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Assessing the Impact of Foreign Aid: The Interaction of Policy and Geography with Foreign Aid in Economic Growth

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Abstract

This Master's thesis examines the complicated dynamics between foreign aid and economic growth. Extending on the works of Burnside and Dollar (2000) and Dalgaard et al. (2004), it scrutinizes the interaction terms of aid with economic policy and aid with geographic factors (percentage of land in the tropics). The thesis reconstructs growth models employed by Burnside and Dollar (2000) and Dalgaard et al. (2004), with data appending the original datasets from 1993 to 2020, broadening the analysis beyond the original studies. It tackles the issue of endogeneity in growth regression models and re-evaluates the influence of policy variables against geographic characteristics in assessing the effectiveness of foreign aid. Findings indicate a transition in significance from policy variables to geographical factors, suggesting a need to reassess aid distribution policies. This research supplements discussions on international development and economic policies, emphasizing the significance of geographical and structural influences on the impact of foreign aid on economic growth.

Keywords: Economic Growth, Foreign Aid, Development

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1. Introduction

In an era marked by global economic disparities and persistent poverty challenges, the role of foreign aid in promoting economic growth has emerged as a central concern for policymakers, economists, and international development practitioners. This master's thesis looks into the multifaceted relationship between foreign aid and economic growth, seeking to create an understanding of the intricate dynamics that underlie aid & economic growth. Understanding the impact of foreign aid on economic growth is not only an academic pursuit; it has profound implications for international policy formulation, poverty alleviation strategies, and sustainable development goals. Despite extensive debates and research, the effectiveness of foreign aid remains a subject of contention, making this investigation timely and vital. The influential work of Burnside and Dollar (B&D) in "Aid, Policies, and Growth" (2000) proposes a policy index that encapsulates: budget surplus, inflation, and trade openness. Concluding that the effectiveness of aid is contingent on good economic policies within recipient countries, stating that the variables above are a sound indicator to be incorporated as a policy index. However, this paper has been rigorously scrutinized by Dalgaard et al., (2004), particularly in their work "On the Empirics of Foreign Aid and Growth," challenging the robustness of the policy variables proposed in determining aid effectiveness. Dalgaard et al., (2004) recommend the usage of a structural characteristic such as the Tropics interaction term with aid, over the usage of the B&D (2000) Policy Index in their paper, concluding that it has greater explanatory power in the growth regression. In this paper, I set out to compare the interaction terms of aid with policy, as proposed by B&D, against the Tropics interaction term proposed by Dalgaard et al., (2004) to determine which offers a more substantial explanation for variations in economic growth. To create a comparison I reconstruct the growth models, ensuring alignment with both B&D (2000) and Dalgaard et al.,(2004) methodologies, while introducing the latest data spanning from 1965 to 2020. This updated dataset allows the extension of the analysis beyond

the original scope of B&D (2000) & Dalgaard et al., (2004), which include data up to 1993 & 1997 respectively, offering new insights into the enduring question of aid effectiveness in promoting economic growth. In the study, I will take a close look at how B&D (2000) composed their policy index and at the issues which Dalgaard et al., (2004), raised about the index. The thesis will also investigate other factors proposed by Dalgaard et al.,(2004), that can affect growth, like the role of a country's geography, specifically in this thesis, the percentage of land in the tropics. Furthermore, The challenge posed by endogeneity in growth regression models is addressed, scrutinizing whether aid and policies, often presumed to be endogenous, hold up under the rigor of updated empirical scrutiny. The following chapters will delve into the multifaceted relationship between foreign aid and economic growth, the contrasting perspectives on the effectiveness of different variables, the obstacles it faces in achieving its goals, and potential strategies to enhance the aid & growth analysis. Each chapter will add to a subtle understanding of the relationship between foreign aid and economic growth. The chapters are organized as follows: In section two I will be reviewing the vast literature available regarding economic growth and aid; Moving on to describing the methodology used in section three; Section four will present the data used throughout the analysis; Section 5 will be presenting the empirical results from the regressions run; Concluding in Section 6.

2. Literature review

The link between foreign aid and economic growth has been a subject of great debates and examination in the field of Economics and International Development. Within the field of development economics, foreign aid has been recognized as a significant instrument for addressing the savings gap often found in impoverished countries, to promote economic growth (Adusei, 2020). The topic of whether foreign aid effectively contributes to economic growth in recipient countries is of great relevance for international policy as well as academic curiosity. This stems from the fact that neo-classical economic theory often diverges from real-world

empirical data. As nations are challenged with poverty alleviation and sustainable development understanding the relationship between foreign aid and sustainable growth becomes immensely important. Over the past decades, foreign aid has evolved significantly encompassing diverse forms of aid which aim to improve infrastructure development, healthcare & education, to name a few. However the research hasn't always aligned regarding its effectiveness, proponents argue that Aid, if used effectively, is a promoter of economic growth and poverty reduction. However, on the other hand, researchers argue that foreign aid through the misallocation of resources and corruption actually causes dependencies and ultimately harms institutions, impeding economic growth (Djankov et al., 2008). To avoid these issues, researchers have been aiming to discover which characteristics or variables have the most significant effect when interacting with aid to promote economic growth, to be able to improve the allocation of aid to the most productive channels. For the sake of simplicity and clarity in presentation, B&D (2000) found it more feasible to create one overall measure for economic policy rather than employing three distinct variables. They chose to construct an index, assigning weights to policies based on their impact on growth. This decision was reached after experimenting with the straightforward principal components approach. However, the simple principal approach resulted in a nearly perfect correlation between openness and inflation. Consistent with these observations, an ordinary least squares (OLS) regression of the growth equation (2) without aid terms was employed to determine the weightings for the policy index. Due to this the growth regression determines the relative importance of the different policies. B&D (2000) finds that aid positively impacts growth in developing countries with good fiscal, monetary, and trade policies but has little effect in poor policy environments. The study suggests aid could be more effective if it were more systematically conditioned on good policy. These findings from B&D’s (2000) analysis contributed to the scientific foundation underpinning the policy recommendations found in the World Bank's policy research report titled "Assessing Aid" (World Bank, 1998). Dalgaard et

al., (2004), put the results of B&D (2000), which conclude that foreign aid fosters economic growth, but its impact is significant only in nations exhibiting strong macroeconomic performance, under scrutiny. Dalgaard et. al.(2004), criticize the focus on three specific variables to create the policy index as according to them the impact of aid returns is likely to be influenced by a multitude of diverse policy measures. This is because some policies might act as substitutes for aid inflows, while others are better viewed as complementary. This suggests that a composite index of policies could encompass certain components that enhance the impact of aid returns, while others may diminish it. Ultimately, the net effect may prove to be inconsequential. Dalgaard et al., (2004), have taken an initial approach to evaluating the significance of (non-political) structural characteristics in aid effectiveness. To do this, they included two variables: the proportion of land located in tropical regions and the product of this variable with aid. The rationale behind the use of this climate-related variable is evident in the research conducted by Bloom & Sachs (1998), Gallup et al. (1999), and Sachs (2001, 2003). All of these studies demonstrate that geographical factors such as tropical land area, tropical diseases (like malaria), or being landlocked have a substantial impact on GDP per capita growth from 1965 to 1990. This suggests that climatic variables can be considered as structural characteristics directly influencing the growth process. However, there is an alternative perspective that suggests 'geography' may serve as a proxy for other (endogenous but infrequent) structural characteristics. Hence, while the precise mechanisms through which geography affects growth are still a subject of debate, the exogeneity of the tropical land area seems unquestionable within the time frame relevant to the aid effectiveness and allocation discourse Dalgaard et al., (2004). The finding that aid appears to have a diminished impact in tropical regions persists across variations in estimation techniques and the underlying dataset (Sachs (2001, 2003)). Research on Climatic conditions has shown that climate might have affected the development of other gradually changing structural features, such as institutions,

for a range of reasons (Hall & Jones, 1999; Acemoglu et al., 2001; Easterly & Levine, 2003). Dalgaard et al.(2004), augment the B&D (2000) growth analysis models previously mentioned by adding the fractions of land in the Tropics variable and its interaction term with it. They come to the result that the interaction between aid and policy becomes statistically non-significant in the models. Conversely, the correlation between foreign aid and the proportion of land in tropical regions emerges as notably significant. This suggests that foreign aid exerts a robust positive influence on growth in non-tropical areas, whereas its effectiveness diminishes in tropical regions. Introducing the interaction of aid with tropical land area modifies the significance of the squared term to only a marginal level. However, the interaction between aid and tropical regions remains strongly significant. Overall, the expanded models, which incorporate a climate-dependent impact of aid, indicate a statistical preference for a climate-influenced approach to understanding aid effectiveness. As the literature review section concludes, it becomes evident that while foreign aid has been a pivotal element in the economic growth of developing countries, its effectiveness is weakened by a variety of factors. The debate over its role in fostering economic growth is complex, with studies like B&D (2000) emphasizing the interaction of aid with "good" economic policies, while Dalgaard et al. (2004) introduce structural and geographic considerations into the equation. This exploration of differing perspectives sets the stage for a deeper methodological inquiry into how aid, policies, and geographical characteristics of a country interact with aid to create economic growth in a country. Moving forward, the methodology section will build on these foundational insights, employing rigorous analytical frameworks to further discuss and understand the complex dynamics of aid and growth.

3. Methodology

The thesis aims to examine whether incorporating augmented data through the inclusion of additional countries & periods yields different outcomes in the analyses conducted by B&D

(2000) and Dalgaard et. al.(2004) respectively. Furthermore, it then aims to establish which proposed Interaction term with aid renders greater explanatory power in growth regressions. To analyse this I will be using the following models outlined below:

3.1 Empirical models

The basic growth model analyzed employs panel fixed-effects adjusted for heteroskedasticity and autocorrelation. The equation for the baseline model can be seen in equation (1) below:

$$(1): \quad g_{it} = \alpha + X_{it}\beta + \mu_i + \vartheta_t + \varepsilon_{it}$$

g_{it} is the per capita real GDP growth, X_{it}, represents the vector of control variables, identified by the endogenous growth literature, such as indicators of economic policy quality and economic openness, following the methodology established by Sachs & Warner (1995), the full list of endogenous and exogenous variables can be found in Table 1. β denotes the vector of coefficients (the betas differ for each variable), i indexes countries, t indexes time, the fixed-time effect is ϑ_t and g_{it} is the per capita real GDP growth. The variable μ_i represents the regional dummies, that capture and account for certain social and economic aspects, which stay constant over time. Based on the growth model in (1) we can create the growth model which analyses the impact of aid on growth, taking into account specific policy conditions. In (2) aid along with an interaction term between aid and policies are introduced into the growth equation.

$$(2): \quad g_{it} = Y_{it-1}\beta_y + a_{it}\beta_a + P_{it}\beta_p + a_{it}P_{it}\beta_{ap} + X_{it}\beta_X + \mu_i + \varepsilon^g_{it}$$

Y_{it-1} is the logarithm of initial real per capita GDP, a_{it} is aid receipts relative to GDP

P_{it} is a P X 1 vector of policies that affect growth, X_{it} is a K X 1 vector of other exogenous variables that might affect growth and the allocation of aid, found in Table 1, these variables are presumed to remain unaffected by shocks to growth or the level of aid. ε^g_{it} is a mean zero scalar included. In Model (2) the convergence effects are incorporated by making growth in period t dependent on Y_{t-1}, the logarithm of real per capita GDP at the start of the period. In (3) the interaction term between aid and tropics is introduced into the growth equation (2).

$$(3): g_{it} = Y_{it-1}\beta_y + a_{it}\beta_a + P_{it}\beta_p + a_{it}P_{it}\beta_{ap} + a_{it}T_{it}\beta_{at} + X_{it}\beta_X + g_t + \varepsilon^g_{it}$$

As B&D (2000) and Collier & Dollar (2001, 2002), indicate in their findings that aid is effective only in regions with 'good' policies, models 2 & 3 include the P vector. The P_{it} vector includes multiple variables, based on the B&D (2000) policy index, which is used as a proxy for macroeconomic policies. These variables are: Following Fischer (1993), I utilize inflation as an indicator of monetary policy; a dummy variable for trade openness[1] is employed, as defined by Sachs and Warner (1995); lastly the fiscal variable, budget surplus, as proposed by Easterly & Rebelo (1993), is included. As the previously discussed literature indicates, the outcome of growth is contingent on the nature of economic policies; thus, growth equations (2 & 3) encompass not just measures of aid and policies but also their interaction term. Furthermore, the interaction term between aid and percentage of land in the tropics is included as earlier indicated we are aiming to establish which interaction term has greater explanatory power, based on growth model three, we will be running OLS and GMM regressions, as well as diagnostic tests, to determine the specific effects of the two interaction terms on growth.

3.2 Endogeneity and aid

The issue of aid's endogeneity in growth regression models has been acknowledged and debated vastly in the literature. This concern revolves around whether the aid variable itself influences the factors it is intended to assist, potentially skewing results in growth models. A significant number of studies investigating the effectiveness of aid address this issue by testing for biases in their estimated parameters that could arise due to the endogeneity of aid. The majority of these studies conclude that ordinary least squares (OLS) regression methods are sufficient and valid for concluding, generally accepting the null hypothesis that the OLS regressions provide reliable estimates. When conducting panel-cross-country analysis, it's crucial to consider aid as

1. The dummy variable is defined by closed and open economies. Closed economies are characterized by average tariffs on machinery and materials exceeding 40 percent, a black-market premium surpassing 20 percent, or extensive government control of key tradeables.

an endogenous variable. This is because when we employ time-averaged data for both growth and aid, they become jointly endogenous, influencing each other within the model. This interdependence must be accounted for to ensure accurate and reliable analysis outcomes (Dalgaard et. al., 2004). Dalgaard et. al. (2004), find that aid and policies should be endogenous regressors if aid allocations and policies depend on lagged real per capita income. Furthermore, they show through the formulation of a time-averaged system that it is difficult to test for endogeneity of aid and policies due to the time-aggregation error, which shows that all time-varying regressors are potentially correlated with the error term. However this bias is decreasing with the increase of the time frame, hence in aid-growth regression models, there exists a balancing act between using long-term averages, which help reduce aggregation bias, and short-term averages, which are more effective in diminishing the bias caused by endogeneity. This trade-off is crucial for achieving accurate and reliable results in these models. The existing literature does not specify an ideal number of years for averages, as the right balance between aggregation and endogeneity biases is challenging to quantify. Four-year averages are commonly used, but it's vital to recognize this limitation, especially since endogeneity tests operate under the assumption that time-varying controls do not have a strong correlation with the aggregation error (Dalgaard et al., 2004). Another issue that arises in the growth-aid analysis is that finding good instruments for aid poses a great challenge. This is because most variables are either correlated with growth or income levels and therefore aren't valid instruments for aid. Dalgaard et al., (2004) however find that the reduced form relation of aid, when using panel data, depicts that lagged aid is highly correlated with current aid. This is as the presence of time-invariant factors in the aid process leads to a consistent serial correlation. This correlation allows for the substitution of lagged aid values in place of time-invariant factors in the reduced form of the model. Consequently, the model can be restructured into an autoregressive model of aid. To show the gain of including lagged aid in the growth model empirically (Dalgaard et

al., 2004) re-estimate the findings by B&D (2000) using both their data set and the extended dataset used by Easterly et al. (2003), which includes the same data but extends it with more countries and the inclusion of the period 1994-1997.

3.3 Issue of Institutions

The next issue of potential endogeneity of institutions and its implications for identifying the impact of aid on growth need to be addressed, to ensure that the observed effects of aid on growth aren't caused through endogenous variations in institutions. To do so Dalgaard et al., (2004) rather than employing instruments for the historically determined aspects of institutions, as described by Acemoglu et al., (2003), adopt a strategy of first differencing to mitigate this effect. This approach is integrated into the analysis through both standard pooled panel GMM-regressions, which address the endogeneity of aid and policies, and panel GMM-regressions of first differences. Specifically, the analysis utilizes the Arellano and Bond (1991) estimator, known as Difference-GMM, and the Blundell and Bond (1998) System-GMM estimator. These are particularly suitable for dynamic panel data models where unobserved heterogeneity is a concern. They are especially effective in our study for eliminating the influences of time-invariant or slowly changing institutions, which is assumed by Dalgaard et al. (2004) in the study we aim to recast, while also considering the potential endogeneity of aid and policies. Hence this method identifies the impact of aid and policies indirectly, by ensuring that any impact detected in the differenced growth model isn't attributable to constant cross-country variations in institutions instead of constructing structural models for aid and policies.

4. Data

The analysis will be conducted using panel data, combining time series and cross-sectional data. This panel data will encompass a variety of countries, as informed by the extended dataset used by Easterly et al. (2003) and the original dataset by B&D (2000), a list of nations included can be found in the appendix (List 1 & 2), and all exogenous and endogenous variables used can be found in Table 1. The dataset used is comprised of multiple datasets which have been merged

for the research. The datasets stem from the Databases of the World Bank (Assassinations, M2/GDP, Aid/GDP, Initial income, Arms import), IMF (CPI), Penn World Tables (population), ICRG (Quality of institutions), and EUI research Centre (Ethnic fractionalization), the datasets cover data from 1965 until 2020, employing the most recent available data. The data has been adjusted for inflation using the Consumer Price Index (CPI) for the year 2015, ensuring that all variables are expressed in constant 2015 dollars. Following the approach of S. Knack and P. Keefer (1995), the equation utilizes a measure of institutional quality, that assesses the security of property rights and the efficiency of the government bureaucracy. As this variable was not widely available before 1980, the assumption that a country's institutional factors evolve gradually over time is used, employing the 1980 value throughout the time series. Furthermore, the model makes use of the ethnolinguistic fractionalization variable, employed by Easterly & Levine (1997), which reveals a correlation between ethnic fractionalization, unfavorable policies, and negative growth performance, even when controlling for policies. Therefore, the institutional quality and ethnolinguistic fractionalization variables encapsulate long-term characteristics of countries that influence both policies and growth. In the analysis, the assassinations variable is also included, as a measure commonly employed in various studies to signify civil unrest. Additionally, an interactive term involving ethnic fractionalization and assassinations is included. Another institutional variable considered is the ratio of broad money (M2) to GDP, serving as a proxy for the financial system's development (Robert G. King and Levine, 1993). Due to concerns about the endogeneity of the M2 variable, it is lagged by one period. The B&D (2000) policy index, which has been discussed previously, consists of three different measures namely: Inflation, Budget surplus, and Trade openness which is an indicator introduced by Sachs and Warner (1995). The "log of population," is used to control for the size of the population in a country or to capture the effects of population growth on the economy. Taking the logarithm of the population size often helps in linearizing the relationship between

population and the dependent variable, and to manage the scale of the data since population numbers can be quite large. Lastly, regional dummies for Sub-Saharan Africa and East Asia are included. The usage of 4-year average growth rates for the dependent variable (real GDP per capita) is employed. The independent variables; percentage of land in the tropics & institutional quality, aid as a percentage of GDP, ethnic fractionalization, assassinations, broad money (M2) as a percentage of GDP, Budget surplus, Inflation, Openness, and the natural log of population are all averaged across 4-year periods. Employing a four-year average is standard in the literature as it enables the avoidance of cyclical fluctuations and alleviates reverse causality, a common issue in growth models. To avoid potential issues related to endogeneity, we employ a metric of climatic conditions (specifically, the proportion of land in tropical areas) as a substitute for 'deep' structural characteristics. Following the literature, the variables of the percentage of land in the tropics & institutional quality stay constant throughout the analysis to stay consistent with the specifications of B&D (2000). Due to the nature of the data being a sample of many nations, the issue of heterogeneity arises, to control for this the regression contains the control variables of geography, the percentage of the land in the tropics by Xavier & Martin (1997) to proxy for geographical characteristics. Furthermore, the interaction terms of, Ethnic Fractionalization & Assassination, and aid & Policy as well as the interaction terms of aid & tropics are included to identify interaction effects, where the relationship between the main variables of interest varies based on the level of a third variable.

5. Results:

Barro-style growth regressions on panel data have been used in this paper to analyze the effects of aid on growth. In the analysis of the growth equations, both OLS and 2SLS regressions are employed to show the impact of treating aid as an endogenous variable. I start by recreating the estimations from the growth regressions performed by B&D (2000) in Table 2. This is done to first get an understanding of differences in the data sources and if our estimation specifications

are the same as those used by B&D (2000). Furthermore, the output from Table 2 (appendix) is used in creating the weightings of the policy index which is of substantial importance further on in both B&D (2000) & Dalgaard et al., (2004) estimations. This encompasses performing a regression analysis based on the basic growth model as outlined in equation (1), however, all terms related to aid are excluded in Table 2 estimation (1) OLS and then included in estimations (2) & (3). When comparing my findings with those of B&D (2000), minor variances in the coefficient sizes can be observed. These differences can be attributed to the use of distinct data sources, leading to slight variations in the data. More critically, the key coefficients related to the policy index, including: Budget surplus; inflation; and Openness, remain significant in both the studies by B&D (2000) and in my analysis, using the same years and nations, across all three regression models. To further affirm the data's consistency, despite each study having an equal number of observations and similar results, Lists 1 & 2 in the Appendix provide summary statistics for both the B&D (2000) dataset and my own, demonstrating comparable data throughout the analysis. I then extended the dataset used by B&D (2000), to include the values from 1993 until 2020, still making use of the same nations, increasing the observations from 275 to 402, but unlike B&D (2000) the data is using constant 2015 US$. The results of the extended dataset can be found in Table 4, in the appendix. When analyzing the results we find that the coefficients for the augmented dataset differentiate, however the sign is still the same as in the B&D (2000) analysis and the coefficients of the policy index variables (inflation, and Openness) are still significant for all regression models. The main discrepancy to take note of is that the third policy index variable (Budget surplus) is no longer significant and the coefficient becomes relatively small, also the Aid/GDP variable becomes significant in the 2SLS regression at the 10% level unlike in the B&D (2000) analysis. Thus we can conclude that using these three variables as accurate indicators for the policy index should be done with caution as the extended dataset shows that only the two variables, inflation and openness, stay

consistently significant while budget surplus does not. B&D (2000) created the policy index to determine whether there is a significant interaction between policies, aid, and economic growth. To be able to determine this, B&D (2000) included the policy index and the interaction terms, AidXPolicy, the policy index interacting with Aid/GDP & aid^2Xpolicy, and the policy index interacting with $(Aid/GDP)^2$, in the growth model regressions, the results can be seen in Table 5. B&D's (2000), findings suggest that the effect of aid on growth is positively influenced by the policy level, and negatively influenced by the amount of Aid/GDP, indicating diminishing returns of aid. To be able to determine whether these results uphold using the extended dataset, I first recreated B&D's estimations, to confirm the usage of the same specifications and approach, the results can be seen in Table 6. The only difference is that in regression (5) OLS & 2SLS, authors excluded five observations that they did not specify, to determine which observations to exclude I created absolute z-scores for the AidXpolicy variable and excluded terms with a score above three, therefore my estimation uses 272 observations and not 270 like B&D (2000). The regressions still indicate similar results to the finding of B&D (2000), with the important variables of the analysis (Policy index, AidXpolicy & aid^2Xpolicy) showing significance in the same regressions for both. Both also come to the result that for either the OLS or the 2SLS estimators there is no significant relationship between aid and growth. The recreation with augmented data (Table 7), upholds these findings only to an extent, as the policy index is also a significant regressor at the 1% level, the Aid/GDP variable stays insignificant throughout and the coefficients show the same signs. However, there are different findings regarding the significance of the interaction terms, which are insignificant for all regressions with the augmented data. Thus the findings by B&D (2000) again need to be further examined and questioned as the interaction between their policy index and Aid/GDP doesn't exhibit significance when the data is extended. The next step in B&D's (2000) analysis was to exclude nations from the analysis, which are middle and higher-income nations. These nations typically

have sufficient access to international capital markets, and there is no strong justification to assume that aid would impact their growth rates in the same manner as it would for low-income countries. Their findings from the previous section, that the impact of aid is greater in "good" policy environments and that aid experiences diminishing returns upholds for the low-income nations. In total 16 countries were eliminated from the list, leaving 40 nations in the analysis by B&D (2000). Due to slight data discrepancies, I made use of 184 instead of 189 observations, and for the last regressions (8) OLS & 2SLS, five observations were removed again, I used the same method as previously making use of the z-scores to determine which to remove, removing four observations leaving me with 180 observations instead of 184. These discrepancies in data caused some differences in the results regarding the magnitude of estimations but once more the signs are the same for both my analysis and the one of B&D (2000). The level of significance for some of the, for our analysis, important variables differs. Firstly when looking at the policy index in B&D (2000) (Table 8) it is significant in all OLS regressions and insignificant in the 2SLS (7 & 8) regressions while in mine (Table 9) it's also insignificant for the OLS regressions of (7 & 8). Furthermore, the interaction term between policy and $(Aid/GDP)^2$ for regression (7) 2SLS, is significant at the 10% level in my analysis while it's not showing significance in B&D (2000). Although it is significant for the OLS estimation in both studies, this could be due to the difference in observations and data, and as it is only significant at the 10% level this shouldn't be of great importance. I then estimated the regressions using the same specifications but with the augmented data, results in Table 10. The extended dataset, renders the same results regarding the signs of the coefficients, once again there are differences in the magnitudes but this is simply due to differences in data. Furthermore, the coefficient of Aid/GDP stays negative throughout and becomes significant for models 7 & 8 unlike in the B&D (2000) data. The interaction between aid and policy becomes significant in all regressions which substantiates the findings by B&D (2000) that aid experiences positive returns mainly in "good" policy

environments. However, the Policy index loses its significance with the addition of aid interaction terms, becoming insignificant for both model (8) regressions and only keeping significance at the 10% level for model (7) OLS. Also, the interaction term between policy and $(Aid/GDP)^2$ is insignificant in the extended dataset, thus even though the coefficient still shows diminishing returns this can't be said with certainty as the coefficient is insignificant at the 10% level when using data up until 2020. The findings from B&D's (2000) analysis contributed to the scientific foundation underpinning the policy recommendations found in the World Bank's policy research report titled "Assessing Aid" (World Bank, 1998). This is of great concern as the research didn't go under further scrutiny before becoming a policy recommendation. As can be seen, by further analysis with updated data the policy variables used by B&D (2000) do not uphold significance when interacting with aid. Also, the variable (budget surplus) which is a component of the policy index loses significance when the dataset is augmented. Therefore we can say with certainty that although the analysis by B&D (2000) contributed greatly to the literature it needs to be scrutinized as their composition of Policy Index variables doesn't uphold with updated data and therefore in growth analysis other variables could show greater explanatory power. To further test this the next section will discuss the proposed interaction term of fraction of land in the Tropics and aid proposed by Dalgaard et al., (2004).

Many authors have proposed over time that there might be a connection between aid and certain policies, yet there has always been a debate about identifying the precise policies that are essential. Consequently, if the three policies highlighted by B&D (2000) were to be confirmed as robust influencers of aid effectiveness, it would be a significant finding. However, Dalgaard et al., (2004) criticize this in their paper "Dalgaard et al, on the empirics of foreign aid and growth" as the earlier result linking aid effectiveness to these policies did not hold up under more rigorous examination. Further confirming the results from my previous analysis, where

the interaction term of policy and aid experience significance to a certain degree, the updated data only showed significance for low-income nations at the 10% level and no significance at all for the 2SLS regression when the interaction term of aid^2Xpolicy was introduced (Table 9). While I used the same methodology, other authors such as Dalgaard and Hansen (2001), Hansen and Tarp (2000, 2001), Hudson and Mosley (2001), Lensink and White (2001), and Lu and Ram (2001) have each conducted tests on the interaction between aid and the policy index proposed by B&D (2000). Each of these studies utilized varying datasets, regression models, or estimation techniques. Despite these differences in methodology, all of the studies arrived at a consensus that the interaction term is not statistically significant. However, Collier and Dehn (2001) support the findings by making use of export price shock measures in their analysis. Based on my analysis of the B&D (2000) Index using updated data and considering the findings of other researchers, it appears that the interaction between the policy index by B&D (2000) and aid does not consistently show significance. Consequently, I have re-evaluated the variables suggested by Dalgaard et al., (2004), particularly the interaction between Tropics and Aid. This re-evaluation aims to determine which interaction variables serve as more reliable indicators for assessing the impact of aid on economic growth, using the latest data available. In Table 11 (Table 1 (Dalgaard et al., (2004)), regressions 1 & 2 are identical to B&D (Table 6, 4&5-OLS) therefore we take the same regression output as in Table 6 and ignore the results in this section from analysis, as they have been discussed in the previous section. Regression (3) in Table 11, demonstrates the diminishing returns outcome, as the ones presented in Dalgaard and Hansen (2001, Table 4, regression (8)). These results are shown as they are based on the identical data to the B&D (2000) regressions. The key distinction lies in Dalgaard and Hansen's utilization of 2SLS with a different set of instruments compared to the 2SLS regressions employed by B&D (2000). This model shows that the returns to aid are diminishing as the aid squared coefficient is negative and significant. Dalgaard et al., (2004) then explore the impact of structural

characteristics, other than political ones, on the effectiveness of aid, extending on the B&D (2000) models, in regressions 4-6 (Tables 11-13). The proposed variables (Tropics & aidXtropics) incorporate the proportion of land within the tropics and a multiplicative term of this variable with aid. Research by Sachs (1998), Gallup et al. (1999), and Sachs in subsequent years demonstrates that geographical factors, specifically the amount of tropical land, play a significant role in influencing GDP per capita growth from 1965 to 1990. These findings suggest that climatic factors could be structural characteristics that directly affect economic growth. However, there is an alternative perspective that 'geography' might be a proxy for other structural characteristics that change infrequently and are endogenous (Dalgaard et al. 2004). Upon employing this model the results indicate, that the contentious interaction between aid and policy becomes statistically insignificant, whereas the effects of aid interacting with the tropics are significant for all regressions (Table 11-12). Aid is found to have a substantial positive effect on growth in non-tropical regions, with a notably reduced effect within tropical areas. Regression (6) (Table 11-12) examines the Dalgaard-Hansen model and reveals that when the interaction between aid and tropical land proportion is included, the squared term's significance diminishes, while the interaction term remains highly significant. Thus, when comparing the impact on aid effectiveness, we find a statistical preference for the Tropics variable over the proposed policy index. Upon the recreation of the regressions with augmented data (Table 13), when focusing on the variables in question, the coefficients show the same direction (-/+) as well as similar size. However, regarding the significance levels I come to notable findings. First, although the policy index by itself is significant in all the regressions, the interaction between aid and policy shows insignificance across all regressions, solidifying previous doubts about the significance of the policy index. Also, the proposed Tropics variable is significant in all regressions as well as its interaction term in regressions (4&5)(Table 13). This further confirms Dalgaard et al., (2004) results that there is a statistical preference for the

Tropics variable over the proposed policy index. When testing for exogeneity of aid regressors the data shows that at the 10% level, we can't reject the null hypothesis, that the aid regressors used in the regression are exogenous. However, when we lag the aid instruments the p-value becomes so large that we can with certainty reject the H0. This brings us to the analysis by Dalgaard et al., (2004) in Tables 14-16 which aims to show the gain from including lagged aid as an instrument in growth regressions. Dalgaard et al., (2004) estimate the reduced form for aid using the variables from the B&D (2000) analysis making use of two different data sets; the B&D (2000) dataset and the updated by Easterly et al. (2003) (ELR). The ELR data has more periods and greater nation coverage. When analyzing the reduced form regressions Dalgaard et al., (2004) conclude that the only variables which show significance throughout are the log of population and the log of real GDP per capita. My replication using the same amount of countries and periods renders the same results except that arm imports gain significance across all regressions, this might however be due to differences in data structure as the composition of arm imports differs across databases. However with the augmented dataset the Sub-Saharan Africa dummy also shows significance (Table 16) throughout regressions (1-3) which is the only notable difference regarding the significance levels. Looking at regression 3 and 4 we can see that upon adding the variables of lagged aid the fit of the model improves substantially and it shows significance for both datasets. This is also true for the analysis using the extended dataset (Table 16). It's also crucial to recognize from the reduced form regressions that aid allocations are responsive to lagged income levels. This highlights the necessity of treating aid as an endogenous variable within the model, which also stays consistent with the augmented data in Table 16. Paying attention to the F-stat shows that it decreases when we add more data to it, in the first two regressions, which is also true for the augmented dataset. However when lagged aid is added the F-stat increases substantially for all datasets (BD, ELR & mine). For neither of my replications (same periods & additional periods) the F-stat falls below 10,

indicating that there are no issues of weak instruments. This is also the main difference between my replication and that of ELR, as regression (2) with the F-stat of 7,7 indicates weak instruments, while in my replication it's slightly above 10 (10,92), this is likely due to small differences in datasets. Thus in conclusion the only noteworthy difference with augmented data is the significance of the regional Sub-Saharan dummy in the augmented dataset, otherwise, the findings of Dalgaard et al., (2004) are consistent with the augmented dataset. However, due to the characteristics of lagged aid making it an invalid instrument as it is clearly correlated with the time-average error, it is important to test for their validity (Tables 11-13). In the 2SLS regressions of (Tables 9-11) the endogeneity of lagged aid instruments is tested concluding that we don't reject the hypothesis that lagged aid instruments aren't correlated with the errors, this finding stays consistent across all data sources. In Table (17-19) the primary concern addressed is the potential endogeneity of institutions and its effect on identifying the true influence of aid on economic growth. There's extensive research on finding valid instruments for institutions, but Dalgaard et al., (2004) study's focus isn't on the direct impact of institutions on long-term growth. Instead, the goal is to ensure that any observed effects of aid on growth aren't confounded by endogenous institutional differences. To achieve this, first differencing to control for institutional effects is employed, thus bypassing the need for instruments that target the historical aspect of institutions. To address this concern, we utilize panel GMM-regressions, including both the Arellano and Bond (1991) DIF-GMM estimator and the Blundell and Bond (1998) SYS-GMM estimator. These techniques are used to eliminate the influence of constant or slowly changing institutions while accounting for the endogeneity of aid and policies. The effects of aid and policies are determined indirectly; while the study doesn't create detailed models for how aid and policies work, it's clear that the observed effects in the model, which looks at changes over time, are not due to fixed differences in institutions between countries, this can be seen by the results in Tables (17- 19). These tables report the growth regression (3)

seeking to determine if the differences in growth stem from the interaction between aid and climate-related differences across nations, including % in tropics as a variable in our case. The variables used compared to the analysis in Tables 11-13, differ as ethnic fractionalisation and assassinations are excluded and the three components of the policy index namely; budget surplus, inflation, and trade-openness are included individually and not as a weighted index. In regression (1-OLS) (Table 17-18) aid has a positive significant impact on growth, however, this impact is smaller for nations with larger proportions of land in the tropics. In regression (2) Instruments for aid are used to check for potential bias from Regression (1). The estimated effect of aid drops significantly but remains significant outside the tropics. However this decrease in aid is not true for the extended dataset and the replicated dataset, where the aid coefficient only decreases slightly, but the regression shows the same levels of significance for all aid and tropic variables. Moving on to regression (3), the three policy measures are added as endogenous variables, with their lagged values serving as instruments. This addition however does not significantly change the estimated effect of aid, this is consistent with the appended dataset as well, as can be seen in Table 19. The main notable discrepancy is that the Sachs-Warner openness variable becomes negative for Regression (2 & 3). In Regressions (4) and (5), the influence of institutions and other constant factors is eliminated through differencing. The standard setup for the GMM estimators is used, employing all possible lagged levels of growth and other variables as instruments. Endogenous variables are lagged at least twice, while predetermined variables are lagged once. The results show that excluding time-invariant factors substantially affects the estimated impact of aid, especially outside the tropics, in the tropics, the impact of aid remains insignificant. Furthermore, the aid variables (aid, AidXtropics) are significant throughout all regressions, this is also true for the augmented dataset, substantiating the hypothesis by Dalgaard et al., (2004) regarding the importance of geographical variables. The findings in the augmented dataset differ slightly, unlike Dalgaard et al., (2004) findings,

the level of aid with the exclusion of time-invariant factors causes only an increase in the aid coefficient in the GMM-DIFF regression but in the GMM-SYS regression the coefficient decreases below the level of regressions (1-4) (Table 19). Also unlike in Dalgaard et al., (2004) findings, for the augmented dataset, the impact of aid in the tropics on growth is positive for regressions 1-4, but it also shows a negative coefficient for the GMM-SYS aid variable. The Experimentation with Instruments in Regressions (4) and (5), by adjusting the number of instrument lags, shows some variations in results, but the estimated impact of aid remains consistent and is also robust when including political instability measures. The main finding from these regressions is the surprisingly steady impact of aid on growth and its statistical significance. Comparatively, the impact of policy measures like budget surplus remains insignificant, while the effect of inflation changes from significant in the level regressions to insignificant in the difference regressions, in Dalgaard et al., (2004) estimations. However, with the augmented dataset this is no longer true, as budget surplus stays significant across all regressions while inflation is only not significant in GMM (3). But the Sachs-Warner openness variable stays insignificant for all but regression (2), thus it again becomes visible that all three variables aren't robust indicators for Policy for the augmented data. Additionally, using the original data from B&D (2000) yields similar results, with the impact of aid being somewhat larger and more consistent across different estimators. This leads to confidence in the assertion that aid positively affects growth, with the impact influenced by climatic variations, fraction of land in the tropics in our case, across all datasets. To further substantiate these findings we conduct some tests. When testing for residual autocorrelation in first and second order, it is found that there is a clear indication of autocorrelation in the residuals, which means that the model may need further refinement. The GMM-DIFF and GMM-SYS results in both data sets suggest strong negative first-order autocorrelation, which, along with a standard error of zero, is unusual and problematic for both sets. Also, the second-order autocorrelation in both data

sets is consistently positive across different estimation methods, although slightly lower in Dalgaard et al., (2004) data set, suggesting a persistent issue across datasets not fully captured by the model. This needs to be taken into consideration when comparing the two interaction terms. But from these models, it can be stated that the interaction term between aid and tropics is showing greater statistical significance and explanatory power when determining growth than the interaction between Aid and Policies. Lastly, In Table 20/21, I aim to find which aid interaction variable between AidXTropics and AidXPolicy has greater explanatory power, to further substantiate previous findings. I used the same methodology and regression specifications as Dalgaard et al. (2004) in the previous analysis (Table 17-19), except instead of including the individual parts of the B&D (2000) policy index (Openness, Inflation, budget surplus) I included the weighted policy index in each regression. The main variables of interest, the aid interaction variables, for both datasets, depict results along with our expectations. The interaction term between aid and policy is insignificant for all regression models of the augmented dataset (Table 21), furthermore, the coefficients are also very small in magnitude. In the Dataset of Dalgaard et al. (2004) (Table 20) the same results are found, except for the GMM-DIFF & GMM-SYS regressions in which the interaction between aid and policy becomes significant but the coefficient size is also minute. On the other hand, the interaction term between aid and tropics is significant across all models for the Dalgaard et al. (2004) dataset (Table 20) with relatively large coefficients and the sign is negative as expected. With the extended dataset, the results are similar, in that the coefficients are as expected in size and sign and the coefficients are significant for models (1, 4, 5). These findings substantiate the hypothesis, that the interaction between aid and tropics is the better estimator to explain growth compared to the aid and policy interaction term. However, to substantiate this some other metrics from the models need to be looked at. The analysis of the Partial R2, in both GMM (2 & 3) regressions, shows that the partial R^2 for Aid is high for both regressions and datasets

suggesting that Aid is a strong determinant of growth. The increase in the R^2 values in the regression (3), in both Table 20 and 21, indicates a stronger correlation with the endogenous variable when other instruments are also included. Aid X Tropics also shows a high partial R^2 in both Datasets and models, indicating its strong explanatory power. The slight increase of R^2 in the regression (GMM-3) suggests that even when additional variables are controlled for, Aid X Tropics remains a significant determinant. The partial R^2 of AidXpolicy for both datasets is similar (0.6420 & 0.6045), this suggests it has a moderate explanatory power compared to the other variables. It's lower than the partial R^2 for Aid and Aid X Tropics, but still substantial. Proving that Aid X Policy, while still a significant determinant, is not as strong of a determinant as aidXtropics. This allows us to once again conclude that the interaction term between aid and tropics is a better overall determinant of growth than the interaction term between aid and the policy index suggested by B&D(2000).

6. Conclusion

The review of the literature regarding aid and growth, made it clear that, aid is a determinant of growth, which I also shown in my analysis. However it left me with the question of which variables are good explanatories and interactors with aid to determine growth. Leading me to explore the complex interplay between foreign aid, economic policies, and growth, extending on the research by Burnside and Dollar in “Aid, Policies and Growth”, which has been critically examined by Dalgaard et al. (2004), in “on the empirics of economics”. In the comparative analysis between the original dataset utilized by B&D (2000) and the augmented dataset, which includes data up to 2020, we find that both B&D 's (2000) policy index variables and Dalgaard et al. (2004) proposed Tropic variable exhibit different levels of significance when subjected to the augmented dataset. The original B&D (2000) study's conclusions regarding the effectiveness of aid policies are somewhat challenged by the augmented dataset. While B&D (2000) found a positive impact of aid in countries with good policies, the extended dataset

diminishes the significance of the budget surplus component of the policy index, suggesting that the relationship between policies, aid and growth is more complex than initially proposed. Dalgaard et al. (2004) critique of B&D's (2000) approach brings to light the potential oversights in the original model and the usage of geographical indicators rather as a more significant variable. The alternative variable suggested by Dalgaard et al. (2004), the proportion of land in the tropics, consistently shows significant interaction with aid in both the original and extended datasets, indicating that geographical factors may be more influential in determining aid effectiveness than policy measures alone. When it comes to the interaction terms, the results are particularly telling. In the B&D (2000) analysis, interaction terms between aid and policy indices showed a significant relationship with economic growth. However, with the extended dataset, these interaction terms lose their significance, suggesting that the positive effect of aid on growth in good policy environments may not hold as strongly over time. On the other hand, the interaction between aid and tropics remains significant across most regressions with the augmented data, supporting the hypothesis that geographic and structural factors may be more critical determinants of aid effectiveness. Therefore, it appears that the variables and conclusions drawn by B&D (2000) need to be considered with caution when extended datasets are examined. The variables, concerning geographical characteristics, seem to maintain their explanatory power even when the temporal period is increased. Thus we can conclude that the interaction term between aid and tropics is a more robust estimator than the interaction term between B&D (2000) policy index and aid. This shift in significance from policy-oriented variables to geographical variables in the context of aid allocation suggests that policy recommendations for aid distribution should be re-evaluated to incorporate these findings. It also prompts a broader discussion on the validity of the B&D (2000) policy index as a tool for assessing the impact of aid on economic growth. These findings indicate a need for ongoing research to fully understand the impact of foreign aid and its complexities.

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Appendix:

Table 1: Summary of regression specifications and identification

Variable		Variants of growth		Aid
Endogenous variables				
Real growth rate	LHS	LHS	LHS	
Aid/GDP	RHS	RHS	RHS	LHS
(Aid/GDP) x policy		RHS	RHS	
$(Aid/GDP)^2$ x policy			RHS	
(Aid/GDP) x tropics				
Exogenous variables				
Log of initial income	Included	Included	Included	Included
Policy Index	Included	Included	Included	Included
Institutional quality	Included	Included	Included	
Ethnic fractionalization	Included	Included	Included	
Assassinations	Included	Included	Included	
Ethnic fractionalization x Assassinations	Included	Included	Included	
M2/GDP, lagged	Included	Included	Included	
Log of population				Included
Arms imports / imports, lagged				Included
Sub-Saharan Africa Dummy	Included	Included	Included	Included
East Asia Dummy	Included	Included	Included	
Egypt Dummy				Included
Franc Zone dummy				Included
Central America dummy				Included
Log of initial income x policy				
Log of population x policy				
Arms imports / imports, lagged x policy				
$(Log\ of\ initial\ income)^2$ x policy				
$(Log\ of\ population)^2$ x policy				

Notes: LHS = Land Hand side variable. RHS = Right hand side variable. All exogenous variables are used as Instruments in 2SLS estimations

Table 2: Burnside & Dollar (2000) Table 3, Growth regressions: using all countries and the individual Policy variables

	(1)	(2)	
Estimation method	OLS	OLS	2SLS
Initial GDP	−0.65	−0.61	−0.74
	(0.55)	(0.58)	(0.62)
Ethnic fractionalization	−0.58	−0.53	−0.69
	(0.73)	(0.73)	(0.78)
Assassinations	−0.44*	−0.44*	−0.44
	(0.27)	(0.27)	(0.27)
Ethnic fractionalization	0.81*	0.81*	0.81*
× assassinations	(0.45)	(0.45)	(0.46)
Institutional quality	0.64**	0.64**	0.63**
	(0.17)	(0.17)	(0.17)
M2/GDP (lagged)	0.015	0.014	0.017
	(0.015)	(0.015)	(0.016)
Sub-Saharan Africa	−1.53**	−1.61**	−1.35*
	(0.73)	(0.76)	(0.76)
East Asia	0.89	0.93*	0.80
	(0.56)	(0.57)	(0.58)
Budget surplus	6.85**	7.00**	6.49*
	(3.39)	(3.38)	(3.47)
Inflation	−1.40**	−1.40**	−1.39**
	(0.41)	(0.41)	(0.41)
Openness	2.16**	2.12**	2.25**
	(0.51)	(0.50)	(0.54)
Aid/GDP	—	0.036	−0.085
		(0.13)	(0.19)
Partial R^2 of first-stage regressions			
Aid/GDP	—	—	0.44
Test for exogeneity of the aid variables			
$\chi^2(1)$	—	—	0.61
			[0.43]
Other statistics			
Observations	275	275	275
$\bar{R}^2$	0.35	0.35	0.35

Notes: The variables are described in more detail in the text. The dependent variable is real per capita GDP growth. The excluded exogenous variables for 2SLS estimation are listed in Table 1. White heteroskedasticity-consistent standard errors are in parentheses. p-values for the tests of exogeneity appear in brackets. * Significant at the 10-percent level. ** Significant at the 5-percent level. *** Significant at the 1-percent level

Table 3: Burnside & Dollar (2000) Table 3, same data

VARIABLES	(1) OLS	(2) OLS	(3) 2SLS
logGDPcap	-0.795**	-0.823**	-0.880*
	(0.393)	(0.418)	(0.483)
ethnf	-0.430	-0.464	-0.533
	(0.863)	(0.882)	(0.916)
assasin	-0.389	-0.389	-0.389
	(0.325)	(0.325)	(0.318)
eth_ass	0.590	0.590	0.591
	(0.671)	(0.672)	(0.656)
icrge	0.681***	0.678***	0.672***
	(0.185)	(0.186)	(0.183)
lly2_1	-0.0111	-0.0102	-0.00840
	(0.0157)	(0.0163)	(0.0179)
ssa	-2.188***	-2.126***	-2.000**
	(0.663)	(0.733)	(0.915)
easia	1.126	1.097	1.039
	(0.748)	(0.763)	(0.791)
bbgdp	7.618**	7.510**	7.291**
	(3.359)	(3.408)	(3.473)
infl	-1.853***	-1.848***	-1.838***
	(0.517)	(0.518)	(0.508)
sacwar	1.533***	1.565***	1.630**
	(0.553)	(0.577)	(0.637)
aid		-0.0263	-0.0797
		(0.132)	(0.274)
Partial R^2			0.42
$chi^2(1)$			0.59
			(0.42)
Observations	275	275	275
R-squared	0.295	0.295	0.295

Notes: The variables are described in more detail in the text. The dependent variable is real per capita GDP growth. The excluded exogenous variables for 2SLS estimation are listed in Table 1. White heteroskedasticity-consistent standard errors are in parentheses. p-values for the tests of exogeneity appear in brackets. * Significant at the 10-percent level. ** Significant at the 5-percent level. *** Significant at the 1-percent level

Table 4: Burnside & Dollar (2000) Table 3: augmented data

VARIABLES	(1) growth	(2) growth	(3) growth
logGDPcap	-0.155	-0.158	-0.433
	(0.237)	(0.241)	(0.288)
ethnf	-0.232	-0.236	-0.687
	(0.711)	(0.715)	(0.777)
assasin	-0.308	-0.309	-0.365*
	(0.194)	(0.194)	(0.203)
eth_ass	0.282	0.282	0.306
	(0.450)	(0.451)	(0.466)
icrge	0.232**	0.230**	0.0704
	(0.105)	(0.108)	(0.140)
lly2_1	-0.00594	-0.00592	-0.00411
	(0.00848)	(0.00850)	(0.00884)
ssa	-1.691***	-1.680***	-0.465
	(0.489)	(0.525)	(0.838)
easia	0.709	0.706	0.370
	(0.541)	(0.544)	(0.590)
bbgdp	0.0518	0.0517	0.0371
	(0.0337)	(0.0338)	(0.0358)
infl	-1.613***	-1.610***	-1.315***
	(0.339)	(0.342)	(0.387)
sacwar	1.766***	1.771***	2.296***
	(0.386)	(0.395)	(0.493)
aid		-0.00576	-0.645*
		(0.100)	(0.352)
Partial R^2			0.5654
$chi^2(1)$			0.89773
			(0.491)
Observations	402	402	402
R-squared	0.245	0.245	0.165

Notes: The variables are described in more detail in the text. The dependent variable is real per capita GDP growth. The excluded exogenous variables for 2SLS estimation are listed in Table 1. White heteroskedasticity-consistent standard errors are in parentheses. p-values for the tests of exogeneity appear in brackets. * Significant at the 10-percent level. ** Significant at the 5-percent level. *** Significant at the 1-percent level

Table 5: Burnside & Dollar (2000) - Table 4

	(3)		(4)		(5)	
Estimation method	OLS	2SLS	OLS	2SLS	OLS	2SLS
Initial GDP	−0.61	−0.79	−0.56	−0.71	−0.60	−0.90
	(0.56)	(0.59)	(0.56)	(0.60)	(0.57)	(0.65)
Ethnic fractionalization	−0.54	−0.70	−0.42	−0.47	−0.42	−0.73
	(0.72)	(0.75)	(0.73)	(0.83)	(0.72)	(0.81)
Assassinations	−0.44*	−0.43	−0.45*	−0.44*	−0.45*	−0.41
	(0.26)	(0.27)	(0.26)	(0.26)	(0.26)	(0.27)
Ethnic fractionalization × assassinations	0.82*	0.78*	0.80*	0.75*	0.79*	0.71
	(0.44)	(0.44)	(0.44)	(0.45)	(0.44)	(0.45)
Institutional quality	0.64**	0.63**	0.67**	0.68**	0.69**	0.66**
	(0.17)	(0.17)	(0.17)	(0.19)	(0.17)	(0.18)
M2/GDP (lagged)	0.014	0.019	0.016	0.025	0.012	0.017
	(0.013)	(0.015)	(0.014)	(0.017)	(0.014)	(0.016)
Sub-Saharan Africa	−1.60**	−1.31*	−1.84**	−1.71**	−1.87**	−1.29
	(0.73)	(0.72)	(0.74)	(0.82)	(0.75)	(0.84)
East Asia	0.91*	0.81	1.20**	1.27**	1.31**	1.15**
	(0.54)	(0.53)	(0.58)	(0.63)	(0.58)	(0.56)
Policy index	1.00**	1.01**	0.78**	0.65**	0.71**	0.74**
	(0.14)	(0.14)	(0.20)	(0.30)	(0.19)	(0.20)
Aid/GDP	0.034	−0.12	0.49	−0.10	−0.021	−0.32
	(0.12)	(0.18)	(0.12)	(0.21)	(0.16)	(0.36)
(Aid/GDP) × policy	—	—	0.20**	0.37	0.19**	0.18*
			(0.09)	(0.33)	(0.07)	(0.10)
$(\text{Aid/GDP})^2$ × policy	—	—	−0.019**	−0.038	—	—
			(0.0084)	(0.038)		
Partial R^2 of first-stage regressions						
Aid/GDP	—	0.44	—	0.42	—	0.29
(Aid/GDP) × policy	—	—	—	0.16	—	0.60
$(\text{Aid/GDP})^2$ × policy	—	—	—	0.11	—	—
Test for exogeneity of the aid variables						
$\chi^2(j)$	—	1.10	—	0.85	—	1.51
		[0.29]		[0.84]		[0.47]
Other statistics						
Observations	275	275	275	275	270	270
R^2	0.36	0.35	0.36	0.34	0.36	0.35

Notes: The variables are described in more detail in the text. The dependent variable is real per capita GDP growth. The excluded exogenous variables for 2SLS estimation are listed in Table 1. White heteroskedasticity consistent standard errors are in parentheses. p-values for the tests of exogeneity appear in brackets. The degrees of freedom parameter j is 1 in column (3), 3 in column (4), and 2 in column (5).

* Significant at the 10-percent level.

** Significant at the 5-percent level.

Table 6: Burnside & Dollar (2000) Table 4: Same data

VARIABLES	(3-OLS) growth	(3-2SLS) growth	(4-OLS) growth	(4-2SLS) growth	(5-OLS) growth	(5-2SLS) growth
logGDPcap	-0.826**	-0.789*	-0.802*	-0.692	-0.865**	-0.810*
	(0.407)	(0.439)	(0.419)	(0.483)	(0.409)	(0.445)
ethnf	-0.485	-0.452	-0.442	-0.252	-0.549	-0.499
	(0.860)	(0.858)	(0.878)	(0.952)	(0.863)	(0.866)
assasin	-0.397	-0.401	-0.400	-0.414	-0.379	-0.387
	(0.318)	(0.312)	(0.319)	(0.314)	(0.318)	(0.312)
eth_ass	0.606	0.616	0.613	0.636	0.600	0.606
	(0.658)	(0.646)	(0.661)	(0.651)	(0.657)	(0.645)
icrge	0.676***	0.679***	0.684***	0.717***	0.732***	0.729***
	(0.184)	(0.181)	(0.187)	(0.197)	(0.186)	(0.182)
lly2_1	-0.0104	-0.0118	-0.0106	-0.0114	-0.0142	-0.0151
	(0.0156)	(0.0168)	(0.0158)	(0.0169)	(0.0162)	(0.0167)
ssa	-2.099***	-2.168***	-2.165***	-2.490**	-1.903***	-2.046**
	(0.700)	(0.764)	(0.745)	(0.975)	(0.707)	(0.798)
easia	1.066	1.084	1.084	1.233	1.007	1.107
	(0.718)	(0.710)	(0.752)	(0.769)	(0.741)	(0.741)
burnside_dollar_index	1.000***	0.999***	0.991***	0.904***	1.016***	0.960***
	(0.168)	(0.165)	(0.232)	(0.259)	(0.225)	(0.234)
aid	-0.0316	0.00185	0.0295	-0.122	-0.0308	-0.0448
	(0.125)	(0.204)	(0.373)	(0.431)	(0.370)	(0.420)
aidXpol			0.0116*	0.0831	0.0269*	0.0029*
			(0.0786)	(0.147)	(0.0596)	(0.0676)
Aid^2Xpolicy			-0.0012*	-0.00670		
			(0.00451)	(0.0129)		
Partial R^2 in the first stage regressions						
Aid		0.4326		0.4124		0.326
Aid X policy				0.1834		0.6834
$(Aid)^2$ X Policy				0.0983		
Chi^2		0.9022		0.87204		1.3805
		(0.2717)		(0.9429)		(0.6839)
Observations	275	275	275	275	272	272
R-squared	0.295	0.295	0.295	0.291	0.302	0.301

The dependent variable is real per capita GDP growth. The excluded exogenous variables for 2SLS estimation are listed in Table 1, White heteroskedasticity consistent standard errors are in parentheses. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. P-values for the tests of exogeneity appear in brackets. The degrees of freedom parameter is 1 in column (3), 3 in column (4), and 2 in column (5).

Table 7: Burnside & Dollar (2000) Table 4, augmented data

VARIABLES	(1) OLS	(2) 2SLS	(3) OLS	(4) 2SLS	(5) OLS	(6) 2SLS
logGDPcap	-0.158	-0.577*	-0.163	-0.617*	-0.141	-0.581*
	(0.238)	(0.298)	(0.241)	(0.361)	(0.239)	(0.302)
ethnf	-0.317	-0.882	-0.331	-0.706	-0.278	-0.865
	(0.713)	(0.803)	(0.717)	(0.980)	(0.715)	(0.814)
assasin	-0.387**	-0.353*	-0.407**	-0.297	-0.402**	-0.370*
	(0.188)	(0.206)	(0.189)	(0.260)	(0.190)	(0.211)
eth_ass	0.410	0.251	0.443	0.116	0.437	0.283
	(0.444)	(0.488)	(0.445)	(0.609)	(0.446)	(0.496)
icrge	0.218**	-0.00717	0.193*	-0.0686	0.204*	-0.0433
	(0.108)	(0.141)	(0.109)	(0.180)	(0.109)	(0.150)
lly2_1	-0.00775	-0.00219	-0.00848	-0.00199	-0.00869	-0.00309
	(0.00843)	(0.00940)	(0.00850)	(0.0115)	(0.00852)	(0.00966)
ssa	-1.497***	0.0777	-1.397***	0.386	-1.476***	0.220
	(0.505)	(0.775)	(0.515)	(0.971)	(0.506)	(0.805)
easia	0.686	0.204	0.523	0.0798	0.559	-0.0163
	(0.544)	(0.618)	(0.563)	(0.819)	(0.562)	(0.685)
burnside_dollar_index	0.924***	1.040***	1.038***	1.148***	1.027***	1.198***
	(0.133)	(0.151)	(0.174)	(0.305)	(0.174)	(0.254)
aid	-0.0470	-0.960	0.241	-0.437	0.313	-0.500
	(0.0969)	(0.333)	(0.408)	(0.810)	(0.399)	(0.679)
aidXpol			0.0751	0.0325	0.0634	0.0922
			(0.0694)	(0.181)	(0.0680)	(0.117)
Aid^2Xpolicy			-0.00326	-0.0304		
			(0.00405)	(0.0278)		
Partial R^2 in the first stage regressions						
Aid		0.3854		0.3854		0.3548
Aid X policy				0.3685		0.6852
$(Aid)^2$ X Policy				0.1366		
Chi^2		1.2829		0.8279		1.5737
		(0.13)		(0.8454)		(0.3105)
Observations	402	402	402	402	401	401
R-squared	0.240	0.240	0.243	0.243	0.241	0.242

The dependent variable is real per capita GDP growth. The excluded exogenous variables for 2SLS estimation are listed in Table 1, White heteroskedasticity consistent standard errors are in parentheses. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. P-values for the tests of exogeneity appear in brackets. The degrees of freedom parameter is 1 in column (3), 3 in column (4), and 2 in column (5).

Table 8: Burnside & Dollar (2000) Table 5 : Growth regressions using lower income countries

	(6)		(7)		(8)	
Estimation method	OLS	2SLS	OLS	2SLS	OLS	2SLS
Initial GDP	−0.74	−0.74	−0.60	−0.58	−0.72	−0.83
	(0.80)	(0.78)	(0.79)	(0.78)	(0.81)	(0.77)
Ethnic fractionalization	−0.78	−0.78	−0.56	−0.45	−0.58	−0.67
	(0.81)	(0.83)	(0.80)	(0.95)	(0.80)	(0.84)
Assassinations	−0.75*	−0.75*	−0.84*	−0.90**	−0.79*	−0.76*
	(0.46)	(0.45)	(0.43)	(0.45)	(0.44)	(0.44)
Ethnic fractionalization × assassinations	0.95	0.95	0.88	0.85	0.69	0.63
	(0.89)	(0.89)	(0.90)	(0.90)	(0.91)	(0.90)
Institutional quality	0.77**	0.77**	0.80**	0.81**	0.84**	0.84**
	(0.19)	(0.19)	(0.20)	(0.21)	(0.20)	(0.19)
M2/GDP (lagged)	0.028*	0.028*	0.031*	0.035*	0.024	0.025
	(0.016)	(0.016)	(0.017)	(0.019)	(0.017)	(0.017)
Sub-Saharan Africa	−1.86**	−1.85**	−2.20**	−2.35**	−2.24**	−2.11**
	(0.65)	(0.67)	(0.67)	(0.91)	(0.67)	(0.73)
East Asia	0.70	0.69	1.33*	1.63	1.54**	1.46**
	(0.56)	(0.56)	(0.71)	(1.21)	(0.67)	(0.71)
Policy index	1.14**	1.14**	0.74**	0.55	0.56*	0.59
	(0.19)	(0.19)	(0.35)	(0.76)	(0.31)	(0.38)
Aid/GDP	−0.033	−0.034	−0.013	−0.010	−0.18	−0.24
	(0.13)	(0.16)	(0.13)	(0.17)	(0.17)	(0.26)
(Aid/GDP) × policy	—		0.27**	0.43	0.26**	0.25**
			(0.12)	(0.49)	(0.08)	(0.12)
$(Aid/GDP)^2$ × policy	—		−0.024**	−0.041	—	—
			(0.0093)	(0.047)		
Partial R^2 of first-stage regressions						
Aid/GDP	—	0.57	—	0.56	—	0.39
(Aid/GDP) × policy	—	—	—	0.11	—	0.58
$(Aid/GDP)^2$ × policy	—	—	—	0.09	—	—
Test for exogeneity of the aid variables						
$\chi^2(j)$	—	0.00	—	0.04	—	0.24
		[0.99]		[1.00]		[0.89]
Other statistics						
Observations	189	189	189	189	184	184
R^2	0.42	0.42	0.42	0.42	0.42	0.42

Notes: The variables are described in more detail in the text. The dependent variable is real per capita GDP growth. The excluded exogenous variables for 2SLS estimation are listed in Table 1. White heteroskedasticity-consistent standard errors are in parentheses. *p*-values for the tests of exogeneity appear in brackets. The degrees of freedom parameter *j* is 1 in column (6), 3 in column (7), and 2 in column (8).

* Significant at the 10-percent level.

** Significant at the 5-percent level.

Table 9: Burnside & Dollar (2000) Table 5 low income countries replication

VARIABLES	(OLS) 6	(2SLS) 6	(OLS) 7	(2SLS) 7	(OLS) 8	(2SLS) 8
logGDPcap	-0.696	-0.765	-0.843	-1.193	-0.632	-0.763
	(0.668)	(0.754)	(0.681)	(0.994)	(0.705)	(0.836)
ethnf	-0.139	-0.202	-0.414	-1.074	-0.0463	-0.117
	(1.050)	(1.078)	(1.077)	(1.296)	(1.090)	(1.122)
assasin	-0.611	-0.604	-0.538	-0.510	-0.570	-0.596
	(0.505)	(0.492)	(0.511)	(0.568)	(0.517)	(0.505)
eth_ass	-0.206	-0.229	-0.447	-0.585	-0.322	-0.233
	(1.097)	(1.072)	(1.122)	(1.265)	(1.130)	(1.118)
icrge	0.654***	0.658***	0.673***	0.665***	0.648***	0.646***
	(0.189)	(0.185)	(0.191)	(0.211)	(0.194)	(0.189)
lly2_1	0.0183	0.0195	0.0174	0.0172	0.0170	0.0207
	(0.0222)	(0.0225)	(0.0223)	(0.0295)	(0.0230)	(0.0248)
ssa	-2.503***	-2.446***	-2.483***	-2.350**	-2.520***	-2.401***
	(0.785)	(0.826)	(0.788)	(1.111)	(0.809)	(0.891)
easia	1.939**	1.936**	2.156***	2.105**	2.007**	1.858**
	(0.787)	(0.763)	(0.821)	(1.039)	(0.844)	(0.888)
policy	0.111***	0.109***	0.0328	-0.0661	0.0850	0.119
	(0.0363)	(0.0363)	(0.0797)	(0.174)	(0.0673)	(0.102)
aid	-0.121	-0.176	-0.0807	-0.409	-0.0666	-0.242
	(0.174)	(0.349)	(0.216)	(0.859)	(0.223)	(0.557)
aidXpol			0.0616*	0.229	0.0084*	0.0062*
			(0.0518)	(0.152)	(0.0215)	(0.0399)
Aid^2Xpolicy			-0.0078*	-0.0441*		
			(0.00674)	(0.0232)		
Partial R^2 in the first stage regressions						
Aid		0.4997		0.4725		0.4417
Aid X policy				0.9741		0.6125
$(Aid)^2$ X Policy				0.0836		
Chi^2		0.02997		0.03267		0.1927
		(0.8628)		(0.9615)		(0.9081)
Observations	184	184	184	184	180	180
R-squared	0.300	0.299	0.305	0.300	0.279	0.276

The dependent variable is real per capita GDP growth. The excluded exogenous variables for 2SLS estimation are listed in Table 21, White heteroskedasticity consistent standard errors are in parentheses. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. P-values for the tests of exogeneity appear in brackets. The degrees of freedom parameter is 1 in column (3), 3 in column (4), and 2 in column (5).

Table 10; Burnside & Dollar (2000) Table 5 low income countries replication, augmented data

VARIABLES	(OLS) 6	(2SLS) 6	(OLS) 7	(2SLS) 7	(OLS) 8	(2SLS) 8
logGDPcap	-0.676	-0.765	-0.756	-1.778**	-0.733	-0.809
	(0.567)	(0.628)	(0.566)	(0.799)	(0.558)	(0.604)
ethnf	-0.198	-0.271	-0.344	-1.879	-0.543	-0.681
	(0.939)	(0.947)	(0.943)	(1.215)	(0.921)	(0.932)
assasin	-0.475	-0.456	-0.446	-0.315	-0.454	-0.455
	(0.346)	(0.343)	(0.345)	(0.419)	(0.360)	(0.352)
eth_ass	-0.218	-0.268	-0.299	-0.852	-0.229	-0.279
	(0.902)	(0.894)	(0.898)	(1.047)	(0.919)	(0.901)
icrge	0.617***	0.620***	0.648***	0.691***	0.734***	0.759***
	(0.171)	(0.167)	(0.171)	(0.200)	(0.167)	(0.163)
lly2_1	0.0287	0.0299	0.0293	0.0466**	0.0290	0.0292*
	(0.0182)	(0.0182)	(0.0182)	(0.0215)	(0.0177)	(0.0177)
ssa	-2.375***	-2.304***	-2.399***	-1.441	-2.507***	-2.505***
	(0.702)	(0.724)	(0.702)	(0.897)	(0.687)	(0.714)
easia	1.832**	1.829***	2.054***	2.400***	2.049***	2.212***
	(0.712)	(0.694)	(0.716)	(0.820)	(0.720)	(0.709)
policy	0.117***	0.116***	0.0769*	0.0590	0.0556	0.0268
	(0.0334)	(0.0330)	(0.0393)	(0.0605)	(0.0382)	(0.0408)
aid	-0.146	-0.214	-0.994**	-4.428***	-1.258***	-1.872***
	(0.142)	(0.267)	(0.484)	(1.241)	(0.459)	(0.607)
aidXpol			0.166**	0.499***	0.212***	0.320***
			(0.0803)	(0.155)	(0.0781)	(0.0961)
Aid^2Xpolicy			-0.00258	-0.0258		
			(0.00681)	(0.0344)		
Partial R^2 in the first stage regressions						
Aid		0.4787		0.4437		0.4284
Aid X policy				0.2927		0.7330
$(Aid)^2$ X Policy				0.0589		
Chi^2		0.00992		0.04923		0.0944
		(0.9208)		(0.9391)		0.9539
Observations	217	217	217	217	210	210
R-squared	0.309	0.308	0.323	0.111	0.345	0.338

The dependent variable is real per capita GDP growth. The excluded exogenous variables for 2SLS estimation are listed in Table 1, White heteroskedasticity consistent standard errors are in parentheses. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. P-values for the tests of exogeneity appear in brackets. The degrees of freedom parameter is 1 in column (3), 3 in column (4), and 2 in column (5).

Table 11: Dalgaard et al. (2004) table 1

Aid-growth Regressions With and Without Geograpical Interaction

Estimation method	(1) OLS	(2) OLS	(3) 2SLS	(4) OLS	(5) OLS	(6) 2SLS
Initial GDP per capita (log)	−0.55	−0.60	0.01	−0.50	−0.54	−0.06
	(0.95)	(1.02)	(0.02)	(0.90)	(0.96)	(0.07)
Ethnic fract.	−0.43	−0.43	0.58	0.12	0.12	1.03
	(0.57)	(0.58)	(0.59)	(0.16)	(0.16)	(1.08)
Assassinations	−0.45*	−0.45*	−0.45*	−0.39	−0.38	−0.37
	(1.66)	(1.68)	(1.70)	(1.55)	(1.55)	(1.58)
Assassinations ∩ Ethnic fract.	0.80*	0.79*	0.88*	0.71*	0.70	0.72*
	(1.75)	(1.75)	(1.92)	(1.65)	(1.63)	(1.69)
Institutional quality	0.67**	0.69**	0.87**	0.659**	0.69**	0.80**
	(3.79)	(3.93)	(3.86)	(3.73)	(4.02)	(3.77)
M2/GDP, lagged	0.02	0.01	0.01	−0.01	−0.02	−0.02
	(1.11)	(0.82)	(0.45)	(0.92)	(1.54)	(0.96)
Sub-Saharan Africa	−1.86**	−1.89**	−3.00**	−1.60**	−1.58**	−2.67**
	(2.44)	(2.43)	(3.32)	(2.10)	(2.04)	(3.09)
East Asia	1.21**	1.32**	1.33**	1.42**	1.57**	1.95**
	(2.03)	(2.22)	(2.01)	(2.36)	(2.63)	(2.94)
Burnside-Dollar policy index	0.78**	0.71**	0.96**	0.86**	0.78**	0.83**
	(3.77)	(3.60)	(6.27)	(4.26)	(4.05)	(5.67)
Aid (EDA/GDP %)	0.05	−0.02	1.35**	1.54**	1.49**	2.47**
	(0.40)	(0.10)	(2.55)	(4.07)	(3.92)	(4.15)
Aid ∩ policy index	0.20**	0.18**		0.05	0.09	
	(2.05)	(2.58)		(0.05)	(1.34)	
Aid squared ∩ policy index	−0.02**			−0.01		
	(2.18)			(0.60)		
Aid squared			−0.13**			−0.10*
			(2.61)			(1.94)
Fraction of land in tropics				−0.62	−0.70	−1.47**
				(1.16)	(1.32)	(2.14)
Aid ∩ fract. of land in tropics				−1.49**	−1.52**	−1.34**
				(3.84)	(4.02)	(2.19)
Test of orthogonality/exogeneity (p-values)						
Aid regressors			0.03			0.04
Lagged aid instruments			0.92			0.95
All overidentifying restrictions			0.83			0.98
Partial R^2 in the first stage regressions†						
Aid			0.53			0.65
Aid squared			0.46			0.44
Aid ∩ fract. of land in tropics						0.64
Observations	275	270	223	275	270	223
Countries	56	56	56	56	56	56
Root MSE	2.89	2.88	3.02	2.80	2.78	2.93

Notes: The dependent variable is real per capita GDP growth. All regressions include time dummies. Robust t-statistics in parentheses. Instruments in regression (5): Aid, Aid squared and aid ∩ policy, all lagged one period, Franc Zone dummy, policy ∩ initial GDP per capita, policy ∩ (initial GPD per capita squared), policy ∩ log of population. In regression (6) the instrument aid ∩ fraction of land in tropics, lagged is added. *significant at 10%; **significant at 5%. †The partial R^2 from the first stage regressions takes the presence of several endogenous variables into account. See Shea (1997) and Godfrey (1999).

Table 12: Dalgaard et al. 2004 table 1 replication using same years and countries

VARIABLES	(1) OLS	(2) OLS	(3) 2SLS	(4) OLS	(5) OLS	(6) OLS
logGDPcap	-0.802*	-0.865**	0.0584	-0.452	-0.454	-0.0930
	(0.419)	(0.409)	(0.614)	(0.404)	(0.400)	(0.627)
ethnf	-0.442	-0.549	0.217	0.341	0.339	0.707
	(0.878)	(0.863)	(1.253)	(0.923)	(0.914)	(1.182)
assasin	-0.400	-0.379	-0.456	-0.420	-0.419	-0.385
	(0.319)	(0.318)	(0.341)	(0.314)	(0.314)	(0.319)
eth_ass	0.613	0.600	0.492	0.470	0.469	0.465
	(0.661)	(0.657)	(0.715)	(0.657)	(0.656)	(0.668)
icrge	0.684***	0.732***	0.309*	0.495***	0.495***	0.542***
	(0.187)	(0.186)	(0.184)	(0.146)	(0.145)	(0.174)
lly2_1	-0.0106	-0.0142	0.0191	-0.0288	-0.0287	-0.0268
	(0.0158)	(0.0162)	(0.0228)	(0.0189)	(0.0188)	(0.0223)
ssa	2.165***	-1.903***	-2.006**	-1.368**	-1.368**	-1.903**
	(0.745)	(0.707)	(0.959)	(0.679)	(0.683)	(0.873)
easia	1.084	1.007	2.002**	2.424***	2.425***	2.826***
	(0.752)	(0.741)	(0.861)	(0.704)	(0.704)	(0.812)
policy	0.991***	1.016***	0.138***	0.139***	0.139***	0.121***
	(0.232)	(0.225)	(0.0392)	(0.0518)	(0.0427)	(0.0335)
aid	0.0295	-0.0308	0.0161	2.328***	2.329***	2.962***
	(0.373)	(0.370)	(1.194)	(0.548)	(0.545)	(1.079)
aidXpol	0.0116*	0.0269*		-0.0139	-0.0132	
	(0.0786)	(0.0596)		(0.0398)	(0.0176)	
aidXpolsquare	-0.0012*			0.000108		
	(0.00451)			(0.00572)		
tropicar				-0.723	-0.722	-1.462*
				(0.634)	(0.627)	(0.935)
aidXtrop				-2.588***	-2.589***	-2.594**
				(0.564)	(0.558)	(1.098)
Aid^2			-0.0438			-0.0283
			(0.197)			(0.222)
Partial R^2 in the first stage regressions						
Aid			0.41			0.61
Aid squared			0.39			0.34
Aid X Tropics						0.59
Test of exogeneity (P-values)						
Aid regressors			0.02			0.05
Lagged Aid Instrument			0.85			0.98
All overidentifying restrictions			0.78			0.91
Observations	274	271	216	275	274	220
R-squared	0.197	0.183	0.207	0.296	0.294	0.311

Notes: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is real per capita GDP growth. Instruments in regression (5): Aid, Aid squared and aid · policy, all lagged one period, Franc Zone dummy, policy · initial GDP per capita, policy · (initial GPD per capita squared), policy · log of population. In regression (6) the instrument aid · fraction of land in tropics, lagged is added. The partial R2 from the first stage regressions takes the presence of several endogenous variables into account. See Shea (1997) and Godfrey (1999).

Table 13: Table 1 Dalgaard et al. 2004 augmented data

VARIABLES	(1) OLS	(2) OLS	(3) 2SLS	(4) OLS	(5) OLS	(6) 2SLS
logGDPcap	-0.163	-0.141	-0.231	-0.654***	-0.632***	-0.502**
	(0.241)	(0.239)	(0.252)	(0.194)	(0.197)	(0.218)
ethnf	-0.331	-0.278	0.0328	0.630	0.603	0.760
	(0.717)	(0.715)	(0.771)	(0.699)	(0.695)	(0.750)
assasin	-0.407**	-0.402**	-0.339**	-0.0804	-0.0684	-0.0358
	(0.189)	(0.190)	(0.169)	(0.152)	(0.154)	(0.156)
eth_ass	0.443	0.437	0.385	-0.214	-0.232	-0.281
	(0.445)	(0.446)	(0.416)	(0.389)	(0.391)	(0.394)
icrge	0.193*	0.204*	0.329***	0.350***	0.348***	0.342***
	(0.109)	(0.109)	(0.118)	(0.0953)	(0.0958)	(0.103)
lly2_1	-0.00848	-0.00869	-0.00427	-0.0267***	-0.0248***	-0.0198***
	(0.00850)	(0.00852)	(0.00783)	(0.00716)	(0.00709)	(0.00755)
ssa	-1.397***	-1.476***	-2.347***	-1.993***	-1.954***	-2.084***
	(0.515)	(0.506)	(0.606)	(0.457)	(0.458)	(0.530)
easia	0.523	0.559	1.238**	1.838***	1.824***	1.913***
	(0.563)	(0.562)	(0.549)	(0.519)	(0.520)	(0.557)
policy	1.038***	1.027***	0.116***	0.161***	0.148***	0.130***
	(0.174)	(0.174)	(0.0220)	(0.0360)	(0.0310)	(0.0213)
aid	0.241	0.313	0.0615	0.579***	0.466**	0.185
	(0.408)	(0.399)	(0.371)	(0.194)	(0.195)	(0.345)
aidXpol	0.0751	0.0634		-0.0159	-0.00437	
	(0.0694)	(0.0680)		(0.0210)	(0.0110)	
aidXpolsquare	-0.00326			0.000807		
	(0.00405)			(0.00254)		
tropicar				-1.144***	-1.170***	-1.684***
				(0.421)	(0.426)	(0.464)
aidXtrop				-0.560***	-0.437**	-0.232
				(0.199)	(0.202)	(0.200)
Aid^2			-0.0358			-0.0267
			(0.0382)			(0.0311)
Partial R^2 in the first stage regressions						
Aid			0.36			0.48
Aid squared			0.30			0.32
Aid X Tropics						0.71
Test of exogeneity (P-values)						
Aid regressors			0.08			0.07
Lagged Aid Instrument			0.71			0.78
All overidentifying restrictions			0.68			0.77
Observations	402	402	402	533	524	458

Notes: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is real per capita GDP growth. Instruments in regression (5): Aid, Aid squared and aid · policy, all lagged one period, Franc Zone dummy, policy · initial GDP per capita, policy · (initial GPD per capita squared), policy · log of population. In regression (6) the instrument aid · fraction of land in tropics, lagged is added. The partial R2 from the first stage regressions takes the presence of several endogenous variables into account. See Shea (1997) and Godfrey (1999).

Table 14: Table 2 Dalgaard et al. (2004)

Reduced Form Aid Regressions

Data set	(1) BD	(2) ELR	(3) BD	(4) ELR
Real GDP per capita (log)	−1.81**	−1.37**	−0.72**	−0.50**
	(8.35)	(5.54)	(3.34)	(3.25)
Ethnic fract.	−0.02	−0.66	−0.08	−0.16
	(0.06)	(1.06)	(0.32)	(0.74)
Assassinations	0.19*	0.15	0.13*	0.19*
	(1.79)	(1.40)	(1.77)	(1.72)
Assassinations ∩ Ethnic fract.	−0.34**	−0.18	−0.24*	−0.31
	(2.00)	(0.84)	(1.93)	(1.62)
Institutional quality	0.16	0.02	0.001	0.02
	(1.44)	(0.27)	(0.01)	(0.54)
M2/GDP, lagged	0.02	0.02	0.02	−0.002
	(1.11)	(1.73)*	(0.80)	(0.51)
Sub-Saharan Africa	0.49*	0.09	−0.03	0.14
	(1.73)	(0.20)	(0.14)	(0.68)
East Asia	0.11	0.25	0.16	0.31**
	(0.43)	(0.86)	(0.80)	(2.55)
Policy index†	−0.05	−0.04*	−0.09	−0.04**
	(0.48)	(1.76)	(1.09)	(2.98)
Population (log)	−0.69**	−0.62**	−0.28**	−0.26**
	(6.10)	(5.07)	(3.42)	(3.52)
Arms imports (lagged)	0.02	0.02	0.01	2.01**
	(1.34)	(1.84)*	(1.33)	(2.12)
Egypt	0.62	−0.47	−0.41	−0.15
	(0.83)	(0.58)	(0.46)	(0.66)
Franc Zone countries	0.11	0.30	−0.18	0.08
	(0.25)	(0.72)	(0.55)	(0.35)
Central America	0.01	−0.47	−0.02	−0.11
	(0.05)	(1.06)	(0.08)	(0.55)
Lagged aid			0.83**	0.69**
			(7.31)	(7.88)
Observations	236	318	236	318
Countries	54	62	54	62
R-squared	0.64	0.49	0.82	0.78
F-test of instruments	11.76	7.70	23.72	31.49

Note. The dependent variable is aid as percentage of GDP. All regressions include time dummies. Heteroscedasticity and autocorrelation robust t-statistics in parentheses. *Significant at 10%; **significant at 5%. †The weights forming the policy index are (6.85, −1.4, 2.16) in regressions (1) and (3) and (1.26, −1.91, 2.47) in regressions (2) and (4).

Table 15: Dalgaard et al. (2004) table 2 replication

VARIABLES	(1) BD	(2) ELR	(3) BD	(4) ELR
logGDPcap	-1.187***	-1.331***	-0.550***	-0.469***
	(0.143)	(0.154)	(0.110)	(0.106)
ethnf	-0.411	-0.746*	-0.121	-0.0282
	(0.342)	(0.417)	(0.243)	(0.268)
assasin	0.170	0.183	0.120	0.213***
	(0.122)	(0.121)	(0.0740)	(0.0769)
eth_ass	-0.277	-0.220	-0.200	-0.347**
	(0.242)	(0.256)	(0.154)	(0.163)
icrge	0.0520	0.0336	0.0393	0.00709
	(0.0510)	(0.0594)	(0.0362)	(0.0379)
lly2_1	0.0119*	0.0275***	0.00288	-0.00115
	(0.00675)	(0.00627)	(0.00483)	(0.00422)
ssa	0.487*	0.338	0.227	0.0731
	(0.273)	(0.314)	(0.195)	(0.201)
easia	0.0886	0.144	0.102	0.291
	(0.249)	(0.316)	(0.177)	(0.202)
Policy	-0.0300	-0.0252*	-0.0440***	-0.0301***
	(0.00202)	(0.0132)	(0.00143)	(0.00841)
lnpop	-0.390***	-0.544***	-0.230***	-0.259***
	(0.0598)	(0.0740)	(0.0439)	(0.0491)
armimp_1	1.660***	1.773***	1.217***	1.222***
	(0.467)	(0.639)	(0.334)	(0.408)
egydum	0.388	-0.676	0.0918	-0.177
	(0.542)	(0.658)	(0.386)	(0.420)
francz	0.194	0.298	-0.0270	0.0319
	(0.250)	(0.304)	(0.179)	(0.194)
centram	0.191	-0.346	0.129	-0.145
	(0.272)	(0.320)	(0.182)	(0.204)
lagged_aid			0.646***	0.736***
			(0.0440)	(0.0351)
Observations	232	316	237	316
R-squared	0.590	0.470	0.791	0.786
F-test of Instruments	14.52	10.92	25.61	33.26

Note: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is aid as percentage of GDP. All regressions include time dummies. Heteroscedasticity and autocorrelation robust t-statistics in parentheses. The weights forming the policy index are (6.85, -1.4, 2.16) in regressions (1) and (3) and (1.26, -1.91, 2.47) in regressions (2) and (4).

Table 16: Dalgaard et al. 2004 table 2 , augmented data

VARIABLES	(1) BD	(2) ELR	(3) BD	(4) ELR
logGDPcap	-0.570***	-0.776***	-0.263***	-0.284***
	(0.131)	(0.143)	(0.0929)	(0.0900)
ethnf	-0.0184	-0.727	0.0918	0.114
	(0.430)	(0.501)	(0.300)	(0.309)
assasin	0.130	-0.0747	0.104	0.0832
	(0.0977)	(0.106)	(0.0682)	(0.0650)
eth_ass	-0.416*	0.0623	-0.229	-0.152
	(0.237)	(0.267)	(0.165)	(0.164)
icrge	-0.211***	-0.126*	-0.0654	-0.0145
	(0.0575)	(0.0646)	(0.0409)	(0.0398)
lly2_1	0.00691	0.0122**	0.00184	-0.00156
	(0.00477)	(0.00488)	(0.00334)	(0.00304)
ssa	1.384***	1.030***	0.490**	0.248
	(0.306)	(0.354)	(0.219)	(0.219)
easia	-0.204	-0.416	0.00171	0.0665
	(0.286)	(0.350)	(0.200)	(0.215)
Policy	0.00120	0.00699	-0.00341**	-0.0222**
	(0.00239)	(0.0145)	(0.00169)	(0.00892)
lnpop	-0.248***	-0.382***	-0.169***	-0.197***
	(0.0685)	(0.0824)	(0.0480)	(0.0510)
armimp_1	1.099*	1.505*	0.955**	1.012**
	(0.650)	(0.793)	(0.454)	(0.487)
egydum	0.188	-0.325	-0.160	-0.0335
	(0.589)	(0.699)	(0.412)	(0.429)
francz	0.151	0.796**	0.0233	0.0969
	(0.304)	(0.353)	(0.212)	(0.218)
centram	0.821**	0.0553	0.0684	-0.168
	(0.329)	(0.368)	(0.233)	(0.226)
lagged_aid			0.677***	0.740***
			(0.0352)	(0.0287)
Observations	365	414	365	414
R-squared	0.398	0.324	0.708	0.747
F-test of Instruments	16.56	13.68	56.31	78.23

Note: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is aid as percentage of GDP. All regressions include time dummies. Heteroscedasticity and autocorrelation robust t-statistics in parentheses. The weights forming the policy index are (6.85, -1.4, 2.16) in regressions (1) and (3) and (1.26, -1.91, 2.47) in regressions (2) and (4).

Table 17: Dalgaard et al. 2004 Table 3

Assessing the Impact of Endogeneity of Aid, Policies and Institutions

Estimation method	(1) OLS	(2) GMM	(3) GMM	(4) GMM-DIF	(5) GMM-SYS
Initial GDP per capita (log)	−0.68**	−0.82**	−0.80**	−2.62	−0.93
	(1.99)	(2.22)	(2.04)	(1.42)	(1.07)
Institutional quality	0.43**	0.47**	0.51**		
	(3.32)	(3.67)	(3.68)		
Sub-Saharan Africa	−1.07*	−1.65**	−1.03**		
	(1.87)	(3.38)	(1.97)		
East Asia	2.69**	2.49**	2.41**		
	(3.85)	(3.78)	(3.44)		
Fraction of land in tropics	−1.31**	−1.67**	−1.73**		
	(3.02)	(3.74)	(3.96)		
Budget surplus	0.08	0.08	0.03	0.14	0.13
	(1.28)	(1.33)	(0.31)	(1.18)	(1.30)
Inflation	−1.97**	−2.09**	−1.24**	−2.25	−1.54
	(3.44)	(3.97)	(2.32)	(1.53)	(1.34)
Sachs-Warner openness	0.45	0.48	1.09*	−1.07	0.21
	(0.85)	(1.07)	(1.72)	(0.67)	(0.14)
Aid	0.60**	0.34**	0.33**	1.31**	0.87**
	(4.70)	(3.27)	(2.66)	(8.99)	(4.86)
Aid ∩ fract. of land in tropics	−0.77**	−0.48**	−0.50**	−2.01**	−1.52**
	(3.10)	(2.40)	(2.51)	(3.65)	(3.89)
Impact of aid in the tropics	−0.17	−0.13	−0.17	−0.70	−0.65**
	(1.37)	(1.03)	(1.30)	(1.45)	(1.98)
Test of residual autocorrelation					
First order	0.48	0.44	0.50	−3.19**	−3.11**
	[0.63]	[0.66]	[0.62]	[0.00]	[0.00]
Second order	1.56	1.39	1.31	1.30	1.30
	[0.12]	[0.16]	[0.19]	[0.20]	[0.19]
Hansen J-test (p-value)		0.13	0.48	1.00	1.00
Partial R^2 in the first stage regressions					
Aid		0.72	0.62		
Aid ∩ fract. of land in tropics		0.71	0.68		
Budget surplus			0.26		
Inflation			0.43		
Sachs-Warner openness			0.48		
Observations	332	316	303	306	361
Countries	65	65	63	63	63
Root MSE	3.02	3.03	3.04	3.06	3.20

Notes: The dependent variable is real per capita GDP growth. All regressions include time dummies. Robust t-statistics in parentheses. The t-statistics inregressions (4) and (5) are based on small sample corrected covariance estimates; see Windmeijer (2000). Instruments in regression(2): Aid, aid squared, aid ∩ inflation, aid ∩ openness, aid ∩ fraction of land in tropics, M2/GDP, all lagged one period, and log(population). In regression (3) the instruments Budget surplus, inflation and openness, all lagged one period, are added. Regression (4) adds all possible lags of real per capita GDP growth and initial GDP per capita and includes all available lags of the instruments used in regressions (3) and (4). *significant at 10%; **significant at 5%.

Table 18: Dalgaard et al. 2004 table 3

VARIABLES	(1) OLS	(2) GMM	(3) GMM	(4) GMM-DIFF	(5) GMM-SYS
logGDPcap	-0.784**	-0.852*	-0.528	-5.116***	-0.230
	(0.396)	(0.487)	(0.574)	(1.696)	(0.396)
icrge	0.401***	0.265	0.250		
	(0.130)	(0.260)	(0.325)		
ssa	-1.121*	-2.037	-2.035*		
	(0.615)	(1.304)	(1.141)		
easia	2.516***	3.262**	3.127***		
	(0.687)	(1.438)	(1.181)		
tropicar	-0.848*	-0.361	-0.644		
	(0.434)	(0.826)	(0.870)		
bbgdp	0.0947	0.239**	0.132*	0.120	0.0826
	(0.0717)	(0.114)	(0.0796)	(0.102)	(0.0793)
infl	-2.227***	-2.428***	-2.312***	-2.393***	-3.085***
	(0.558)	(0.865)	(0.562)	(0.858)	(1.080)
sacwar	0.495	0.115	0.169	1.255*	1.776***
	(0.446)	(0.780)	(0.575)	(0.661)	(0.578)
aid	0.704***	0.774***	0.670***	0.924***	0.498***
	(0.138)	(0.148)	(0.145)	(0.204)	(0.163)
aidXtrop	-0.950***	-0.919***	-0.778***	-0.998***	-0.920***
	(0.154)	(0.195)	(0.203)	(0.295)	(0.205)
Impact of aid in the tropics	-0.246	-0.145	-0.108	-0.074	-0.422
	(0.207)	(0.245)	(0.249)	(0.359)	(0.262)
Test of residual autocorrelation					
First order	0.2520	0.4831	0.5472	-3.12	-3.25
	(0.6175)	(0.6347)	(0.6824)	(0.002)	(0.001)
Second order	1.8416	1.5828	1.4804	1.52	1.22
	(0.1472)	(0.1135)	(0.1388)	(0.129)	(0.223)
Partial R^2 first stage regression					
Aid		0.7686	0.8556		
Aid X tropics		0.8110	0.8394		
Budget surplus			0.3911		
Inflation			0.6490		
Sachs-Warner openness			0.7624		
Observations	332	316	303	306	361
Number of Countries	65	65	65	63	65
Hansen J-test (p-value)		0.17	0.53	1	1

Notes: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is real per capita GDP growth. All regressions include time dummies. Robust t-statistics in parentheses. Instruments in regression(2): Aid, aid squared, aid ˙ inflation, aid ˙ openness, aid ˙ fraction of land in tropics, M2/GDP, all lagged one period, and log(population). In regression (3) the instruments Budget surplus, inflation and openness, all lagged one period, are added. Regression (4) adds all possible lags of real per capita GDP growth and initial GDP per capita and includes all available lags of the instruments used in regressions (3) and (4).

Table 19: Dalgaard et al. 2004 Table 3 – augmented data

VARIABLES	(1) OLS	(2) GMM	(3) GMM	(4) GMM-DIFF	(5) GMM-SYS
logGDPcap	-0.580**	-0.894*	-0.754*	-0.385	-0.503
	(0.255)	(0.461)	(0.422)	(0.585)	(0.379)
icrge	0.253**	0.178	0.0845		
	(0.125)	(0.283)	(0.278)		
ssa	-1.226**	-2.443**	-2.321**		
	(0.548)	(1.006)	(1.060)		
easia	2.340***	1.849	1.979		
	(0.650)	(1.434)	(1.282)		
tropicar	-0.827*	-0.610	-0.680		
	(0.483)	(0.915)	(0.837)		
bbgdp	0.153***	0.306***	0.226***	0.187***	0.162**
	(0.0535)	(0.0871)	(0.0800)	(0.0613)	(0.0691)
infl	-0.304***	-0.189	-0.296*	-0.474***	-0.323***
	(0.0773)	(0.128)	(0.161)	(0.0974)	(0.0943)
sacwar	0.471	-1.650*	-0.852	0.586	0.836
	(0.330)	(0.854)	(0.685)	(0.766)	(0.622)
aid	0.697***	0.643***	0.637**	0.942***	0.431**
	(0.124)	(0.196)	(0.283)	(0.344)	(0.201)
aidXtrop	-0.622***	-0.493**	-0.475*	-0.778**	-0.596***
	(0.132)	(0.214)	(0.274)	(0.330)	(0.201)
Impact of aid in tropics	0.057	0.15	0.162	0.164	-0.165
	(0.181)	(0.290)	(0.394)	(0.477)	(0.284)
Test of residual autocorrelation					
First order	0.823	0.7940	0.7505	-3.72	-3.67
	(0.3678)	(0.63)	(0.52)	(0.000)	(0.000)
Second Order	0.8742	1.5913	1.4807	1.49	1.59
	(0.03)	(0.1115)	(0.1387)	(0.137)	(0.111)
Partial R^2 in the first stage regression					
Aid		0.7721	0.9391		
Aid X Tropics		0.7925	0.9191		
Budget Surplus			0.4584		
Inflation			0.8732		
Sachs-Warner openness			0.8244		
Observations	589	589	589	496	589
Number of Countries	65	65	65	63	65
Hansen J-Test (p-value)		0.7884	1	1	1

Notes: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is real per capita GDP growth. All regressions include time dummies. Robust t-statistics in parentheses. Instruments in regression(2): Aid, aid squared, aid˙inflation, aid˙openness, aid˙fraction of land in tropics, M2/GDP, all lagged one period, and log(population). In regression (3) the instruments Budget surplus, inflation and openness, all lagged one period, are added. Regression (4) adds all possible lags of real per capita GDP growth and initial GDP per capita and includes all available lags of the instruments used in regressions (3) and (4).

Table 20: Comparing the two interaction variables, Dalgaard et al. 2004 data

VARIABLES	(1) OLS	(2) GMM	(3) GMM	(4) GMM-DIFF	(5) GMM-SYS
logGDPcap	-0.910**	-0.621	-0.700	-4.528***	-0.214
	(0.360)	(0.831)	(0.709)	(1.492)	(0.587)
icrge	0.403***	0.125	0.143		
	(0.136)	(0.310)	(0.245)		
ssa	-1.047*	-1.924	-1.996		
	(0.565)	(1.533)	(1.426)		
easia	2.772***	3.241**	3.156***		
	(0.690)	(1.272)	(0.839)		
tropicar	-0.821	-0.860	-0.348		
	(0.552)	(0.956)	(0.979)		
policy	0.167***	0.231**	0.202***	0.242**	0.250***
	(0.0399)	(0.101)	(0.0734)	(0.0952)	(0.0711)
aid	0.663***	0.484	0.605**	0.420	0.420*
	(0.228)	(0.307)	(0.247)	(0.314)	(0.240)
aidXtrop	-1.018***	-0.739***	-0.859***	-0.733**	-1.072***
	(0.232)	(0.249)	(0.226)	(0.286)	(0.220)
aidXpolicy	-0.0192	-0.0283	-0.0186	-0.0574**	-0.0362**
	(0.0162)	(0.0274)	(0.0212)	(0.0280)	(0.0159)
Test of residual autocorrelation					
First order	0.252	0.3978	0.3466	-3.32	-3.45
	(0.6175)	(0.07)	(0.08)	(0.001)	(0.001)
Second Order	2.0031	1.9670	1.9130	2.04	1.98
	(0.0614)	(0.0492)	(0.0557)	(0.041)	(0.048)
Partial R^2 in the first stage regression					
Aid		0.7682	0.8553		
Aid X Tropics		0.8152	0.8401		
Aid X Policy			0.6420		
Observations	371	371	371	302	371
Number of Countries	65	65	65	63	65
Hansen J-Test (p-value)		1	1	1	1

Notes: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is real per capita GDP growth. All regressions include time dummies. Robust t-statistics in parentheses. Instruments in regression(2): Aid, aidXpolicy, aid squared, aid · inflation, aid · openness, aid · fraction of land in tropics, M2/GDP, all lagged one period, and log(population). In regression (3) the instruments Budget surplus, inflation and openness, all lagged one period, are added. Regression (4) adds all possible lags of real per capita GDP growth and initial GDP per capita and includes all available lags of the instruments used in regressions (3) and (4).

Table 21: Comparing the two interaction variables, augmented data

VARIABLES	(1) OLS	(2) GMM	(3) GMM	(4) GMM-DIFF	(5) GMM-SYS
logGDPcap	-0.571***	-0.979*	-0.802*	-0.169	-0.302
	(0.214)	(0.530)	(0.470)	(0.611)	(0.356)
icrge	0.252*	-0.0404	-0.137		
	(0.132)	(0.411)	(0.379)		
ssa	-1.264**	-2.472**	-2.404**		
	(0.523)	(1.159)	(0.981)		
easia	2.334***	0.346	1.506		
	(0.711)	(1.438)	(1.157)		
tropicar	-0.847	-1.158	-0.674		
	(0.563)	(1.048)	(0.736)		
Policy_index	0.150***	0.0910	0.134**	0.163**	0.194***
	(0.0291)	(0.0635)	(0.0610)	(0.0752)	(0.0598)
aid	0.645***	0.430*	0.525*	1.012***	0.387*
	(0.193)	(0.256)	(0.278)	(0.215)	(0.215)
aidXtrop	-0.577***	-0.348	-0.433	-0.826***	-0.555***
	(0.202)	(0.251)	(0.271)	(0.161)	(0.208)
aidxpolicy	-0.00841	0.0123	0.00616	-0.00423	-0.0194
	(0.00977)	(0.0127)	(0.0114)	(0.0195)	(0.0145)
Test of residual autocorrelation					
First order	0.823	0.6379	0.7175	-3.71	-3.71
	(0.3678)	(0.314)	(0.2186)	(0.000)	(0.000)
Second Order	1.5074	1.3613	1.5074	1.49	1.71
	(0.1317)	(0.1734)	(0.1317)	(0.135)	(0.087)
Partial R^2 in the first stage regression					
Aid		0.7781	0.9396		
Aid X Tropics		0.8001	0.9219		
Aid X Policy			0.6045		
Observations	589	589	589	496	589
Number of Countries	65	65	65	63	65
Hansen J-Test (p-value)		1	1	1	1

Notes: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is real per capita GDP growth. All regressions include time dummies. Robust t-statistics in parentheses. Instruments in regression(2): Aid, aid squared, aid˙inflation, aidXpolicy aid˙openness, aid˙fraction of land in tropics, M2/GDP, all lagged one period, and log(population). In regression (3) the instruments Budget surplus, inflation and openness, all lagged one period, are added. Regression (4) adds all possible lags of real per capita GDP growth and initial GDP per capita and includes all available lags of the instruments used in regressions (3) and (4).

List 1: Country Specific summary statistics (same as BD)

Country	N	Per capita GDP 1970	Per capita GDP growth	Aid % of GDP
ALGERIA	2	1826	2,81	0,77
ARGENTINA	6	5637	0,38	0,02
BOLIVIA	6	1661	-0,04	1,80
BOTSWANA	3	823	7,48	5,12
BRAZIL	6	2434	2,39	0,03
CAMEROON	5	804	0,84	1,88
CHILE	6	3605	2,09	0,16
COLOMBIA	6	2140	2,13	0,12
COSTA RICA	6	2904	1,51	1,02
COTE D'IVOIRE	1	1615	-2,59	0,85
DOMINICAN REPUBLIC	6	1536	2,66	0,60
ECUADOR	6	1789	2,63	0,32
EGYPT	5	1163	3,76	2,39
EL SALVADOR	6	1810	-0,31	1,87
ETHIOPIA	2	296	-4,74	3,75
GABON	6	3704	1,26	1,91
GAMBIA, THE	6	722	0,25	7,08
GHANA	6	1059	-0,74	1,92
GUATEMALA	6	2028	0,58	0,49
GUYANA	6	1816	-0,36	3,74
HAITI	5	834	0,10	1,77
HONDURAS	6	1237	0,87	2,19
INDIA	6	802	2,07	0,26
INDONESIA	6	715	4,90	0,39
JAMAICA	3	2645	-2,92	1,42
KENYA	6	586	1,33	2,34
KOREA, REPUBLIC OF	6	1680	6,99	0,20
MADAGASCAR	4	1146	-1,74	2,70
MALAWI	4	440	-1,10	5,65
MALAYSIA	6	2154	4,35	0,20
MALI	1	419	4,64	7,65
MEXICO	6	3987	1,40	0,02
MOROCCO	6	1342	1,74	0,94
NICARAGUA	6	2359	-3,45	3,14
NIGER	2	805	1,46	5,38
NIGERIA	6	767	0,78	0,14
PAKISTAN	6	1029	2,79	0,76
PARAGUAY	6	1394	2,19	0,69
PERU	6	2736	-0,72	0,41
PHILIPPINES	6	1403	0,88	0,44
SENEGAL	4	1146	-0,18	3,63
SIERRA LEONE	6	1435	-0,39	1,70
SOMALIA	2	921	0,60	4,44
SRI LANKA	6	1243	2,86	1,17
SYRIAN ARAB REPUBLIC	5	2294	3,13	1,86
TANZANIA	2	424	0,26	5,86
THAILAND	6	1526	5,18	0,24
TOGO	4	618	-0,24	5,36
TRINIDAD AND TOBAGO	5	6795	0,59	0,07
TUNISIA	3	1442	1,26	0,91
TURKEY	1	2202	3,78	0,33
URUGUAY	6	4121	1,24	0,13
VENEZUELA	6	7753	-0,52	0,01
ZAIRE (D.R. CONGO)	5	686	-1,94	2,35
ZAMBIA	6	1117	-2,04	4,81
ZIMBABWE	3	1082	-0,70	2,34

List 2: Country Specific summary statistics Burnside and Dollar (2000)

TABLE A2—COUNTRY-SPECIFIC SUMMARY STATISTICS

Country	N	Per capita GDP in 1970 (1985 US$)	Per capita GDP growth (percent per annum)	Aid (percent of GDP)	Policy index
Algeria	2	1826	2.8	0.77	1.1
Argentina	6	5637	0.4	0.02	−0.2
Bolivia	6	1661	0.0	1.80	1.5
Botswana	3	823	7.5	5.12	3.8
Brazil	6	2434	2.4	0.03	−0.2
Cameroon	5	804	0.8	1.88	1.2
Chile	6	3605	2.1	0.16	2.2
Colombia	6	2140	2.1	0.12	1.6
Costa Rica	6	2904	1.5	1.02	1.6
Côte d'Ivoire	1	1615	−2.6	0.85	0.4
Dominican Republic	6	1536	2.7	0.60	1.0
Ecuador	6	1789	2.6	0.32	2.3
Egypt	5	1163	3.8	2.39	0.4
El Salvador	6	1810	−0.3	1.87	1.4
Ethiopia	2	296	−4.7	3.75	0.8
Gabon	6	3704	1.3	1.91	0.9
Gambia	6	722	0.3	7.08	1.6
Ghana	6	1059	−0.7	1.92	1.4
Guatemala	6	2028	0.6	0.49	1.5
Guyana	6	1816	−0.4	3.74	0.1
Haiti	5	834	0.1	1.77	1.0
Honduras	6	1237	0.9	2.19	1.2
India	6	802	2.1	0.26	0.8
Indonesia	6	715	4.9	0.39	3.2
Jamaica	3	2645	−2.9	1.42	0.1
Kenya	6	586	1.3	2.34	0.9
Korea	6	1680	7.0	0.20	3.2
Madagascar	4	1146	−1.7	2.70	0.9
Malawi	4	440	−1.1	5.65	0.6
Malaysia	6	2154	4.4	0.20	2.8
Mali	1	419	4.6	7.65	1.9
Mexico	6	3987	1.4	0.02	1.3
Morocco	6	1342	1.7	0.94	1.6
Nicaragua	6	2359	−3.5	3.14	−1.0
Niger	2	805	1.5	5.38	0.9
Nigeria	6	767	0.8	0.14	0.8
Pakistan	6	1029	2.8	0.77	0.7
Paraguay	6	1394	2.2	0.69	1.5
Peru	6	2736	−0.7	0.41	0.1
Philippines	6	1403	0.9	0.44	1.5
Senegal	4	1146	−0.2	3.63	1.0
Sierra Leone	6	1435	−0.4	1.70	0.3
Somalia	2	921	0.6	4.44	0.6
Sri Lanka	6	1243	2.9	1.17	1.2
Syria	5	2294	3.1	1.86	0.8
Tanzania	2	424	0.3	5.86	0.4
Thailand	6	1526	5.2	0.24	3.2
Togo	4	618	−0.2	5.36	0.5
Trinidad and Tobago	5	6795	0.6	0.07	1.1
Tunisia	3	1442	1.3	0.91	1.7
Turkey	1	2202	3.8	0.33	2.4
Uruguay	6	4121	1.2	0.13	0.8
Venezuela	6	7753	−0.5	0.01	1.5
Zaire	5	686	−1.9	2.35	0.6
Zambia	6	1117	−2.0	4.81	0.1
Zimbabwe	3	1082	−0.7	2.34	0.5

Notes: *N* indicates the number of four-year periods for which the variables in our regressions were observed for the country indicated. The policy index is described in the text. It is the weighted average of the openness measure, the inflation rate, and the budget surplus, where the weights are given by the corresponding coefficients in the regression reported in Table 4 column 1. The index is measured in terms of percentage points of GDP growth. The figures for GDP growth, aid, and the policy index are averages across all four-year periods in which they are defined during the interval 1970–1993.