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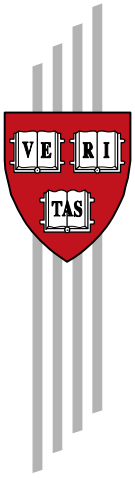
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Dany Bahar

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Aid and Fertility *

Dany Bahar †

Abstract

This paper uses a panel data from developing countries to study the relationship between foreign aid flows and fertility rates. By making use of natural disasters in neighboring countries as an instrumental variable to foreign aid receipts,I find that a percentage point increase in the share of aid in the GDP increases on average fertility rates among the population by 0.045 additional children. This can be translated to an additional child for about every 22 women of childbearing age. The positive effect of foreign aid on fertility rates can contribute to the current debate on foreign aid, and supply an additional explanation for its limited efficacy historically. By making use of the same instrumental variable, I also find no effect of foreign aid on other determinants of economic growth and growth itself.

Keywords: Foreign Aid, Aid Flows, Fertility Rate, Growth, Economic Growth, Economic Development

JEL Codes: O11, O16, F35, J13

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1 Introduction

In recent years the world witnessed a public debate on whether foreign aid is in fact contributing to ending poverty or speeding up economic growth among developing countries. Jeffrey Sachs (2005) in his book "The End of Poverty" presents an analysis of the low cost investments needed (i.e. foreign aid) per individual in order to overcome malaria, hunger and other extreme poverty factors mainly in Africa. Sachs argues that the goals presented in the UN Millennium Assembly are fully achievable by increasing the financial assistance of the west toward developing countries.

The other side of the coin is presented by William Easterly (2006) in his book "The White Man's Burden: Why the West's Efforts to Aid the Rest Have Done So Much Ill and So Little Good". In Easterly's views, the failure in reaching these goals is not related to low foreign aid transfers, but to bad planning. Moreover, Easterly raises the question: if indeed the costs of ending poverty are so low, how come development agencies were not able to significantly lower poverty rates after all the enormous amounts of financial resources invested until now?

The debate on the effectiveness of foreign aid has been present among economists for decades. Academic literature about foreign aid data back to the mid fifties. Milton Friedman attacked foreign aid by arguing that politicians will not allocate aid efficiently resulting in the political elite benefiting from aid flows (Friedman, 1958). Later, several studies tried to study the relationship between foreign aid and saving rates or economic growth mainly ignoring endogeneity problems,[1] still without reaching a single and clear conclusion.

However, only during the past decade economists started to estimate the causal effect of foreign aid on economic growth by dealing with endogeneity issues. Peter Boone (1996) reopened the debate by estimating the

[1] Papanek (1973), Mosley et. al. (1987)

effect of foreign aid on public and private consumption and investment. He found that aid does not significantly increase investment, nor benefit the poor (measured by lack of improvements in human capital indicators like infant mortality). Also, the impact of aid does not vary according to whether recipients are liberal-democratic governments or highly repressive regimes. However, *ceteris paribus*, more democratic regimes have 30 percent lower infant mortality. Hence, Boone suggests that short term aid should be targeted to support new liberal regimes, which might be more successful in achieving mid and long term economic goals.

A few years later, Burnside and Dollar (2000) showed that foreign aid has a significant positive impact on growth whenever "good policies" are present. They did this by finding a significant positive estimator of the interaction term between aid and a "good policies" index in their empirical specification. However, Easterly (2004) showed how the interaction term becomes insignificant when expanding the sample used by Burnside and Dollar and maintaining their same specification.

Hansen and Tarp (2001) found that by adding the aid parameter both in its linear and quadratic form to the growth equation, aid has a positive impact on growth showing with diminishing results. In their findings, the square of aid drives out the good policies interaction term of Burnside and Dollar. In addition, they found that when controlling for investment and human capital, there is no effect of aid on growth, meaning that aid affects growth through capital accumulation, both physical and human.

A number of other studies, motivated by Burnside and Dollar, changed the latter specification, resulting again in inconclusive results.[2] Roodman (2007) makes a very complete review of the literature and explore the fragility of several studies of aid and growth. He finds that the results in all these empirical studies are not robust to slight changes in their specifications or

[2]Guillaumont and Chauvet (2001), Collier and Dehn (2001), Collier and Dollar (2002, 2004),Collier and Hoeffler (2004) and Dalgaard, Hansen and Tarp (2004).

extensions of their datasets.

Nevertheless, the attention of most economists studying foreign aid has been concentrated mostly on economic growth, ignoring other variables which might have a direct impact on the latter. Analyzing the effect of aid on the determinants of growth, separately, might help us to find complementary explanations to the limited efficacy of foreign aid flows. This empirical paper will focus on the fertility rates of the developing countries and how do they respond to foreign aid.

Already in the early seventies, the ecologist and microbiologist Garret Hardin wrote about possible consequences of foreign aid and linked it to population growth. Hardin (1974) criticizes the idea of creating a *"World Food Bank"* (i.e. food aid) by explaining that if poor countries know that they will be provided with nourishment in times of emergency, they will not have an incentive to manage properly their food reserves. It will also back away their capacity to self-sustain themselves, thus staying poor forever. He links aid to population growth as follows:

> *"If poor countries received no food from the outside, the rate of their population growth would be periodically checked by crop failures and famines. But if they can always draw on a world food bank in time of need, their population can continue to grow unchecked, and so will their "need" for aid. In the short run, a world food bank may diminish that need, but in the long run it actually increases the need without limit."*

In fact, Malthus (1978) already made a similar argument using income in place of food. In times of economic prosperity, couples will tend to marry earlier, have more children and thus countries will experience higher population growth rates. More recent economic models can also be used to explain this phenomenon and they may explain how aid can be translated to higher fertility rates if it is perceived by household as non-wage income or even subsidies in prices. These models are explored further in the next section.

Actually, many forms of foreign aid are actually distributed among the poor population as cash transfers or subsidies on prices (like food aid) as a short-term alleviating measure. In its official website[3], the United States Agency for Foreign Aid (USAID) specifies:

> *"The United States is the world's largest food aid donor and provides approximately half of all food aid to populations throughout the world. In recent years, the USG (US Government) has provided approximately $1 billion through the U.N. World Food Program (WFP), or approximately 40 percent of all contributions to the organization. The USG contributes significant international food aid through non-governmental organizations. The USG also looks to other donors to provide food aid to populations in need."*

A BBC press article titled *"Ethiopia's food aid addiction"* (February, 2006) links food aid to the ineffectiveness of aid by arguing:

> *"Like a patient addicted to pain killers, Ethiopia seems hooked on aid. For most of the past three decades, it has survived on millions tonnes of donated food and millions of dollars in cash. It has received more emergency support than any other African nation in that time. Its population is increasing by 2m every year, yet over the past 10 years, its net agricultural production has steadily declined."*[4]

Similarly, a press article of the Associated Press on June 2008 titled *"Food aid saves millions but world hunger lingers"*[5] also testifies that, in spite of food aid reaching millions of people in starvation during the last years, the failure of the agriculture in poor regions is keeping developing countries from ensuring enough food for their own people.

[3] http://www.usaid.gov/our_work/humanitarian_assistance/foodcrisis/
[4] http://news.bbc.co.uk/2/hi/africa/4671690.stm
[5] http://a.abcnews.com/International/wireStory?id=4976888

Economic literature on the possible link between foreign aid and fertility rates is scarce.[6] Nevertheless, for economists exists a strong motivation to study this possible relationship. If in fact foreign aid is having a positive impact on fertility rates and population growth, this could be diluting capital per capita, and hence inhibiting economic growth of the aid recipient countries.

Using country-level panel data, I find a significant and positive effect of foreign aid on fertility rates. On average, a percentage point increase in foreign aid as a share of the GDP will increase the fertility rates on approximately 0.045 children per woman of childbearing age, meaning an additional child for approximately every twenty two women. These results represent a causal relation, computed using a two stages least squares estimator using natural disasters in neighboring countries as an instrumental variable to foreign aid flows.

The results of this job can contribute to two controversial debates currently taking place. The first is related to find feasible explanations to the still high fertility rates across poor countries, in particular, in the Sub-Saharan Africa region. The second relates to the long-standing debate about the effectiveness of foreign aid, opening a new debate on studying the effect of the latter not only on growth rates, but in other determinants of economic prosperity.

The remainder of this paper is organized as follows. The next section contains an overview on the determinants both of fertility and foreign aid, which will help us to analyze properly the stated hypothesis. Section 3 present the empirical specification to be estimated, the data sources and summary statistics. Section 4 shows some results using ordinary least squares

[6] Azarnert (2008) presents an overlapping generation model in which he decomposes aid in two parts: aid per adult and aid per children. While aid per child lowers the price of child quantity, aid per adult adversely affects the recipients' incentive to invest in human capital. These two components together can drive the economy to a low equilibrium stagnation in which foreign aid is a main cause for it.

and fixed effects estimators. Section 5 presents results for a two stages least squares estimator making use of natural disasters in neighboring countries as instrumental variable for foreign aid, thus establishing causality in the relation. Section 6 expands the use of the instrumental variable to study the effect of foreign aid on other economic outcomes. Section 7 concludes.

2 About Foreign Aid and Fertility

2.1 An Economic View on Fertility Rates

Population growth has been studied by economists for decades. Most of the attributes of any economy - in particular all of the "per capita" ones - are directly influenced by the local rate of population growth. Already Malthus, in the late eighteenth century, tied population growth to per capita income (Malthus, 1798). He claimed that in response to products (i.e. food) being produced above the subsistence levels, couples will have more children, increasing population; hence increasing also the supply of labor in the mid-term run. This will cause a fall in the wages and rising food prices (due to the increasing demand and the fixity of land). This in turn will cause a drop in consumption, rising mortality rates and a drop in fertility rates, completing the cycle. Under this theory, total economic output can increase and decrease, but the population respond to these changes such that for most families there is a long term equilibrium of the standard of living at the subsistence level. However, the rising per capita income (i.e. standards of living) and the declining population growth rates in the world since the industrial revolution, has showed that Malthus was wrong, at least for recent western history (Galor and Weil, 2000).

Although it is very difficult to establish empirically the direction of the causality between fertility rates and economic growth, they are strongly negative correlated in the post World War II world. However, there have been some empirical attempts to establish a causal relation between these two.

Barro (1991) finds a significant negative effect of fertility on gross domestic product growth on a cross-section sample of countries. Similarly, Brander and Dowrick (1993) present an empirical study using a 107 country panel finding that high birth rates appear to reduce economic growth. From the theoretical perspective, the well known Solow model shows how population growth (treated as exogenous) causes capital dilution that in turns lowers output per worker (Solow, 1956). Becker, Murphy and Tamura (1990) and Moav (2005) show how fertility decisions can drive economies to poverty traps. Birdsall (1988) presents a complete review of a number of other studies on the macroeconomic consequences of population growth.

All these studies are consistent with the idea that any incentive to increase fertility rates (as might be foreign aid) will consequently have a negative impact on economic growth. For our analysis, however, I will focus on the determinants of fertility rates rather than it consequences.

2.1.1 The Determinants of Fertility

The determinants of fertility have been studied by economists for decades. The main motivation behind it is to understand what are the incentives involved in fertility decisions, and how are these decisions affected by changes in other economic conditions of the individual such as wages, human capital (and its rate of return), labor supply, consumption and so on.

The main theoretical approach for explaining the determinants of fertility is based on a household utility optimization problem in which, aside from goods consumption, both quantity and quality of children are part of the utility function of individuals (Becker and Lewis, 1973). Moav (2005) expanded this idea by developing an overlapping generations model in which parent's productivity as teachers increases with their own human capital. Moav explains how this fact will generate a multiple equilibrium (between and within countries) in which there is steady state of high human capital and low fertility (inducing faster economic growth) and a second steady state

of larger families with low human capital rates. Each household converges in the long run to its particular steady state depending on its initial level of human capital.

For this model, the maximization of the utility function is subjected to a budget constraint which contains time as a limited resource that can be allocated to leisure, work and childrearing. Parents can use their income to consume goods or invest in their children human capital (which measures children quality). Following changes in the budget constraint of the individuals, they will reach new decisions on consumption, fertility and investment in human capital. The final outcome of each household with respect to decisions on fertility could be explained mainly through two mechanisms:

- Suppose a household receives a non-wage cash transfer, regardless of its labor supply. This would generate a purely *income effect* resulting in families demanding more quantity of children and more quality for them (and of course more consumption for each of the other goods). Although the income elasticities of quantity and quality are expected to be positives, they do not necessarily have the same magnitude. Hence, some households will be better-off by increasing quantity more than quality or vice-versa.

- Suppose a household experience a subsidy on prices or services related to children (like food, schooling or parent's cost of time). This will generate a *substitution effect* on the utility maximization problem of the household. Subsidies in the cost of child quantity will generate an incentive for increasing the number of offspring within households. On the other hand, subsidies in child quality services or products will produce an incentive to invest in children's human capital. Consequently, a change in prices will also be followed by an *income effect* that might act in the opposite direction of the *substitution effect*. For example, for parents who experience a rise in their wages (i.e. opportunity cost of

time), the relative price of childrearing becomes higher. Thus, an increase in wages will induce a *substitution effect* between child quantity and other goods (including quality), in favor of the latter. Simultaneously, an *income effect* acts by making parents better off by demanding more of every good, including more children. Therefore, it is not possible to predict what the new equilibrium on quantity and quality demand will be, and it will depend on the specific utility function and initial budget constraint of the household.

In this theoretical framework, Moav (2005) explains how it is feasible that uneducated (poor) families will be better off by increasing the optimal quantity of children in response to marginal subsidies on costs related to children quality. This might happen since the cost of quantity (i.e. the cost of time) will probably stay cheaper in relation to the cost of quality. In other words, following subsidies in schooling or other "quality" costs, parents will be able to reallocate their resources to consume more of other goods, and this may still induce an increase in fertility, specially among individuals with low enough wages. Under the assumption that most of the foreign aid is intended to the poor, the aggregate effect on fertility rates will be perceived at the macro level in developing countries with high enough poverty rates.

Under an empirical framework, it is of our interest to identify the most relevant and measurable determinants of fertility that can generate, at least partially, the effects described above. For instance, it is important to identify what are the main variables that can affect the cost of quantity and quality of children within households. Behrman, Duryea and Skekely (1999) perform a empirical study which decomposes the determinants of fertility rates between countries and across time. The study shows that female schooling and health attributes are the strongest explanatory determinants of fertility.

Birdsall (1988) and Behrman, Duryea and Szekely (1999) present a breakdown of the determinants of fertility, based on theoretical and empirical frameworks. Next is a summary of such variables:

- **Parents' education and labor force participation:** Education attainment and work experience are strongly associated with wages. Education and work experience act in the utility function of individuals through the cost of time, because of the rate of return to education and experience. As explained before, higher wages will make opportunity cost higher and consequently, will also cause cost of children quantity to be more expensive. This in turn will be associated with a decrease in the desired number of children per family. Furthermore, regarding schooling - specially across women - educated women tend to have better understanding of contraceptive methods and present higher success in using them. Together with this, female education is associated with a higher age at marriage, having an effect on family planning. According to Birdsall (1988), "Female education (...) bears one of the strongest and most consistent negative relationships to fertility". Since the effect of schooling on fertility may differ across male and female individuals (Birdsall, 1988), the schooling measures in the empirical specifications are separated by genre.

- **Child Schooling and Health Services:** These variables are related mostly to the cost of children quality. Thus, changes in these determinants are associated with the quantity-quality trade off. For instance, a decline in the cost of children education or health services will possibly generate an incentive to increase optimal quality and decrease optimal quantity in the household utility maximization problem.

- **Non-wage income:** When controlling for parents' wages, extra income may generate an *income effect* inducing an increase both in the optimal quantity and quality of children across households. Poor individuals, for whom the opportunity cost is low, will be better-off by allocating most of this extra income to the children quantity. In the long run, however, continuous extra income receipts might induce exter-

nalities that will affect other economic circumstances - including some of the determinants of fertility - causing further effects on the optimal children quality-quantity decisions of households.

- **Markets and the roles of children:** Improvements in capital markets should lower fertility. Expanding capital markets - which allow private savings and social insurance - make children less relevant as as a form of *old age support*. In rural societies - where capital markets are underdeveloped - children have a high income-generating potential relative to their cost, presenting an incentive for larger families.

- **Infant Mortality:** As families plan their optimal number of children, high rates of infant mortality might affect this outcome. In sectors where infant mortality remains high, the number of births are usually higher than the desired outcome (due to replacement effect and risk aversion). The replacement effect may also take place based on life expectancy, since planning on family size take into consideration also adulthood survival.

- **Culture and Religion:** Patterns of culture or religion may influence the preferences of individuals and thus, the way women allocate their time between labor supply and childrearing. Moreover, different cultural and religious environments present different incentives for contraceptive methods use. Under the assumption that the effect of different cultures on fertility are constant or at least do not highly vary across time, it is possible to control for them empirically.

For our analysis it must be clear that foreign aid could have an impact on any of these determinants and thus affect fertility rates. Its effect will depend on how it is being perceived across households. If foreign aid is perceived as cash transfers, then it will generate a pure *income effect*. However, if foreign aid is perceived as a subsidy in prices of goods or services related to

children, it sill generate both mechanisms (*substitution and income effects*), and the final outcome it is very hard to predict. Moreover, goods or services (such as schooling, food, health and others) are not exclusively related only to quantity or to quality of children, but to both simultaneously, what makes this prediction even harder. It is to be noticed that at the macro-empirical level it is very difficult to identify what are the exact determinants of fertility that are being affected by foreign aid. However, in this paper I give some insights about this.[7]

In our empirical specification I carefully choose parameters which measure directly or are proxy for most of these determinants. On one side, when using ordinary least squares, being able to do this represents a clear advantage, since this will reduce the risk of omitted variable bias when adding foreign aid to the regression. However, on the other side, every time the specification is controlling for the determinants of fertility, it will be impossible to estimate the overall effect of aid on fertility rates (including it effects on the determinants themselves). Instead the estimate will represent the marginal effect of foreign aid either directly on fertility or through a number of other variables which are unobservable or not accounted for. It is to notice that the risk of endogeneity is present only whenever any of the determinants of fertility (both observables and unobservables) for which we do not control for, presents some partial correlation with foreign aid.

2.2 About Foreign Aid and its determinants

Foreign aid as we know it today is a post World War II phenomenon. It is not clear yet what are the main drivers of aid allocation. A Policy Research Report of the World Bank explains foreign aid as follows (World Bank, 1998):

[7]Also notice that foreign aid may have externalities which might affect fertility through other ways than just pure income or substitution effects, such as developing credit markets or generating changes in institutions or fundamentals of the economy. In this paper I mean to estimate the overall effect of foreign aid on fertility which also includes these externalities.

> *"From the start, it had twin objectives, potentially in conflict. The first objective was to promote long-term growth and poverty reduction in developing countries; the underlying motivation of donors was a combination of altruism and a more self-interested concern that, in the long term, their economic and political security would benefit if poor countries were growing. The second objective was to promote the short-term political and strategic interests of donors. Aid went to regimes that were political allies of major Western powers. Thus the strategic and developmental objectives were potentially, but not necessarily, at odds."*

Many economist studied through cross country regressions the allocation of foreign aid among recipients. All of them reached similar conclusions. Foreign aid is not always allocated based on economic development goals. Maizels and Nissanke (1984) found that bilateral aid flows fit best a model in which aid serves donors interest, whereas a second model, in which aid flows are meant to compensate for shortfalls in domestic resources fit multilateral aid distribution. Boone (1996) finds that *"(...)political factors largely determine aid flows(...)"* by finding significant estimators of political alliances dummies in his OLS and Fixed Effects regressions of foreign aid on a number of other variables. Alesina and Dollar (2000) present a study in which they found evidence that *"(...)factors such as colonial past and voting patterns in the United Nations explain more of the distribution of aid than the political institutions or economic policy of recipients."* These studies use this fact as an explanation for the ineffectiveness of foreign aid (Alesina and Dollar, 2000). On the other hand, GDP per capita still appears as one of the strongest explanatory variables of foreign aid (Alesina and Dollar, 2000; Boone 1996). However, there is no evidence that demographic variables such as infant mortality and life expectancy measures have any explanation power at all in foreign aid allocations (Boone, 1996).

Foreign aid from OECD countries increased significantly during the seventies and eighties (see figure 1). Private aid flows have also started to increase relative to official aid assistance. In the seventies and eighties, official aid (bilateral and multilateral sources) represented about half of total aid flows. As for 1996, official aid represents only a quarter of the total aid flows (World Bank, 1998).

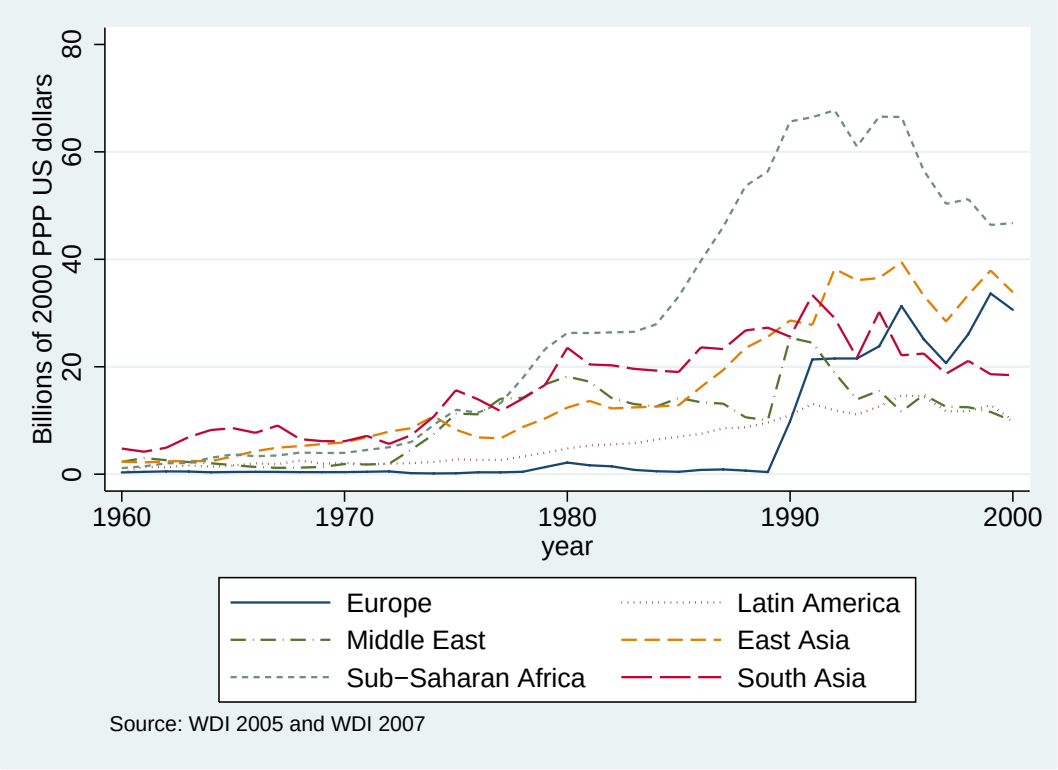


Figure 1: Total ODA and Official Aid by World Region 1960-2000 (in Billions of 2000 PPP US dollars)

However, following the review in the previous chapter, it is widely recognized that foreign aid has barely proved itself as the solution to development problems. As the World Bank report (1998) explains:

> *"Sadly, experience has long since undermined the rosy optimism of aid financed, government led, accumulationist, strategies for*

development. Suppose that development aid only financed investment and investment really played the crucial role projected by early models. In that case, aid to Zambia should have financed rapid growth that would have pushed per capita income above $20,000, while in reality per capita income stagnated at around $600."

Some explanations for these failures are corruption or bad policies (Burnside and Dollar, 2000). Yet, in spite of the failure of foreign aid, it remains as one of the primary solutions to economic stagnation and poverty across developing countries (World Bank, 1998). Therefore, the debate on its direct and indirect effects on other economic outputs, along with the way it should be distributed, it is a highly relevant debate for economists and policy makers nowadays.

3 Data Sources and Empirical Model

The main goal of this paper is to determine if foreign aid has any direct and causal effect on fertility rates at macro levels. To do this, we estimate the fertility equation with foreign aid being one of the covariates. The model to estimate is:

$$fert_{it} = \beta_0 + aid_{it}\beta_a + y_{it}\beta_+ z_{it}\beta_z' + \sigma_i + \gamma_t + \delta_r t + \epsilon_{it} \tag{1}$$

Where i indexes countries, and t indexes time and r regions. $fert_{it}$ is the fertility rate per woman, aid_{it} is aid flows relative to GDP, y_{it} represents the logarithm of per capita GDP, z_{it} is a Kx1 vector of exogenous variables that affect fertility and might be correlated with aid, σ_i and γ_t correspond to country specific fixed effects and time fixed-effects respectively, $\delta_r t$ is a vector of regional linear time trends, and ϵ_{it} is a mean zero scalar.

Our variable of interest is β_a, which measures (assuming strict exogeneity)

the marginal effect of one percentage point of aid as a share of the GDP on the fertility rate per woman.

σ_i captures all the country fixed effects (such as colonial history or geographic conditions) affecting fertility which also might be correlated with aid flows. Changes in the average level of fertility rates across time will be absorbed by γ_t, the period fixed effects common to all countries. This in fact will capture part of the common decline of the fertility rates across time. $\delta_r t$ will control linearly for specific regional shocks on fertility across time.

The vector z_{it} includes a number of exogenous variables which control for most of the determinants of fertility reviewed in the previous chapter, such as: infant mortality below one and five years, life expectancy at birth, share of female workers in the labor force, rate of rural population and schooling variables both across the female and male population.

The data was compiled mainly from the World Bank Development Indicators (World Bank, 2005; World Bank, 2007), which includes data on foreign aid, fertility rates and other macroeconomic variables used for the analysis from 1960 to 2004, which will be the sample period. Consistent with the literature, we constructed the main independent variable of interest by dividing Official Development Assistance (ODA) and Official Aid in current US dollars by the GDP per capita in current US dollars, resulting in the share of net ODA and Official Aid in the gross domestic product of each country per year.[8] ODA consists of net disbursements grants plus concessional loans that have at least a 25 percent grant component (World Bank, 1998) to promote economic development and welfare in recipient economies. However, in practice, ODA is virtually all grants (Boone, 1996). Official Aid refers to aid flows from official donors to the transition economies of Eastern Europe and the former Soviet Union and to certain advanced developing countries and territories as determined by DAC. Both types of aid can be divided into bilat-

[8]Negative numbers of this measure indicate that the country was a net donor in that specific period.

eral and multilateral components. The former is assistance administrated by agencies of the donor governments, while the latter is aid administrated by international agencies such as the United Nations Development Programme or the World Bank (World Bank, 1998). we use the ODA and Official Aid share of the GDP variable without distinction of grants, loans, bilateral or multilateral. If the variances across all these types of aid are similar, the results will be robust to any subset of aid. Furthermore, the World Bank report (1998) states regarding distinction between loans and grants: *"The macroeconomic effects of aid are the same regardless of which measure of aid is used".* we restrict the dataset to countries which were never net donors of ODA and Official Aid during the sample period (1960-2004).[9]

The dependent variable - total fertility rate per woman - is defined as the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with prevailing age-specific fertility rates. Fertility rates are documented in WDI on a yearly basis for a partial set of countries, but it is included for most countries every five years, starting in 1962 through 2002. Due the lack of availability of fertility rates on a yearly basis, we averaged the variables in the dataset to nine five-years periods starting from 1960-1964 through 2000-2004.

y_{it} is measured making use of the Real GDP per capita (in 2000 US dollars constant prices, Laspeyres) from the Penn World Tables 6.2 (Heston, Summer and Aten, 2006) . Additional macroeconomic variables include measures on average schooling for women and men above age 25 per country and time period as measured by Barro and Lee (2000). Since the number of observations for which the educational attainment variables are available is much smaller than the base sample size, these covariates are inserted sequentially in the regressions. In the rest of the paper, we refer to the sample which includes the schooling variables as the reduced sample. The source of all the other variables in the vector z_{it} corresponds to the WDI.

[9]The results are robust to the inclusion of net donors (see Table A4 in the Appendix).

Finally, the data is merged with dataset on natural disasters from the Emergency Events Dataset website. On a later chapter, this data will be used to instrument foreign aid and thus establishing the causal effect of aid on fertility rates.

The base panel data set consists of 96 countries across 9 five-years periods, from 1960-1964 to 2000-2004. The countries in the sample respond to two conditions: (1) they were always foreign aid net receivers during the sample period (as measured by ODA and Official Aid) and (2) their population was at least a million people during at least one period of time over the whole sample period. The use of only "large countries" in the analysis is to avoid an upward bias of the effect of the share of ODA in the GDP on fertility rates. The small countries dropped from the sample tend to have a much higher mean of ODA and Official Aid as a share of GDP (16.73% in constrast to 7.79% of the rest of the sample), being many of them developing countries with high fertility rates. In any case, the main results stays unaffected by their inclusion.[10] The list of all countries in the sample is covered in Table A1. The number of observations, and therefore the number of countries, used in the regressions will depend on the control variables availability.

Summary statistics for the key variables are presented in Table 1. The mean fertility rate is 5.28 children per woman for the base dataset, being half of the observations with a fertility rate below 5.84. ODA and Official Aid represents in average 7.5% of the GDP, with half of the observations having less than 4.45% of the GDP. In a typical low-income country, foreign aid is the main external source of finance, averaging between 7 and 8 percent of the GNP (World Bank, 1998).

The real gross domestic product, in 2000 US dollars, averages 3038 dollars per capita in the sample. The maximum value of the real GDP is 21,348.12 real 2000 US dollars, which corresponds to Israel in the 2000-2004 period. [11]

[10] See Table A5 in the Appendix.

[11] Consistently with the literature, robustness test were made excluding Israel and Egypt from the sample, which present an irregular aid trend since the Camp David accords. Their

However, 90% of the countries in the sample have a real GDP lesser than 7000 US dollars (in constant US dollars 2000 prices). As can be inferred from the statistics, most of the countries in the sample are developing countries. Table A2 provides some country-specific information about the main variables of focus.

3.1 Explaining Fertility

The dependent variable of the study is the fertility rate per women. In order to understand the behavior of the determinants of fertility using the sample data, we estimate the model:

$$fert_{it} = \beta_0 + y_{it}\beta_+ z_{it}\beta_z' + \sigma_i + \gamma_t + \delta_r t + \upsilon_{it} \tag{2}$$

Table 2 presents results of the estimation of model (2) being z_{it} the determinants of fertility. In the first 8 columns, the data used is not limited to the base dataset of the analysis, and they include also high income countries for which data of the WDI is available.[12] The variables in columns 1 through 5 can explain at most 84% of the variance in fertility rates accross countries and time. Adding regional dummies and a regional linear time trend in the next two columns explain slightly more, but when adding country specific fixed effects the explanatory power of all the covariates together raises to 95%. The signs of all the covariates are consistent with the theory and previous literature (Birdsall, 1988; Behrman, Duryea and Szekely, 1999).

When reducing the sample to both the base and reduced dataset of this analysis (columns 9 and 10 respectively), the explanatory power stays above 93%. Therefore, by making use of all the explanatory variables (including the country specific fixed-effects, time dummies and the regional linear time trend) it is possible to explain most of the cross-country change in the fertility

exclusion does not affect the results (see Table A5 in the Appendix).

[12] All the data is collapsed to five-years periods as the base dataset.

rates in the period of time covered by the sample.

We can deduce from these results that the determinants of fertility that were reviewed in the previous section account for most of the variation of fertility rates in our sample.

4 The effect of Foreign Aid on Fertility

4.1 OLS Estimates

Table 3 presents OLS estimates for model (1) omitting the σ_i component. There are two main disadvantages to this method. First, country specific characteristics (i.e. colonial past, location, climate conditions and other fixed attributes) are not controlled for, and the error term becomes $\sigma_i + \epsilon_{it}$. Hence, the estimates of β_a possibly present omitted variable bias since aid allocations are associated with σ_i: colonial past and long term alliances between countries (Boone, 1996; Alesina and Dollar, 2000). Second, the results of β_a will represent the effect of foreign aid either directly on fertility rates or through unobservables or unmeasured covariates which are not present in the regressions. Hence, through OLS it is not possible to study the overall effect of aid on fertility, because omitting variables in the regressions would possibly result in biased estimators for β_a. This is because the allocation of aid might be correlated with health and schooling outcomes like the ones we are controlling for.

The first column presents a simple and naive specification which results in a positive and significant estimate for β_a. Column 2 to 4 include sequentially most of the determinants of fertility (but schooling). All these regressions present positive estimates for β_a, and some of them significant, ranging from 0.010 to 0.014. However, the estimates could be biased since there is no control for σ_i. Column 5 includes control for absolute latitude and regional fixed effects, trying to reduce some of the bias caused by omitting σ_i. In this specification the variable of interest losses significance. The last column

repeat the previous specification but including the schooling variables, and thus using only the reduced sample. This last column shows positive and significant estimates for β_a standing at 0.024 additional children per woman for every percentage point increase of aid as a share of the GDP. However, the use of the reduced sample arises the possibility that the results suffer of selection sample bias. This is covered in the next sub-section.

These estimates are unbiased only under the assumption that, once controlling for all the determinants of fertility (not including country specific fixed effects), foreign aid is not correlated with the error term. Being this assumption hardly reliable, we turn to make the analysis through fixed effects estimation.

4.2 Fixed Effects Estimates

Table 4 presents the results of estimating model (1) using the Fixed Effects estimator. By using this method we overcome endogeneity problems that arises due to the correlation between country fixed specific characteristics and foreign aid allocations. The estimates of β_a are unbiased only under the *strict exogeneity* assumption:

$$E(\epsilon_{it}|aid_{it}, y_{it}, z_{it}, \sigma_i, \gamma_t, \delta_r t) = 0 \tag{3}$$

However, still it is not possible to study through this method the overall effect of aid on foreign aid, since omitting variables could produce bias on the estimates of β_a. Hence, the results of this section may represent the effect of aid on fertility through other variables which are not accounted for, such as non-wage cash transfers to families - representing a pure *income effect*, or subsidies in the cost of food, which in case of poor families might increase their decision on the optimal number of children. Another disadvantage of this method is that, even though it controls for countries' fixed effects, the strict exogeneity assumption does not necessarily hold.

The first column presents a naive specification controlling only for y_{it}, thus obtaining biased estimates for β_a. Column 2 through 4 controls progressively for all the variables available for the base dataset of 95 countries.[13] Based in the estimates in all these columns, there is no evidence that the effect of foreign aid on fertility rates is statistically different from zero. However, columns 5 shows a positive and significant estimate for β_a, and this happens when controlling for the schooling variables. As explained before, the availability of the schooling variables is restricted to observations for only the 50 countries of the reduced dataset.[14] From here arises the possibility that the estimate of the variable of interest in column 5 is driven by sample selection bias. Column 6 shows an informative regression identical as column 4 but only on the reduced sample. It can be seen that the estimate for β_a, although not statistically different from zero, is very similar in magnitude than the one of column 5, making a strong case that the reduced sample generates a sample selection bias.

It is of our interest to understand if the main variables of interest are correlated with the probability of being in the sample or not. The distributions of fertility and foreign aid variables across both datasets are strongly similar. In the reduced dataset ODA and Official Aid (as a share of GDP) averages 7.04 percentage, with a standard deviation of 7.57, and fertility averages 5.56 with a standard deviation of 1.52, which are close to the statistics of the base dataset presented in Table 1. Figure 2 presents a scatter of the foreign aid values against the fertility rates both in the base and reduced dataset. It can be seen that there is virtually no difference in the distribution of these variables across both datasets. Figure 3 also presents the Kernel Density lines for fertility rates and foreign aid flows in both the base and reduced samples. The lines are almost superimposed one against the other, meaning

[13] Libya was dropped from the sample since it consists of a single point of time observation, lacking of within variation.

[14] Burundi and Mauritania were dropped out of the sample since each country had a single point of time observation in the reduced dataset

that the distribution of both datasets are highly alike.



Figure 2: Scatter of ODA and Official Aid (as a share of GDP) Vs. Fertility Rates per woman in both the base and the reduced sample

A more analytical approach is presented in Table 5. This table presents the results of a probit model which intends to measure the probability of being in the reduced sample. The regression included as regressors aid_{it}, $fert_{it}$, y_{it} and Z_{it}. As can be seen from the results, when controlling for all the variables, neither specific levels of fertility rates or aid flows explain the probability of being in the sample. However, in order to assure that the results of column 5 in table 4 lack of sample selection bias, one must assume that the error term of the selection equation is uncorrelated with ϵ_{it}. Column 6 in table 4 presents a case against this assumption due to the similarity in magnitude of β_a estimate with column 5. Hence, the reliability of this assumption cannot be fully proved. Any presence of unobservables which are correlated both with fertility and foreign aid (violating the strict exogeneity assumption), or correlated with the probability of being in the reduced sample (generating sample selection bias) can be causing distortion

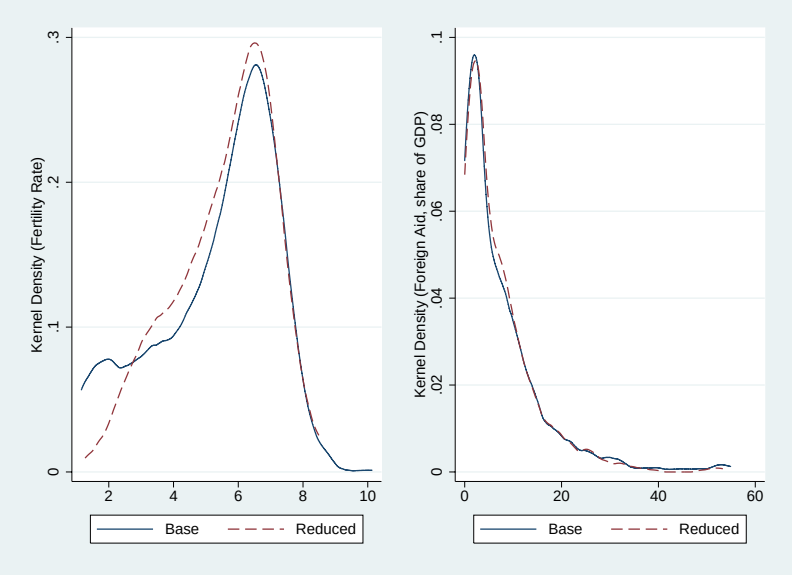


Figure 3: Kernel Densities of ODA and Official Aid (as a share of GDP) and Fertility Rates per woman in both the base and reduced dataset

on the results. This possibility is covered in the next section.

5 Establishing a causal effect: how many foreign aid dollars produce another child?

Preceding sections demonstrate a positive correlation between foreign aid and fertility. Yet, it cannot be proved that this correlation actually represents a causal effect of foreign aid on fertility rates. In this section we instrument for foreign aid making use of natural disasters data on neighboring countries.

The number of natural disasters in neighboring countries of X is a valid instrument if (1) they have a direct impact on foreign aid flows to country X and (2) they are not correlated with the children production of country X (but only and exclusively though the effect of aid allocations). There are several reasons why this claim is consistent. First, natural disasters

are exogenous. Moreover, the relevant claim is that natural disasters in country Y are exogenous to the fertility decisions of households in country X. However, given the case that natural disasters in neighboring countries have any effect in the fertility rates, the impact will be translated in terms of the determinants of fertility, or directly through regional shocks in the specific point of time of the disaster (i.e. refugees, migration, etc). Hence, we include in 2SLS sequentially the determinants of fertility. The robustness of the results hints that this is not the case.

The new model to estimate becomes:

$$fert_{it} = \beta_0 + \hat{aid}_{it}\beta_a + y_{it}\beta_+ z_{it}\beta'_z + \sigma_i + \gamma_t + \delta_{rt} + \epsilon_{it} \tag{4}$$

In which $\hat{aid}_{it}$ is the first stage regression fitted values of foreign aid, and the rest of the specification is identical to model (1). The instrumental variable can be properly defined as the number of natural disasters that occurred in neighboring countries (that belong to the same region)[15] during the same period of time. The data was acquired from the Emergency Events Dataset, and summed up to five-years periods to suit the panel data sample. we restricted the disasters dataset only to data on earthquakes, floods, wind storms, volcanoes and slides, under the assumption that these disaster types are exogenous and of sudden natural occurrence.[16]

There are two main advantages of instrumenting for foreign aid. First, that the estimates of β_a will be unbiased. Second, the exogeneity of foreign aid flows in the estimation will allow us to omit certain determinants of fertility without the risk of omitted variable bias, and thus being able to study the overall effect of foreign aid. If foreign aid is having also effects on

[15]Regions as defined by the World Bank: North America, Latin America and the Caribbean, Europe, Sub-Saharan Africa, East Asia and the Pacific, Middle East and North Africa, and South Asia.

[16]Other disaster types in the dataset, such as epidemics, extreme temperature and droughts, are more predictable and therefore could have an effect not only through changes in aid flows but directly on the fertility production function of the countries non-affected by the disasters.

schooling or health outcomes and consequently any effect on fertility rates, our estimate will capture this when omitting the relevant covariates from the regression.

Table 6 presents summary statistics of the natural disasters merged in the sample. There are 2993 natural disasters reported distributed over 3170 country-year observations of the base dataset.[17] On average, there are 6.36 natural disasters in every country every year. The average number of killed and injured people per disaster is around 400 and 800 respectively. However, 90 percent of the disasters had less than 226 killed victims and less than 200 injured, which in terms of total population can be classified as small impact disasters. This suggests that most of the disasters are not expected to have direct impact on the fertility rate of localities outside the limits of the country in which they occurred. We do expect however changes in aid allocations in response to natural disasters.

Government spending on humanitarian emergencies is dominated by the United States (Cohen and Werker, 2007). The Congressional Budget Justification of the American USAID agency, an independent federal government agency that manages foreign aid policy, specifies that foreign aid is budgeted in advance by geographical regions (USAID, 2008). Each budget justification has an specific clause for humanitarian assistance, which in 2007 was above USD 10 billions. However, because of the unanticipated nature of many disasters, humanitarian aid budget allocations often increase throughout the year as demands arise (Nowels and Tarnoff, 2004). Hence, in the presence of unexpected natural disasters, some countries will suffer from a decrease in their aid allocations due to the need of give immediate assistance to the affected countries. In general, it is possible for governments to adjust their aid on short notice (Kuziemko and Werker, 2006).

This claim is consistent with the dataset: a larger number of natural

[17]The table is presented on terms of single years. Table A3 presents a breakdown of the disasters per country over the 1960-2004 period that are part of the base dataset

disasters in neighboring countries of country X lowers significantly the foreign aid flows to the latter. Evidence of this is the first stage regressions, which are showed in Table 7A. For the different specifications, it can be seen that an additional natural disaster in the neighbor countries will decrease the share of foreign aid of the GDP in a range of 0.044 to 0.051 percentage points, being this estimate statistically significant in all specifications with p-values below 0.01. It can be seen that other variables are consistent with intuition on the allocation of aid.

At the country-level, a graphical representation of what happens is presented in figures 4 and 5. Figure 4 reveals data from Congo across time (from the period 1960-64 to 2000-2004). The left panel describes the behavior of both the number of natural disasters among Congo's neighbors, and foreign aid flows received by Congo, while the right panel presents a version of these two variables "cleaned" from their perceptible time trends (in order to take into account the relativeness of each period). It is easily noticeable that in the presence of a large amount of natural disasters in the region (excluding Congo), the foreign aid receipts for Congo drop substantially.

Figure 5 shows how Haiti's foreign aid receipts behave similarly to Congo's in response to natural disasters in Latin America and the Caribbean region (excluding Haiti). Again, the right panel is a "detrended" version of the left panel. This behavior is consistent mostly among all countries in the sample.[18]

The exogeneity of natural disasters in neighbor countries and its remarkable impact on foreign aid of each country makes this a plausible instrument to estimate the effect of foreign aid on fertility.

Table 7B shows 2SLS results using the number of natural disasters in neighbor countries as an IV. This time, the naive specification of controlling only for GDP per capita in the first column result in a positive and significant coefficient for the effect of foreign aid on fertility per woman, standing on

[18]Figures A1 and A2 in the appendix compiles the "detrended" version of these graphs for all countries in the sample.

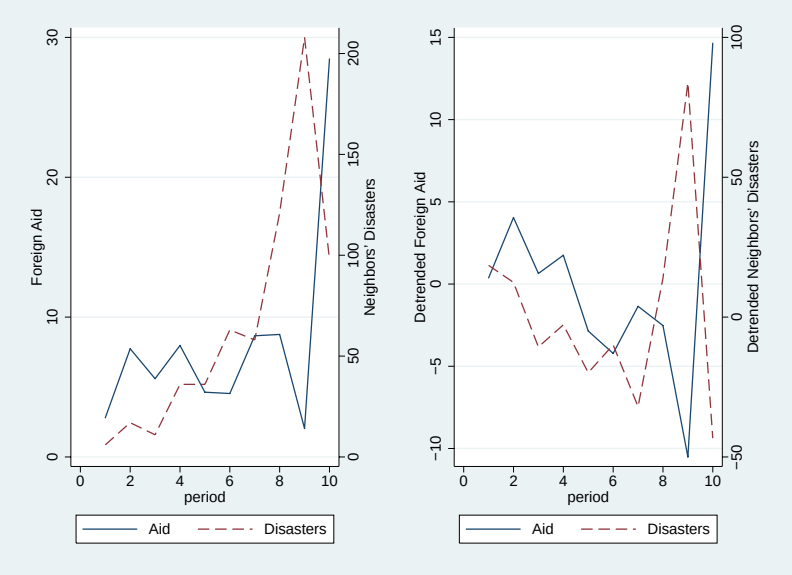


Figure 4: ODA and Official Aid in Congo in response to natural disasters in its neighbors

0.045 additional child per woman for every percentage point increase of aid as a share of GDP. This effect includes the overall effect of aid flows, also through its effects on schooling, health and other outcomes that explain fertility. Columns 2 and 3, which control for labor market and health measures, also present similar estimates of foreign aid on fertility, which are both positive and statistically significant. The fourth column presents a slight smaller - but still robust - estimate for β_a in magnitude, not statistically significant, even though its p-value stands at 0.109. The last column includes schooling variables, which drop the sample by slightly less than half, and the estimate for β_a is 0.054, statistically significant at the 5% level. The results show that the OLS and FE estimates were downward biased. This is consistent with the intuition. Any unobservable measure of "development", such as human capital accumulation, that for sure affects fertility decisions across households, will be negatively correlated with aid flows.[19]

[19]Similar regressions like the ones in Table 7 were also made using total fertility rate

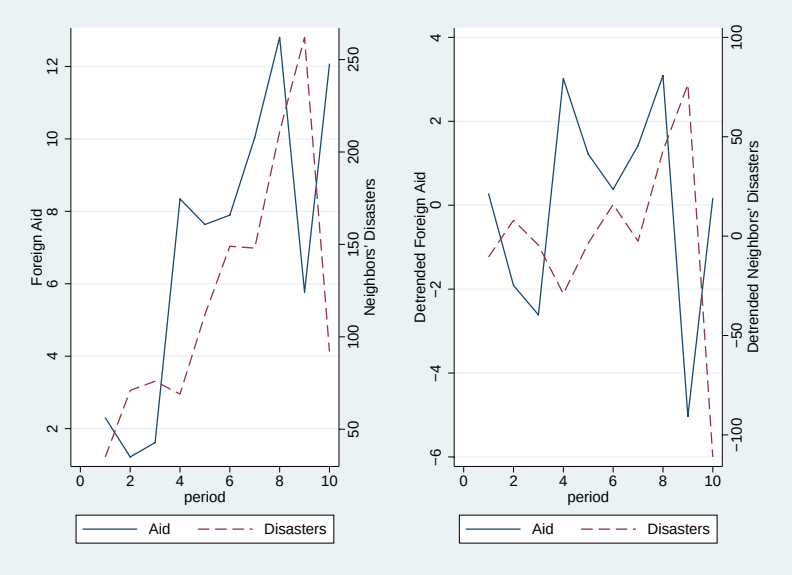


Figure 5: ODA and Official Aid in Haiti in response to natural disasters in its neighbors

The table also reports the first stage F test. The values suggest that the we are not in the presence of a weak instrument. The robustness of the results across all the specifications suggest that β_a is unbiased, and the results are consistent with the hypothesis that foreign aid is having a causal and positive effect on the fertility rates of the developing countries.

Furthermore, the robustness of the results give some insights about the mechanism that is working behind this relationship. The effect of aid on fertility stays robust in the presence of other determinants. This allow us to infer two claims. First, aid flows is having virtually no effect on health, labor, market development and schooling outcomes which can account for variations of fertility and are present in the regressions. Second, consequently, aid flows are increasing fertility through other variables which are not being controlled

one period ahead as the dependent variable, since the effects of aid might not be seen immediatly. The results are robust to the ones presented in the paper, being slightly higher and more significant in almost most of the specifications.

for, such as cash transfer to families, subsidies in food costs, unobservable variables related to culture or institutions and others. Therefore, aid is being perceived as non wage extra income that is inducing a purely income effect, or perceived as a subsidy in children costs (aside from the ones that are being controlled for), causing that the increase in the quantity of children is the dominating effect in the household utility maximization problem. At the macro level it is not possible to identify exactly what is the main driver of this causal relationship. However, an empirical analysis at the household level could give a better explanation to this phenomenon. This, however, is out of the range of this research.

The estimated effect averages 0.045 additional child per woman for every percentage point increase of ODA and Official Aid receipts as a share of the GDP. In other words, this means an additional child for about every 22 women. If we take Tanzania as an example, this marginal effect could be translated to over 300 thousand children per one percentage point increase in the share of foreign aid in the GDP of Tanzania, or above 1.5 million new children for one standard deviation increase of the same parameter (based on 2000-2004 average population).[20] Figure 6 presents rough estimations of one percentage point increase and one country-specific standard deviation increase of foreign aid as a percentage of GDP for a selected sample of the countries in the base dataset for the period 2000-2004. The numbers suggest that the impact on population growth is non negligible, providing another possible explanation to the lack of efficacy of foreign aid.

[20] This was computed using as the childbearing population the share of female population aged 15-50 (assuming a uniform distribution of ages between the group aged 15-64).

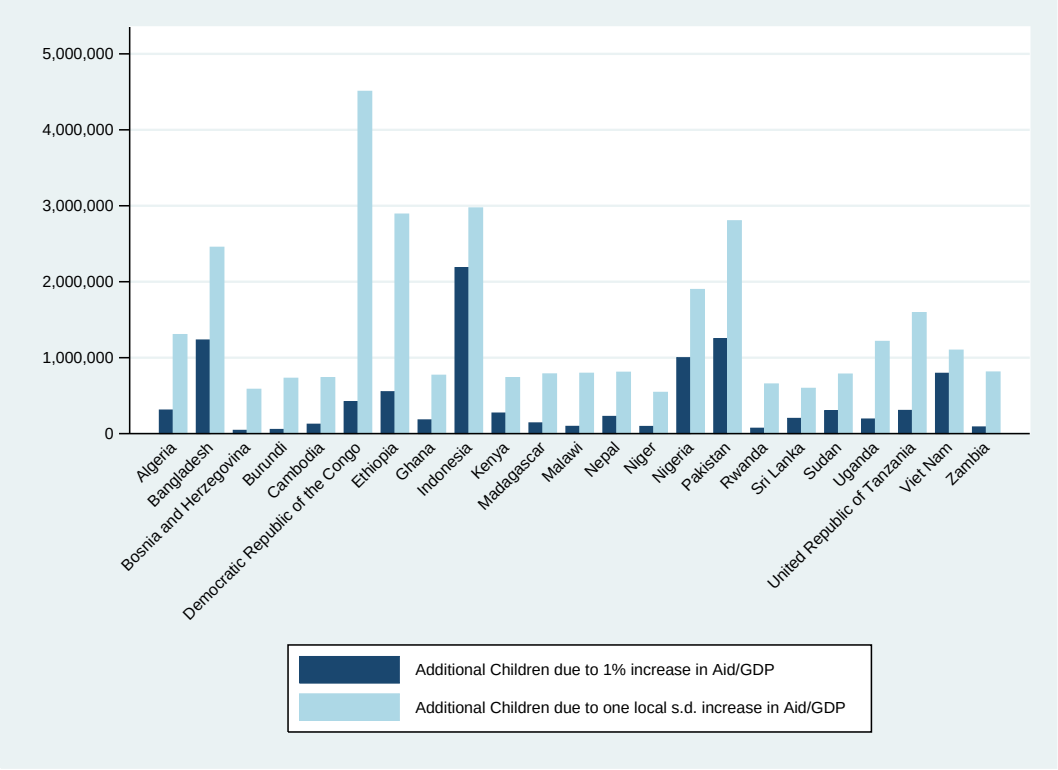


Figure 6: Estimated number of additional children due to an increase in aid flows, per country (based on 2000-2004 average population)

6 Exploring Further the Effectiveness of Foreign Aid

Having found a proper instrumental variable for foreign aid, we can extend this specification to study its effect on other dependent variables.

The robustness of the results in table 6 allow us to assume strict exogeneity of the first stage fitted values of foreign aid flows. Therefore, it is reasonable to assume strict exogeneity of following empirical model:

$$outcome_{it} = \beta_0 + a\hat{id}_{it}\beta_a + y_{it}\beta_+\sigma_i + \gamma_t + \delta_r t + r_{it} \tag{5}$$

Similarly to model (1), i indexes country, t indexes time and r indexes region. $outcome_{it}$ is a vector of economic variables of interest which foreign aid intents to influence. $\hat{aid}_{it}$ is the instrumented version of the foreign aid variable (using natural disasters in neighboring countries), y_{it} is real GDP per capita, σ_i is a vector of country fixed effects, γ_t is a vector of time common effects, δ_{rt} represents a regional linear time trend and r_{it} is a mean zero residual term.

By making use of this simplistic specification, it is possible to estimate consistently the marginal effect of foreign aid flows on other variables such as labor market outcomes, health outcomes, investment or economic growth. Table 8 presents results of 2SLS regressions which estimate the effect of foreign aid flows on seven economic outcomes. Regarding most of the variables, there is no evidence that foreign aid flows have any effect of them. The share of the total labor force in the population and the share of female workers in the labor force is not being improved by aid flows. Likewise, infant mortality is not being affected by foreign aid flows. However, regarding life expectancy, which is a proxy variable for general health determinants of the population, the results show a positive and significant coefficient for foreign aid as a share of GDP. Regarding schooling outcomes, there is no evidence of improvement measured by average years of schooling in the population. It can be noticed that the sign of the estimate appears negative, being consistent with the theoretical framework.[21] Regarding economic growth variables, there is no evidence that investment shares are positively affected by foreign aid flows. Lastly, column 7 shows results when using real GDP growth per capita as the dependent variable, finding no evidence that it is being affected by foreign aid flows.

From this analysis can be inferred that foreign aid is not having impact in labor markets or schooling outcomes of developing countries. Similarly, there is no evidence that aid is having any impact on the determinants of growth

[21] In this case the relevant sample is the reduced sample.

or economic growth itself. Regarding health outcomes the results are not clear. Aid appears to be effective in increasing the life expectancy in developing countries, but is having no effect on infant mortality whatsoever. The allocation of aid flows to distribute medicines to combat the HIV epidemics in Africa could give a proper explanation to this phenomenon.

7 Concluding Remarks

Even thought foreign aid flows as we know them today started immediately after World War II, only during the last decade or two economists started to estimate its impact and effectiveness. This paper opens a new path of research on the study of foreign aid. Most of the research until now was limited mostly to the effect of aid on economic growth, ignoring other determinants of economic prosperity, such as fertility rates.

The primary question of this research was whether foreign aid can explain partially the high fertility rates in developing countries. By making use of natural disasters in neighboring countries as an instrumental variable to foreign aid, we have found that aid have a positive and significant effect on fertility rates across countries, and found no evidence that aid flows are improving other economic outcomes, except life expectancy.

There are two important contributions in this research. First, the empirical strategy of instrumenting for foreign aid makes allow us to establish a causal relationship between foreign aid and fertility. Recent literature on foreign aid flows lacks of proper instrumental variables to overcome endogeneity issues in their specifications. Therefore, the results presented in them, not only are not robust,[22] but are not reliable enough.

Second, the sole idea of examining the effect of foreign aid on the determinants of growth, and not growth itself, can lead us to conclude that aid policies should be aimed to generate the proper incentives so that it will

[22] Roodman, 2007

impact the determinants of growth on the right direction, and therefore, in the long run, aid flows would contribute to economic growth.

An important point is that this paper does not suggest that aid flows should be eliminated, but that the allocation of aid both across countries and projects should be done carefully enough. This in order to avoid undesired incentives and creating a "medicine that worsens the illness".

The fact that aid flows in the last decade have decreased might be a consequence of the recent global debate on the effectiveness of foreign aid. This is not necessarily a bad signal. It might also hint of a process in which development agencies are improving efficiency on their aid allocations, distributing less aid on more efficient projects. If this claim happens to be true, then we should expect aid to be much more effective in the near future, and see the developing world enjoying its fruits.

Table 1 - Summary Statistics

	N	Mean	SD	Min	Median	P75	P90	Max
ODA and Official Aid (as percentage of GDP)	608	7.51	8.91	0.001	4.45	10.04	18.32	54.91
Fertility rate, total (births per woman)	608	5.28	1.87	1.15	5.84	6.70	7.20	10.13
Real per capita GDP (Constant Prices: Lasperyres)	608	3038.05	3129.22	294.22	1941.60	3748.32	6968.92	21348.12
Mortality rate, infant (per 1,000 live births)	592	92.86	49.04	4.00	94.80	127.00	157.00	255.00
Mortality rate, under-5 (per 1,000)	592	145.20	85.91	4.50	144.00	204.50	255.00	450.00
Rural population (% of total population)	608	65.78	18.93	8.52	67.68	81.35	88.58	97.92
Labor force, female (% of total labor force)	608	38.71	9.55	6.21	41.08	46.03	48.91	53.16
Life expectancy at birth, total (years)	608	54.75	10.81	34.71	52.70	64.63	70.66	79.03
Average schooling years in the total population (>25)	394	2.83	1.98	0.04	2.34	3.95	5.48	9.90
Average schooling years in the female population (>25)	393	2.28	2.05	0.00	1.54	3.32	5.16	9.74
Average schooling years in the male population (>25)	393	3.41	2.00	0.08	3.10	4.59	5.97	10.09

Table 2 - The determinants of Fertility

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log Real Per Capita GDP	-1.272 ***	-0.113 **	-0.205 ***	-0.144 ***	-0.268 ***	-0.174 **	-0.270 ***	-0.050	-0.097	-0.085
(Constant Prices: Lasperyres)	(0.036)	(0.051)	(0.070)	(0.051)	(0.073)	(0.075)	(0.080)	(0.107)	(0.108)	(0.115)
Labor force, female		0.001	-0.003	0.001	-0.004	-0.001	-0.001	0.007	0.00101	-0.005
(% of total labor force)		(0.004)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)
Mortality rate, infant		0.003	0.006 **	0.003	0.005 **	0.004	0.003	0.003	0.00163	0.007 ***
(per 1,000 live births)		(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Mortality rate, under-5		0.012 ***	-0.001	0.010 ***	-0.003	0.003	0.002	0.022 ***	0.0255 ***	0.016 **
(per 1,000)		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.006)	(0.007)	(0.007)
Life expectancy at birth, total		-0.062 ***	-0.034 ***	-0.059 ***	-0.028 ***	-0.013 ***	-0.011 **	-0.0096	0.00876	-0.003
(years)		(0.003)	(0.004)	(0.003)	(0.004)	(0.005)	(0.005)	(0.007)	(0.011)	(0.010)
Rural population		-0.099 ***	-0.073 ***	-0.102 ***	-0.077 ***	-0.063 ***	-0.059 ***	0.016	0.0211 **	0.007
(% of total population)		(0.009)	(0.011)	(0.008)	(0.010)	(0.011)	(0.011)	(0.012)	(0.010)	(0.011)
Average schooling, female			-0.114 ***		-0.095 ***	0.024	-0.002	-0.033		-0.137 *
(years, population above age 25)			(0.037)		(0.035)	(0.037)	(0.038)	(0.063)		(0.076)
Average schooling, male			-0.058		-0.064 *	-0.142 ***	-0.124 ***	-0.221 ***		-0.272 ***
(years, population above age 25)			(0.040)		(0.038)	(0.041)	(0.041)	(0.053)		(0.070)
Sub Saharan Africa						0.237	0.902 **			
						(0.212)	(0.383)			
South Asia						(-0.491)**	(0.273)			
						(0.210)	(0.406)			
Middle East and North Africa						0.661 ***	2.101 ***			
						(0.201)	(0.433)			
Latin America and the Caribbean						0.263	1.271 ***			
						(0.163)	(0.348)			
Europe						-0.577 ***	-0.556 *			
						(0.148)	(0.326)			
East Asia and the Pacific						-0.251	0.345			
						(0.165)	(0.387)			
Constant	14.9 ***	12.63 ***	12.26 ***	13.090 ***	12.990 ***	10.080 ***	10.090 ***	3.791 ***	3.495 **	5.469 ***
	(0.294)	(0.698)	(0.808)	(0.665)	(0.781)	(0.941)	(1.056)	(1.391)	(1.382)	(1.390)
Time Fixed Effects	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	No	No	No	No	No	Yes	Yes	Yes
Linear Region Time Trend	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Research Sample Only	No	No	No	No	No	No	No	No	Yes	Yes
Observations	1,337	1,170	800	1,170	800	800	800	800	592	386
Adjusted R-squared	0.51	0.81	0.83	0.82	0.84	0.86	0.87	0.95	0.95	0.932

Legend: *** p¡0.01, ** p¡0.05, * p¡0.1
Notes: Robust standard errors in parentheses, clustered by country.

Table 3 - Ordinary Least Squares Results

	(1)	(2)	(3)	(4)	(5)	(6)
ODA and Official Aid	0.015 *	0.014 *	0.010	0.012 *	0.009	0.024 **
(% GDP)	(0.008)	(0.008)	(0.006)	(0.006)	(0.006)	(0.011)
Log Real Per Capita GDP	-0.456 **	-0.544 ***	-0.172	-0.004	-0.030	0.151
(Constant Prices: Lasperyres)	(0.180)	(0.160)	(0.150)	(0.150)	(0.150)	(0.200)
Labor force, female		-0.024 *	-0.026 **	-0.032 ***	-0.028 **	-0.004
(% of total labor force)		(0.012)	(0.011)	(0.011)	(0.012)	(0.014)
Mortality rate, infant			0.005	0.003	0.007	-0.002
(per 1,000 live births)			(0.006)	(0.007)	(0.006)	(0.007)
Mortality rate, under-5			0.001	0.003	-0.000	0.004
(per 1,000)			(0.004)	(0.004)	(0.004)	(0.005)
Life expectancy at birth, total			-0.048 **	-0.034 *	-0.039 **	-0.020
(years)			(0.019)	(0.019)	(0.019)	(0.022)
Rural population				0.019 ***	0.017 ***	0.005
(% of total population)				(0.007)	(0.006)	(0.010)
Average schooling for female						-0.220
(years, population age > 25)						(0.130)
Average schooling for male						0.001
(years, population age > 25)						(0.120)
Absolute Latitude					-0.017	-0.008
					(0.011)	(0.014)
Sub Saharan Africa					0.771	1.047
					(0.530)	(0.630)
South Asia					0.184	0.716
					(0.540)	(0.630)
Middle East and North Africa					1.642 ***	1.565 **
					(0.490)	(0.620)
Latin America and the Caribbean					0.923 *	1.452 **
					(0.550)	(0.670)
East Asia and the Pacific					0.163	0.595
					(0.830)	(0.870)
Constant	10.230 ***	11.700 ***	10.320 ***	7.081 ***	7.046 ***	5.091
	(1.290)	(1.220)	(1.460)	(1.830)	(1.860)	(3.120)
Observations	608	608	592	592	592	386
Adjusted R-squared	0.79	0.80	0.84	0.85	0.86	0.79

Legend: *** p<0.01, ** p<0.05, * p<0.1

Notes: Robust standard errors in parentheses, clustered by country. All the columns control for time fixed effects and specific region time trend.

Table 4 - Fixed Effects Estimation Results

	(1)	(2)	(3)	(4)	(5)	(6)
ODA and Official Aid	0.006	0.006	0.008	0.005	0.013 *	0.012
(% GDP)	(0.005)	(0.005)	(0.006)	(0.006)	(0.007)	(0.008)
Log Real Per Capita GDP	-0.204	-0.205	-0.072	-0.047	0.061	-0.073
(Constant Prices: Lasperyres)	(0.180)	(0.180)	(0.190)	(0.190)	(0.210)	(0.220)
Labor force, female		0.021	0.012	0.009	-0.003	0.000
(% of total labor force)		(0.022)	(0.018)	(0.017)	(0.016)	(0.019)
Mortality rate, infant			0.001	0.001	-0.005	-0.002
(per 1,000 live births)			(0.006)	(0.006)	(0.005)	(0.006)
Mortality rate, under-5			0.002	0.002	0.008 **	0.004
(per 1,000)			(0.004)	(0.004)	(0.003)	(0.003)
Life expectancy at birth, total			0.017	0.022	0.010	0.018
(years)			(0.015)	(0.013)	(0.014)	(0.016)
Rural population				0.025 ***	0.015	0.029 **
(% of total population)				(0.008)	(0.011)	(0.012)
Average schooling for female					-0.289 ***	
(years, population age > 25)					(0.098)	
Average schooling for male					-0.121	
(years, population age > 25)					(0.120)	
Constant	8.070 ***	7.300 ***	5.195 **	3.107	4.195 **	3.761
	(1.290)	(1.570)	(2.080)	(2.140)	(1.980)	(2.770)
Observations	607	607	591	591	384	384
Number of Countries	95	95	95	95	50	50
Adjusted R-squared	0.80	0.80	0.82	0.82	0.85	0.83

Legend: *** p<0.01, ** p<0.05, * p<0.1

Notes: Robust standard errors in parentheses, clustered by country. All the columns control for countries' fixed effects, time fixed effects and specific region time trend. Lybia was dropped out of the sample in columns (1) to (4) since it has a single point of time observation. Burundi and Mauritania were dropped in columns (5) to (6) for the same reason.

Table 5 - Probit test for Sample Selection

	(1)	(2)
ODA and Official Aid	-0.003	0.000
(% of GDP)	(0.016)	(0.016)
Fertility Rate, total		-0.206
(births per woman)		(0.150)
Observations	468	468

Legend: *** p<0.01, ** p<0.05, * p<0.1

Notes: Robust standard errors in parentheses, clustered by country. Both specifications includes all the other covariates used in column (6) of table 4, including countries' fixed effects, time fixed effects and specific region time trend.

Table 6 - Natural Disasters Summary Statistics

	N	Mean	SD	Min	Median	P75	P90	Max
Total Natural Disasters (per country per year)	3170	6.36	6.21	0	4.00	10	15	29
Total Killed Victims (per disaster)	2993	404.82	7564.15	0	16.00	60	226	300000
Total Injured Victims (per disaster)	2993	802.50	9268.51	0	0.00	17	200	249378
Total Affected Victims (per disaster), in thousands	2993	1075.81	9079.67	0	5.73	79	618	239000

Table 7A - 2SLS First Stage Regressions

	(1)	(2)	(3)	(4)	(5)
Number of Natural Disasters	-0.048 ***	-0.048 ***	-0.046 ***	-0.044 ***	-0.051 ***
(other countries, same region)	(0.012)	(0.012)	(0.011)	(0.011)	(0.016)
Log Real Per Capita GDP	-10.700***	-10.690***	-11.300***	-10.830***	-11.870***
(Constant Prices: Lasperyres)	(2.250)	(2.260)	(1.910)	(2.120)	(2.500)
Labor force, female		-0.042	0.009	-0.017	0.070
(% of total labor force)		(0.099)	(0.090)	(0.084)	(0.100)
Mortality rate, infant			0.039	0.035	-0.026
(per 1,000 live births)			(0.062)	(0.063)	(0.059)
Mortality rate, under-5			-0.059	-0.060	-0.023
(per 1,000)			(0.041)	(0.042)	(0.038)
Life expectancy at birth, total			-0.327 **	-0.283 **	-0.312 *
(years)			(0.140)	(0.140)	(0.170)
Rural population				0.186 **	0.056
(% of total population)				(0.085)	(0.099)
Average schooling for female					1.246
(years, population age > 25)					(1.050)
Average schooling for male					-1.235
(years, population age > 25)					(0.940)
Observations	607	607	591	591	384
Number of Countries	95	95	95	95	50
Adjusted R-squared	0.26	0.26	0.29	0.30	0.37

Legend: *** p<0.01, ** p<0.05, * p<0.1

Notes: Robust standard errors in parentheses, clustered by country. All the specifications include countries fixed effects, time effects and a regional linear time trend. Lybia was dropped out of the sample in columns (1) to (4) since it has a single point of time observation. Burundi and Mauritania were dropped in column (5) for the same reason. The constant term is not reported.

Table 7B - 2SLS Results

	(1)	(2)	(3)	(4)	(5)
ODA and Official Aid	0.045 *	0.044 *	0.045 *	0.040	0.054 **
(% GDP)	(0.024)	(0.024)	(0.024)	(0.025)	(0.025)
Log Real Per Capita GDP	0.208	0.194	0.331	0.329	0.533 *
(Constant Prices: Lasperyres)	(0.310)	(0.310)	(0.310)	(0.310)	(0.310)
Labor force, female		0.022	0.012	0.010	-0.005
(% of total labor force)		(0.021)	(0.017)	(0.017)	(0.016)
Mortality rate, infant			-0.000	-0.001	-0.003
(per 1,000 live births)			(0.006)	(0.006)	(0.006)
Mortality rate, under-5			0.004	0.004	0.008 ***
(per 1,000)			(0.004)	(0.004)	(0.003)
Life expectancy at birth, total			0.027 *	0.030 **	0.021
(years)			(0.015)	(0.014)	(0.015)
Rural population				0.018 *	0.013
(% of total population)				(0.010)	(0.011)
Average schooling for female					-0.344 ***
(years, population age > 25)					(0.120)
Average schooling for male					-0.068
(years, population age > 25)					(0.140)
Observations	607	607	591	591	384
Number of Countries	95	95	95	95	50
Adjusted R-squared	0.72	0.72	0.75	0.76	0.80
First Stage F Test	16.74	16.56	18.38	15.71	10.09

Legend: *** p<0.01, ** p<0.05, * p<0.1

Notes: Robust standard errors in parentheses, clustered by country. All the specifications include countries fixed effects, time effects and a regional linear time trend. Lybia was dropped out of the sample in columns (1) to (4) since it has a single point of time observation. Burundi and Mauritania were dropped in column (5) for the same reason. The constant term is not reported.

Table 8 - 2SLS Regressions on the Effect of Foreign Aid on several economic outcomes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Labor Force (% Total Population)	Female Labor Force (% Total Labor Force)	Infant Mortality Rate, Infant	Life Expectancy at Birth	Average Schooling, Years	Share of Investment of the Real GDP	Real GDP Per Growth Capita
ODA and Official Aid	0.0003	0.0493	0.2270	0.4380**	-0.0165	-0.0920	0.002
(% GDP), Instrumented	(0.001)	(0.110)	(0.760)	(0.220)	(0.021)	(0.210)	(0.009)
Log Real Per Capita GDP	0.0124	0.6680	-3.8460	3.8880	0.1470	-2.8620	0.095
(Constant Prices: Lasperyres)	(0.012)	(1.280)	(8.340)	(2.620)	(0.270)	(2.960)	(0.100)
Observations	607	607	591	607	393	608	529
Number of Countries	95	95	95	95	50	95	93
First Stage F Test	16.74	16.74	14.15	16.74	9.46	17.85	16.46

Legend: *** p<0.01, ** p<0.05, * p<0.1

Notes: Robust standard errors in parentheses, clustered by country. All the specifications include countries fixed effects, time effects and a regional linear time trend. In Column (7), the real GDP covariate corresponds to the initial Log Real Per Capita GDP.

Appendix

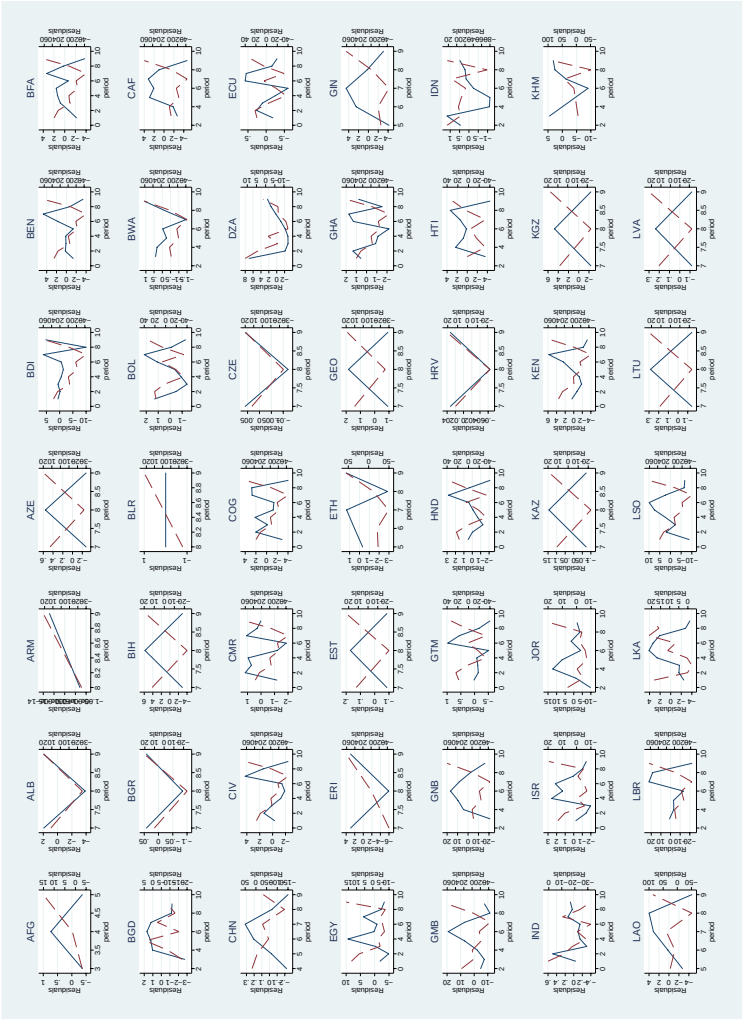


Figure A1: Detrended changes in Foreign Aid and Natural Disasters in neighbor countries, Panel I

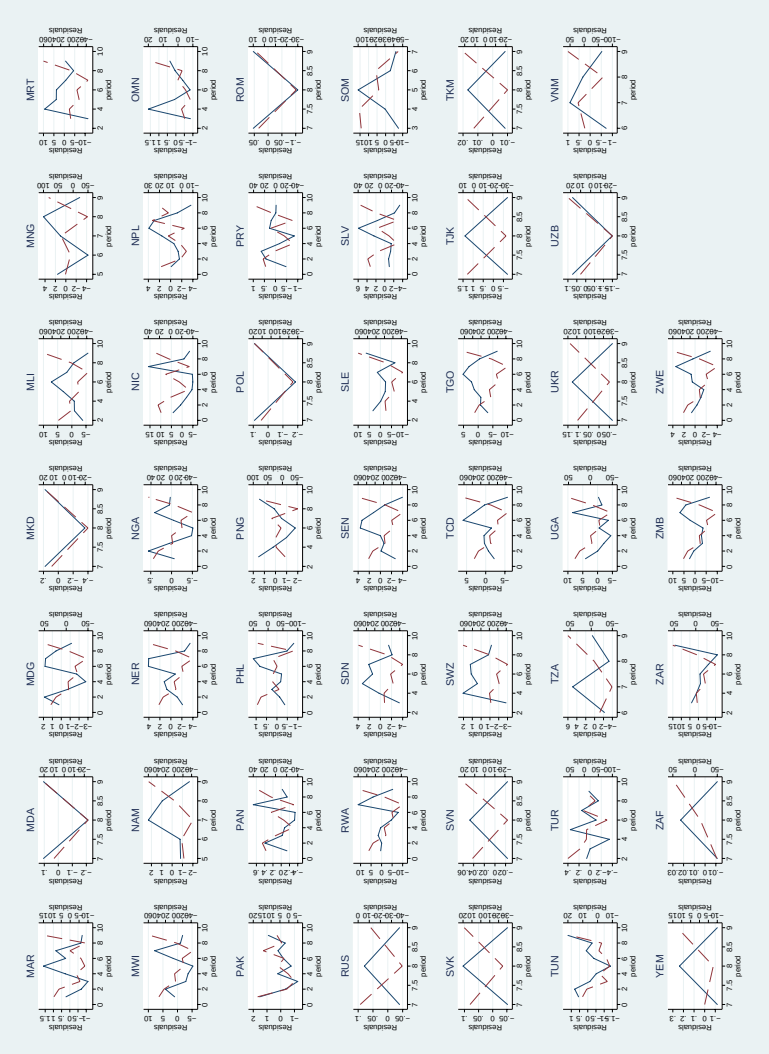


Figure A2: Detrended changes in Foreign Aid and Natural Disasters in neighbor countries, Panel II

Table A1 - List of Countries in the Base Sample

Europe		**Sub-Saharan Africa**	
Albania	Lithuania	Benin	Madagascar
Armenia	Moldova	Botswana	Malawi
Azerbaijan	Poland	Burkina Faso	Mali
Belarus	Romania	Burundi **	Mauritania **
Bosnia and Herzegovina	Russian Federation	Cameroon	Namibia
Bulgaria	Slovakia	Central African Republic	Niger
Croatia	Slovenia	Chad	Nigeria
Czech Republic	Tajikistan	Congo	Rwanda
Estonia	Macedonia (FYR)	Cte d'Ivoire	Senegal
Georgia	Turkey	Dem. Rep. of the Congo	Sierra Leone
Kazakhstan	Turkmenistan	Eritrea	Somalia
Kyrgyzstan	Ukraine	Ethiopia	South Africa
Latvia	Uzbekistan	Gambia	Sudan
		Ghana	Swaziland
		Guinea	Togo
		Guinea-Bissau	Uganda
		Kenya	United Rep. of Tanzania
		Lesotho	Zambia
		Liberia	Zimbabwe
Latin America & Caribbean	**East Asia and the Pacific**	**Middle East and North Africa**	**South Asia**
Bolivia	Cambodia	Algeria	Afghanistan
Ecuador	China	Egypt	Sri Lanka
El Salvador	Indonesia	Israel	Nepal
Guatemala	Lao PDR	Jordan	Bangladesh
Haiti	Mongolia	Libyan Arab Jamahiriya*	Pakistan
Honduras	Papua New Guinea	Morocco	India
Nicaragua	Philippines	Oman	
Panama	Viet Nam	Tunisia	
Paraguay		Yemen	

Notes: Countries' regions are defined by the World Bank. All countries were never net donors between 1960-2004. All countries have a population of at least a million people, between 1960 and 2004. * Indicates a country with only one observation in the base dataset. ** Indicates a country with only one observation in the reduced dataset

Table A2 - Summary Statistics, per Country

Country Name	Periods	Aid (%GDP)	Real GDP Per Capita (2000 USD)	Fertility Rate per Woman
Albania	3	13.18	3069.88	2.47
Algeria	9	2.44	4851.47	5.76
Armenia	2	11.38	3511.92	1.39
Azerbaijan	3	3.04	3173.67	2.29
Bangladesh	7	4.80	1544.91	4.83
Belarus	2	0.44	9672.00	1.28
Benin	9	8.13	1123.56	6.64
Bolivia	9	6.30	2764.76	5.44
Bosnia and Herzegovina	3	23.61	2361.50	1.50
Botswana	7	6.92	4483.15	5.31
Bulgaria	3	1.84	7492.41	1.33
Burkina Faso	9	10.18	785.91	7.03
Burundi	9	14.22	816.74	6.69
Cambodia	5	10.24	541.03	5.14
Cameroon	9	3.89	2357.19	5.91
Central African Republic	7	11.88	965.56	5.48
Chad	9	9.59	892.12	6.51
China	6	0.29	2124.82	2.26
Congo	9	5.86	1791.45	6.24
Croatia	3	0.38	8550.44	1.49
Czech Republic	3	0.40	13157.28	1.36
Cte d'Ivoire	9	3.75	2014.85	6.68
Democratic Republic of the Congo	7	7.41	891.16	6.62
Ecuador	9	1.19	3913.78	4.81
Egypt	9	5.38	2814.36	5.00
El Salvador	9	3.43	3962.55	4.92
Eritrea	3	28.00	601.67	5.73
Estonia	3	1.25	10312.29	1.44
Ethiopia	5	9.20	569.60	6.47
Gambia	8	17.90	908.53	6.04
Georgia	3	6.00	3710.00	1.46
Ghana	9	5.92	1058.52	5.99
Guatemala	9	1.32	3425.11	5.83
Guinea	5	7.75	2388.92	5.96
Guinea-Bissau	7	37.56	627.59	7.03
Haiti	7	7.73	2045.66	5.41
Honduras	9	5.70	2138.14	5.97
India	9	1.05	1614.61	4.73
Indonesia	8	1.85	2509.89	3.94
Israel	9	2.82	14829.25	3.30
Jordan	8	12.98	4189.36	6.06
Kazakhstan	3	0.57	7394.51	2.15
Kenya	9	5.93	1237.94	6.84
Kyrgyzstan	3	11.37	3189.12	2.92
Lao People's Democratic Republic	5	11.71	1228.14	5.80

Notes: Period is the number of five-years periods for which the data of the is available.

Table A2 - Summary Statistics, per Country (Cont.)

Country Name	Periods	Aid (%GDP)	Real GDP Per Capita (2000 USD)	Fertility Rate per Woman
Latvia	3	1.10	8197.89	1.37
Lesotho	9	16.68	1166.84	5.29
Liberia	7	21.67	1131.51	6.69
Libyan Arab Jamahiriya	1	0.03	10334.85	3.27
Lithuania	3	1.12	8710.31	1.50
Madagascar	9	7.58	1069.44	6.30
Malawi	9	16.68	655.73	7.05
Mali	8	14.83	835.86	7.09
Mauritania	7	21.05	1328.56	6.00
Moldova	3	4.38	2586.60	1.71
Mongolia	5	10.41	1562.89	3.90
Morocco	9	2.80	2998.04	5.19
Namibia	5	3.09	5072.57	5.44
Nepal	9	6.39	1042.35	5.44
Nicaragua	9	10.76	4873.86	5.68
Niger	9	10.51	1036.58	7.83
Nigeria	9	0.60	1051.48	6.58
Oman	7	1.30	12933.36	7.27
Pakistan	9	3.91	1732.15	6.27
Panama	9	1.39	5484.65	3.97
Papua New Guinea	7	11.82	3676.63	5.36
Paraguay	9	1.89	4175.97	5.18
Philippines	9	1.29	2975.79	4.90
Poland	3	1.23	7541.47	1.57
Romania	3	0.92	5326.03	1.38
Russian Federation	3	0.39	9675.42	1.37
Rwanda	9	15.72	1048.66	7.54
Senegal	9	9.16	1480.80	6.46
Sierra Leone	7	13.44	1117.87	6.38
Slovakia	3	0.61	9213.72	1.53
Slovenia	3	0.25	16493.44	1.29
Somalia	5	38.79	1155.72	7.23
South Africa	3	0.30	7908.79	3.04
Sri Lanka	9	4.58	2242.28	3.38
Sudan	7	4.61	1074.06	5.69
Swaziland	7	5.07	6268.80	5.57
Tajikistan	3	8.17	1832.85	3.75
Macedonia (FRY)	3	3.81	5051.28	1.92
Togo	9	8.39	1033.27	6.39
Tunisia	9	3.93	4399.47	4.74
Turkey	8	0.48	4232.69	3.88
Turkmenistan	3	0.89	6989.42	3.23
Uganda	9	7.67	899.04	6.98
Ukraine	3	0.87	5687.46	1.38
United Republic of Tanzania	4	17.85	633.80	5.78
Uzbekistan	3	0.98	3575.10	3.14
Viet Nam	4	3.30	1825.19	2.96
Yemen	3	4.80	1007.28	6.65
Zambia	9	11.02	1082.16	6.53
Zimbabwe	9	2.38	2962.93	5.96

Notes: Period is the number of five-years periods for which the data of the is available.

Table A3 - Number of Natural Disasters per Country

Country Name	Total Disasters (1960-2004)
Afghanistan	9
Albania	8
Algeria	50
Armenia	4
Azerbaijan	9
Bangladesh	173
Belarus	3
Benin	12
Bolivia	36
Bosnia and Herzegovina	5
Botswana	5
Bulgaria	6
Burkina Faso	7
Burundi	9
Cambodia	10
Cameroon	10
Central African Republic	10
Chad	9
China	392
Congo	5
Croatia	3
Czech Republic	6
Cte d'Ivoire	2
Democratic Republic of the Congo	17
Ecuador	49
Egypt	18
El Salvador	22
Eritrea	3
Estonia	0
Ethiopia	30
Gambia	5
Georgia	10
Ghana	8
Guatemala	38
Guinea	5
Guinea-Bissau	4
Haiti	40
Honduras	36
India	314
Indonesia	237
Israel	5
Jordan	8
Kazakhstan	6
Kenya	21
Kyrgyzstan	11
Lao People's Democratic Republic	15
Latvia	1

Table A3 - Number of Natural Disasters per Country (Cont.)

Country Name	Total Disasters (1960-2004)
Lesotho	8
Liberia	3
Libyan Arab Jamahiriya	0
Lithuania	2
Madagascar	34
Malawi	19
Mali	9
Mauritania	10
Moldova	6
Mongolia	13
Morocco	24
Namibia	4
Nepal	49
Nicaragua	34
Niger	10
Nigeria	29
Oman	5
Pakistan	85
Panama	28
Papua New Guinea	35
Paraguay	16
Philippines	329
Poland	8
Romania	29
Russian Federation	66
Rwanda	7
Senegal	13
Sierra Leone	5
Slovakia	7
Slovenia	2
Somalia	7
South Africa	33
Sri Lanka	44
Sudan	22
Swaziland	2
Tajikistan	28
Macedonia (FRY)	5
Togo	6
Tunisia	12
Turkey	83
Turkmenistan	2
Uganda	21
Ukraine	13
United Republic of Tanzania	23
Uzbekistan	2
Viet Nam	85
Yemen	16
Zambia	8
Zimbabwe	6

Table A5 - 2SLS Results Including Net Donors and Large Countries

	(1)	(2)	(3)	(4)	(5)
ODA and Official Aid	0.059 *	0.058 *	0.049 *	0.046	0.054
(% GDP)	(0.033)	(0.031)	(0.028)	(0.028)	(0.034)
Log Real Per Capita GDP	0.365	0.331	0.367	0.380	0.476
(Constant Prices: Lasperyres)	(0.290)	(0.270)	(0.240)	(0.240)	(0.300)
Labor force, female		0.005	-0.003	-0.003	0.001
(% of total labor force)		(0.014)	(0.013)	(0.013)	(0.016)
Mortality rate, infant			0.001	0.002	-0.003
(per 1,000 live births)			(0.007)	(0.007)	(0.006)
Mortality rate, under-5			0.006	0.005	0.010 ***
(per 1,000)			(0.004)	(0.004)	(0.004)
Life expectancy at birth, total			0.027 *	0.030 **	0.024
(years)			(0.015)	(0.014)	(0.016)
Rural population				0.020 **	0.021 **
(% of total population)				(0.008)	(0.009)
Average schooling for female					-0.312 ***
(years, population above age 25)					(0.100)
Average schooling for male					0.029
(years, population above age 25)					(0.120)
Observations	1,009	970	908	908	592
Number of Countries	154	148	145	145	78
Adjusted R-squared	0.63	0.65	0.73	0.74	0.78
First Stage F Test	7.018	10.03	10.16	9.907	8.236

Legend: *** p<0.01, ** p<0.05, * p<0.1

Notes: Robust standard errors in parentheses, clustered by country. All the specifications include countries fixed effects, time effects and a regional linear time trend.

Table A5 - 2SLS Results Including Large Countries

	(1)	(2)	(3)	(4)	(5)
ODA and Official Aid	0.043	0.043 *	0.045 *	0.042 *	0.051 **
(% GDP)	(0.026)	(0.025)	(0.024)	(0.025)	(0.025)
Log Real Per Capita GDP	0.352	0.291	0.393	0.400	0.474
(Constant Prices: Lasperyres)	(0.310)	(0.280)	(0.280)	(0.280)	(0.300)
Labor force, female		0.020	0.011	0.009	0.007
(% of total labor force)		(0.015)	(0.013)	(0.012)	(0.013)
Mortality rate, infant			0.001	0.001	-0.004
(per 1,000 live births)			(0.007)	(0.007)	(0.005)
Mortality rate, under-5			0.004	0.004	0.008 ***
(per 1,000)			(0.004)	(0.004)	(0.003)
Life expectancy at birth, total			0.028 *	0.031 **	0.020
(years)			(0.015)	(0.014)	(0.015)
Rural population				0.019 **	0.015
(% of total population)				(0.008)	(0.011)
Average schooling for female					-0.328 ***
(years, population above age 25)					(0.120)
Average schooling for male					-0.056
(years, population above age 25)					(0.140)
Observations	727	697	669	669	396
Number of Countries	117	112	111	111	52
Adjusted R-squared	0.66	0.69	0.73	0.74	0.80
First Stage F Test	6.651	10.31	10.27	9.707	9.361

Legend: *** p<0.01, ** p<0.05, * p<0.1

Notes: Robust standard errors in parentheses, clustered by country. All the specifications include countries fixed effects, time effects and a regional linear time trend.

Table A5 - 2SLS Results Excluding Egypt and Israel

	(1)	(2)	(3)	(4)	(5)
ODA and Official Aid	0.042 *	0.041 *	0.040 *	0.038	0.048 *
(% GDP)	(0.022)	(0.022)	(0.023)	(0.024)	(0.025)
Log Real Per Capita GDP	0.123	0.118	0.218	0.227	0.366
(Constant Prices: Lasperyres)	(0.300)	(0.300)	(0.320)	(0.310)	(0.320)
Labor force, female		0.006	0.002	-0.000	-0.007
(% of total labor force)		(0.015)	(0.013)	(0.014)	(0.016)
Mortality rate, infant			0.000	-0.000	-0.004
(per 1,000 live births)			(0.006)	(0.006)	(0.005)
Mortality rate, under-5			0.002	0.002	0.007 **
(per 1,000)			(0.004)	(0.004)	(0.003)
Life expectancy at birth, total			0.028 *	0.030 **	0.019
(years)			(0.014)	(0.014)	(0.015)
Rural population				0.011	0.007
(% of total population)				(0.011)	(0.012)
Average schooling for female					-0.325 ***
(years, population above age 25)					(0.120)
Average schooling for male					-0.008
(years, population above age 25)					(0.130)
Observations	589	589	575	575	371
Number of Countries	93	93	93	93	48
Adjusted R-squared	0.75	0.75	0.78	0.78	0.82
First Stage F Test	18.54	18.27	19.31	16.94	9.642

Legend: *** p<0.01, ** p<0.05, * p<0.1

Notes: Robust standard errors in parentheses, clustered by country. All the specifications include countries fixed effects, time effects and a regional linear time trend.

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