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Politics, policies, and the effectiveness of foreign aid in fragile states

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Politics, policies, and the effectiveness of foreign aid in fragile states

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Abstract: International development cooperation has evolved since the 1960s. The effectiveness of aid is still topical, but studies have not paid adequate attention to the relationship between sectoral aid, politics, institutions, and aid effectiveness in fragile states. Using data from 2002 to 2020, this paper examines the effects of education aid and health aid on education outcomes and health outcomes in fragile states. It uses the Arellano-Bover/Blundell-Bond system generalized method of moments estimator to examine the effect of health aid and education aid on maternal mortality and primary school completion. There is evidence of muted effectiveness of health aid and education aid on health and education outcomes in the face of fragile contexts. There is ample evidence that policies and institutional factors matter for aid effectiveness. Donor support for social sectors in fragile states must be accompanied by support for institution-building and policy formulation processes.

Key words: aid effectiveness, education aid, health aid, maternal mortality, primary school completion, fragile states

JEL classification: F34, F35, I20, O19

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1 Introduction

International development cooperation has evolved since the 1960s. After the end of the Cold War, the question of aid effectiveness assumed greater importance. In 2003, the first in a series of high-level fora on aid effectiveness between donors and their development partners was held in Rome. The effectiveness of aid is key because aid is a vital source of funding for many poor countries. There is a growing consensus in the literature that aid stimulates economic growth, although there is no unanimity on the estimates of the impact (Gisselquist and Tarp 2019; Mekasha and Tarp 2019).

Extreme poverty has been halved in the last 30 years. Six decades ago donor countries provided 75 per cent of the funding flow to developing countries; by 2016 donor funds accounted for ten per cent of the flow. These outcomes represent major trends and improvements (Chandy et al. 2016). Unfortunately, those trends and improvements have eluded fragile states. Consequently, fragile states are attracting more attention from the donor community. The World Bank (2022) suggests that by 2030, two out of every three people living in extreme poverty will be in a fragile state. Member countries of the Development Assistance Committee (DAC), the largest source of aid, allocated the lion's share of their funding (i.e. 63 per cent of their net allocations) to 57 fragile states in 2018 (Thompson 2020). To ensure that aid to fragile states generates the desired impact, we must understand the effectiveness of aid to this group of countries. Improved development outcomes in fragile states will go a long way in reducing extreme poverty around the world.

Since the 1990s the development literature has emphasized the importance of institutions for the effectiveness of aid (Acemoglu et al. 2005). In the last decade it has been found that aid effectiveness is also associated with politics. The literature suggests that the persistence of poor policy choices and weak institutions in developing countries is not a result of gaps in knowledge or a lack of financial resources (Dasandi et al. 2019). Powerful actors who benefit from the status quo impede change (Carothers and de Gramont 2013; Leftwich 2000). To address the persistence of the poor policies and weak institutions that blunt the effectiveness of aid, we must know what lies behind those policy choices and weak institutions.

The impact of aid is often examined through two broad approaches: the use of growth theories, and the examination of the channels through which aid impacts on economic growth (Tsikata 1998). Some channel-focused studies investigate the fiscal response to aid and the impact of aid on social services such as education and health. Many studies have estimated the impact of aid on governance and democracy, among other matters. The channel approach to studying aid effectiveness is more promising than the use of growth regressions (Mekasha and Tarp 2019). This is because, as Mekasha and Tarp (2019: 14) argue, 'promoting economic growth is not the primary objective of foreign aid'. Therefore, this paper examines how aid influences social outcomes in fragile states. It considers health and education outcomes as channels of aid effectiveness. The choice of health and education outcomes is consistent with the aspirations represented by the United Nations' Sustainable Development Goals.

Researchers have paid considerable attention to the relationships between aid effectiveness and politics, aid effectiveness and fragile states, and aid effectiveness and institutions. Thus far, there has been a paucity of studies that look at aid effectiveness, politics, and policies in the context of fragile states within a unified framework. That is where this paper seeks to make its contribution. The paper's objective is to ascertain the empirical relationship between three pertinent phenomena: politics, policies, and aid effectiveness in the context of fragile states.

The rest of the paper is organized as follows. Section 2 reviews the proximate literature on aid effectiveness and the role of politics and policies in supporting the economic development agenda of developing countries and fragile states. The empirical approach that underpins the estimations in this paper is discussed in Section 3. The main findings of the estimations are given in Section 4. The last section, Section 5, provides the conclusion and the way forward.

2 Literature

The theoretical basis of the role of foreign aid in stimulating economic growth is broadly acknowledged. But the empirical evidence is vast and until recently has been contested. For example, since 2010 a cogent body of work in the development economics literature has emerged to underscore the effectiveness of foreign aid. Fragile states have not benefited to the same extent as other recipients of foreign aid. These states are more in need of aid than non-fragile states. This section begins with the theoretical aid-growth debate. It then provides a brief overview of the literature on the effect of politics and policies on aid effectiveness. The review also assesses the connection between health and education outcomes and growth. Lastly, it provides highlights from the literature on aid effectiveness in fragile states.

2.1 Aid and growth

The first generation of empirical work drew its theoretical foundations from the Harrod-Domar growth model (Domar 1946; Harrod 1939). In the Harrod-Domar model, savings are seen as the key constraint to economic growth. The theoretical basis for aid within the context of this model is that aid has the potential to supplement domestic savings and therefore can facilitate growth. Diwan (1968) describes this as the classical view of foreign aid. Later, Chenery and Strout (1966) introduced the two-gap model, which suggests the existence of two gaps that need attention to stimulate growth: the domestic savings-investment and import-export gaps. In the former, it is assumed that less developed countries' mobilization of domestic savings is inadequate to fund the investment needed for economic growth. Foreign aid can assist the development effort by helping to close the savings-investment gap. The import-export gap implies a negative net export position, that is, a gap between the value of exports and the value of imports. Chenery and Strout contend that a negative net export position is a drag on economic growth.

Hansen and Tarp (2000) characterize the aid effectiveness empirical literature on the basis of its theoretical underpinnings. The authors describe foreign aid and growth studies where the causality runs from aid to growth via savings and investment as the first-generation strand of the literature. Most of the empirical studies associated with this strand of the literature suggest a negative relationship between aid and growth. Hansen and Tarp reviewed over 100 papers in this first-generation literature on aid and growth. The second generation of aid-growth literature is anchored in the theoretical link between investment and growth. This strand assumes that if aid stimulates investment in the aid recipient country, then aid has a positive effect on growth. The notion of capital accumulation is critical in this assessment, and the Harrod-Domar and Solow growth models form the theoretical foundations of the studies. In addition to the importance of capital accumulation, the Solow model emphasizes the substitution between labour and capital.

2.2 Aid effectiveness and policies

As the theoretical growth literature advanced, neoclassical endogenous growth models became the basis of growth regressions from the 1990s onwards. These third-generation studies, unlike the earlier generations, explicitly take account of the policy environment and other non-economic

factors when modelling growth. Importantly, the studies highlight the role of technology, innovation, and human capital accumulation. The empirical studies control for the policy environment, the quality of institutions, and many non-economic factors. Notable papers in this strand of the literature include Hansen and Tarp (2000), Durberry et al. (1998), Burnside and Dollar (2000), and Mühleisen et al. (1995).

Hansen and Tarp (2000) provide a succinct summary of the main ideas from the third-generation literature and observe that economic growth is a complex phenomenon. This is because there is an interplay of many economic and non-economic factors that determine growth outcomes. Hansen and Tarp's (2000) conclusions are consistent with those of others who have sought to make sense of the myriad of growth determinants. Durlauf and Quah (1999) demonstrate the complexity and diversity of these determinants. They identify 87 determinants from cross-country growth regressions. Writing a few years later, Durlauf et al. (2005) identify an even bigger number of determinants: 143 variables. Tsangarides and Mirestean (2009) divide the many determinants into ten broad economic and non-economic categories. The non-economic determinants include the quality of public institutions, ethnic heterogeneity, ethnolinguistic fractionalization, conflict and civil strife, geographical attributes, and many idiosyncratic variables.

The complexity of growth determinants notwithstanding, the aid-growth evidence that began to accumulate in the 1970s can be associated with three perspectives (if we discount the differences in the methodological approaches adopted in the studies). The first perspective suggests that foreign aid promotes growth. The second perspective suggests that the effect of aid on growth is negative. The last perspective argues that the effect of aid on growth can be positive under certain conditions. Some of these conditioning influences are the quality of institutions and good policies in the aid-receiving country.

Many have contributed to a convergence of the evidence of aid effectiveness in the aid-growth debate. Prominent among these are Hansen and Tarp (2000), Arndt et al. (2010), and Mekasha and Tarp (2013, 2019). Hansen and Tarp (2000) discover a coherent and positive aid-growth linkage, which is robust even for countries with an unfavourable policy environment. Arndt et al. (2010) frame the literature in the context of the Rubin causal model at the macroeconomic level. Their findings show that in the long run there is a positive and significant causal effect of aid on growth. Mekasha and Tarp adopt a meta-analysis approach. The authors analyse the aid and growth literature over the period 1970 to 2004 (Mekasha and Tarp 2013), later extending the window of observation of the sampled studies to 2013 (Mekasha and Tarp 2019). The positive outcome is consistent across the two study periods.

Despite this newfound convergence on the positive linkage between aid and growth, Mekasha and Tarp (2019) suggest that while aid has a positive effect on growth, the primary objective of aid is not to drive growth directly. This perspective is consistent with the strand of development literature that has often sought to assess the impact of aid on growth through defined channels (Tsikata 1998). According to the empirical evidence on the determinants of growth, aid should have a positive impact on a range of development outcomes that include growth. The development outcomes on which development aid is expected to impact directly include health and education. Health and education are also critical determinants of human capital. Human capital is an important factor in the output function of the new growth theories. Education and health are therefore important channels of long-run growth (e.g., Grossman and Helpman 1994; Jones and Romer 2010; Lucas 1988).

2.3 Aid effectiveness and politics

In one of the few third-generation aid effectiveness papers to suggest that aid has no effect on growth, Boone (1996) underscores the importance of politics in determining the effectiveness of aid. While Boone suggests that aid has no effective impact on growth, he concedes that the nature of politics in the aid recipient country influences health outcomes. The political economy of aid effectiveness has received increasing attention in the development literature, particularly following stakeholders' renewed interest in understanding the drivers of aid effectiveness. Boone's findings indicate that aid recipient countries that are run by liberal and democratic regimes have 30 per cent lower infant mortality rates on average than the least free political regimes.

Others have looked at politics from the perspective of donors. For example, Bobba and Powell (2007) consider the effectiveness of aid when the recipient country is a political ally. They conclude that aid provided to political allies is ineffective for growth. Their findings are robust even when the estimation approach is varied.

The intersection between economics and politics has a very long tradition. Huntington (1968) and Hibbs (1977) are cited by Alesina and Perotti (1994) as examples of studies that empirically examine the relationship between politics and the economy. Dasandi et al. (2019) undertake a critical survey of the literature on 'thinking and working politically' (TWP), a political economy approach to development practice. The TWP approach is premised on development as a political process. However, Dasandi et al. conclude that the literature on TWP is practitioner-based and case study-centred and lacks academic rigour. Nonetheless, the assertion that development is a political process is consistent with development literature that explains aid effectiveness in the context of non-economic factors such as the quality of the institutions and the political regimes in place. Studies that highlight the importance of political commitment for aid effectiveness include Hughes and Hutchison (2012). Drawing on case studies in Cambodia and the Philippines, Hughes and Hutchison argue that development is not a public good but a centre of interest for contestation by forces in society. In an earlier paper, Alesina and Perotti (1994) review the political economy of growth, particularly in the context of the new growth models. Their study assesses the relationship between growth, political instability, political freedom, democratic institutions, and income inequality. In sum, the place of politics in determining growth outcomes is grounded in both theory and evidence.

2.4 Aid effectiveness and education aid

Assessments of the effect of foreign aid devoted to education on economic growth are often based on endogenous growth theories and the Solow growth model. Such studies include Asiedu (2014), Keller (2006), and McMahon (1998). Asiedu examines the relationship between education aid aimed at the primary school sector and economic growth in sub-Saharan Africa. The paper uses data on 38 sub-Saharan African countries from 1990 to 2004. The findings suggest that the impact of aid on primary school education outcomes is positive. Post-secondary school outcomes are either negative or insignificant. The study also suggests that aid rises as the primary school share of the education budget increases. The only non-economic variable that the study controls for is institutional quality. The estimations are carried out with the system generalized method of moments (GMM).

Nsanja et al. (2021) examine the relationship between education aid and economic growth for 32 sub-Saharan countries. The window of observation is from 2005 to 2017. The findings provide evidence that the effect of education aid depends on the income group of the recipient country. For instance, while primary school education aid and aggregate education aid are supportive of economic growth in lower-income countries, higher education aid is more growth-enhancing than

foreign aid to the primary and secondary education sectors. Like Asiedu (2014), Nsanja et al. (2021) adopt the system GMM estimation technique. The authors control for a limited number of variables (inflation, consumption, investment, and trade openness). In addition to the selection of macroeconomic variables, they control for the nature of governance, that is, autocracies and democracies.

2.5 Aid effectiveness and health

At the outset it is important to underscore that health outcomes, like education outcomes, have a bearing on human capital formation. Health is a component of human capital. As was discussed earlier, human capital is a critical factor in the context of the new growth theories. The effect of favourable health outcomes on growth is demonstrably positive: Ridhwan et al.'s (2022) meta-analysis of 719 estimates from 64 studies provides evidence that health has a positive effect on growth. But the empirical assessment of the effect of health-related aid is fraught with estimation challenges. The outcomes are also contested. Woode et al. (2021) suggest that the earlier literature failed to control for fragmentation, ill-targeted aid, and aid disbursement consistent with aid effectiveness principles. They investigate whether the much-touted Sector-Wide Aid Programme (SWAP) approach, based on aid effectiveness principles, has led to improvements in aid effectiveness and child mortality. They find that health-related SWAP leads to a six to eight per cent reduction in infant mortality compared with non-SWAP countries. They conclude that health aid has a positive effect on aid effectiveness in the context of the SWAP framework. The positive health aid outcomes and aid effectiveness are robust for countries that implement the SWAP framework poorly (Woode et al. 2021).

Doucouliaos et al. (2021) examine the impact of health aid on child mortality conditional on the quality of governance. The authors use an instrumental variable estimation approach. The instrument for health aid is the interaction between the probability of allocating health aid to a recipient country and donor government fractionalization. The paper uses panel data on 96 aid recipient countries for the years 2002 to 2015. It suggests that the effectiveness of health aid in reducing child mortality is conditional on the existence of good governance. The effect of health aid on maternal mortality is also positive according to Banchani and Swiss (2019).

Odokonyo et al. (2017) assess the effect of health aid on a broad range of health outcomes in Uganda. They find that health aid reduces the burden of disease but is less effective in reducing disease prevalence. Their study provides evidence that populations that live closer to funded health projects benefit more. The results also suggest that health aid has not necessarily been targeted at the communities in most need. Odokonyo et al. use a difference-in-differences approach based on household panel data and geographically referenced subnational foreign aid data.

While the recent literature provides evidence of a positive effect of health aid on health outcomes, some previous studies suggested a negative effect (Bradshaw et al. 1993; Sell and Kunitz 1986).

2.6 Fragile situations and aid effectiveness

There is unanimity in the literature that aid effectiveness in fragile states is much lower than in other states (Ishihara 2012). Chandy et al. (2016) show that aid practices in fragile states are inferior to those in stable states. They identify considerable variations in aid practices among donor countries in fragile states. Among the conclusions reached by the authors is the suggestion that poorly performing bilateral donors should outsource the delivery of aid to larger multilateral organizations that have better performance. The role of donor behaviour in explaining aid effectiveness in fragile states is also highlighted by Browne (2007). Browne points out that bilateral

donors supported economic mismanagement in Zambia and that there was donor complicity in the collapse of the Rwandan state, which culminated in the 1994 genocide.

2.7 Conclusions

Thus far, studies on aid effectiveness in countries in fragile situations have not paid adequate attention to the interplay of politics, policies, and the standard determinants of aid effectiveness within a unified framework. This paper contributes to the aid effectiveness literature in this area by focusing on how aid impacts on human capital outcomes. Fragile states are falling behind in relation to the major trends associated with aid in low-income countries. Studies such as this paper can provide insights to help turn this situation around.

3 Empirical analysis

The theoretical basis of the estimations in this paper is that foreign aid drives economic growth through defined channels (Mekasha and Tarp 2019; Tsikata 1998). These channels include education and healthcare. The empirical model therefore investigates the effect of health aid and education aid on health and education outcomes. Dummy variables are used to ascertain the effect of sectoral aid on defined sectoral outcomes in fragile states.

3.1 Estimation approach

Dynamic panel estimators are often used to investigate causal relationships. These estimators are designed to deal with situations where we have: (1) limited time periods of observations and a large number of subjects in a sample; (2) a linear relationship; (3) one dependent and dynamic variable, which depends on its past realizations; (4) non-strictly exogenous independent variables; (5) fixed individual effects; (6) heteroskedasticity and autocorrelation within but not across individual observations (Roodman 2009).

Arellano and Bond (1991) propose the difference GMM. The Arellano-Bond estimator first transforms all the regressors by differencing before applying a GMM. Arellano and Bover (1995) and Blundell and Bond (1998) improve on the difference GMM with the additional assumption that first differences of instrumental variables are not correlated with the fixed effects. The Arellano-Bover/Blundell-Bond estimator, or system GMM, permits the introduction of many instruments, which in turn enhances efficiency. The system GMM builds a system of two equations. These are the original equation and the transformed equation. The nature of the panel data for this paper (a large number of countries and a small number of years) makes the system GMM apt for the estimations.

Following the literature, we estimate the equation:

$$Y_{it} = \alpha + \beta A_{it} + \gamma E_{it} + \lambda NE_{it} + \delta fragility_{it} + \varepsilon_{it} \quad (1)$$

Y_{it} is the health and education outcomes of the relevant sectoral aid. A_{it} is the sectoral aid (health aid and education aid). Health aid is measured as disbursed aid from DAC countries to the health sector in per capita terms. Similarly, education aid is given as disbursed education aid per capita. The primary school completion rate (as a percentage of the total for the relevant age group) is used as the education aid outcome. The mortality rate for under-fives per 1,000 live births is the health outcome. There are two sets of controls: economic E_{it} and non-economic NE_{it} . These controls are drawn from the growth literature. The economic controls are key macroeconomic indicators,

while the non-economic variables represent country performance indicators on politics and the quality of relevant institutions. Countries in fragile situations are represented in the model with the dummy variable *fragility_{it}*. We consider extreme fragility and fragility. The error term in the model is given by ε_{it} .

3.2 Source of data and description of variables

Data on the disbursement of aid from DAC countries to low-income, lower middle-income, and upper middle-income countries was obtained from the Organisation of Economic Co-operation and Development's (OECD) development aid database. The data covers the period 2002 to 2020 in constant 2020 United States dollars. We obtained the following series: total bilateral aid to all sectors; total aid to education; total aid to health; aid for population policies and reproductive healthcare. Section 4 of this paper presents summary statistics on the variables used in the estimation. Table A1 in the Appendix gives a detailed description of all the variables used in the estimation and the sources of the data. The countries covered by the sample and their respective states of fragility are provided in Table A2.

Sectoral outcomes and macroeconomic indicators

The sectoral outcomes for health and education are from the World Bank's World Development Indicators (WDI). The WDI were also the source of information on investment (gross fixed capital formation as a percentage of gross domestic product (GDP)), consumption (government consumption expenditure as a percentage of GDP), and trade (value of trade exports plus imports as a percentage of GDP).

Policies

Institutional Policy and Institutional Assessment is a tool used by the World Bank to assess the quality of policy and institutions. The tool is constructed with 16 criteria, which are categorized into four equally weighted clusters. The four clusters are economic management, structural policies, policies for social inclusion and equity, and public sector management and institutions. Countries are rated on a scale of one (low) to six (high) on the 16 criteria.

Politics

Following the work of Alesina et al. (2003), we measure politics with three representations of fractionalization in societies. Ethnic, linguistic, and religious fractionalization have been found to explain policy choices and the performance of institutions. The degree of heterogeneity with regard to ethnicity, language, and religion determines the level and extent of political contestations. These contestations then influence political choices related to policies and institutions. For example, La Porta et al. (1999) show that ethnic fractionalization is a determinant of quality of government. Their study uses three components of ethnolinguistic fractionalization developed by Alesina et al. (2003). This is an improvement on other measures of fractionalization that are used in the economic literature because the measures used in the generation of the indices are more comprehensive.

4 Main findings

Before presenting the econometric estimations, we examine the descriptive statistics associated with the key variables of interest.

4.1 Descriptive statistics

The means and standard deviation statistics from the series used in the analysis are provided in Table 1. The figures represent the average values of the variables considered for the sample of 126 countries. The proportion of foreign aid that goes into healthcare is on average around seven per cent of total aid.

Maternal mortality per 100,000 live births is 294 on average (Figure A1 in the Appendix), and the primary school completion rate is 55 per cent of the relevant age group. The amount of aid disbursed per person on average to the 126 countries in the sample of aid-receiving countries is US\$110 (constant 2020). The regional averages of aid receipt per person vary considerably (Figure A2). There is a similar variation in education aid per person (Figure A3). About half of the total aid is earmarked for reproductive health. Education aid per capita averages US\$11.1 (constant 2020).

Table 1: Summary statistics, 2002–19

| | Mean | Standard deviation |
|---|----------|--------------------|
| Aid variables | | |
| Total aid per capita (constant 2020 US\$) | 109.46 | 179.27 |
| Health aid per capita (constant 2020 US\$) | 6.85 | 16.43 |
| Reproductive health aid per capita (constant 2020 US\$) | 3.3 | 6.69 |
| Education aid per capita (constant 2020 US\$) | 11.1 | 26.79 |
| Outcomes | | |
| Maternal mortality (per 100,000 live births) | 294.27 | 325.96 |
| Primary school completion rate (% of relevant age group) | 55.31 | 43.22 |
| Economic controls | | |
| Real interest rate (%) | 7.41 | 8.16 |
| Inflation, consumer prices (annual %) | 7.22 | 11.60 |
| Trade (% GDP) | 76.77 | 35.74 |
| Real GDP per capita | 3,269.54 | 2,801.87 |
| Politics controls | | |
| Language fractionalization | 0.47 | 0.30 |
| Ethnicity fractionalization | 0.53 | 0.24 |
| Religion fractionalization | 0.43 | 0.24 |
| Institutions | | |
| Structural policies cluster average (1=low, 6=high) | 3.30 | 0.52 |
| Economic policy management cluster average (1=low, 6=high) | 3.40 | 0.67 |
| Public sector management and institutions cluster average (1=low, 6=high) | 3.07 | 0.48 |
| Policies for social inclusion/equity cluster average (1=low, 6=high) | 3.27 | 0.50 |
| Other controls | | |
| Domestic government health expenditure (% GDP) | 82.99 | 20.82 |
| Government expenditure per student, primary (% GDP per capita) | 2.39 | 1.65 |

Source: author's calculations based on data from WDI and OECD database.

There is a significant linear relationship between aid effectiveness (measured by the sectoral outcomes maternal mortality and primary school completion rate) and politics. Ethnic, linguistic, and religious fractionalization worsen maternal mortality. Fractionalization also reduces primary school completion rates. As expected, a good quality of institutions and policies reduces maternal mortality and increases primary school completion rates (Table 2).

Table 2: Correlation between aid effectiveness, politics, and institutions

| | Maternal mortality | Primary school completion rate |
|---|------------------------|--------------------------------|
| Language fractionalization | 0.4711*** (0.0000) | -0.4426*** (0.0000) |
| Religion fractionalization | 0.1866*** (0.0000) | -0.1658*** (0.0004) |
| Ethnicity fractionalization | 0.4926*** (0.0000) | -0.4545*** (0.0000) |
| Structural policies | -0.4318*** (0.0000) | 0.3478*** (0.0000) |
| Economic policy management | -0.2766*** (0.0000) | 0.1659 (0.0131) |
| Public sector management and institutions | -0.4519*** (0.0000) | 0.4220*** (0.0000) |
| Policies for social inclusion/equity | -0.2766*** (0.0000) | 0.4691*** (0.0000) |

Note: *** 1% level of significance.

Source: author's calculations based on data from WDI.

4.2 Regression results

We conduct system dynamic panel data estimations for six models representing the relationship between health outcomes, maternal mortality, and aid. The models control for fragile contexts at two levels: extremely fragile states and fragile states. Other controls are indicators of macroeconomic stability, politics, policies, and institutional quality.

Reproductive health aid and maternal mortality

The aid controls used in the models vary. Models 1 to 3 take reproductive health aid as the proxy for health aid. The controls for politics—ethnic fractionalization, religious fractionalization, and linguistic fractionalization—are statistically significant. The estimations suggest that reproductive health aid reduces maternal mortality. These models also control for domestic healthcare expenditure.

Fragile contexts have aggravating effects on maternal mortality. But importantly, politics (as measured by fractionalization) has a negative impact on maternal mortality. The findings show that the quality of institutions and policies matters for maternal health outcomes. A good quality of public sector management and institutions reduces maternal mortality, as do structural and social inclusion policies. This outcome is robust for the three models. The economic policy management control is significant for Model 3 (Table 3). These results are consistent with the findings by Doucouliagos et al. (2021), even though that study used a different estimation technique (i.e. an instrumental variable estimator).

Table 3: System dynamic panel data estimation: maternal mortality and reproductive health aid

| | Model 1 | | Model 2 | | Model 3 | |
|---------------------------------------|-------------|----------------|-------------|----------------|-------------|----------------|
| | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error |
| Maternal mortality_lag_1 | 0.943*** | 0.003 | 0.945*** | 0.003 | 0.943*** | 0.003 |
| Aid | | | | | | |
| <i>Reproductive health aid</i> | -0.001 | 0.002 | -0.012** | 0.007 | -.006*** | 0.001 |
| <i>Domestic health expenditure</i> | 0.137*** | 0.016 | 0.017 | 0.021 | 0.177 | -0.016 |
| Fragile context | | | | | | |
| <i>Fragile states dummy</i> | -3.029 | 3.691 | 17.138*** | 5.802 | 10.967*** | 3.503 |
| <i>Extremely fragile dummy</i> | -42.843*** | 6.712 | -13.286 | 9.109 | -29.275*** | 6.495 |
| Macroeconomic stability | | | | | | |
| <i>GDP per capita</i> | -0.005*** | 0.000 | -0.004*** | 0.000 | -0.004*** | 0.001 |
| <i>Inflation</i> | 0.224*** | 0.016 | 0.160*** | 0.028 | 0.174*** | 0.018 |
| <i>Interest rates</i> | 0.096*** | 0.010 | 0.038*** | 0.005 | 0.100*** | 0.009 |
| <i>Trade openness</i> | -0.035*** | 0.010 | -0.043*** | 0.008 | -0.016*** | 0.007 |
| Politics | | | | | | |
| <i>Ethnicity fractionalization</i> | 27.092*** | 5.829 | | | | |
| <i>Language fractionalization</i> | | | 27.714*** | 9.861 | | |
| <i>Religion fractionalization</i> | | | | | 29.650*** | 6.103 |
| Policies and institutional quality | | | | | | |
| <i>Structural policies</i> | -9.626*** | 1.251 | -7.194*** | 2.124 | -5.483*** | 1.109 |
| <i>Economic policy management</i> | 0.683 | 0.693 | 1.025 | 1.515 | -0.124*** | 0.344 |
| <i>Public sector and institutions</i> | -10.587*** | 1.745 | -7.755*** | 2.419 | -10.007*** | 1.685 |
| <i>Policies for social inclusion</i> | -6.181*** | 1.700 | -8.732*** | 2.408 | -5.482*** | 1.109 |
| Constant | -28.604*** | 5.980 | -14.613*** | 5.987 | -10.525*** | 8.423 |
| No. of observations | 373 | | 355 | | 376 | |
| No. of groups | 46 | | 45 | | 47 | |
| Wald chi ² (14) | 3.40e+7*** | | 3.122+06 | | 5.81e+06*** | |
| Sargan test, Chi ² | 34.56 | | 31.03 | | 32.573 | |
| AR (1) | -1.3389 | | -0.963 | | -1317 | |

Note: *** 5% level of significance.

Source: author's calculations

Health aid and maternal mortality

When total health aid is used to replace reproductive health aid in the regression model, the results of the estimations remain unchanged. Significantly, domestic health expenditure by individual countries is important for reducing maternal mortality. As expected, fragile contexts worsen maternal mortality outcomes, with extremely fragile contexts having a more negative impact. Ethnic and religious fractionalization (proxies for politics) have a negative impact on maternal mortality. Ethnic and religious fractionalization have statistically significant coefficients. This suggests the importance of politics in the determination of maternal health outcomes. The signs of the coefficients of the economic and non-economic variables are all consistent with the a priori expectation (Table 4).

Table 4: System dynamic panel data estimation: maternal mortality and health aid

| | Model 1 | | Model 2 | | Model 3 | |
|---------------------------------------|-------------|----------------|-------------|----------------|-------------|----------------|
| | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error |
| Maternal mortality_lag_1 | 0.949*** | 0.002 | 0.948*** | 0.002 | 0.948*** | 0.002 |
| Aid | | | | | | |
| <i>Health aid</i> | -0.017*** | 0.001 | -0.022*** | 0.002 | -0.020*** | 0.001 |
| <i>Domestic health expenditure</i> | 0.143*** | 0.016 | 0.048*** | 0.016 | 0.156*** | 0.014 |
| Fragile context | | | | | | |
| <i>Fragile states dummy</i> | 9.879*** | 3.619 | 3.120 | 4.150 | 5.839** | 2.770 |
| <i>Extremely fragile dummy</i> | 47.604*** | 5.389 | 26.138*** | 6.782 | 28.555*** | 8.186 |
| Macroeconomic stability | | | | | | |
| <i>GDP per capita</i> | -0.004*** | 0.001 | -0.003*** | 0.000 | -0.003*** | 0.000 |
| <i>Inflation</i> | 0.205*** | 0.011 | 0.158*** | 0.019 | 0.173*** | 0.008 |
| <i>Interest rates</i> | 0.091*** | 0.011 | 0.039*** | 0.008 | 0.083*** | 0.006 |
| <i>Trade openness</i> | -0.026*** | 0.009 | -0.019*** | 0.012 | -0.001 | 0.006 |
| Politics | | | | | | |
| <i>Ethnicity fractionalization</i> | 26.872*** | 5.149 | | | | |
| <i>Language fractionalization</i> | | | 1.564 | 9.705 | | |
| <i>Religion fractionalization</i> | | | | | 24.545*** | 4.501 |
| Policies and institutional quality | | | | | | |
| <i>Structural policies</i> | -7.305*** | 1.394 | | | -8.496*** | 1.501 |
| <i>Economic policy management</i> | -1.237** | 0.536 | -1.034 | 0.934 | 0.516 | 0.477 |
| <i>Public sector and institutions</i> | -9.633*** | 1.051 | -5.327*** | 1.564 | -8.513*** | 1.271 |
| <i>Policies for social inclusion</i> | -4.318*** | 1.201 | -4.932*** | 0.853 | -4.740*** | 1.215 |
| Constant | -20.72*** | 6.000 | -5.919 | 4.679 | -12.228** | 5.571 |
| No. of observations | 379 | | 361 | | 382 | |
| No. of groups | 47 | | 46 | | 48 | |
| Wald chi ² (14) | 3.770e+7*** | | 1.1e+07*** | | 4.1e+06*** | |
| Sargan test, Chi ² | 31.72 | | 31.442 | | 33.952 | |
| AR (1) | -1.3606 | | -0.9799 | | -1317 | |

Note: *** 1% level of significance; ** 5% level of significance.

Source: author's calculations.

Primary education completion and education aid

To estimate the effect of education aid on education outcomes in fragile situations, we retain all the controls used in the previous models for fragile contexts, macroeconomic stability, politics, policies, and institutional quality. The new aid controls are education aid and domestic expenditure on education.

Education aid matters in helping to raise primary school completion rates when we control for politics with religious fractionalization. In the two other models, where we control for politics using ethnic and linguistic fractionalization, education does not affect primary school completion rates. Although domestic expenditure is relevant in this instance, the effects are marginal at best (Table 5).

The impact of aid on education outcomes has attracted little attention in the literature. Most studies have sought to examine the effect of education aid on growth (Asiedu 2014). One of the few papers to examine the effectiveness of education aid is by Riddell (2012), who focuses on primary school enrolment. Riddell concludes that education aid expands primary school enrolment.

Table 5: System dynamic panel data estimation: primary school completion rate and education aid

| | Model 1 | | Model 2 | | Model 3 | |
|--|-------------|----------------|-------------|----------------|-------------|----------------|
| | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error |
| Primary school completion_lag_1 | 0.706*** | 0.009 | 0.934*** | 0.001 | 0.663*** | 0.009 |
| Aid | | | | | | |
| <i>Education aid</i> | -0.160 | 0.102 | 0.002 | 0.008 | 0.008*** | 0.002 |
| <i>Domestic expenditure on primary education</i> | 0.013*** | 0.002 | 0.070* | 0.000 | 0.270 | 0.469 |
| Fragile context | | | | | | |
| <i>Fragile states dummy</i> | -7.501*** | 2.923 | 4.756*** | 0.426 | 7.594 | 5.909 |
| <i>Extremely fragile dummy</i> | -51.392*** | 3.052 | 2.238 | 1.433 | -49.965*** | 3.359 |
| Macroeconomic stability | | | | | | |
| <i>GDP per capita</i> | 0.009*** | 0.000 | 0.000*** | 0.000 | -0.008*** | 0.001 |
| <i>Inflation</i> | 0.0234 | 0.007 | 0.005*** | 0.000 | 0.038*** | 0.005 |
| <i>Interest rates</i> | -0.011** | 0.004 | -0.013*** | 0.000 | -0.011*** | 0.004 |
| <i>Trade openness</i> | -0.028*** | 0.002 | -0.032*** | 0.002 | -0.042*** | 0.007 |
| Politics | | | | | | |
| <i>Ethnicity fractionalization</i> | -16.154** | 6.478 | | | | |
| <i>Language fractionalization</i> | | | -0.540** | 0.296 | | |
| <i>Religion fractionalization</i> | | | | | -171.029*** | 59.250 |
| Policies and institutional quality | | | | | | |
| <i>Structural policies</i> | -0.172 | 0.709 | 0.579** | 0.296 | -1.067*** | 0.321 |
| <i>Economic policy management</i> | 4.309*** | 0.503 | -0.295*** | 0.062 | 2.519*** | 0.677 |
| <i>Public sector and institutions</i> | 3.648*** | 1.129 | -0.227 | 0.235 | 6.320*** | 1.780 |
| <i>Policies for social inclusion</i> | 10.069*** | 0.967 | 0.754*** | 0.261 | 11.450*** | 0.937 |
| Constant | | | | | | |
| No. of observations | 616 | | 561 | | 618 | |
| No. of groups | 52 | | 48 | | 52 | |
| Wald chi ² (14) | 1.03+6*** | | 2.8e+07 | | 5.81e+06*** | |
| Sargan test, Chi ² | 38.713 | | 31.785 | | 32.573 | |
| AR (1) | -1.012 | | -1.658 | | -1.017 | |

Note: *** 1% level of significance; ** 5% level of significance.

Source: author's calculations

5 Conclusions and the way forward

This paper sought to examine the effect of sectoral aid on two social outcomes: health and education. The assessment controlled for non-economic issues including fragile situations, politics, and policies. The estimations were undertaken using panel data on 126 countries. The findings provide evidence that health aid and reproductive health aid reduce maternal mortality in fragile states. The effect of education aid on education outcomes is not as robust as that observed for health aid. The results of the study are consistent with a section of the literature, particularly studies that examine the effect of health aid on maternal mortality.

Donors have to pay attention to the non-economic factors of politics, institutions, and policies for improved health and education outcomes in fragile contexts. A greater understanding of the political economy of countries in fragile contexts is imperative in order to improve sectoral outcomes such as maternal mortality and primary school completion rates.

Donor governments must support institutions and policy development to improve the effectiveness of aid. Countries with better policies and institutions must not be given more at the expense of those with poorer institutions and policies and difficult political environments.

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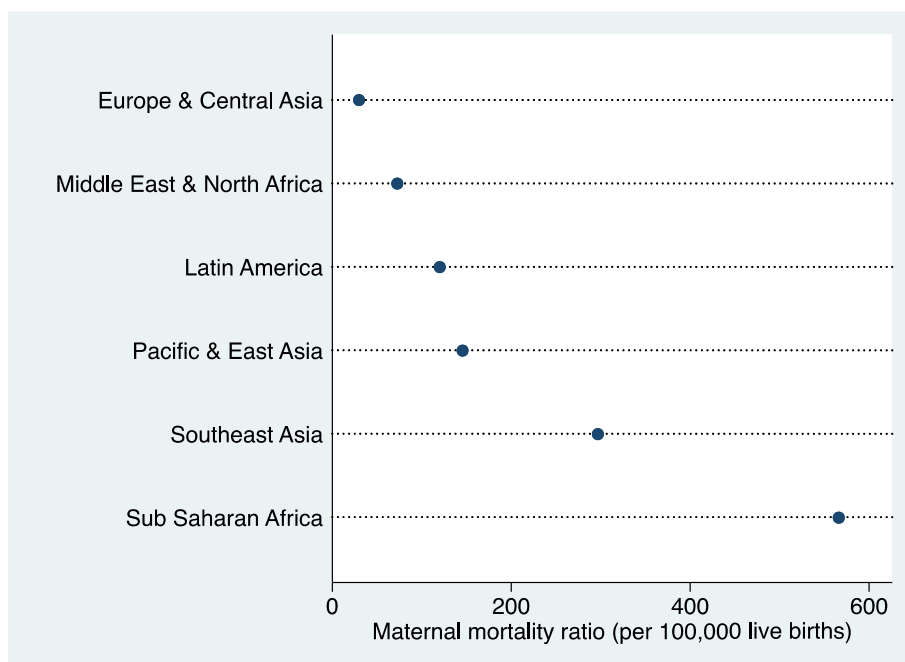
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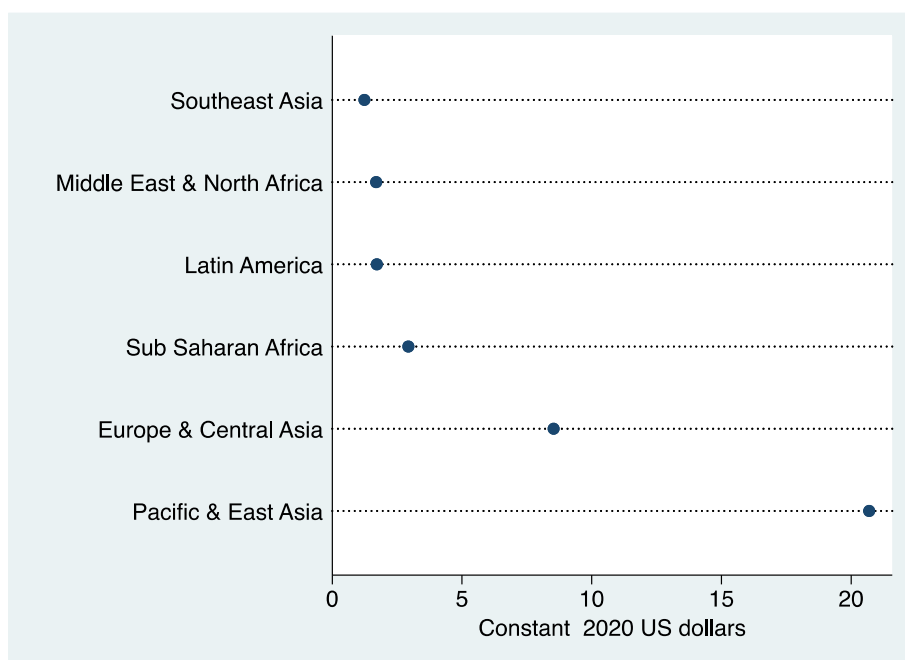
Appendix

Figure A1: Maternal mortality ratio by region, 2002–19



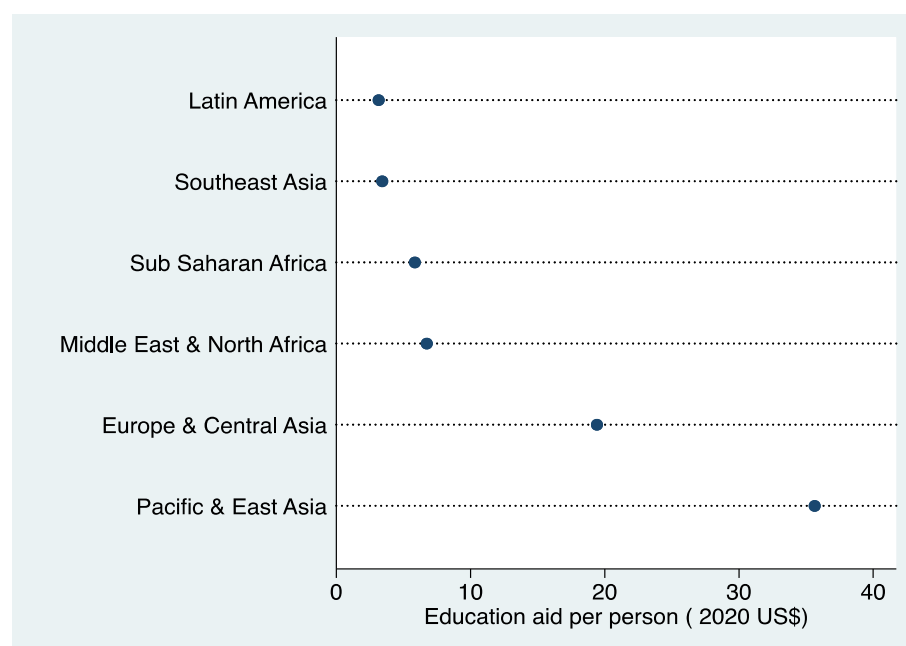
Source: author's illustration.

Figure A2: Average aid (per capita) per year by region, 2002–19



Source: author's illustration.

Figure A3: Education aid per person, 2002–19



Source: author's illustration.

Table A1: Descriptions of variables and sources of data

| Description of variable | Source of data |
|---|-----------------------|
| 1 Total aid per capita (constant 2020 US\$) | OECD database |
| 2 Health aid per capita (constant 2020 US\$) | OECD database |
| 3 Reproductive aid per capita (constant 2020 US\$) | OECD database |
| 4 Education aid per capita (constant 2020 US\$) | OECD database |
| 5 Maternal mortality (per 100,000 live births) | WDI |
| 6 Primary school completion rate (% of relevant age group) | WDI |
| 7 Real interest rate (%) | WDI |
| 8 Inflation, consumer prices (annual %) | WDI |
| 9 Trade (% GDP) | WDI |
| 10 Real GDP per capita | WDI |
| 11 Language fractionalization | Alesina et al. (2003) |
| 12 Ethnicity fractionalization | Alesina et al. (2003) |
| 13 Religion fractionalization | Alesina et al. (2003) |
| 14 Structural policies cluster average (1=low, 6=high) | WDI |
| 15 Economic policy management cluster average (1=low, 6=high) | WDI |
| 16 Public sector management and institutions cluster average= (1=low, 6=high) | WDI |
| 17 Policies for social inclusion/equity cluster average (1=low, 6=high) | WDI |
| 18 Domestic government health expenditure (% GDP) | WDI |
| 19 Government expenditure per student, primary (% GDP per capita) | WDI |
| 20 Population | WDI |
| 21 Fragile and extremely fragile states | World Bank (2022) |

Source: author's compilation.

Table A2: List of countries in the sample used in the estimations

| | Country | Extremely fragile | Fragile |
|----|------------------------------------|-------------------|---------|
| 1 | Afghanistan | X | |
| 2 | Albania | | |
| 3 | Algeria | | |
| 4 | Angola | | X |
| 5 | Argentina | | |
| 6 | Armenia | | |
| 7 | Azerbaijan | | |
| 8 | Bangladesh | | X |
| 9 | Belarus | | |
| 10 | Belize | | |
| 11 | Benin | | |
| 12 | Bhutan | | |
| 13 | Bolivia (Plurinational State of) | | |
| 14 | Bosnia and Herzegovina | | |
| 15 | Botswana | | |
| 16 | Brazil | | |
| 17 | Burkina Faso | | X |
| 18 | Burundi | X | |
| 19 | Cabo Verde | | |
| 20 | Cambodia | | X |
| 21 | Cameroon | | X |
| 22 | Central African Republic | X | |
| 23 | Chad | X | |
| 24 | Colombia | | |
| 25 | Comoros | | |
| 26 | Congo (Democratic Republic of the) | X | |
| 27 | Congo | X | |
| 28 | Costa Rica | | |
| 29 | Côte D'Ivoire | | X |
| 30 | Cuba | | |
| 31 | Djibouti | | X |
| 32 | Dominica | | |
| 33 | Dominican Republic | | |
| 34 | Ecuador | | |
| 35 | Egypt | | |

| | | | |
|----|----------------------------------|---|---|
| 36 | El Salvador | | |
| 37 | Equatorial Guinea | | X |
| 38 | Eritrea | | X |
| 39 | Eswatini | | X |
| 40 | Ethiopia | | X |
| 41 | Fiji | | |
| 42 | Gabon | | |
| 43 | Gambia (Republic of the) | | X |
| 44 | Georgia | | |
| 45 | Ghana | | |
| 46 | Grenada | | |
| 47 | Guatemala | | X |
| 48 | Guinea | | X |
| 49 | Guinea Bissau | | X |
| 50 | Guyana | | |
| 51 | Haiti | X | |
| 52 | Honduras | | X |
| 53 | India | | |
| 54 | Indonesia | | |
| 55 | Iran (Islamic Republic of) | | X |
| 56 | Iraq | X | |
| 57 | Jamaica | | |
| 58 | Jordan | | |
| 59 | Kazakhstan | | |
| 60 | Kenya | | X |
| 61 | Kiribati | | |
| 62 | Kosovo | | |
| 63 | Kyrgyzstan | | |
| 64 | Lao People's Democratic Republic | | X |
| 65 | Lebanon | | |
| 66 | Lesotho | | X |
| 67 | Liberia | | X |
| 68 | Libya | | |
| 69 | Madagascar | | X |
| 70 | Malawi | | |
| 71 | Malaysia | | |
| 72 | Maldives | | |

| | | | |
|-----|----------------------------------|---|---|
| 73 | Mali | | X |
| 74 | Marshall Islands | | |
| 75 | Mauritania | | X |
| 76 | Mauritius | | |
| 77 | Mexico | | |
| 78 | Micronesia (Federated States of) | | |
| 79 | Moldova | | |
| 80 | Mongolia | | |
| 81 | Montenegro | | |
| 82 | Morocco | | |
| 83 | Mozambique | | X |
| 84 | Myanmar | | X |
| 85 | Namibia | | |
| 86 | Nepal | | |
| 87 | Nicaragua | | X |
| 88 | Niger | | X |
| 89 | Nigeria | | X |
| 90 | North Macedonia | | |
| 91 | Pakistan | | X |
| 92 | Papua New Guinea | | X |
| 93 | Paraguay | | |
| 94 | Peru | | |
| 95 | Philippines | | |
| 96 | Rwanda | | |
| 97 | Samoa | | |
| 98 | Sao Tome and Principe | | |
| 99 | Senegal | | |
| 100 | Serbia | | |
| 101 | Sierra Leone | | X |
| 102 | Solomon Islands | | X |
| 103 | Somalia | X | |
| 104 | South Africa | | |
| 105 | South Sudan | X | |
| 106 | Sri Lanka | | |
| 107 | Sudan | X | |
| 108 | Suriname | | |
| 109 | Syrian Arab Republic | | |

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|-----|-------------------------------|---|---|
| 110 | Tajikistan | | X |
| 111 | Tanzania (United Republic of) | | X |
| 112 | Thailand | | |
| 113 | Timor-Leste | | |
| 114 | Togo | | X |
| 115 | Tonga | | |
| 116 | Tunisia | | |
| 117 | Türkiye | | |
| 118 | Turkmenistan | | |
| 119 | Uganda | | X |
| 120 | Ukraine | | |
| 121 | Uzbekistan | | |
| 122 | Viet Nam | | |
| 123 | West Bank Gaza | | X |
| 124 | Yemen | X | |
| 125 | Zambia | | X |
| 126 | Zimbabwe | | X |

Source: author's compilation based on data from World Bank (2022).