipient country's culture as measured by three numerical variables affects how effective development aid is in promoting economic development. To provide a more comprehensive view, the roles of aid and culture will also be examined separately.

1.2. Method and data

Panel regressions with data from 58 countries over almost 30 years are used to produce the results presented below. The dependent variable is development as measured by three variables: Growth in the Human Development Index (HDI), growth of per capita GDP and change in school enrollment. A cultural variable and aid is used as independent variables together with controls. In order to study the effect of culture on aid efficiency, the aid and cultural variables are also interacted, thus creating a third variable looking at the effect of the combination of aid and culture on the rate of development in a particular country at a particular point in time. As a further control the data will be divided into different subgroups to see whether the results differ in these constellations.

Culture is measured with the help of the World Value Survey (WVS), a global inquiry that gathers data about values through interviews. With data from this survey three different variables are constructed: one recreates Granato et al. (1996)'s measurement of achievement motivation, one is a measurement of how often a population attends religious services and the third one is a measurement of traditional and secular values constructed by the WVS. These three variables are obviously not comprehensive enough to fully cover any culture, no single measure ever will, but they focus on parts of culture like religion and tradition that have been pointed out as important by previous studies like Granato et al. mentioned above and WVS (2009).

1.3. Limitations

The greatest limitation to this study has been a lack of available data on culture. The WVS has only been performed in a limited number of countries, many which did not receive any aid during the time period when data is available. This greatly reduces the number of observations. Another limitation is that the complexity of culture is hard to comprise into any single variable. The same is true for the aid variable as the concept of aid include both bi- and multilateral aid, concessional loans

and donations from minor and major organizations. Only some of it is used here and combined into only one variable, which leaves a large part of the heterogeneity of aid left to be discussed.

1.4. Disposition

The following section discusses culture's role in development and its connection to mainstream economics and aid effectiveness. Previous research and empirical studies are also discussed before a hypothesis is formulated. Section 3 discusses the method and data in detail. Section 4 presents the results and robustness checks. Section 5 concludes.

2. Culture, development and aid

The connection between culture and development has only occasionally been studied within the field of economics. However, as culture in many ways is an underlying factor to more formal institutions it is not as far from economics as one might first think. This chapter will discuss the connection between culture, institutions, development and aid, as well as previous research on the subject. Lastly, a working hypothesis is formed.

2.1. Culture, institutions and development

The notion that "institutions matter" is now all but universally accepted in development economics. As neoclassical models failed to explain in full the economic gap between rich and poor states, models including institutions stepped up to answer questions concerning economic growth and development. Defined by North as "the humanly devised constraints that structure political, economic and social interaction", institutions govern our actions and create the incentive structure of an economy (1991:97). It is the state of an economy's institutions that decides the transaction costs of that economy; strong institutions are therefore of utmost importance for a state's performance (Coase 1998). With this in mind it is not strange that an abundance of literature covers the subject.
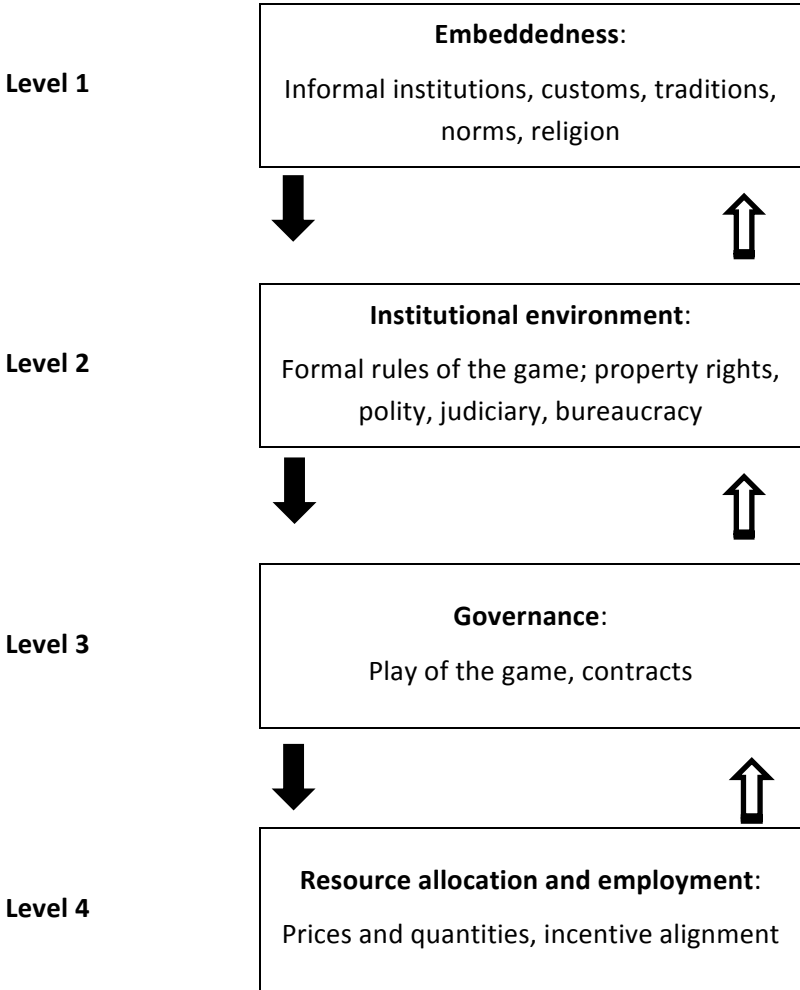
The importance of institutions has been discussed for a few hundred years, but modern theory has its roots in the 20th century when the New Institutional Economics slowly gained momentum after the Second World War. NIE gathers a wide number of subjects and economists, with North, Coase and Williamson perhaps being the most prominent ones, under the same banner.

The least common denominator in the group is the view that the neoclassical assumption of zero-transaction costs and rational and omniscient agents is improbable. Instead transaction costs and bounded rationality is assumed. Actors are presumed unable to foresee the full consequence of their actions while only having incomplete information and exchanges are presumed to have a positive cost (Furubotn and Richter 2008).

Institutions as defined by North comprise a broad area covering constraints ranging from formal to informal and everything in between. According to Coase and North, institutions, in a wider sense, encompass customs, informal norms and culture, so the study of culture thus falls within institutional economics. Williamson orders the broad field of institutions into four levels of social analysis.

GRAPH 1

Level 1	**Embeddedness**: Informal institutions, customs, traditions, norms, religion
Level 2	**Institutional environment**: Formal rules of the game; property rights, polity, judiciary, bureaucracy
Level 3	**Governance**: Play of the game, contracts
Level 4	**Resource allocation and employment**: Prices and quantities, incentive alignment

Williamson (2000: 597)

Williamson's four levels of analysis are ordered in a hierarchy where a level takes exponentially more time to change than the level below. Higher levels set the stage for lower ones (black arrows) while lower levels affect higher ones through feedback (white arrows) meaning that in the long run all levels affect each other. In the short run, however, the upward pressure to change is assumed to be negligible. This analysis of the structure and hierarchy of institutions is both comprehensible and persuasive, it is hard to argue against that this is an, at least roughly, accurate description of how a society work. This simple graph also clearly shows why economist should take culture as well as more formal institutions into account when studying development: just as level 2 and 3 affect level 4 so does level 1 affect them all. The first level takes its name from the idea that human beings takes action embedded in their cultural beliefs. It is this cultural level that is the focus of this thesis.

Even if many articles and books have been written on the subject of institutions, the subject of culture, or level 1, is often taken as given by economists (Williamson 2000). Instead, neoclassical economists have focused on level 4 and institutional economists on level 2 and 3. This neglect is surprising as level 1 set the constraints for the three below. Enforcing formal institutions that do not match the informal ones is likely to lead to high enforcement costs and political instability (North 1993). The introduction of market institutions in the former Soviet Union provides a good example of such poor matching of institutions (Nee 2005). An economist researching economic development can ignore culture only at his or her own risk.

Despite the emphasis on more formal, lower level, institutions in economics, there has been empirical research conducted on the direct connection between culture and development in nearby disciplines, mainly sociology. This connection has been studied for at least a hundred years with Weber's *The Protestant Ethic and the Spirit of Capitalism* (1905/2001) being the first major work. This book discussed the connection between culture and religion and its effect on development already in the very beginning of the 20th century. Since then, culture has been given a peripheral role in development studies.

David McClelland (1953/2008) is one of few scholars who looked into this matter. McClelland tries to measure what he calls "*n* Achievement" or "need for achievement", the factor he puts down as most important in a culture for determining future growth. This is the "desire to do well, not so much for the sake of social recognition, but to attain an inner feeling of personal accomplishment" (211). People with a high *n* Achievement are considered to work harder and learn faster and a civilization with a high concentration of people with a high rate of *n* Achievement is thought to grow faster. McClelland does a number of analyses in his article, covering ancient as well as modern nations, and finds strong support for this hypothesis.

The idea that culture matters for development, or at least for economic growth, is also investigated by Franke, Hofstede and Bond (1991). They use regression analysis and data from 18

states to investigate differences in growth rate during 1965-1980 and 1980-1987. They find that about half of the difference could be explained by differences in personal values. Especially Confucianism is found to be positively, and individualism to be negatively, correlated to growth.

In Granato, Inglehart and Leblang (1996), the authors perform a regression analysis of certain cultural factors and their relation to growth in 25 countries. They use the World Values Survey to create an index of McClelland's *n* Achievement. Their index gives high scores to cultures where determination and thrift are promoted, and low scores to cultures where religion and obedience are promoted. Granato et al. (1996) also use a measurement of post-materialist values thought to be negatively correlated with growth, as it puts more focus on other goals than growth, like environmental preservation. Both variables turn out to be significant and with the expected signs when tested against economic growth. *n* Achievement is robust even when added to a more neoclassical model with variables like initial GDP and investment, even making the latter insignificant. The authors of the study point out that the causal link between growth and culture probably work in both directions; just as countries with high achievement motivation ought to experience high growth, countries that experience growth have greater incentive to promote achievement motivation since the pay-off is higher. There are clear similarities between the achievement motivation index and the Confucianism measurement used by Franke et al. (1991), but contrary to the latter, the former considers obedience a negative factor for development. The results of these two studies hence contradict each other on this matter.

After being kept at the periphery for decades, one part of culture, religion, started to reemerge in development theory in the beginning of the 21st century (ver Beek 2000). Recently, a number of articles discussing religion's role in development has been published including Selinger (2004), Lunn (2009) and Deneulin and Rakodi (2010). Even international organizations like the World Bank have addressed the issue (Marshall 2001). Although these articles point to a connection between culture and development, their focus is solely on religion and not culture in a wider sense. They also mostly lack empirical work.

In conclusion there seems to exist a vague notion that culture matters for development, at least among those economists who have investigated the subject. Since culture sets the stage for more formal institutions, it also sets the stage for development as a whole.

2.2. Aid efficiency, institutions and culture

The ability of aid to promote growth and development is disputed. While studies at the micro-level often show that aid could be beneficial to recipients, macro investigations often show that there is no, or even a negative, relationship between aid and development (Baliamoune-Lutz and Mavrotas

2009). Around the turn of the 20th century a macro debate about the conditionality of aid efficiency began: perhaps aid can be efficient, but only under some specific circumstances? In 1998 the World Bank published a study addressing the issue (Dollar and Pritchett 1998), discussing the importance of not only good policies but also of high quality institutions in the recipient country when it comes to making aid work. The seminal work in this debate came with Burnside and Dollar (2000). In this article the authors perform empirical tests at the macro-level to show that aid leads to economic growth if it is complemented with good policies. Burnside and Dollar's article also finds that strong institutions are positively connected to growth, but it is policies that are their focus when it comes to conditionality; the authors only interact aid with their policy index in their regressions, institutions are taken as a purely exogenous variable. This is changed in their follow-up article of 2004 where institutional quality is interacted with aid in a growth model. Institutions are found to be positively related to aid efficiency and for the most part the results are significant.

Other scholars that have later empirically studied aid conditionality concerning institutions often find support for strong institutions improving aid efficiency. Baliamoune-Lutz and Mavrotas (2009) find that when institutions and social capital are controlled for the choice of policies in the recipient country even loses importance. Cheng and Zhang (2008) find that aid is most efficient in an economy with high transaction efficiency, suggesting that weak institutions are negatively linked to aid efficiency. Hodler (2007) looks at the quality of institutions that confine rent seekers from appropriating public funds and finds aid efficiency to be conditional on these. Dalgaard et al. (2004) find that aid efficiency is negatively correlated with the Tropics and suggests that this is due to tropical countries, *ceteris paribus,* having weaker institutions than other countries. One exception in this literature is Dollar and Collier (2001 and 2002) who find that strong institutions as measured by ICRGE-scores interacted with aid have a small but significant *negative* effect on growth if policies and their interaction with aid are controlled for. Using CPIA scores as a measurement of policies they find that these outdo institutions in improving aid efficiency.

Looking at types of institutions rather than the quality of them, Kosack (2003) looks into how democracy is related to aid efficiency. Even when controlling for institutional quality and economic policy, the interaction between aid and democracy is found to be significantly positive. Furthermore, Kosack finds that both aid and democracy by themselves are negatively correlated with development. These results are robust even when the endogeneity of aid is controlled for with the help of a two-stage least squares (2SLS).

As such, the notion that institutions matter when it comes to aid efficiency is well supported by empirics, with only a few studies contradicting the otherwise positive results. According to the majority of the above studies, not only should the recipient state's institutions be efficient and free from corruption for the country to benefit from aid, they also need to be of the

right type. All of the studies mentioned here focus on institutions only in the sense of level 2 and level 3 of Williamson's hierarchy, looking at the rule of law, corruption and such. Throughout, level 1, the cultural level, is taken as a given. But if culture matters for institutions, and institutions matter for aid effectiveness, what is the connection between culture and aid effectiveness? This question has yet to be answered as, to the author's knowledge, no quantitative studies have been performed on the subject. Since both the link between culture and institutions (and growth) and the connection between institutions and aid efficiency are established this is quite strange; if culture affects institutions and growth, and institutions affect aid efficiency, could not culture be expected to affect aid efficiency?

Culture could be expected to affect aid in a number of ways, just like it can affect development as a whole. In cultures where achievement is encouraged, aid could enable people to develop and prosper at a more rapid pace than in a country where individual achievement is quenched, as capital received by "high achievers" could be expected to utilize aid in more efficient way than "low achievers". As such, a secular, individualistic culture could be a requisite for convergence with the developed world. However, it is not certain that a culture that is beneficial to development would also be beneficial to aid efficiency; the opposite might also be true. Just as Kosack (2003) finds that while democracy is good for aid efficiency, it is detrimental for development, different cultural measurements might also have contradictory effects on development and aid efficiency. A tendency towards obedience within a population, which lowers achievement motivation, may improve the use of aid in a country if it makes sure that aid is delivered to the right recipients, despite the negative relationship between development and achievement motivation predicted by Granato et al. (1996). It is noteworthy that the investigation by Franke et al. (1991) finds a positive relationship between Confucianism, which has a positive focus on obedience, and development. As such it is clear that the relationship between obedience and development is not as clear-cut as Granato et al. assumes. The positive relationship found by Franke et al. in their study might be even more relevant for aid efficiency since aid is less likely to suffer from the drawbacks of obedience than development as a whole. The negative effects of obedience arise when innovation is quenched and achievement motivation is lowered, but considering that aid projects tend to be financed and initiated from abroad, they are less affected by the culture of the recipient country than purely domestic projects. As such, obedience could have only positive effects on aid efficiency, while at the same time possibly be negative for development as a whole.

Religion, which is also considered to be a negative factor in the achievement motivation measurement, could perhaps also increase aid efficiency. Churches, mosques and other places of worship could provide networks through which aid could be channeled to those who are most in need. There exists some evidence that religion improves social trust, and thus networks, in

rural parts of developing countries in South Asia (Candland 2000). This might certainly improve the usage of aid by decreasing transaction costs and creating channels through which aid could go, even if religion might hinder development of a nation as a whole by hampering individual development as found by Granato et al. (1996). A common non-individualistic culture could increase social trust, which is positively correlated to the development of efficient and uncorrupt institutions, which in turn is positively correlated to development (Knack and Keefer (1997), Zak and Knack (2001), Beugelsdijk et al. (2004), Rothstein and Uslaner (2005)). In this sense, a more individualistic and secular culture could be detrimental to aid efficiency. As such, even if religion and traditional values according to theory and empirics should be detrimental to development, the effects of such values on aid efficiency remains unclear. This potentially contradictory relationship between aid efficiency and development makes any prediction of the exact effects of culture on aid efficiency difficult to make.

The connection between aid efficiency and culture is an important question to study. Even if one assumes that culture is completely exogenous and insusceptible to outside force, it is still important to understand how culture affects development. This is imperative when it comes to issues such as aid. If culture has an effect on how effective aid is this need to be considered when deciding on how, where and to whom aid is to be distributed. Aid is an excellent field in which to study the economic effects of culture as it is received and distributed by a large number of countries all around the globe and cultures are likely to differ substantially between recipients.

2.3. Hypothesis

Considering theory, previous research and the discussion in the above sections it is more than likely that the cultural environment in the recipient country should have an effect on how efficiently aid is used to promote growth and development in that country. As discussed above, the exact nature of such a relationship is not clear from empirics or theory.

The hypothesis of this thesis is thus that culture matters when it comes to aid efficiency.

3. Method

This thesis will use a model similar to neoclassical endogenous growth models to study the effects of culture on aid efficiency and development with the help of panel regressions, as is often done in

similar investigations (see e.g. Burnside and Dollar (2000 and 2001)). To examine the effect of culture on aid efficiency, cultural variables will be added both as stand-alone variables and as interacted with aid, a method also used by the two papers mentioned above. The formal model takes the form below:

$$q_{it} = c + a_i + b_t + \beta_1 y_{1it} + \beta_2 y_{2it} + y_{1it} * y_{2it} + \mathbf{z}_{it} + e_{it}$$

Where q is rate of change of development, y_1 is aid received relative to GDP, y_2 is culture and $\mathbf{z}$ is a vector of controls, all indexed by both country (i) and time (t). C is a constant, a_i is country-specific effects and b_t is time specific effects. Lastly e_{it} is error terms.

The data is presented below, starting with the dependent variable, development, followed by descriptions of the culture and aid variables and lastly the various control variables. In total the data covers 58 countries over five five-year periods (1981-1986, 1990-1995. 1995-2000, 2000-2005 and 2005-2010) that both participated in at least one wave of the WVS, and received aid at least 10 of the years 1975-2008. The data covers 5 continents, Australia and Antarctica being the only continents without representations. Both the very poor, like Ethiopia, Eritrea and Burkina-Faso, as well as the rich, such as Singapore and Hong Kong, are represented. It might seem surprising to see these two rich countries in the sample, but both were in fact net receivers of aid in both the 1980's and 1990's, even if only to a low extent compared to some of the other countries in the sample. The full set of countries can be seen in Appendix A. The key descriptives of some key variables can be found in Appendix B. The correlation between the variables of interest and the other variables are also reported in this appendix. The correlations between all variables are not reported, as multicollinearity between controls is unimportant, as I will make no inference from these. As the sample of countries is not random and consists of 58 countries out of the only 200 or so in existence fixed effects are used in the panel regressions. This is to account for country- and time specific effects such as special strategic interests or oil crises. Most studies on subjects like this, including Burnside and Dollar (2000 and 2004), Dollar and Collier (2001 and 2002) and Kosack (2003) do not use country fixed effects. As fixed effects implies adding dummies for each country and time period, the method implies a loss of power. The choice not to include them is possibly due to researchers trying to increase the number of significant results in their studies.

As aid is likely to be suffering from endogeneity a 2SLS regression method is also used. The sample is also divided in three ways as a robustness check. Divisions are made according to GDP levels, distance from the Equator and lastly after ethno-linguistic fractionalization. The shares of the population who are part of different religions are used as additional controls. To control for heteroscedasticity, White's robust standard errors are used.

3.1. Data

3.1.1. Dependent variable - Development

Development is measured in three ways, the first being growth of the countries' HDI. This index is published by the United Nations Development Programme (UNDP 2010) and is a combination of measurements of education, wealth and health. The 2010 index has been slightly altered from previous years. Rather than measuring wealth in GDP (PPP) per capita, GNI (PPP) per capita is used and instead of looking at literacy rates expected years of schooling is used (UNDP 2010). Data on the HDI is available at five-year intervals and growth will be measured as the difference between two following values. The first value is from 1980, one year before the first WVS, which means that the first period starts from there.

GDP growth is also used as a dependent variable. Granato et al. (1996) used GDP when they found a significant relationship between achievement motivation and development, so testing it here becomes a control to see whether their results hold in this larger sample or not. Average annual growth in the following five-year period is used with figures from the World Development Indicators (WDI). Where five years of data is not available, the average over three or four years is used instead.

Change in gross primary-school enrollment is also used as a measure of development. Expected school enrollment is part of the HDI but breaking this complex measurement down to its parts makes it possible to look more closely at how a state is affected by aid. Figures are from the WDI and, just as with GDP, average annual growth the period following the WVS-value is used.

It is worth emphasizing that all of these are measurements of *change* and not of stock values. The coefficients in the regressions are thus a measurement of the change in the rate of change of development caused by the variables. Examining change rather than absolute values is preferable as changes in absolute values of these measurements could take decades to achieve even after changes in culture or other, lower level, institutions occur. It also deals with the issue of causality, as it is hard to argue that the growth of any of these measures in the future affects the culture of a country today. It also decreases the correlation between the three dependent variables used, making it yet more motivated to use more than one measurement. The initial HDI and initial GDP-levels correlate to almost 80% but their respective growth rates only correlate to 60%. Changes in poverty headcount, poverty gap and stock debt are not used as a measure of development as they all suffer from lack of data. Neither is life expectancy, the third part of HDI besides wealth and education, as it does not vary enough over the five-year periods used to qualify it for use in the regressions.

3.1.2. **Independent variable - Culture**

Culture is generally expected to change only slowly over time but the data used shows some variance both over time as well as between countries, making a panel well motivated. The cultural variables in the regressions are all based on data from the World Values Survey. The WVS gathers information on cultural and religious values around the world by interviewing thousands of people with the help of questionnaires. The WVS has been performed in five "waves", 1981, 1990, 1995-1998 and 2005-2008. As the participating countries differ from wave to wave an unbalanced panel will be used.

It is of course not unproblematic to measure as complex a phenomenon as culture in a way that it could be used in a regression. To compensate for this, three different measurements of culture are used. All are in some way connected to religion, as this is one of the most prominent parts of culture, as well as one of the easiest to find data on. Even though all three measurements are similar, they cannot be said to measure the exact same thing. All are however relevant for the hypothesis that culture matters. Descriptive statistics can be found in Appendix B.

The first variable measuring culture is the *achievement motivation*-index discussed above. The index is constructed from answers to the question "Here is a list of qualities which children can be encouraged to learn at home. Which, if any, do you consider to be especially important?" from the World Value Study. The percentage of those who answer "obedience" is added to the percentage of those who answer "religious faith". The sum of these is then subtracted from the percentage that answered "thrift, saving money and things" and "determination". Granato et al. (1996) only use data from one wave of the WVS but all five will be used here, and in total answers from over 160,000 interviews is used to calculate the values for the regression. *Achievement motivation* is, in this context, a well-known measurement and it is highly relevant for this type of research. The major problem with this measurement is the low number of observations available. Out of a total of 290 possible observations a mere 109 is available for *achievement motivation*. As comparison, for most controls the number of observations is about 200. However, this is still the greatest number of observations of the three cultural variables.

The WVS provides a measurement of what they call "traditional vs. secular rational values", henceforth *secular values*. *Secular values* consists of a single score where low values represent traditional values and high values represent secular values. Countries who have "traditional" values promotes family, respect for authorities, religion and nationalism, while "secular" countries promote individualistic, secular values and have liberal opinions on issues like abortion, euthanasia and divorce (WVS 2009). The WVS provides only about 55,000 interviews where all necessary questions to calculate this score were answered. This makes this score less representative than that of *achievement motivation* but it is still a substantial amount of data. Like *achievement*

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motivation, it is a relatively well-known measurement and it is highly relevant to this type of research. *Secular values* has only 86 observations, the least observations of all the three cultural variables.

A purely religious variable, *religious attendance*, is also used. This data is also gathered from the WVS, as the answers to the question "How often do you attend religious services?". The possible answers range from 1 ("More than once a week") to 8 ("Never/Practically never"). This draws on the fact that both of the above measurements rely heavily on religion, so to look at a pure religious variable gives added depth. This is also supported by the literature promoting religion's role in development discussed in chapter 2.1.

The variables discussed here have enough variation to qualify their use in these regressions. The exact figures can be found in Appendix B. Correlations are generally low, with the exception for *secular values*, which is correlated to *initial GDP* at 66% in the pairwise sample. This is high, but not high enough to exclude either of the two variables from the regressions. This is true for all samples used in this thesis.

3.1.3. **Independent variable - Aid**

Net aid as share of GDP is used to measure the amount of aid received by each country. Data on aid is taken from the OECD's Development Assistance Committee's (DAC) data on Official Development Assistance (ODA). It contains data from OECD and non-OECD country donors alongside about thirty multilateral organizations including the EU, the IMF, the World Bank as well as several UN departments and regional development banks. This data has previously been used by, for example, Alesina and Dollar (2000), but while they focus on bilateral aid only, here both bilateral and multilateral aid will be included. DAC qualifies an international transfer as ODA if it is "i) administered with the promotion of the economic development and welfare of developing countries as its main objective; and ii) it is concessional in character and conveys a grant element of at least 25 per cent." (OECD). A five-year average is used, with the WVS year in the middle. As this is a quite wide definition of aid one must be aware of the possibility that what is true for aid in general might not be true for specific types of aid, say bilateral or multilateral.

The possible endogeneity of aid will, as mentioned above, be controlled for with the use of 2SLS. The data on aid covers almost 250 observations and ranges from over 40% to, in some cases, even some negative numbers when net ODA is negative. There are only a few negative observations as few countries receiving aid for more than ten years in between 1975-2008 reached the point of becoming a net donor of aid. These countries are not excluded from the sample, as

countries that have just moved from being net receivers to become net donors are still relevant for this subject.

As can be seen in Appendix B, there seems to be no risk of multicollinearity between the aid variable and neither the cultural variables nor the controlling variables. The highest correlation is, not surprisingly, with *initial GDP* and not even this correlation is high enough to exclude any of the two variables. It is important to note that the correlations reported in Appendix B are from a pairwise sample, i.e. the greatest sample possible between two variables. When the sample is limited in certain ways, this multicollinearity does become an issue and certain controls are therefore removed from some of the regressions below to increase the sample, but when this is done it is clearly stated.

One limitation of the aid data seems to be an under-statement of military support. Countries such as Egypt and Israel, who are known for receiving great amount of military support from the US (Kosack 2003), are reported as getting only a few percent of GDP from aid.

3.1.4. **Control variables**

To disentangle the changes in development caused by difference in culture and aid from those caused by other factors, a number of controls are added to the regressions. The choice of control variables draws inspiration from studies such as Kosack (2003), Burnside and Dollar (2004) and others who perform similar regressions to investigate the efficiency of aid. Sources for these variables can be found in Appendix C.

The first control variable is *initial HDI*. The initial level of development is likely to correlate with aid and its inclusion is therefore warranted, as it is also likely to be correlated with the rate of development due to convergence. Also, if culture has a positive effect on the rate of development and is expected to change at a quite slow pace, it is also likely to be correlated with the initial level of development. *Initial HDI* is therefore included to separate the direct effect of aid on development from effects due to convergence. For the same reason *initial GDP* and *initial school enrollment* are relevant when their respective rate of change is used as the dependent variable. These types of controls are present in both of the articles mentioned above.

Institutional quality is also likely to affect how well a country utilizes aid, as well as its rate of development, as corruption and an inefficient bureaucracy means that both aid and other resources will be lost before reaching their intended destination. As culture sets the stage for more formal institutions, these levels 3 institutions are likely to be correlated with culture as well and they are included as controls to ensure that it is the deeper level institutions that are really affecting the outcome of the regressions. To control for this, the regressions will include a measurement

consisting of the sum of the country's score for *Corruption* and for *Bureaucratic Quality,* both on a scale from 0 to 6 where higher values are preferable to lower ones, from the International Country Risk Guide (ICRG). Data from the ICRG is for instance used in Baliamoune-Lutz and Mavrotas (2009). An advantage of using the ICRG data instead of Keefer and Knack's measurement of the quality of institutions used by among others Burnside and Dollar (2000) is that the ICRG has a large enough database to allow the values of a country to change over time. Even a simple overview of the ICRG data show that there is a variation over time, so not fixing this variable is motivated.

The policies pursued by the different governments are also well-used controls. As pointed out by Burnside and Dollar (2000) policies affect how well aid is used and it can be assumed it also affects the rate of development. Government policy has proven to be important for development and aid efficiency, and can be expected to be correlated with strong institutions making it a relevant control in this setting. *Inflation* is used as a proxy for monetary policies, while the net yearly *government lending* will be used as proxy for fiscal policies. *Trade* policy will be measured by the ratio of trade to GDP. This last proxy is not without problems as it could produce large values to raw-material exporting countries despite natural resources being known to have detrimental effects on the quality of a country's institutions and hence its development (e.g. Sala-i-Martin and Subramanian 2003). But this problem is solved as both corruption and bureaucratic quality is already controlled for in the regression. Similar policy-controls can e.g. be found in Dollar and Collier (2001), Dalgaard et al. (2004) and Baliamoune-Lutz and Mavrotas (2009). To further limit the distortion of raw-material exporting countries and their history of poor development, *terms of trade* is added as a control for fluctuations in the world economy and the fact that many developing countries are dependent on primary goods, which are notoriously income-inelastic (Kosack 2003). The *terms of trade* variable is calculated as the average change in an index over the same five-year periods as aid. Because most the data ends before 2010, the last period is instead the average over four- or three-year periods, depending on the data.

Conflicts are likely to have a negative impact on aid efficiency as well as development in general as aid money is likely to be used to relieve military needs rather than humanitarian ones. As such, conflicts need to be taken into account. To control for this *arms import* (as part of total imports) lagged five years is added to the model as a proxy for conflict. This variable can be found in Dalgaard et al. (2004) and Kosack (2003).

Finally, the regressions will control for *democracy,* measured by the combination of the state's score for political rights and civil liberties from Freedom House. The two scores range from 1 to 7 where 1 is the most democratic for both. This control is included since Kosack (2003) finds significant relationships between democracy and both development and aid efficiency.

3.1.5. **2SLS**

As *aid* is likely to be correlated with some of the control variables, such as the absolute level of HDI or arms imports, a 2SLS will be used to avoid endogeneity. A separate equation will be used for the first-stage regression using received aid as the dependent variable and some of the control variables and an additional variable as independents. The control variables used in the first-stage regression are: *Initial HDI*, as donors are likely to give more the higher the need of the country; *arms imports*, here used as a proxy for strategic importance which is expected to increase aid; and *democracy*, as democracies tend to give more to democracies. The first two comes from Kosack and the third comes from Alesina and Dollar (2000) who suggests that there is a vague but positive relationship between democracy and aid received.

In addition to these a new variable is added, namely the log of *population*. It is added to reflect how donors tend to favor smaller countries (Kosack 2003). To account for bilateral issues like strategic interests or colonial ties country-specific fixed effects are used. Time specific effects are also added to reflect change in global trends in donations.

The system can be identified since there are exogenous variables in each regression that do not belong in the other; i.e. good policies is shown by Burnside and Dollar (2000) not to be related to aid received, so those variable do not belong in the first-stage equation. Similarly the population variable does not belong in the final regression as this should not have an effect on development, as "both the US and Luxembourg have achieved very high average quality of life" (Kosack 2003:6). All four variables are relevant as they are significantly related to aid. They are also uncorrelated to the errors from the second stage regression indicating that they are exogenous and hence can be used as instruments (Kennedy 2008). The full result of the first stage equation and the common-sample correlations for the variables used can be found in Appendix D. Whereas *initial HDI, population* and *democracy* all have the expected signs *arms imports* is negatively related to aid, which is counter to the prior discussion. With all likelihood this is due to military support being underrepresented in data on aid and possibly also a sign that donors do not appreciate their aid recipients waging war. All instruments but *democracy* are significant, the R^2 value is high and the correlation matrix shows no signs of multicollinearity. The correlation with the original aid variable is high, 93% using the pairwise sample, but still lead to different results as shown in the next chapter.

4. Results

4.1. Full sample regressions

Initial tests of the data give positive results. Neither the Levin, Lin and Chu test nor the Im, Pesaran and Shin test for unit roots show any signs of non-stationarity among the regressions. A Hausman test confirms the need for fixed effects. The number of observations and cross-sections used vary greatly with the variables used and both are reported at the end of each table. In the regressions using the whole data set there are seldom less than 50 observations per regression. Adjusted R^2 values are in general very high and the p-values of the F-statistic tend to be low despite most variables being insignificant. The high adjusted R^2 values can be explained by the fixed effects, which are able to capture a great deal of the variance between the countries. As expected, the same regressions without any fixed effect have significantly lower adjusted R^2 values. The combination of high R^2 values and insignificant controls is mostly consistent throughout the thesis.

The p-values are reported in parenthesis under the coefficients. Throughout asterisks (*) indicate significance, one asterisk indicating a result significant at the 10%-level, two the 5%-level and three the 1%-level.

4.1.1. Achievement motivation

The results from the OLS regressions and 2SLS regressions using *achievement motivation* as the cultural variable are shown in table 1 and 2 respectively. As can be seen, almost none of the variables of interest are significant, no matter what dependent variable is used. *Aid* is the only variable of interest that is significant and then only once, in the 2SLS regression using *GDP* as the dependent variable. The need of a 2SLS is clear, as all *aid* variables switch signs depending on whether a 2SLS is used or not. In the regressions using *HDI* and *school enrollment* this has the unexpected effect of turning two positive relationships into negative ones, but as none of these give any significant results this is not too important. In conclusion, the 2SLS points to aid being better at improving growth than development in a broader sense.

The cultural variable is proven insignificant on all occasions and negative in all but one, which is far from the results of Granato et al. (1996), who found a significantly positive result between development and *achievement motivation* in a similar investigation. One possible explanation could partly lie in their limited access to data; where their paper uses only one wave of

TABLE 1 Achievement motivation

Dependent variable:	Change in HDI	Change in GDP	Change in school enrollment
Aid	0.00065	-2.659859	0.019627
	(0.9121)	(0.1477)	(0.4308)
Achievement motivation	-0.00128	-0.985548	-0.023871
	(0.8987)	(0.7142)	(0.2569)
Achievement motivation*Aid	-0.00134	-0.239976	0.022105
	(0.6189)	(0.7823)	(0.4589)
Initial HDI	-0.4895**	-104.4701*	0.097984
	(0.0299)	(0.0708)	(0.7285)
Initial GDP		0.000304	
		(0.6198)	
Initial enrollment			-0.001781***
			(0.0094)
Democracy	0.003515*	0.10592	0.004283
	(0.0617)	(0.8149)	(0.1331)
Inflation	-6.75E-05	0.036709	-0.000177
	(0.7987)	(0.6372)	(0.6896)
Net government lending	-0.00016	-0.13508	-0.000802
	(0.7516)	(0.4232)	(0.4833)
Institutions	-0.00197	-0.246126	-0.00043
	(0.3147)	(0.5398)	(0.878)
Arms imports	-0.1299***	5.914562	-0.310814***
	(0.0063)	(0.6103)	(0.0049)
Trade	0.000105)	0.009668	-0.0000451
	(0.5734)	(0.8828)	(0.8807)
Terms of trade	-0.01038	10.05108	-0.06695
	(0.711)	(0.1995)	(0.171)
C	0.286854*	67.10151*	0.300101
	(0.0548)	(0.0809)	(0.1619)
Adjusted R^2	0.853241	0.835583	0.964506
Prob(F-statistic)	0.00017	0.000577	0.000039
Observations	61	61	53
Cross-sections	35	35	31

TABLE 2 Achievement motivation, 2SLS

Dependent variable:	Change in HDI	Change in GDP	Change in school enrollment
Aid	-0.002519	3.029672**	-0.009876
	(0.6105)	(0.0361)	(0.1440)
Achievement motivation	-0.001439	0.073726	-0.011838
	(0.7931)	(0.9541)	(0.1245)
Achievement motivation*Aid	-0.000688	-0.133385	-0.004248
	(0.7131)	(0.7623)	(0.2707)
Initial HDI	-0.534101***	-19.77261	-0.161266
	(0.0009)	(0.5426)	(0.3620)
Initial GDP		-0.001026**	
		(0.0182)	
Initial enrollment			-0.001501***
			(0.0041)
Democracy	-0.000106**	-0.034100	0.004390*
	(0.0244)	(0.9221)	(0.0593)
Inflation	-0.000106	0.037599	-0.000169
	(0.6475)	(0.4870)	(0.6115)
Net government lending	-0.000050	-0.038547	-0.000440
	(0.9297)	(0.7671)	(0.5773)
Institutions	-0.001974	0.086385	0.000357
	(0.1843)	(0.7963)	(0.8417)
Arms imports	-0.173394*	49. 77758*	-0.481880***
	(0.0789)	(0.0535)	(0.0040)
Trade	0.000131	0.029333	-0.000210
	(0.3635)	(0.3805)	(0.2716)
Terms of trade	0.05820	6.941948	-0.068712*
	(0.8231)	(0.2608)	(0.05968)
C	0.318153***	11.17937	0.473772***
	(0.0012)	(0.5633)	(0.0026)
Adjusted R^2	0.828932	0.856514	0.973784
Prob(F-statistic)	0.000215	0.000153	0.000003
Observations	62	63	55
Cross-sections	35	36	32

the WVS, five are used in this thesis. Besides an added time dimension this also provides data for more countries; Granato et al. only had two African countries in their regression but several developed countries. The use of five-year intervals for growth instead of the almost 30-year interval used by Granato et al. as well as the use of country specific fixed effects and different controls is also a part of the explanation.

The interacted variables are all insignificant and with a great margin at that, indicating that culture has no effect on aid efficiency and that the hypothesis of this thesis hence should be rejected.

4.1.2. **Religious attendance**

Tables 3 and 4 show the results of the regressions using *religious attendance* as the cultural variable. The *aid* variables are once again shown to be insignificant in all but one of the regressions, but here it is a negative relationship that is significant, in the OLS *GDP*-regression. However, any significance disappears in the 2SLS regression as *aid* once again switches signs in these regressions.

The cultural variable is found to be negative more often than not. There is even one significant negative result as the cultural variable in the *GDP* regression in table 3 is significant at the 5% level. Considering that high values indicate low attendance and that *achievement motivation* holds religion to be negative these results contradict the findings of Granato et al. (1996) and this is as unexpected as the negative results for their measurement.

Religious attendance interacted with *aid* also gives mainly insignificant results, but positive on all but one occasion. It is significant and positive at the 5% level in the OLS *GDP* equation, which indicates that religion can be detrimental for a country's use of aid to promote economic growth. In the same equation, both *religious attendance* and *aid* are negative and individually significant. Once again the cultural variable has opposite effects on aid efficiency and development, and this time it is significant. This significant and positive relationship disappears once the endogeneity of aid is controlled for.

TABLE 3 Religious attendance

Dependent variable:	Change in HDI	Change in GDP	Change in school enrollment
Aid	0.0000212	-2.8242**	0.010127
	(0.9979)	(0.0398)	(0.467)
Religious attendance	-0.00155	-0.992052**	0.00007
	(0.5375)	(0.0344)	(0.9896)
Religious attendance*Aid	0.000932	0.39718**	0.000451
	(0.1447)	(0.0189)	(0.8005)
Initial HDI	-0.42347**	-83.05453*	0.265537
	(0.0252)	(0.0541)	(0.4335)
Initial GDP		0.000365	
		-0.3837)	
Initial enrollment			-0.001429
			(0.1701)
Democracy	0.002602	0.157365	0.001473
	(0.199)	(0.7072)	(0.7707)
Inflation	-9.81E-05	0.044419	-0.000627
	(0.6410)	(0.3927)	(0.1852)
Net government lending	-0.00064	-0.202327*	-0.001506
	(0.2776)	(0.0836)	(0.3238)
Institutions	(0.00163	-0.083807	-0.002304
	-0.3106)	(0.7829)	(0.4445)
Arms imports	-0.12628**	0.232624	-0.28155*
	(0.0128)	(0.9811)	(0.0794)
Trade	0.0002	0.018719	0.000194
	(0.3841)	(0.7719)	(0.7715)
Terms of trade	0.01156	14.1047	-0.025255
	(0.7982)	(0.1557)	(0.805)
C	0.256386*	55.91251*	0.194239
	(0.0602)	(0.0733)	(0.4598)
Adjusted R^2	0.823404	0.887714	0.95893
Prob(F-statistic)	0.002512	0.000865	0.002832
Observations	57	57	50
Cross-sections	34	34	31

TABLE 4 Religious attendance, 2SLS

Dependent variable:	Change in HDI	Change in GDP	Change in school enrollment
Aid	-0.006130	1.827039	0.000294
	(0.4042)	(0.3786)	(0.9841)
Religious attendance	-0.002782	0.130936	-0.001383
	(0.3706)	(0.8570)	(0.8169)
Religious attendance*Aid	0.000195	0.129856	-0.000261
	(0.5893)	(0.1348)	(0.7149)
Initial HDI	-0.540937***	-24.91757	0.160703
	(0.0024)	(0.4735)	(0.4920)
Initial GDP		-0.000922**	
		(0.0446)	
Initial enrollment			-0.001269*
			(0.0869)
Democracy	0.003077	0.173333	0.001263
	(0.1172)	(0.6576)	(0.7528)
Inflation	-0.0000863	0.009574	-0.000500
	(0.7187)	(0.8468)	(0.2754)
Net government lending	-0.000336	-0.160204	-0.001018
	(0.6294)	(0.2826)	(0.4264)
Institutions	-0.001628	0.072227	-0.002188
	(0.3190)	(0.8292)	(0.3676)
Arms imports	-0.225888	34.11743	-0.267911
	(0.1008)	(0.3465)	(0.3676)
Trade	0.0000289	0.061506	-0.0000933
	(0.9103)	(0.2710)	(0.8504)
Terms of trade	-0.015776	15.14041*	-0.054800
	(0.6884)	(0.0917)	(0.4573)
C	0.353620***	11.97101	0.291322
	(0.0036)	(0.6133)	(0.1518)
Adjusted R^2	0.762700	0.853328	0.961221
Prob(F-statistic)	0.005085	0.001207	0.000694
Observations	58	59	52
Cross-sections	34	35	32

4.1.3. **Secular values**

The results of the *secular values* regressions are shown in tables 5 and 6 below. *Terms of trade* could not be used in some regressions, especially when *school enrollment* was used as the dependent variable as this caused a "near singular matrix", an indication of close-to-perfect collinearity. This arises when one or more of the variables can be written as a linear combination of some others, in this case it is *initial HDI* and the two aid variables that are causing trouble. The reason why this is an issue in this regression despite the variables having no signs of multicollinearity in the pairwise sample is due to both *school enrollment, terms of trade* and *secular values* limiting the sample in different ways, leaving observations that suffer from high collinearity. Considering that *initial HDI* is one of the most commonly significant variables in the previous regressions and the empirical reasons for its inclusion as a control it is preferable to solve this multicollinearity issue by removing *terms of trade* instead of *initial enrollment.*

In these regressions *aid* is mostly positive, and it is significantly so for the 2SLS *GDP* regression, marking the fourth time this variable is positive, and the second time it is significant, in regressions with *GDP* as the dependent variable. This is the one consistent result for the *aid* variable, indicating that aid is somewhat efficient in promoting economic growth but inefficient in promoting development in a broader sense.

Secular values shows the highest number of significant results out of the three cultural variables. It is positive in all regressions and significant in two of the 2SLS- regressions, as well as in the OLS *HDI*-regression. These significant results support the hypothesis that culture matters. As the result is positive, it also gives some support to Granato et al. (1996)'s hypothesis, as *secular values* should be positively correlated with *achievement motivation,* considering the two measurements' similar idea. This correlation between the two is, however, weak. In this sample, the two variables are correlated at only 6% so even if they aim to measure the same attitudes they clearly differ greatly.

The interacted variable is negative five out of six times, and significant in one of these circumstances. It is noteworthy that when the interacted variable is significant, it has the opposite sign of the stand-alone cultural variable. This is true not only this time, but also every other time either of the two are significant in the previous regressions. There are many reasons why a positive relationship between a cultural variable and development does not necessarily imply a positive relationship between the same cultural variable and aid efficiency. The two discussed in this thesis are networks or obedience. These results give some support to the hypothesis that culture matters for aid efficiency, and that the relationship between aid, development and culture is complex.

TABLE 5 Secular values

Dependent variable:	Change in HDI	Change in GDP	Change in school enrollment
Aid	0.001902	0.731822	0.005754
	(0.3025)	(0.4142)	(0.6576)
Secular values	0.064658*	9.636934	0.030913
	(0.0919)	(0.4142)	(0.7978)
Secular values*Aid	-0.016	-0.418781	0.002166
	(0.1106)	(0.8676)	(0.9142)
Initial HDI	-0.65156*	-74.77956	-0.107825
	(0.0585)	(0.3557)	(0.8365)
Initial GDP		0.001276	
		(0.6263)	
Initial enrollment			-0.002097
			(0.2804)
Democracy	0.004763	0.986272	0.001213
	(0.1193)	(0.1287)	(0.7642)
Inflation	0.000628	0.114789	-0.0000116
	(0.1644)	(0.5021)	(0.994)
Net government lending	0.000629	-0.359469	-0.001844
	(0.4962)	(0.4193)	(0.4287)
Institutions	0.006435	0.810511	-0.007725
	(0.2366)	(0.5497)	(0.5983)
Arms imports	-0.11827*	5.004301	-0.18619
	(0. 0828)	(0.7677)	(0.1922)
Trade	-0.00053	-0.112238	-0.0000474
	(0.1476)	(0.2745)	(0.9535)
Terms of trade	-0.0039		
	(0.3025)		
C	0.350251*	34.68527	0.516917
	(0.0790)	(0.5151)	(0.3251)
Adjusted R^2	0.997402	0.777966	0.96273
Prob(F-statistic)	0.039989	0.04145	0.035144
Observations	47	55	50
Cross-sections	32	36	34

TABLE 6 Secular values, 2SLS

Dependent variable:	Change in HDI	Change in GDP	Change in school enrollment
Aid	-0.002279	6.503405*	0.018858
	(0.8812)	(0.0696)	(0.2418)
Secular values	0.016011	16.77420*	0.107682*
	(0.3802)	(0.0556)	(0.0644)
Secular values*Aid	-0.004119	-2.539155*	-0.007630
	(0.4516)	(0.0825)	(0.2482)
Initial HDI	-0.670119	97.79424	-0.066048
	(0.3023)	(0.1457)	(0.7701)
Initial GDP		-0.001168*	
		(0.0972)	
Initial enrollment			-0.002631***
			(0.0024)
Democracy	0.003265	-0.043051	0.003257
	(0.4024)	(0.8848)	(0.1945)
Inflation	0.0000741	0.235871*	0.002165
	(0.8674)	(0.0816)	(0.1454)
Net government lending	0.0000999	0.110735	0.000673
	(0.9408)	(0.4675)	(0.7221)
Institutions	0.003330	0.850472	0.007730
	(0.6215)	(0.3529)	(0.4474)
Arms imports	-0.060833	123.6486*	0.501921
	(0.8874)	(0.0795)	(0.3379)
Trade	-0.0000974	-0.013663	-0.000971
	(0.7234)	(0.6183)	(0.1461)
Terms of trade	-0.003513	12.39489*	
	(0.8901)	(0.0554)	
C	0.382497	-81.70678	0.477502*
	(0.3574)	(0.1215)	(0.0644)
Adjusted R^2	0.937119	0.996010	0.981284
Prob(F-statistic)	0.058504	0.049561	0.003241
Observations	48	48	54
Cross-sections	32	32	37

4.2. Where does culture matter?

Considering how diverse the sample is, it is motivated to examine other patterns in other groups. The sample is therefore split into different groups according to different criteria. A list of which countries are in each group can be found in Appendix A. The same control variables are used, as well as country and time specific fixed effects. *Terms of trade* has to be removed to increase the number of available observations to avoid multicollinearity between *initial HDI* and the aid variables. In some cases other control has to be removed as well in order to get enough observations to avoid a near singular matrix. Which variables that are removed depend on a combination of the variable's previous significance and the size of their samples in the different groups. The variables that are removed can be found in Appendix E. The most common variable to be removed, besides from *terms of* trade, is *net government lending,* due to the few observations available for this variable and the few significant results for it in the full sample regressions. Some regressions are not possible to run at all, no matter how many control variables that are deleted. The exclusion of control variable is of course not desirable; they are included in the original regression for a reason. But when faced with the choice between excluding variables and multicollinearity the former is the lesser evil. By removing *terms of trade* and some other variables the number of observations can be kept reasonably high. The number of observations in those regressions that are possible to run range from 27 to 45. R^2 values are consistently high and F-statistics consistently low throughout. Sources can be found in Appendix C.

4.2.1. GDP-level

The data is separated into two groups based on GDP levels from 2005 as data from 1981 is scarce. This means that both countries that have been enjoyed high GDP levels for a while and those that have had growth over the sample period end up in the rich group. A summary of the results can be found in table 7 below.

There are notable differences between the two groups. Negative results in one group are often positive in the other and not one significant result can be found with the same sign in both groups. This is perhaps most clear when looking at *aid*. There are two significant results in the group with high GDP levels, one negative in an OLS regression and one positive in a 2SLS regression, both in the *GDP* regressions which is as expected from previous regressions. In general, the OLS results are negative and the 2SLS positive for the aid variable in this group. In the poor group, however, the pattern is the opposite, all the significant results are negative and in the 2SLS *GDP* regressions. This indicates that aid is less efficient in poorer countries once endogeneity is controlled for, despite them presumably needing aid more. This is possibly due to selection bias, as the rich group includes only

countries that have both received aid during the period and that are now rich. Thus all countries that managed to use their aid efficiently can be assumed to be in the rich group.

TABLE 7 GDP-level

		High GDP			Low GDP		
OLS		Aid	Culture	Aid*Culture	Aid	Culture	Aid*Culture
Achievement motivation	HDI	+	-	+	-	-	+
	GDP	+	-**	+***	+	+	-
	School	-	-	-	N/A	N/A	N/A
Religious attendance	HDI	-	+*	-	+	+	+
	GDP	-	-	+	+	+	+
	School	-	-	+	+	+	-
Secular values	HDI	-	-	+	+	+	+
	GDP	-*	+*	+	-	+	+
	School	-	+	-	N/A	N/A	N/A
2SLS							
Achievement motivation	HDI	+	+	+	-	+	-
	GDP	+	-	+	-**	+	-
	School	+	-	-	-	+	-
Religious attendance	HDI	+	+	-	-	-	-
	GDP	+	+	+	-***	-**	+**
	School	+	+	-	-	-	+
Secular values	HDI	+	+	-**	-	+	+
	GDP	+*	-	+	-*	+	+
	School	+	+	-	N/A	N/A	N/A

Culture is therefore all the more interesting in this case. The results for both significant and insignificant results are mixed in both groups and no clear pattern is visible and variables often switch sign in the 2SLS-regressions. The same is true concerning the results for the interacted variables. Most of the stand-alone culture variables have the opposite sign to the interacted variables and this is also the case in 4 out of 5 regressions where any of them is significant. This is consistent with the results from 4.1.

4.2.2. Distance from the Equator

As all regressions use fixed effects, variables that do not change over time for each country cannot be used. Distance from the Equator is an example of such a variable. It has been used in developmental regressions as an explanatory variable for development (e.g. Theil and Finke 1983, Ram 1997) and as such should be interesting to add as a control variable. It is generally used as a proxy for differences

in institutional quality and it is reasonable to assume that cultures also might differ between longitudes. Even if the country-specific effects capture differences between countries, differences specifically related to the distance from the Equator cannot be identified. To control for this the sample is once again divided into two subsamples, here depending on their distance to the Equator as measured by the longitude.

TABLE 8 Distance from the Equator

		Close			Distant		
OLS		Aid	Culture	Aid*Culture	Aid	Culture	Aid*Culture
Achievement motivation	HDI	-	+	-	+	-	-
	GDP	+	+	-	-	-	+
	School	+	-	+	-	+	-
Religious attendance	HDI	-	-	+	+	-**	+**
	GDP	-	-	+	+	-	+**
	School	+	+	+	-	-	+
Secular values	HDI	-	+	-	-	-	+
	GDP	+	+	-	+	+	-
	School	-	+	+	-	-	+
2SLS							
Achievement motivation	HDI	-	+	-	-	-	-
	GDP	+	+	-	+	-	-
	School	-	-	-	-	-	-***
Religious attendance	HDI	-	-	+	-**	-**	+**
	GDP	-	-	+	-	-	+
	School	-	+	+	-*	-*	+*
Secular values	HDI	+	+	-	-	+	+
	GDP	+	+	-*	+	-	+
	School	-	-	+	-	-	+

The results from this division of the sample differ from those of the first division, showing that a lot of the differences lay in which countries are in the sample. As for significant results for the aid variable, there are two negative results in the distant group, both in the 2SLS regressions, and none in the close group. If we look at *religious attendance* it is always negative in the distant group and significantly so three times. It is negative five out of six times in the group located close to the Equator as well, but never significant. This indicates that religion is beneficial to most countries, but especially to countries far away from the Equator. As can be seen in appendix A, both groups have countries from the two main religions, Christianity and Islam, in their sample. What makes this yet more noteworthy is that there are more positive than negative results in the close group but none in

the far away group. In fact, 15 out of 18 culture variables are negative in the distant group. This gives more support for the idea that religion is more beneficial to countries located far away from the Equator.

The significant results for the interacted variables are clearly divided between the groups, with five significant ones in the distant group and only one in the group close to the Equator. As four out of five significant results in the far away group is positive and the sole significant result in the close group is negative. This tells us that the more religious a country far away from the Equator is, the less efficient will aid donations be in promoting development, while the opposite seems to be true close to the Equator. The clearest result remains: still, the stand-alone variables have the opposite signs of the interacted variables in 5 out of 6 regressions where either of them is significant and all three times when both of them are significant.

4.2.3. Ethno-linguistic fractionalization

Ethno-linguistic fractionalization has been found to be negatively correlated with growth in a number of studies (e.g. Alesina et al. 2003). It is a likely proxy for cultural homogeneity and is as such of interest when searching for a positive effect of social cohesion. Traditional and religious cultures should be expected to be positively correlated to development in homogenous countries, as a traditional culture in such a country could be a uniting factor compared to more individualistic cultures. On the contrary, heterogeneous countries ought to benefit from secular values, as the benefits from a common culture is likely to be less and thus should the benefits of such a culture be greater than the costs in these countries.

As data that changes over time is not available it was not possible to use ethno-linguistic fractionalization together with the country-specific effects. To compensate for this lack of data, another division is made, splitting the original sample, putting the most homogenous countries into one group and the most heterogeneous countries into another. Ethno-linguistic fractionalization is measured by combining the ethnic and language fractionalization measurements calculated by Alesina et al. (2003).

This division of the sample produces the fewest significant results, the variables of interest being significant on only ten times. *Aid* is significant four times and is mostly negative. There are two significant cultural variables, one positive in the heterogeneous group and one negative in the homogeneous group, which indicates that heterogeneous countries benefit more from a more secular and individualistic culture than homogenous countries. This is probably due to the risk of strife between different groups in heterogeneous countries increase the less individualistic a country is, a risk a homogeneous country does not have to deal with. However, as the interacted variables

once again have the opposite signs in most cases (and all of the significant cases) the results indicate that aid efficiency decreases with religiosity in homogenous countries. Given the discussion about networks in chapter 2 this is counterintuitive, religious countries should benefit more from religion than heterogeneous countries.

Looking at the sample, it is interesting to note that Catholic countries are overrepresented in the homogenous sample. As the sign of the culture variables have different signs in the two groups, this fuels the idea that *what* religion a country has is as important as *how* religious a country is. It is also worth noting that there are great geographical differences between the groups, with Latin America being overrepresented in the homogeneous sample and Sub-Saharan Africa in the heterogeneous sample. This longitudinal difference of how culture affects development could perhaps be explained by differences in culture between the two continents that are not explained by the simple measurements used here.

TABLE 9 Ethno-linguistic fractionalization

		Homogeneous			Heterogeneous		
OLS		Aid	Culture	Aid*Culture	Aid	Culture	Aid*Culture
Achievement motivation	HDI	+	-	+	-	-	-
	GDP	+	-	+	-*	+**	-**
	School	-	+	-	-	-	+
Religious attendance	HDI	+	-	+	-	+	+
	GDP	+	-	+**	+	+	-
	School	-	-	+	+	+	-
Secular values	HDI	+	-	-	+	+	-
	GDP	-	+	+	-	+	-
	School	-	+	-	-	+	+
2SLS							
Achievement motivation	HDI	-	-	+	-	+	-
	GDP	+	-	-	-*	+	+
	School	+	-	+**	-	+	+
Religious attendance	HDI	-**	-*	+**	+	+	-
	GDP	-	-	+	+	-	+
	School	-	-	+	+	-	+
Secular values	HDI	-	+	-	-	-	+
	GDP	+	-	-	+*	+	-
	School	+	-	+	+	-	+

4.2.4. **Religion**

As the results so far indicate that the signs of the stand-alone and interacted cultural variables have opposing signs it is possible that the cultural variables are not comprehensive enough to capture the full effect of culture. To compensate for this, different types of religions are added as control variables. Possibly, some religions might be pro-developmental but poor at handling aid, whereas some are good at handling aid but poor for development. If this is the case the addition of specific religions might cause the pattern of opposing signs to disappear, as differences between the religions is reflected in the religious variables instead.

Data on religion comes from the World Value Study and is based on the percentage of interviewees belonging to any of the nine most common religions in the survey is used. The results can be seen in table 10. As this robustness check used the full sample, *terms of trade* could be used almost throughout, the removed variables can be seen in appendix E. The number of observations varies between 52 and 67.

As is apparent, adding religious control variables nullify most of the previous significant results, leaving only five of the variables of interest still significant, indicating that *which* religion a country has is as important as *how* religious or traditional a country is. The religious variables show no clear patterns, with most results changing signs when the cultural variables change or when a 2SLS is used. Very few of the results are significant and most that are can be found in the same regression. No conclusion can thus be drawn on which religion is preferable than others in a developmental perspective; perhaps certain combinations are more favorable than others. Furthermore, half of the regressions, including one of the three with significant cultural variables, still have the opposing signs on the stand-alone and interacted cultural variables, so the addition of religious variables does not fully explain this result. However, these regressions do bring the number of regressions where the two variables in question have opposing signs down to half, the lowest number of all the groups of regressions.

TABLE 10 Religion

OLS		Aid	Culture	Aid* Culture	Buddhi st	Roman Catholic	Evangelical	Hindu	Jew	Muslim	Orthodox	Protestant	Sikh
Achievement motivation	HDI	+	-	+	+	+	+	-	+	+	-	+	-
	GDP	+	+	+	+	+	+	-	+	+	-	+	-
	School	-	-	-	-**	+	-	-	-	-***	-	-	-
Religious attendance	HDI	+	+	+	+	+	+	-	+	+	-	+	+
	GDP	+	+	-	+	-	-	-	+	+	+	-	-
	School	+	-	+	-	-	-	+	-	-	-	-	+
Secular values	HDI	+	+	-	-*	-*	-*	-	-	-*	-	-**	+*
	GDP	+	+	+	-	-	-	-	-	-	+	-	-
	School	-	+	+	-	+	+	+	+	+	+	+	+
2SLS													
Achievement motivation	HDI	-***	-*	+***	+***	+***	-**	-***	+***	+***	+***	+***	+
	GDP	+	+	-	+	+	+	+	-	+	-	-	-
	School	-	-*	-	-	+	-	-	-	-***	-	-	+
Religious attendance	HDI	-	-	+	+	+	+	+	+	-	+	+	+
	GDP	-	+	+	+	-	-	+	+	+	+*	-	-
	School	-	-	+	-	+	-	+	-	-	+	-	+
Secular values	HDI	-	+	+	-	+	-	+	-	-	+	-	+
	GDP	+	+*	+	-	+	-	+	-	-	+	-	-
	School	+	-	+	-	+	+	+	+	+	-	+	+

5. Conclusion

Culture permeates and forms every civilization. At the most fundamental level of society it sets the stage for more formal institutions, which in turn form the markets we act in. Despite this influence on the market, most economists have for long neglected culture. While the study of some levels of institutions has become accepted in mainstream economics, culture is still left out in the cold. This thesis is a small attempt to incorporate culture into economics in general and into the conditionality of aid-debate in particular. This debate has reached somewhat of a consensus on the importance of institutions. Considering the interdependence between institutions and culture and the diversity of cultures among the recipient countries, the inclusion of culture into this debate is a logical step.

Regression analysis, the method employed in this thesis, is a tried-and-tested way to deal with issues such as this. The use of cultural variables in regressions is a slightly more novel, but not entirely new, approach. The aggregate variables used here have both been used in investigations before. Only the variable measuring religious attendance is, to the author's knowledge, new to the field.

The number of significant results is not very high, especially not considering the amount of regressions used, but there are a few results worth taking an extra look at. First of all, there seems to be some support for the argument that aid, as measured by the DAC, can promote development in some sense of the word once endogeneity is controlled for. In the full sample regressions this positive relationship is only significant in regressions using GDP as the dependent variable. In fact, aid comes out negative in most regressions using HDI. This indicates that aid is not very pro-poor as neither HDI nor school enrollment seems to be improved by it. Also, aid seems to be more efficiently used in rich countries, and countries that are close to the Equator. This shows the need of future research on aid efficiency to focus not only on economic growth but also on development in a broader sense. There already exists studies that uses measurements like HDI instead of GDP (e.g. Kosack (2003)), but many of the major studies in this area, like Burnside and Dollar (2000 and 2004) and Dollar and Collier (2001 and 2002) use GDP and GNP growth rates respectively. This has to be amended in future studies.

Secondly, the effect of culture on development depends on the cultural measurement used. While a secular culture as measured by the variable *secular values* seem to promote economic development, a secular, individualistic culture, as measured by *achievement motivation* and *religious attendance* seem to *reduce* the rate of economic development. S*ecular variables* is positively

significant in two out of three full sample regressions once the endogeneity of aid is controlled for and it is the only cultural variable that is never significantly negative in any of the regressions, no matter what sample is used. This positive relationship seems especially prominent in homogenous countries and countries close to the Equator. *Achievement motivation* is negative three out of the four times it is significant, the only exception being in heterogeneous countries, and *religious attendance* is negative five out of the six times it is significant, the exception being in among high-GDP countries. These negative result and the fact that the results of *achievement motivation* and *religious attendance* differ from the ones of *secular values* is unexpected considering both the similarities between the measurements and previous research like Granato et al. (1996). Culture is a complex subject and the results of the different cultural variables in this thesis show how hard it is to include all aspects of culture into a single variable. Future research will have to deal with this issue and perhaps even create a new variable to measure culture.

Thirdly, the relationship between aid, development and culture is complex. Throughout the thesis, the stand-alone cultural variable and the interacted variable are both significant in the same regression a total of ten times. On all of these occasions, they have the opposite signs from each other. The difference in signs between culture alone and culture interacted with aid provides one of the most consistent results in the thesis. It holds for all three measurements of culture in most of the full-sample regressions, at least among the significant results, and the pattern is also clear in the sub-groups. This indicates that the role of culture is neither obvious nor simple. Regressions using *achievement motivation* and *religious attendance* indicate that countries seem to benefit from having a traditional, religious culture, but at the same time such cultures makes aid less efficient. At the same time, regressions using *secular values* indicate that countries benefit from having a secular, individualistic culture but that such a culture is detrimental for aid efficiency. To complicate this picture further, the 2SLS *aid* variable has the opposite signs from the interacted variable on all five occasions when they are both significant. It seems that in situations or groups of countries where aid is not efficient a high level of *achievement motivation* or *religious attendance* will improve aid efficiency and when aid is efficient a high level of *secular values* will decrease this efficiency. Clearly this leaves room for further research. Perhaps it is true that traditional cultures are better at handling aid through networks while at the same time being detrimental to development by quenching individual development. However, the results from the regressions splitting the sample by ethnical homogeneity do not support this hypothesis. Homogeneous countries, typically thought of as having greater levels of social trust and closer networks, do benefit more from being religious but handle aid more efficiently the more secular they are, which is the opposite of what can be expected according to the network theory.

The most reasonable explanation for this consistent inconsistency between the cultural variables themselves and between the stand-alone and interacted cultural variables is perhaps that the measurements of culture used here are too simple to capture the whole picture. It is e.g. possible that some religions are more pro-developmental than others, even if they are more conservative in a social sense. The attempt in this thesis to control for this gave support to the notion that the *type* of religion common in a country is important for both development and aid efficiency, as only one of the 18 regressions with religious controls has a significant cultural variable with opposing sign from the interacted variable. However, this control does not bring us any closer to determining which religions are more beneficial to development than others and how the connections between religion and development work. The inner workings of these connections and the connection to culture in a broader sense are areas in dire need of further empirical research.

There are many questions left to answer in this area. The major concern for further research is the lack of data, for while controls and variables measuring development such as GDP, HDI or inflation can generally be found with ease, the cultural variables severely limit the number of observations available. It is clear that the relatively small scope of the WVS is limiting in these regressions, reducing the number of observations in each regression from over 200 to about 60. This is a problem any future researcher will have to deal with, even if using another measurement of culture. Culture is a wide and complex issue, which makes it hard to summarize in simple variables. The three variables used in this thesis all rely heavily, but, save *religious attendance*, not solely on religion. Further research could perhaps focus on other issues, such as traditional hierarchies. It could be a good idea to look for proxies more easily available than interview-based data. A possible proxy for traditional hierarchies could be formal recognition of traditional leaders as a measurement of the cultural importance of these.

The connection between economics and culture has yet to be fully understood and greater focus is needed before any answers can be given. The results presented here support the idea that culture matters when it comes to aid efficiency. Although further research is needed to fully understand the effects of culture, it should not be ignored by mainstream economics any longer.

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Appendix A

List of countries used in the regressions

Albania[X]	Egypt[X]	Kyrgystan	Singapore*[Y]
Algeria*[X]	El Salvador*[YX]	Macedonia*	Slovenia*[X]
Argentina*[X]	Eritrea[Y]	Malaysia*[Y]	South Africa*
Armenia[X]	Ethiopia[Y]	Mali[Y]	Tanzania[Y]
Azerbaijan[X]	Georgia	Malta*	Thailand*[Y]
Bangladesh[YX]	Ghana[Y]	Mexico*[YX]	Trinidad and Tobago*[YX]
Bosnia-Herzegovina*	Guatemala[Y]	Moldova	Turkey*[X]
Brazil*[YX]	Hong Kong*[Y]	Morocco	Uganda[Y]
Burkina-Faso[Y]	India[Y]	Nigeria[Y]	Uruguay*[X]
Chile*[X]	Indonesia[Y]	Pakistan	Venezuela*[YX]
China[X]	Iran*	Peru*[Y]	Vietnam[YX]
Colombia*[YX]	Iraq	Philippines [Y]	Zambia[Y]
Croatia*[X]	Israel*	Rwanda[YX]	Zimbabwe[YX]
Cyprus*[X]	Jordan*[X]	Saudi Arabia*[X]	
Dominican republic *[YX]	Korea*[X]	Serbia	

* indicates a country in the rich group
[Y] indicates a country in the group close to the Equator
[X] indicates a country in the homogeneous group

Appendix B

Key descriptives for key variables

	Achievement motivation	Religious attendance	Secular values	Change in HDI	Change in GDP	Change in school enrollment	Aid	Aid-2SLS
Mean	-0.209285	3.936132	0.019271	0.026547	2.437114	0.219516	4.568386	3.820006
Median	-0.272667	4.045000	-0.005839	0.028454	2.790715	0.208303	1.119888	1.470684
Maximum	0.909000	7.870000	0.947605	0.085255	23.66438	0.458894	42.60212	26.26601
Minimum	-1.190656	1.370000	-0.546172	-0.073445	-25.00000	0.151752	-0.200129	-10.49434
Std. Dev.	0.428565	1.257421	0.276567	0.019992	4.643256	0.036652	7.022430	6.190861
Observations	109	106	86	224	273	242	255	198

Correlations for some key variables, pairwise sample.

	Achievement motivation	Religious attendance	Secular values	Change in HDI	Change in GDP	School enrollment	Aid	Aid-2SLS
Arms imports	-0.10	-0.12	-0.11	0.05	-0.14	-0.16	0.01	0.02
Democracy	0.00	0.13	-0.58	0.17	-0.03	-0.03	0.31	0.24
GDP	0.41	0.31	-0.21	0.60	1.00	0.18	-0.06	-0.13
Government lending	-0.05	0.05	0.13	0.08	0.23	0.07	-0.32	-0.46
HDI	0.17	0.08	-0.16	1.00	0.60	0.12	-0.05	-0.12
Inflation	0.02	0.04	-0.02	0.03	0.02	-0.05	-0.05	-0.04
Initial GDP	0.16	0.27	0.66	-0.08	-0.03	-0.08	-0.37	-0.42
Initial HDI	0.10	0.47	0.52	0.00	0.08	-0.23	-0.58	-0.57
Initial school enrollment	0.09	0.13	0.31	0.07	0.17	-0.41	-0.42	-0.46
Institutions	0.16	0.19	0.32	0.00	0.06	-0.22	-0.33	-0.37
Aid	0.00	-0.12	-0.31	-0.05	-0.06	0.28	1.00	0.93
Aid-2SLS	0.08	-0.31	-0.38	-0.12	-0.13	0.28	0.93	1.00
Terms of trade	-0.18	0.05	0.10	-0.06	-0.03	0.14	0.08	0.03
Trade	0.13	0.16	-0.17	-0.12	0.04	-0.06	-0.06	0.08
School enrollment	-0.03	-0.32	-0.07	0.12	0.18	1.00	0.28	0.28
Religious attendance	0.41	1.00	0.27	0.08	0.31	-0.32	-0.12	-0.31
Secular values	0.01	0.27	1.00	-0.16	-0.21	-0.07	-0.31	-0.38
Achievement motivation	1.00	0.41	0.01	0.17	0.41	-0.03	0.00	0.08

Appendix C

Control variables

Variable	Source	Measurement
Democracy	Freedom House	Combination of political rights and civil liberties score (low score indicates more democratic).
Inflation	WDI	GDP deflator
Arms imports	WDI	Share of total imports, lagged 5 years
Net government lending	International Monetary Fund	Percentage of GDP
GDP	WDI	5-year average per capita percentage growth
School enrollment	WDI	Gross percent primary enrollment
Trade	WDI	Percentage of GDP
Population	WDI	Log values
Institutions	PRS Group	Combination of "Corruption" and "Bureaucratic quality" scores (low scores indicates corruption and poor quality)
Terms of trade	WDI	Change over 5 year net barter terms of trade index
Distance to Equator	CIA the World Factbook	Latitude
Ethno-linguistic fractionalization	Alesina et al. 2003	The average of ethnic and language fractionalization values.
Religion	WVS	Percentage of interviewees answering that they belong to a certain religion.

Appendix D

2SLS first stage equation (with country- and time fixed effects)

Dependent variable: Aid	Coefficients
C	171.9248***
	(0.0017)
Initial HDI	-15.18705**
	(0.0331)
Democracy	0.068539
	(0.5409)
Log of population	-9.46968***
	(0.0031)
Arms imports	-17.28566***
	(0.0023)
Adjusted R^2	0.909504
Prob(F-statistic)	0.00000
Observations	193
Cross-sections	53

Correlations between variables used in the first-stage regression, common sample

	Democracy	Arms imports	Initial HDI	Aid	Log of population
Democracy	1.00	0.14	-0.40	0.27	0.25
Arms imports	0.14	1.00	-0.11	0.02	0.17
Initial HDI	-0.40	-0.11	1.00	-0.53	-0.12
Aid	0.27	0.02	-0.53	1.00	-0.28
Log of population	0.25	0.17	-0.12	-0.28	1.00

Appendix E

Control variables besides *terms of trade* excluded from regressions in 4.2

Rich and poor

Cultural variable	Dependent variable	Rich Control variable(s) removed	Poor Control variable(s) removed
OLS			
Achievement motivation	HDI	None	None
	GDP	None	Trade
	School	Net government lending, inflation, trade	N/A
Religious attendance	HDI	None	Net government lending, inflation
	GDP	None	Net government lending, trade
	School	Net government lending, inflation, trade, arms imports, institutions	Net government lending, inflation, institutions, trade
Secular values	HDI	Net government lending	All
	GDP	Net government lending	All
	School	Net government lending, inflation, trade, institutions	N/A
2SLS			
Achievement motivation	HDI	None	None
	GDP	None	Net government lending
	School	None	Net government lending, trade, inflation, institutions
Religious attendance	HDI	None	Net government lending, inflation
	GDP	None	Net government lending, inflation, trade
	School	None	All
Secular values	HDI	Net government lending	Net government lending, inflation, trade, institutions
	GDP	Net government lending	Net government lending, inflation, trade, institutions, democracy
	School	Net government lending	N/A

Distance from the Equator

		Close	Far
Cultural variable	Dependent variable	Control variable(s) removed	Control variable(s) removed
OLS			
Achievement motivation	HDI	Net government lending	None
	GDP	Net government lending	None
	School	Net government lending, inflation, trade	Net government lending
Religious attendance	HDI	None	Net government lending
	GDP	Net government lending	Net government lending
	School	Net government lending, inflation, trade	Net government lending
Secular values	HDI	Net government lending, inflation	Net government lending, inflation
	GDP	Net government lending, inflation, trade	Net government lending, inflation
	School	Net government lending, inflation, trade, institutions	Net government lending, inflation, trade, institutions
2SLS			
Achievement motivation	HDI	Net government lending	None
	GDP	Net government lending	None
	School	Net government lending, inflation, trade	Net government lending
Religious attendance	HDI	None	None
	GDP	Net government lending	Net government lending
	School	Net government lending, inflation, trade, institutions	Net government lending
Secular values	HDI	Net government lending, inflation	Net government lending
	GDP	Net government lending, inflation, trade	Net government lending
	School	Net government lending, inflation, trade, institutions	Net government lending, inflation, trade, institutions

Ethno-linguistic fractionalization

		Homogeneous	Heterogeneous
Cultural variable	Dependent variable	Control variable(s) removed	Control variable(s) removed
OLS			
Achievement motivation	HDI	None	Net government lending, inflation, arms
	GDP	None	Net government lending, inflation, trade
	School	Net government lending	Net government lending, inflation, trade, arms imports, institutions
Religious attendance	HDI	None	Net government lending, inflation, institutions
	GDP	None	Net government lending, inflation, institutions
	School	Net government lending	Net government lending, inflation, trade, institutions
Secular values	HDI	Net government lending	Net government lending, inflation, trade, institutions
	GDP	Net government lending	Net government lending, inflation, trade, institutions
	School	Net government lending, inflation, trade	Net government lending, inflation, trade, institutions
2SLS			
Achievement motivation	HDI	None	Net government lending, inflation, trade
	GDP	None	Net government lending, inflation, trade
	School	None	Net government lending, inflation, trade
Religious attendance	HDI	None	Net government lending, inflation, trade
	GDP	None	Net government lending, inflation, trade
	School	Net government lending	Net government lending, inflation, trade
Secular values	HDI	Net government lending	Net government lending, inflation, trade
	GDP	Net government lending	Net government lending, inflation, trade
	School	Net government lending, inflation	Net government lending, inflation, trade

Religion

Terms of trade were used in all these regressions if not otherwise stated below.

Cultural variable	Dependent variable	Control variable(s) removed
OLS		
Achievement motivation	HDI	None
	GDP	None
	School	Net government lending, terms of trade
Religious attendance	HDI	Terms of trade
	GDP	Terms of trade
	School	Net government lending, terms of trade
Secular values	HDI	None
	GDP	Net government lending, terms of trade
	School	Net government lending, terms of trade, trade, arms imports, institutions
2SLS		
Achievement motivation	HDI	None
	GDP	None
	School	Net government lending, terms of trade
Religious attendance	HDI	Terms of trade
	GDP	Terms of trade
	School	Net government lending, terms of trade
Secular values	HDI	Net government lending, terms of trade
	GDP	Net government lending, terms of trade
	School	Net government lending, terms of trade, inflation, trade