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Assessing Foreign Aid, The case of Foreign Aid To The Education Sector

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Abstract

The ultimate financial responsibility for improving educational access, participation, and quality lies with national governments. However, for many countries, particularly the poorest, educational progress depends, to a significant extent, on economic assistance coming from bilateral and multilateral donors. This study tries to understand how donors mobilize and allocate their resources to promote the education sector in the developing world, and to what extent they are successful in doing so. Our primary interest lies in the analysis of donor agencies and their behaviours, rather than the situations of education aid recipient countries. In addition to a chapter for the introduction and another for the conclusion, we assess education aid with the help of three interlinked studies. First, we look at how donors resource transfers have affected education sector achievements in education aid recipient countries. Second, we examine how donors commit their education aid resources for education in developing countries. Third, we present the determinants of the donors efforts (the total volume of education aid that a donor country makes available to the all recipients) in providing foreign aid for the education sector.

The objective of our second chapter is to address the pertinent question of education aid effectiveness by analysing, the impact of education aid on different educational achievements of the education aid recipients ranging from coverage to quality and efficiency. To conclude from our different empirical estimations, the impact of education aid on educational achievements is always found to be helpful but significant rarely. Among other factors, we find health levels to play a key role in improving educational achievements.

Apart from our study, relevant literature (reviewed in Chapter 2 of this thesis), has found only a small -and often not statistically significant - effect of education aid on the recipients

educational achievements. Is this an inherent feature of education aid or the consequence of poor allocation practices by donors? One of the tentative answers to this question is that education aid can be effective only if donors select education aid projects appropriately. In our third chapter, our aim is to investigate how recipient countries needs and merits together with donors interests determine the allocation of education aid by donors, and have shown that the "needs, merits and self-interest" factors have very different explanatory power in the analysis of education aid allocation behaviours; we also found some significant harmonies and differentiations of the education aid determinants among various donors at individual and group levels. Our findings suggest that at the aggregate level education aid is directed towards countries with lower levels of educational development. However, this pattern is not present for the majority of bilateral donors.

In our fourth chapter, we have tried to answer the question as to what determines education aid effort and have shown that, besides economic factors, several other factors also help to explain variations in education aid efforts among donors. Given the recent economic situation and improved awareness, an explanation of why education aid effort varies among donors at any given time -and, for an individual donor, between different periods will provide us with an understanding of the reasons affecting the nature and volume of education aid. Furthermore, such an explanation might also helps to improve conditions in the existing nature and volume of education aid.

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Acknowledgment

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Declaration of Authorship

I declare that, except where explicit reference is made to the contribution of others, that this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

Signature: _____

Name: Sohail Farooq

List of Abbreviations and Acronyms	
2SLS	Two-Stage least Squares
AB	Arellano Bond
AUSAID	Australian Aid
CMP	Comparative Manifestos Project
CRS	Creditor Reporting System
CRSE	Cluster-Robust Standard Errors
DAC	Development Assistance Committee
DAE	Donors to African Education
DANIDA	Danish International Development Agency
EFA	Education For All
FINNIDA	Finnish International Development Agency
FTI	Fast Track Initiative
FY	Fiscal Year
GDP	Gross Domestic Product
GMM	Generalized Method Of Moments
GTZ	German Agency For Technical Cooperation
HDI	Human Development Index
IDS	International development statistics
IMF	International Monetary Fund
IV	Instrumental Variable
LDV	Lagged Dependent Variable
LSDV	Least Square Dummy Variable
MDGs	Millennium Development Goals
NEP	Net Enrolment Rate, Primary School
NGO	Non-Governmental Organization
ODA	Official Development Assistance
OECD	Organization For Economic Cooperation and Development
OLS	Ordinary Least Squares
PISA	Programme For International Student Assessment
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific And Cultural Organization
UNICEF	United Nations Childrens Fund
UPE	Universal Primary Education
US	United States Of America
USAID	United States Agency For International Development
WB	The World Bank
WCEFA	World Conference On Education For All
WDI	World development Indicators
WW II	World War II

Chapter 1

Foreign Aid to the Education Sector

1.1 INTRODUCTION

In his 2006 State of the Union Address, US President Bush stated, "For people every where, the United States is a partner for a better life. Short-changing these efforts would increase the suffering and chaos of our world . . . ".

Do developed countries seek to improve the well-being of individuals in the poorer countries of the world? "Respect of human rights and the promotion of democracy" is one of the five main objectives of Swiss foreign policy;[1] the United Kingdom (UK) stated that "By 2015, UK aid will: secure schooling for 11 million children more than we educate in the UK but at 2.5 per cent of the cost" as one of its international priorities;[2] and the strategic plan for the United States Department of State claims that "a more healthy, educated, democratic and prosperous world...will also be more stable and secure".[3] Similar statements by the governments of developed countries are common. Are these statements merely empty rhetoric, or are they backed by a strategy of promoting education in the less developed areas of the world? If the later, how effective are they in doing so?

If the richer countries of the world seek to promote education abroad, one area where we would certainly expect to find evidence of this is in foreign aid (Aid) targeted to the educa-

[1]The Swiss Confederation: A Brief Guide (2011).

[2]The future of UK aid: Changing lives, delivering results: our plans to help the world's poorest people (2011).

[3]Fiscal Year (FY) 2004-2009 Department of State and USAID Strategic Plan.

tion sector (Education Aid).[4] The focus of this thesis is on foreign aid to the education sector. The evidence presented in this thesis suggests that in the new millennium, the promotion of education abroad is also important for developed countries, because, with interconnectedness between industrialised and developing countries, wealthy nations become less able to insulate themselves from problems caused by underdevelopment abroad. It is increasingly self-interested for donors to use aid to promote education sector.

The United Nations (UN) Secretary-General Kofi Annan described education as "a human right with immense power to transform" and claimed that "on its foundation rests the cornerstones of freedom, democracy and sustainable human development" (UNICEF, 1999).

The role of education in economic development is clearly formulated by economists such as Schultz (1963), who proposes the notion of human capital, which includes the idea that "people enhance their capabilities as producers and as consumers by investing in themselves and that schooling is the largest investment in human capital". Certain arguments of education and development by development economists go beyond the human capital theory, like Heyneman (2000) claims that social capital can be created through effective schooling, and Sen (1999), who presents human capability as a core concept of development. According to Sen (1999), human capability addresses the substantive freedom the ability of people "to lead the lives that they have reason to value and to enhance the real choices they have".

Education is critical to achieving the Millennium Development Goals (MDGs), and is claimed to deliver benefits in health, governance, productivity, gender equality, and nation-building (Cassity, 2010). There is consistent evidence in the worldwide literature that education lowers fertility and the infant and child death rates. Securing progress in the education sector is particularly important as it is the largest spending sector and the largest national employer in many developing countries.[5] Improvements in this sector will therefore have

[4]In the literature; Aid, Foreign Aid, International Aid, Developmental Aid, Overseas Aid, Overseas Development Aid/Assistance, Economic Assistance, Development Assistance, International Assistance and International Support are used interchangeably. In our thesis "Aid" means the Whole Foreign Aid given/received by a donor /recipient country and "**Education Aid**" means the Education Sector-Specific Foreign Aid given/received by a donor /recipient country.

[5]For more benefits of education, please see Chapter 2 of this thesis.

a positive knock-on effect on public financial management overall. The ultimate financial responsibility for improving educational access, participation, and quality lies with national governments. However, for many countries, particularly the poorest, educational progress depends, to a significant extent, on aid coming from bilateral and multilateral donors.

As stated earlier with the current emphasis on education in the UN MDGs, understanding education aid is of the utmost importance. A better knowledge of the effects of education aid and an understanding of its allocation mechanism would be useful in making judicious aid allocation decisions at a time when the focus is on the role of education in development (McGrath, 2010; McMahon 1999; among others) is increasing. Moreover, at a time when developed nations are critically reassessing their aid commitments, a deeper understanding of the donors efforts, allocative decisions and effectiveness of education aid in the developing world is vital.

This study tries to understand how donors mobilize and allocate their resources to promote the education sector in the developing world, and to what extent they are successful in doing so. Our primary interest lies in the analysis of donor agencies and their behaviours, rather than the situations of education aid recipient countries. We assess education aid with the help of three interlinked studies. First, we look at how the donor's resource transfers have affected the education sector achievements in the education aid recipient countries. Second, we examine how the donors disburse their education aid resources for developing countries education sector. Third, we present the determinants of the donor's efforts (the total volume of education aid that a donor country makes available to the all recipients) in providing foreign aid for the education sector.

1.2 FOREIGN AID

1.2.1 Definition

Before advancing further it is necessary to define what is we meant by foreign aid. The Development Assistance Committee (DAC) of the Organisation for Economic Cooperation and Development (OECD) is the main organ in which donors seek to coordinate their bilateral cooperation activities for development. Since its creation in 1961, the DAC is also responsible for collecting statistics on the global effort of cooperation. Since we will draw on their data, we here adopt their definition of aid. We use this term to include resource flows defined by the OECD as "Official Development Assistance" (ODA). ODA is defined as resource flows to developing countries and to multilateral institutions for use in developing countries which are given by governments and have a grant element of at least 25 per cent; the purpose of the funds should be developmental, therefore military aid is not included in data reported for ODA. The OECD database is populated based on donor's reporting, not recipient usage.

Data collection relies primarily on declarations by DAC members, multilateral organisations and other donors. The data are collected through two reporting systems: the aggregated DAC includes a breakdown by type of aid, donor countries and sectors, and data from the Creditor Reporting System (CRS), which contains detailed information on individual projects and aid programmes. The CRS data thus allows the analysis of the sectoral distribution of aid by sector, donor and recipient countries. Therefore CRS data cover only those activities undertaken by individual DAC member countries within the framework of their bilateral ODA and aid activities funded by some multilateral institutions on their regular budget. This database provides a detailed overview of aid activities. The data on aid to education are themselves broken down into 11 categories, grouped into 4 sub-sectors -basic education (code 112), secondary education (code 113), post-secondary education (code 114) and education unspecified (code 111).[6]

[6]See table B.3 in Appendix B for a detailed list of donors' education aid activities.

There are a few important points to note. ODA can be either bilateral (state-to-state) or multilateral (channelled through a multilateral institution such as the World Bank (WB), International Monetary Fund (IMF) and UN etc.). For aid to be classified as multilateral the donor country to the multilateral institution must give up control of how and where that money is spent. Thus, disaster relief from the United States (US) that is channelled through a UN body but specified for use in Country X is not multilateral, because the US does not give up ownership of how that aid is used; this aid would appear as US bilateral aid in the OECD data.

1.2.2 Historical Perspective on Foreign Aid

Before the European colonisation of Latin America, Africa and Asia, nations used to trade resources, information, ideas and even technical assistance back and forth. However, after European colonisation, significant amounts of technical assistance in the form of missionaries and teachers flowed into the colonies (Smith, 1990). International co-operation evolved further as a result of the two world wars. Most of this was necessarily collaborative (between the Allies), to support the war effort. In order to understand foreign aid overall (and education aid more specifically) today we need to place it in its relatively short historical context. Since the end of World War II (WWII), the aid business as a whole has gone through four phases, two in the Cold War and two following the end of the Cold War: (1) Rebuilding Western Europe after WWII; (2) Aid to developing countries during the Cold War; (3) Post-Cold War aid; and (4) Aid in the new millennium.

1.2.2.1 The Marshall Plan

The aftermath of World War II saw the world's first large-scale development aid programmes in the Marshall Plan, which sought to rebuild Western Europe. The Marshall Plan aid from the US to Western Europe was meant to stop the spread of communism in the recipient countries and develop export markets for the US economy.

During the colonial era, the traffic of education aid in developing countries was very restricted. However, beginning in the early l960s when the bulk of the colonies received their political independence, aid negotiations started up with many of the new bilateral assistance agencies that came into being during the 1960s as well as with the multilateral agencies, in particular the World Bank which started its educational lending in 1963. Aid negotiations also intensified with the private agencies, such as the Ford and Rockefeller Foundations, and with Non-Governmental Organisations (NGOs). In 1972, the Ford and Rockefeller foundations together hosted a meeting of the heads of international donor organisations at the Rockefeller's Conference Center in Bellagio, Italy, on the topic of Education and Development Reconsidered.

1.2.2.2 The Expansion of Foreign Aid

As foreign aid expanded to include developing countries, the rationale for aid changed. Poor, recently independent countries with small markets represented limited potential as consumers for the producers in industrialised countries. However, it was generally understood by policy makers that a large amount of aid was funnelled to strategic allies on the right side of the bipolar struggle, with little regard for their respect for human rights or their desire to advance the well-being of their citizens.

In the 1950s and 1960s, development efforts were concentrated on increasing levels of agricultural and industrial production as well as the exploitation of natural resources (mining, forestry, etc.). It was not until the early 1970s that leading donor agencies began to invest more heavily in integrated rural development programmes, as well as poverty alleviation, basic needs, education, and gender issues (Nordtveit, 2011). An expanded vision of international educational development in the 1960s and 1970s defined a larger role for international assistance in less industrialised countries, which, in turn, called for coordination among aid donors. This coordination led to a series of donor conferences. In 1988, the World Bank sponsored several regional meetings in Africa to discuss the findings and implications of its special report, Education in Sub-Saharan Africa: Policies for Adjustment, Revitaliza-

tion, and Expansion (World Bank, 1988). The Bank also held follow-up meetings with other donor organisations that later evolved into a group called the Donors to African Education (Chabbott, 2003).

Throughout the 1980s and early 1990s, close attention was paid to national educational expansion and planning in the framework of national development and economic modernization. Many critics (For details see Noveli, 2010), have argued that education was much more than human capital and that the World Bank and others driving these reforms should go beyond this narrow economism and conception of the value of education, and recognise the positive social, political and cultural effects that education can potentially produce.

1.2.2.3 Post-Cold War Aid

Given the security focus that had previously been used to justify aid, it is not surprising that aid became less important after the end of the Cold War. Berthelemy and Tichit (2004) performed a number of statistical tests on difference in aid between the 1980s and 1990s, and concluded that "a major outcome of the end of the Cold War has been the strong decline in aid commitments of bilateral donors".

Over the decades developing countries have experienced a shift in both the amount of aid and the purpose for which it is delivered. The emphasis changed from "structural adjustments" in the 1980s to "conditionality" in the 1990s. In the last decade of the century, donor financing has been geared toward social services such as health and education (see Stevens, 2008). With the recent emphasis being placed on improving human infrastructure, a large portion of the aggregate aid is diverted toward specific sectors and purposes. In the 1990s the international education aid community gave basic education the highest priority through the World Conference on Education For All (WCEFA) held in 1990 with the sponsorship of United Nations Children's Fund (UNICEF), United Nations Educational, Scientific and Cultural Organisation (UNESCO), the World Bank, and the United Nations Development Programme (UNDP). Aid agencies that had traditionally supported secondary, higher edu-

cation, and/or vocational education began to switch to basic education.[7] Ten years later, the World Education Forum (2000) highlighted that, for many countries, Universal Primary Education (UPE) (committed at WCEFA) was still far from being a reality. During this Forum, a firm commitment was made that "no countries seriously committed to Education For All (EFA) will be thwarted in their achievement of this goal by a lack of resources" (World Education Forum, 2000).To support countries at risk of not achieving these goals, two years later in 2002, 22 bilateral and multilateral donors, initiated the "Fast Track Initiative" (FTI).[8]

1.2.2.4 Aid for a New Millennium

The end of the Cold War resulted in a drastic reduction in aid. Figure 1.1 provides some evidence that this has changed in the new millennium, with aid climbing to historical highs in the last few years. In early 2002 at the Monterrey Conference, donors agreed to increase their funding for development, which lead towards a new paradigm of aid "aid as a partnership". The events of September 11, 2001 have radically altered the geopolitical and geostrategic activities of the dominant Western powers, resulting in a greater importance being accorded to issues related to aid, development, and education.

Investment in education is critical for economic growth, improved health, and social progress is beyond question. However, alongside this, many people in today's global society, including many of its most prominent leaders and academics, maintain that terrorist activity is the result of ignorance and/or poverty.

In the aftermath of the September 11, 2001 attacks (which highlighted terrorism as a major non-military threat to international security), aid has been repeatedly identified as an important counter-terrorism policy option. Several prominent observers -ranging from former US Vice President *Al Gore* to US President *George W. Bush*, and academics, including

[7]For example, DANIDA(Danish International Development Agency), FINNIDA(Finish International Development Agency) and GTZ(German Agency for Technical Cooperation).

[8]The FTI, founded in 2002, is specifically designed to support low-income countries in achieving UPE. This initiative is a concrete response to the commitment of the international community taken at the Forum of Dakar that no country with a credible plan should be delayed by lack of resources. The full objectives, principles and procedures of the initiative, were recorded in a framework document (FTI, 2004).

Joseph Nye, Laura Tyson and Richard Sokolsky and Joseph McMillan - have called for increased aid and educational assistance to end terrorism, by eliminating what is believed to be its core causes Krueger and Maleckova (2003).[9]

This new security environment has changed the objectives of the donors e.g. "The objective of the Australian aid program is to advance the national interest by reducing poverty and promoting sustainable development. The aid program restricts environments conducive to terrorism by assisting the poor to access basic services, including quality and affordable education, improving their employment prospects and helping them cope with risk and vulnerability".[10] Since 2001, the United States Agency for Development Aid's (USAID) education portfolio in the Near East and South Asian region has dramatically expanded from 1 to 13 programmes. The budget for education in 13 countries (Afghanistan, Bangladesh, Egypt, India, Iraq, Jordan, Lebanon, Morocco, Nepal, Pakistan, Sri Lanka, West Bank/Gaza, and Yemen) rose from $99.5 million in fiscal year (FY) 2002 to nearly $274.5 million in FY 2004.[11]

1.3 EDUCATION AID FLOWS

Donor contributions are an important source of revenue for education systems in many least and low-and middle-income countries. Monitoring the volume of education aid and understanding its nature and composition is of vital importance to us and to the global community of donors and recipients.

Figure 1.1 shows the evolution of education aid flows to all education aid recipient countries over the period 1973-2007 (in constant US$ of 2008). Three periods may be distinguished. After a rapid downturn in the late 1970s education aid started growing rapidly over the second half of the 1980s, but remained stagnate during the whole decade of the 1990s. At

[9]The academics are respectively, the Dean of the Kennedy School of Government; the Dean of the London Business School and working at the National Defence University, USA.

[10]Counter-Terrorism and Australian Aid August 2003.

[11]U.S. Mission to the U.N. Agencies in Rome, USAID Works.

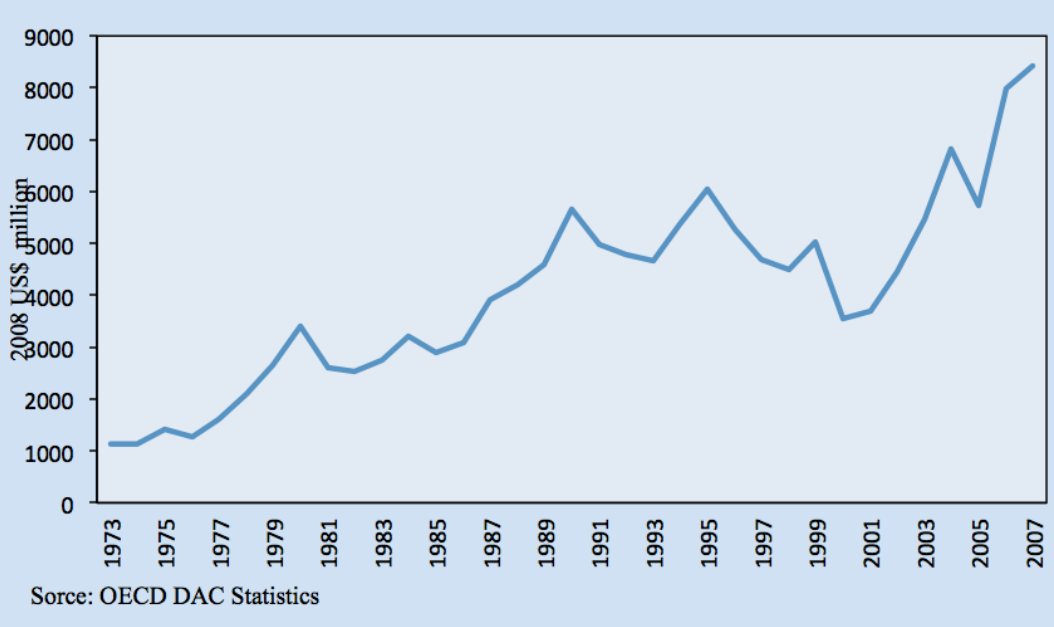


Figure 1.1: Total Education Aid Flows (1973-2007)

the end of the century there was a sharp decline in education aid flows which resulted in the lowest levels of education aid flows since 1986. The first decade of the 21st century brought a renewed emphasis on foreign aid, in part inspired by the challenge of reaching the UN's Millennium Development Goals. Aid to the education sector resumed its growth in 2001 and had reached a value of 8.4 billion US$ by the year 2007.

The second half of the 1990s saw a downward trend in education aid flows, and it reached a record low of 3.5 billion in 2000, a decrease of 41 percent compared with 1995, primarily due to a long-term reduction trend of bilateral aid flows since 1992. Fiscal problems in OECD countries, strategic aid reductions (e.g., as a result of the end of the Cold War) and a general sense of aid pessimism were the main reasons for this development.

After particularly low levels of commitments to education at the turn of the century, the next five years saw a marked increase. Just after the Dakar Conference on Education for All, in 2002, ODA commitments to education exceeded US$ 4 billion for the first time since 1999. The period between 2000 and 2007 was marked by a significant increase, from US$ 3 billion to US$ 8.4 billion, suggesting that advocates have had some success in raising awareness of the importance of education in the international community.

The shares of education aid in total ODA are indicators of the priority they receive. Despite a perception that education and other social sectors have benefited disproportionately from aid increases, figure A.1 (in Appendix A) shows that, that share of education in total aid remained broadly stable, averaging between 11 and 13 percent of total aid, with certain exceptions e.g. in mid-1980s and 2005-06. However education aid received a decreasing share of the total aid targeted to the social sector, which declined from 57 per cent (1973) to just 21 per cent in 2007.

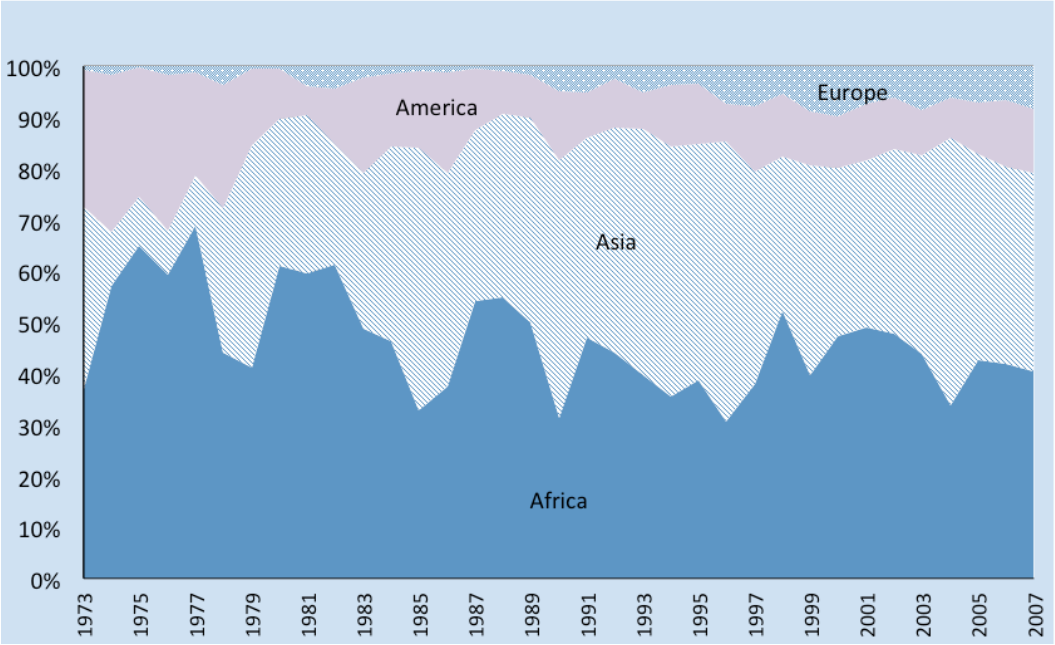


Figure 1.2: Education Aid Flows At Regional Level (1973-2007)

In addition to aid volume, aid performance is measured with reference to geographical allocation, identifying which regions receive aid. Figure 1.2 provides a regional breakdown of the relative share of education aid. Changes over time in aid shares by regional destination are likely to reflect evolving donor motivations, as well as the changing needs of poor countries in different regions. Africa, the largest regional recipient of education aid in 2007, received almost 40 per cent of total education aid. For the region, this represents a substantial decrease over the 69 per cent share it received in 1977. From the early 1970s to the 1980s, on average, more than 50 per cent of education aid was directed toward Africa. Since the late 1970s, Asia has continued to be the second largest recipient of education aid. The share

allocated to Asia rise during the early 1990s followed by a fall in the late 1990s but has risen again in the last decade. In 2007, education aid deliveries to Asia and Africa accounted for 80 percent of the total. This reflects the fact that they are home to the largest share of out of school children, which was 91 percent in 2004-2006. Until the 1990s, countries in America were the most significant recipients of aid outside Asia and Africa. Since the 1990s, the newly independent states of East and Central Europe have emerged as significant recipients. For European donors in particular, European recipients now feature among the top ten recipients, whereas they did not do so ten years previously. For example, Serbia and Bosnia-Herzegovina are now among the top ten recipients of education aid from Norway, Sweden and Switzerland, whereas they did not feature ten years ago.

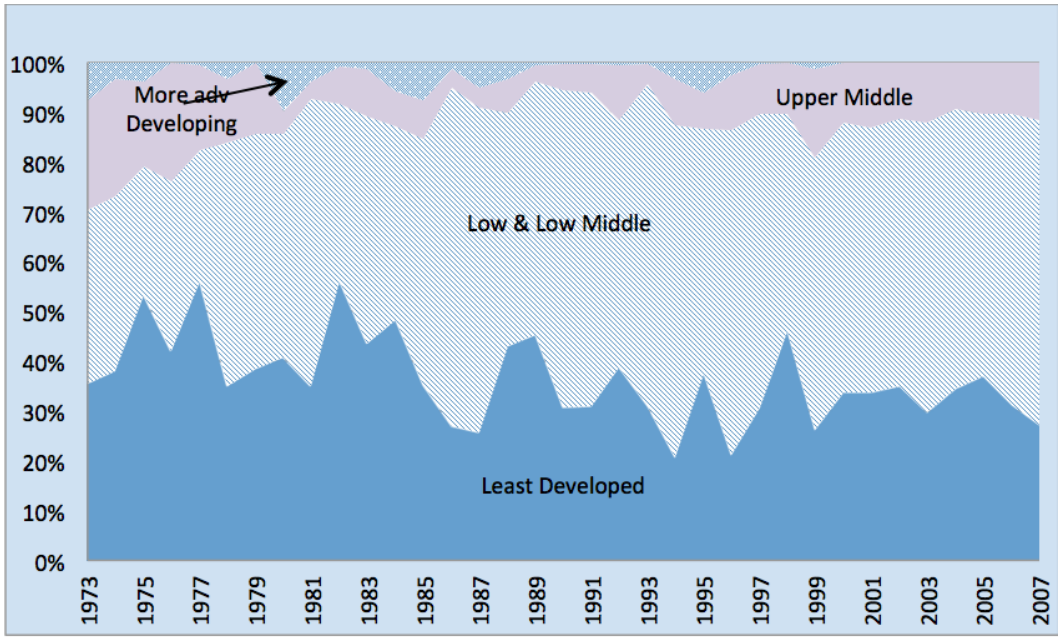


Figure 1.3: Education Aid Flows at Income Level (1973-2007)

Out of a total of 152 aid recipient countries, the OECD-DAC defines sixty of these as low and low-middle income countries, and forty-nine as Least Developed Countries (LDCs), while the rest of the 43 are Upper Middle income and the more advancing Developing countries. Figure 1.3 shows the allocation of education aid by income group. The most striking result from figure 1.3 is the progressive redistribution of education aid that has taken, place since the 1970s. In 1975, just over half of all aid went to least developed countries, with

nearly one fourth being received by Low and Low middle-income countries. By 1999 the share going to Low and Low middle-income countries was 55 per cent and 26 per cent for the Least Developed countries. In 2007, the least developed countries received 27 per cent in aid for education, the lowest share received in the last 10 years. Low and Low Middle income countries received a higher share of overall aid to education: 61 per cent in 2007. Nearly 88 per cent of education aid goes to least developed and low & Low middle income countries. The remainder about 12 percent is allocated to upper-middle income countries. The LDCs group includes many countries that have the worst educational outcomes and are the least likely to meet the education-related MDGs.

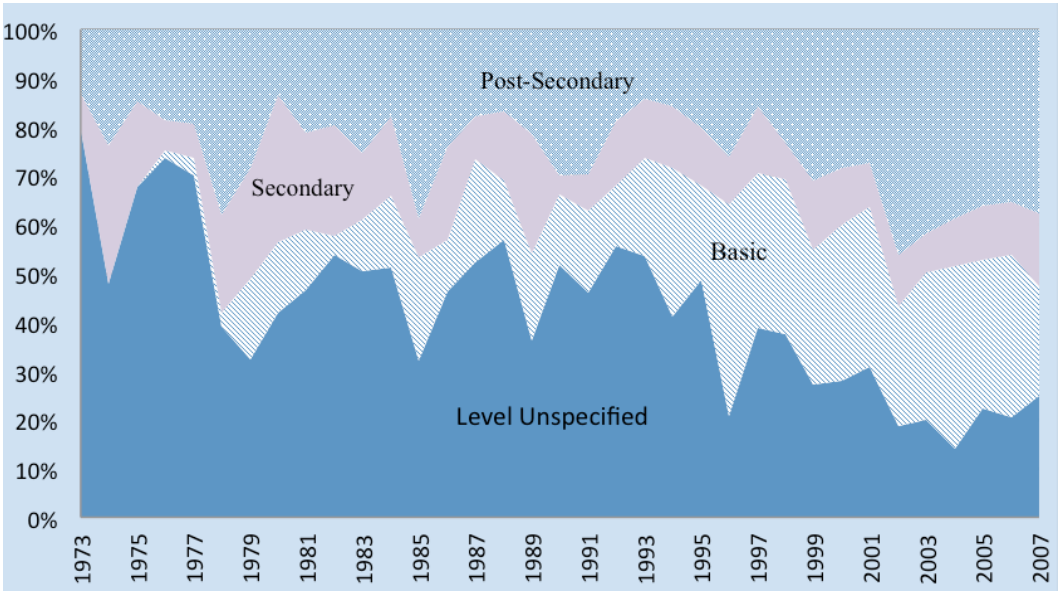


Figure 1.4: Education Aid Flows At Sectoral Level (1973-2007)

In response to the World Conference on Education for All, held in Jomtien, Thailand, in 1990, and in support of the debate on poverty alleviation, international educational concern has been oriented towards basic education. This results in a higher share for basic education in education aid as a whole from 5 per cent in the mid 1970s to around 30 per cent in the mid 1990s.(see Figure 1.4)

Between 1999 and 2006, both basic and post-secondary levels of education increased their shares in total education aid from 27 per cent to 33 per cent and from 31 per cent to 35 per cent, respectively. Of total direct aid to education in 2007, 22 per cent was for basic

education, 15 per cent for secondary education, and 38 per cent for post-secondary education; 25 per cent was recorded as an unspecified level (See figure 1.4). In recent years, secondary and post-secondary education have benefited from an increased share of education aid. The redistribution towards secondary and post-secondary education has been seen as a welcome shift as more young people are now completing primary education and able to progress to secondary and post-secondary education.

1.4 ORGANISATION, METHODOLOGY, AND FINDINGS

We assess education aid with the help of three interlinked studies described in the following sub-sections;

1.4.1 Education Aid Effectiveness

After more than 50 years of aid, its rationale and structure is under intense critical review. Despite the extensive literature considering the effects of aid on economic growth and poverty, there is little systematic empirical evidence on how overall aid affects education, and even less on how education aid affects educational outcomes (achievements). The second chapter of this thesis analyses the impact of education aid on different educational achievements ranging from coverage to quality and efficiency of the education aid recipients education system. The work also assesses the importance of infant mortality rate (used as a proxy for health status in the recipient country) after controlling for other variables such as Gross Domestic Product (GDP) per capita, population under the age of 15, and democracy among others.

The objective of our second chapter is to address the pertinent question of education aid effectiveness. Recent contributions to the aid literature suggest that sector-by-sector evaluations are necessary to obtain more accurate evaluations of aid effectiveness (Findley et al., 2010). A sectoral approach avoids the extremely high complexity of macro level

evaluations in which it is virtually impossible to acknowledge for all factors with potential impacts on the link between aid and its intended target. Moreover, sectoral data can be drawn from international statistics, which appear to be more reliable than the micro level evaluation data generated by development agencies with the intention of using them as a marketing device for development services.

To conclude from our linear (OLS Fixed Effect, Instrumental Variable Approach and GMM specification) and Logistic empirical estimations, the impact of education aid on educational achievements is always found to be helpful but rarely significant. We find health levels to play a key role in improving educational achievements. Our results are robust to different model specifications. The main policy implication would be to channel a part of education aid toward improving the level of health (in particular, infant mortality).

Our second chapter contributes to the literature in three ways. First, we include among our determinants of educational achievements a summary measure of public health, infant mortality. This factor has been ignored in the relevant literature although health is a well-accepted determinant of school attendance and school performance. Second, we consider a wider range of empirical specifications, instead of relying on one or on a few selected ones. In particular, we consider a logistic functional form that should capture the dynamics of educational achievements over time better than the approach commonly used in the literature (see Clemens, 2004). Finally, we consider a wider array of educational achievements as our dependent variables in order to study whether our conclusions would vary according to the way we measure outcomes. The findings and results of this study will benefit major, key stakeholders, including donors and recipient countries that play a major role in education sector development.

1.4.2 Education Aid Determinants

The development literature has been investigating the determinants of aid allocation for more than 40 years, but most have used only aggregate measures of aid such as GDP. The purpose

of this analysis is to revisit the debate regarding the impact of recipient need, merit, and donors interests on aid allocation. The novelty is that the analysis is carried out at sector level. Knowing that aid targets a variety of recipient needs, it may make more sense to estimate the effects of sector-level need indicators on aid targeting a particular sector, since countries can differ considerably in their needs in areas such as health, education or infrastructure even if they are at a similar level of economic development. Factors such as past policy choices, and even cultural practices imply that for a given level of GDP per capita some countries have a more acute need than others in particular areas such as education. It is thus desirable that donors take these specific needs into account when allocating aid to different sectors.

In examining aid it is important to look for patterns in bilateral aid as a whole (summed across donors) and at the behaviour of individual donors. The macro analysis may capture aspects of allocation that would be missed in an analysis of individual donors. Donors specialize in sectors, in geographic areas, in modes of delivery, etc. It is important to see how these all appear when they come together as "bilateral or multilateral aid". Donors may crowd each other in aid delivery, seeking to buy influence with the same, narrow, set of recipients. On the other hand, they may each pursue their interests with different countries, creating a more level playing field for recipients.

In an empirical analysis, for the period 1973-2007 across 146 developing countries, donors education aid commitments are regressed against a set of determinants, which can be classified in three categories: (i) the recipient country's needs, (ii) the recipient country's merits, i.e. the quality of its policies and institutions and, (iii) the geopolitical and commercial interests of the donors. Our aim is to investigate how recipient countries' needs and merits together with donors' interests determine the allocation of education aid by donors.

There are many reasons why we should be interested in the determinants of education aid flows. For example, first, it is open to debate whether education aid can achieve its intended targets or not; apart from our study (Chapter 2 of this thesis), studies such as Michaelowa and Weber (2007) and Gyimaph-Brempong and Asiedu (2008) have found only a small - and often not statistically significant - effect of education aid on the recipient's educational

achievements. Is this an inherent feature of education aid or the consequence of poor allocation practices by donors? One of the tentative answers to this question is that education aid can be effective only if donors select education aid projects appropriately. In this sense, aid allocation matters. Second, aid is an important means by which donor countries and agencies try to help poor countries at times when they are in need of it. Third, we should care about whether education aid is being directed towards those most in need of it. If education aid is to be effective in promoting its intended targets, it is crucial that it be allocated to the countries which need it most. Similarly, we should also be interested in whether aid tends to go more towards where it might be most effective, as measured by the effectiveness of the recipient government in making use of the aid. Fourth; in a situation where global education aid deliveries have fallen sharply in recent years, from 23 per cent of total aid flows in early 1970s to around 9 per cent of the total aid flows in 2007, an analysis of education aid allocation will help the sector to utilise the relatively scarce aid more efficiently. Finally, the current architecture of education aid combines a variety of actors, having different objectives and statutes, which imply that the education aid allocation behaviours may vary to a large extent from one group (e.g. bilateral donors) to another (e.g. multilateral donors), or even from one individual donor to another. A clear understanding of the functioning of the education aid architecture requires an evaluation of harmonies and differentiations of the education aid determinants among various donors.

In chapter three we have shown that the "needs, merits and self-interests" factors have very different explanatory power in the analysis of education aid allocation behaviours. Our findings suggest that although at the aggregate level education aid is directed towards countries with lower levels of educational development, this pattern is not present for the majority of bilateral donors. Multilateral organisations like the World Bank and the United Nations seem to target their education aid better than most bilateral donors, who are very sensitive to their self-interests.

1.4.3 Education Aid Effort

Round and Odedokun (2004) pointed out that little of the extensive literature on aid addresses the issue of what determines the total volume of aid that donors make available. Recent economic and technological developments have markedly affected the foreign aid business. On the one hand, improved awareness raises pressure on donor governments to increase the aid supply (Bertoli et al., 2008), while at the same time, the persistent rise in the interdependence of donors has decreased the importance of aid to them. Besides economic factors, several other factors also help to explain variations in aid efforts across donors; these include cultural characteristics, national identities, domestic political institutions, great power status, and the existence of a domestic welfare state within the donor country (Ahmed et al., 2011). Accounting for these country-specific characteristics will helps us to explain why some donors have higher level of education aid effort while others do not. Are there any specific determinants of education aid effort that operate across all (or most of the) donor governments? In chapter four, we try to answer this question and have shown that what determines education aid effort. In addition, we identify the patterns that are apparent across donor countries and groups.

Given today's stronger focus and the introduction of measurable international targets, the question of donors education aid efforts or supply has become more important. As donors determine the quality and quantity of aid available to recipients, therefore, an explanation of why education aid effort varies among donors at any given time -and, for a particular donor, between different periods- will provide us with an understanding of the reasons affecting the nature and volume of education aid. Furthermore, such an explanation might also helps to improve conditions in the existing nature and volume of education aid.

1.4.4 Conclusion

The last chapter summarises the work, results and implications of the empirical sections in Chapters two, three and four of this thesis. It also presents the author's conclusions and recommendations with respect to education aid. The final section of this chapter discusses the limitations of the research and offers further areas for future research within the context of education aid.

Appendix A

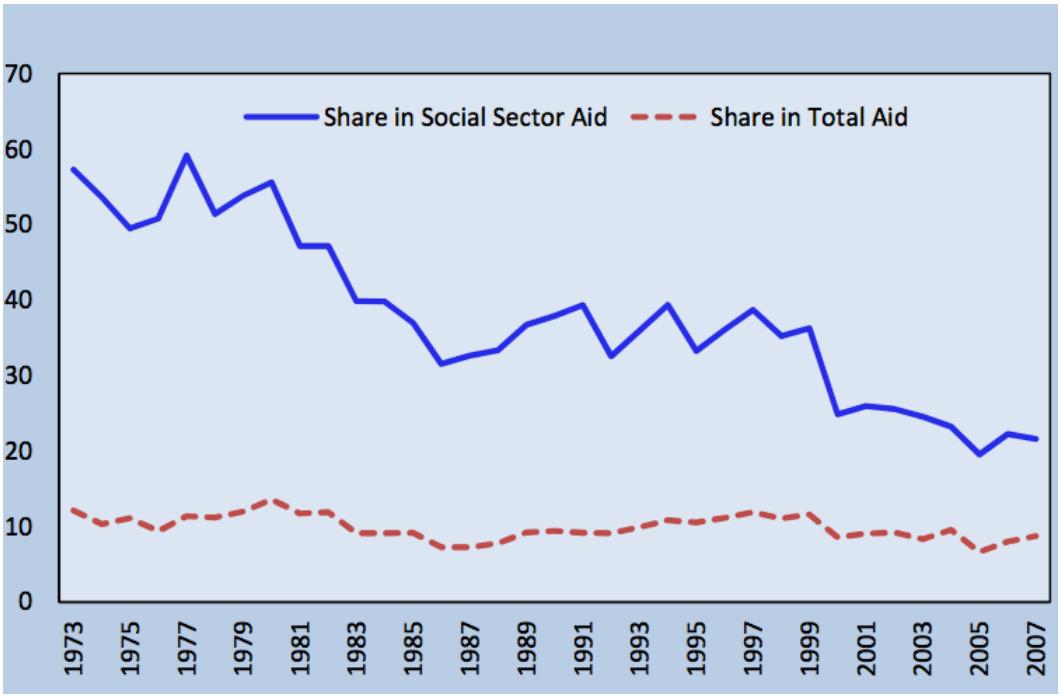


Figure A.1: Education Aid Share in Total and Social Sector Aid (%)

Chapter 2

Aid Effectiveness in the Education Sector

2.1 INTRODUCTION

Most of the cross-country econometric studies of aid have concentrated on the effectiveness of aid in increasing economic growth (Burnside and Dollar, 2000; Collier and Dollar, 2002; Easterly et al., 2004; Dalgaard et al., 2004; to name a few). The literature on aid effectiveness can mainly be divided in to two distinct camps: (a) Aid optimist and (b) Aid skeptics. Optimists support the effectiveness of aid in promoting economic growth provided that it is accompanied with well-established institutions, good governance, free trade and fiscal discipline, among other elements[1](Burnside and Dollar, 2000 and 2004; Hansen and Tarp, 2001; Morrissey, 2001; Chauvet and Guillamount, 2003 and Pattillo et al., 2007).[2] On the other hand, aid skeptics argue against the aid effectiveness and claims that foreign aid, rather than assisting poor countries to grow richer crowds out private sector investment and innovation and results in government corruption and rent seeking, undercutting economic and political development, enabling governments to remain unaccountable to their citizens, encouraging dependency on donors and thus reducing incentives for recipients to adopt good policies

[1]Some have also pointed out that, aid effectiveness on growth is dependent on certain features of recipient countries, such as the share of a country's area that lies in the tropics, the level of democratisation, political stability, vulnerability to external shocks or absorptive capacity (Daalgard et al., 2004; Svensson, 1999; Chauvet and Guillaumont, 2003 and 2004; Guillaumont and Chauvet, 2001).

[2]They also argue that increased aid results in improved outcomes in poor countries by relaxing resource constraints. Sachs (2006) argues that a massive rise in foreign aid helps countries to achieve MDGs.

(Easterley et al., 2003; Roodman, 2007; Brautigam and Knack, 2004; Knack, 2001; Rajan and Subramanian, 2008; Moyo, 2009 and Christensen et al., 2010).

Although aid effectiveness on growth merits close attention, it is also a fact that, many aid projects target purposes that might affect growth only remotely or even not at all (Clemens et al., 2004).[3] Indeed, donors have made it clear that they are also interested in outcomes other than growth (Isenman and Ehrenpreis, 2003).[4] Foreign aid addresses a great variety of purposes and reasons (Clemens et al., 2004; Mishra and Newhouse, 2009; Lancaster, 2007 and Radelet, 2006 among others). It ranges from providing sanitation to potable water and from building roads, schools, to airports, and from boosting agricultural production to fighting malaria. Proponents of aid such as Sachs (2006) points too many examples throughout the world where aid has helped to heal the sick, educate the illiterate, and feed the hungry citizens who would otherwise not have had these benefits. Despite his overall skepticism of the effectiveness of most aid, Easterly (2006) notes that aid seems to lead to general improvements in some sectors, including education, water and sanitation, and health.

In the latter half of the twentieth century, much of the world embraced two new fundamental human rights: (a) The right to development and (b) The right to education (Chabbott, 2003). Despite radical differences in financial and administrative means and history, governments around the world have rationalised their national development goals and plans, using education to accelerate socio-economic development and to help distribute its benefits equitably (Chabbott, 2003), as education is widely considered to be a principal avenue to human and economic development (Sen, 1999).

According to Michaelowa and Weber (2007), it is widely recognised that education is not only a relevant objective in itself, but also potentially a highly important factor in deriving overall economic development.[5] By providing the skills and knowledge necessary for the growth and competitiveness of developing countries, education is viewed as not only provid-

[3]The paper has recently been published in The Economic Journal, 122 (June), 590-617.

[4]Education is viewed as a "flagship" of Australia's overseas aid programme. (Cassity, 2010)

[5]The World Bank 1990 World Development Report concludes;"...There can be little doubt that educating the children of the poor greatly improves their chances of escaping poverty."

ing a foundation for sustained economic growth as a lifelong process, but is widely accepted as a fundamental prerequisite for the achievement of economic and human development and is considered as a critical element in meeting basic human needs, and in achieving equity, capacity building, and access to information, research and development.[6]

After studying the determinants of GDP growth of more than one hundred countries over thirty years, Baro (2000) finds that along with government policies and institutions and initial stocks of human capital, education has remained a major determinant of per capita GDP growth.[7] They found that growth was positively related to the initial level of an average of five years school attainment of adult males at the secondary and higher levels. This confirmed some earlier studies such as McMahon (1999), Kim and Lau (1996), and Wood (1994).

A common theme in the literature is that the benefits of education, in the form of democratisation, human rights, and political stability etc., are not only received by those who invest, but are also externalities since they are largely received by others, and often in future generations as well. For example, the improved education of mothers may carry second-generation effects through healthier or better-educated children (McMahon, 1999; Morrisson, 2002). Farmers make more intelligent choices among a complex set of input choices, families make more intelligent choices in terms of family size, health practices, and choices of investment (Heyneman, 2005). Sen (1999) views education as an investment and important tool for attaining development goals, since education is an investment and is vital for attaining development goals, therefore developing countries should mobilise their resources for education. The ultimate financial responsibility for improving educational access, participation, and quality lies with national governments (Benavot et al., 2010). However, for many least developing countries, educational progress depends, to a significant extent, on aid coming from the donor community.

In some of the African countries, about half of the educational budget is met from aid. The education sector of almost all least developed countries suffers from a scarcity of re-

[6]See OECD (2001b) for a review of studies on the non-economic benefits associated with education.

[7]OECD work has also confirmed the importance of investment in education as a determinant of economic growth (see Bassanini and Scarpetta (2001) and OECD (2001a).

sources -financial as well as physical. In these circumstances, the provision of funds through education aid will have a significant effect in meeting some basic needs and fill the prevailing gaps in the recipient's education sector.

In most of the developing world, the education sector is constrained by many factors such as, deficiency of resources, poor teaching quality, limited infrastructure, inadequate teaching materials, and low wages for teachers etc. There are numerous ways in which education aid-funded projects -which are aimed to improve education in recipient countries- can lead to higher education achievements in these countries. Jacob and Lefgren (2004) argue that the provision of teacher training can have a significant positive impact on students' achievements under generally favourable conditions.

Education aid projects aimed for school buildings, equipment and so forth, can result in better quality and wider accessibility of education. Lyons (2001) suggests a strong relation between the condition and utility of the school facilities and learning i.e. the classroom is the most important area within a school, and the school environment has strong influence on student performance and achievement compared to other factors such as family background, socio-economic status, school attendance and behaviour etc. Donors also helps the recipient countries to find the most cost-effective ways of expanding access to education, ways of improving equity and upgrading the quality of education and of maintaining the quantitative expansion of education systems to cope with an increasing demand triggered by the increasing population in the developing world.

The above discussion shows that education aid should cause measurable improvements in the educational achievements of the recipient countries, as the projects it funds are specifically designed to attain educational achievements.[8] If this is true, we expect education aid to be highly correlated with progress in educational achievements of recipient countries. We test this by modelling the effect of education aid on developing countries' educational

[8]In aid effectiveness literature, many studies have pointed to the problem of fungibility. Keeping in consideration possible education aid fungibility (recipients may divert donors' funds to different sectors), donors still have oversight over the intended projects and have incentives to ensure the projects will be successful. We argue that, because of this additional donor oversight, education aid will improve the sector's performance.

achievements (covering education sector coverage, quality and efficiency). We evaluate the effect of education aid flows on these variables, which may miss micro-level improvements in daily life such as higher literacy rates in general and among women in particular, which could be the result of education aid projects. Regardless of whether the outcomes of education are economic, social, political or human development, understanding the impact of education aid in developing countries has become an important issue that needs to be addressed.

Recent contributions to the aid literature suggest that sector-by-sector evaluations are necessary to obtain more accurate evaluations of aid effectiveness, as this can be the real key to unrevealing the mystery of aid's real impacts (Clemens et al. 2004; Michaelowa and Weber, 2007). Hence, by understanding the effect that education aid have on the measurable outcomes of the recipient's education sector, we can understand whether education aid is successful in achieving its intended purpose or not. The global aid policy environment also provides a unique case for study on this topic, as the 2000 Millennium Development Goals call for universal primary education by 2015 (UN, 2010). With the recent change of focus from economic to human development (Williamson, 2008), a better understanding of the effectiveness of education aid will provide a valuable contribution to the ongoing debate on the effectiveness of aid in general by addressing the lack of sectoral aid analysis in the literature.

As stated earlier with the current emphasis on education in the UN MDGs, understanding the effectiveness and impact of education aid is of the utmost importance.[9] A better knowledge of education aid effects will be useful in judicious aid allocation decisions at time when the focus on the role of education in development (McGrath, 2010; McMahon, 1999 among others) is increasing.[10] In addition, at a time when developed nations are critically reassessing their foreign aid commitments, a deeper understanding of the impact of education aid on its intended achievements in the developing world is vital.

[9]According to AusAID, education is critical to achieving the MDGs, and is claimed to deliver benefits in health, governance, productivity, gender equality, and nation-building (Cassity, 2010).

[10]Education aid may also act as a signal to recipient governments that donors are watching their countries' education performance, giving them incentives to focus on improving that sector (Bermeo, 2006).

The international community has always had high expectations of aid, and these have increased since 2002 with the adoption of MDGs at the UN summit. It has long been asserted that foreign aid has played a significant part in working towards the achievement of universal primary schooling even before the adoption of MDGs. (Arvin and Lew, 2009). The effectiveness of donor support to education is under review in both bilateral and multilateral organisations (Gillies, 2010; World Bank, 2006; Chapman and Quijada, 2008). Although there are a number of factors that influence the recipient countries education sector achievements, this chapter wishes to focus on the main determinants like; education aid, per capita levels of income and the health conditions etc.

The present chapter contributes to the aid effectiveness literature by studying the effect of education aid on educational achievements such as enrolment rates. Since the topic has been already addressed by some papers in the literature, it is worth emphasising how we expand on previous work. First, we include among our determinants of educational outcomes a summary measure of public health, infant mortality rate. This factor has been ignored in the relevant literature even though health is a well-accepted determinant of school attendance and school performance. Second, we consider a wider battery of empirical specifications, instead of relying on one or a few selected ones. In particular, we consider a logistic functional form that should capture the dynamics of educational outcomes over time better than the approach commonly used in the literature (see Clemens, 2004). Finally, we consider a larger array of educational measures as our dependent variable in order to study whether our conclusions would vary with the way we measure outcomes. The findings and results of this study will benefit major, key stakeholders, including donors and recipient countries that play a major role in education sector development.

The rest of the chapter is organised as follows. Section 2.2 offers a succinct review of the most relevant literature. Section 2.3 and 2.4 describe respectively the data and the model, where the empirical methodologies used in the study are discussed in section 2.5. The empirical results and their interpretation are provided in Section 2.6 and the last section, section 2.7 offers some concluding remarks.

2.2 LITERATURE REVIEW

Cassen (1986) was the first to call for the disaggregation of different types of aid, followed by White (1998). More recently Clemens et al. (2004) raised the issue again, but with compelling evidence that only aid to sectors such as infrastructure, industry, and agriculture should and do have short-term effects on economic growth, but that aid as a whole does not. Following the influential work of Clemens et al. (2004) a new trend of research - on the effectiveness of aid at sector level - has emerged, and researchers have started gradually moving away from highly aggregated variables to focus on the effectiveness of specific instruments on less ambitious targets e.g. (Mishra and Newhouse, 2009; Dreher et al., 2008; Mishra and Newhouse, 2007; Michaelova and Weber, 2007; Masud and Yontchev, 2005). So far, the results obtained tend to demonstrate the effectiveness of aid to improve living conditions in developing countries.

The literature on the effectiveness of education aid is relatively recent and scant.[11] Following new trends in sector-specific aid evaluations, a growing body of studies (Michaelowa and Weber, 2004 and 2007; Dreher et al., 2008, among others) have evaluated the impact of education aid on specific measurable outcomes of education sector of the recipient.

Theoretically, education aid is found to have either positive impact on a country's economy or to improve certain educational outcomes. Those who look at economic outcomes, have attempted to link education and human capital formation by suggesting that education aid should stimulate economic growth as it provides human capital (Asiedu and Nandwa, 2007; Gani and Clemes, 2003). Examining the effect of education aid on GDP growth, Asideu and Nandwa (2007) found that the effect of education aid depends on the level of development of the recipient country (low and middle income) as well as the level of education at which aid is being targeted (primary, secondary, or higher). They concluded that aid in primary education enhances growth in low income countries but aid in Post-primary education has no significant effect; and for middle income countries, aid in primary education and

[11] For complete list of studies, see table 2.1.

Table 2.1: Summary-Table of The Empirical Research On Education Aid Effectiveness

Authors (Year)	Coverage	Aid data	Method	Results	Dep. Var.
Gani & Clemes (2003)	1991-1995 - 65 Developing Countries	Ratio of educational aid to total bilateral aid	Cross-country regressions	Education aid is positively correlated with human well being in low as well as lower-middle-income countries.	human-development index
Michaelowa and Weber (2006)	1975-2000 - 100 Developing Countries	Aid committed to education	Dynamic panel	With a small impact, Aid to education increases primary education in developing countries (measured both in terms of enrolment and completion rates). In the most optimistic case, they imply that an increase of the current aid by 200% would lead to a rise of net primary enrolment by 2.5 percentage points.	Net-Primary enrolment and completion rates
Michaelowa and Weber (2007)	1993-2004 - 100 Developing Countries	Aid committed to education	GMM	Investigating the impact of disaggregated educational aid on outcomes in primary, secondary and tertiary education, this paper provides some evidence for a positive effect of aid at all three levels. However, the estimated effects are rather low.	primary completion secondary & tertiary (gross enrolment)
Asiedu and Nandwa (2007)	1990-2004 - 90 Developing Countries	Aid disbursed to education	System GMM	recipient country (low and middle income) as well as the level of education at which aid is being targeted (primary, secondary, or higher)	GDP-per capita growth
Gyimaph Brempong, K. and Asiedu, E. (2008)	1990-2004 Developing Countries	Aid committed to education	Dynamic Panel Data	Aid has a significantly positive effect on primary school completion rates. And have no evidence of the fungibility of aid to primary education.	Primary school completion rates, Education expenditures.
Dreher et al. (2008)	1970-2004 - 100 Developing Countries	Aid committed to education	OLS, 2SLS & system GMM.	Aid has a robust and statistically significant positive effect on primary school enrolment rates. While increased domestic government spending on education does not.	Net Primary school enrolment rate.
Moe (2008)	1990-2004 - 8 Southeast Asian countries.	Aid committed to education	OLS	ODA provided for basic, secondary and post-secondary education has a significant relationship with educational development.	education development index
Diawara (2009)	27 African countries	Aid committed to education	panel data analysis	Aid is positively and significantly associated with primary and secondary education outcome.	Primary, secondary and tertiary education (gross enrolment)

secondary education has an adverse effect on growth but aid in higher education enhances growth.

From a human development viewpoint, education aid is effective if it has specific positive outcomes that are not necessarily associated with economic growth. Gani and Clemes (2003), investigated the effect of different types of foreign aid on human well-being (proxied by the Human Development Index, HDI) using data of 65 developing countries. They found that education aid was positively correlated with human well-being in the low income countries. Similarly Moe (2008) found that in the South East Asian countries post-secondary education aid showed a significant positive association with the human development (proxied by the HDI). In addition, the authors reported that education aid targeted at basic and secondary education had a positive and significant effect on educational development measured by the gross enrolment ratios.

Using Generalized Method of Moments (GMM), panel fixed effects, Ordinary Least Squares (OLS) and Two-Stage Least Squares (2SLS), Michaelowa and Weber (2007) showed a significant and positive effect of education aid on primary completion and secondary and tertiary school gross enrolment rates, but of relatively small magnitude. The authors also stress the existence of decreasing returns to scale of the effectiveness of education aid as well as interactions with institutional quality. In a contemporaneous study with similar estimating methodologies, Dreher et al. (2008) focused on the effect of education aid on primary school enrolment on a panel of 61 to 94 countries. They found that higher per capita education aid significantly increased primary school enrolment rates, and their results were robust across the different methods used for estimation, use of the instruments and even when taking into accounts other control variables. Similarly, Gyimah-Brempong and Asiedu (2008) found that education aid had a significantly positive effect on primary school completion and enrolment rates and found no evidence of the fungibility of aid to primary education.[12]

More recently, Diawara (2009) used a panel data set of 27 African countries for the period

[12]Although, their results are consistent with the rest, they do not follow the standard procedure of controlling for lagged measures of education in their regressions.

1960-2005, and found a significant positive association of education aid with primary and secondary education. Michaelowa and Weber (2007) found that with a small impact, aid to education increases primary education in developing countries (measured both in terms of enrolment and completion rates).They conclude that, in the most optimistic case, an increase of the current education aid by 200 per cent would lead to a rise of net primary enrolment by 2.5 percentage points.

2.3 DATA

The analysis presented in this chapter is based on the data from the secondary sources, mainly compiled by the OECD, DAC, the principal body through which the OECD deals with issues related to financial co-operation with developing countries, and that from the World Bank's World Development Indicators (WDI).

Our dependent variables are the recipient education sector achievements. The independent variables are: GDP per capita in constant 2007 U.S. dollars, the infant mortality rate per 1000. Gross primary and secondary school enrolment ratios, children out of school, pupil-teacher ratios, urban population (per cent of total), population under the age of 15 years (per cent of total), number of repeaters at primary school level, and the primary completion rate, taken from the WDI, 2010 CD-Rom, published by the World Bank. The democracy data is from the Polity IV data set.

Our crucial independent variable used in the analysis is education aid commitments.[13] The OECD database provides data on ODA commitments by purpose, taken from the CRS. The CRS is an on-line database, internationally recognised as a source of data on the geographical and sectoral breakdown of development aid granted by bilateral and multilateral

[13]The OECD defines a commitment as "a firm obligation, expressed in writing and backed by the necessary funds, undertaken by an official donor to provide specified assistance to a recipient country or a multilateral organisation". Bilateral commitments are recorded in the full amount of expected transfer, irrespective of the time required for the completion of disbursements. A disbursement is defined as the release of funds or the purchase of goods or services for a recipient; by extension, the amount thus spent. Disbursements record the actual international transfer of financial resources, or of goods or services valued at the cost to the donor.

institutions.

Moreover, a large part of the CRS database is composed of missing data in the education sector. This may indicate that a donor has not given any education aid in the given period, or that a donor has given education aid but it has not been reported, or even that a country had registered all education aid given to the recipient country at one time rather than annually reporting it over the time period. Therefore, these missing data are considered as zero education aid.[14]

An education aid activity can take many forms: education policy and administrative management, education personnel development. According to the OECD, the term "Purpose of aid" signifies the sector of the recipient's economy that the aid activity is designed to assist such as education in our case. Aid activities are classified into 26 broad 3-digit categories, each of which is further classified into 5-digit purpose codes. A specific set of education aid codes have been considered for our analysis; these are mentioned in table B.3 in the Appendix-B.

Table 2.2 shows summary statistics for the variables used in the analysis. One important point is that, although most of these variables have a relatively symmetric distribution, this is very clearly not the case for education aid. Education aid commitments per capita, for instance, has an average value of US$ 5.16 per person, but a median of US$ 0.63 per person. That is a difference of an order of magnitude caused by some extreme values at the right end of the distribution (this variable has a maximum of US$ 632 per person). Indeed, at 24.2 the standard deviation of education aid per capita is about five times the mean and forty times the median. It would therefore be inappropriate to judge the magnitude of the effect of aid on educational achievements by considering aid changes proportional to the standard deviation or the mean. Instead, we find that an increase of education aid per capita of US$ 1 provides an intuitive and adequate yardstick. This is a change that would more than double education aid flows to more than half of aid recipients in our data.

[14]Our results were almost same when we dropped these missing data from the analysis rather than considering them zeros, but there is a huge loss of number of observations in doing so.(results are not shown)

Table 2.2: Summary Statistics

Variable	Obs.	Mean	S.D.	Median	Min.	Max.
Education Aid Commitments per capita	1296	5.16	24.2	0.63	0	632.69
Education Aid Commitments Over GDP	1061	0.57	1.41	0.08	0	22.3
Primary School Enrollment (% Net)	651	78.64	20.77	87.85	12.24	100
Secondary School Enrollment (% Net)	305	53.8	26.98	60.72	1.24	94.33
Pupil Teacher Ratio (Primary)	913	31.05	13.08	28.96	5.28	88.92
Pupil Teacher Ratio (Secondary)	879	19.75	7.56	18.88	5.24	64.78
Persistence to Grade 5	384	75.58	18.97	78.63	0	100
Progress To secondary School	447	78.25	22.05	86.08	7.46	100
Repetition rate (Primary)	807	10.36	9.45	7.89	0	46.6
Repetition rate (Secondary)	693	9.26	8.36	7.61	0	43.56
Health (Infant mortality rate)	1086	60.21	43.94	50	2.29	200
Gov. Education Expenditures (per capita)	556	179.8	379.64	63.57	0.92	5971.04
Gov. Education Expenditures (% of GDP)	598	4.42	3.44	3.93	0.42	49.52
Population Under 15 (% of Total)	1173	36.85	9.12	39.92	13.83	52.81
Urban Population (% of Total)	1302	48.58	24.65	46.95	3.24	100
GDP Per Capita	1060	4960.7	9834.45	1530.65	75.9	84930.68
Trade	101	.0005	.001	.0007	0.00	0.03
Colony	1309	0.70	0.56	1	0	1
Democracy	886	3.05	3.57	1	0	10

Note: All variables are based on 5-year averages of the data.

Following the same logic, education aid commitments as a per cent of GDP can be assessed by considering an increase of 0.10 per cent of GDP, which is somewhat above the median value of this variable of 0.08 per cent of GDP. It is be useful to know, in order to evaluate estimated effects, that net enrolment rates in primary education increased from an average of 69.80 in 1973-77 to 86.07 in 2003-07 increasing on average by 2.71 percentage points per five-year period.

The empirical work covers 163 countries (see table B.1 in Appendix-B for the list of the countries). The countries selected and the sample period is chosen on the basis of data availability. As mentioned earlier, to reduce the noise in the annual data, we follow the practice in the literature and average the data over five years which will reduce measurement error, if any. Therefore, the dataset has seven points in time: 1977, 1982, 1987, 1992, 1997, 2002, and 2007. For example 1977 is the average of 1973-1977.

2.4 MODEL

Education achievement= f (Lagged Educational Achievement, Education Aid, Health, Control variables)

An ideal measure of an individual's educational achievements should capture several components, including the number of years spent in school, the quality of the schooling, the nature of the curriculum, and the student's effort (Frot and Santiso, 2009). Given that creating a measure that accurately quantifies all these components is difficult, in the absence of direct measures of learning outcomes, proxy variables have been used at the cross-country level (Lee and Barro, 1997; UNESCO, 2002; Cavicchioni, 2001).

2.4.1 Dependent Variables

A country's educational accomplishments can be divided into three categories: (a) Coverage of Educational System (b) Internal Efficiency of Education System; and (c) Quality of Services and their Utilisation. Accessibility and children taking advantage of educational facilities are some of the questions which relate to the coverage of an education system, where the equity variables reflect different characteristics of children being in school and those that are not. Finally, the quality variables record what children learn during their stay in school. Given the multidimensional nature of education aid and the set of available data, it appears essential not to focus only on coverage variables as most prior studies have done.[15]

The dependent variables used in the analysis are, primary and secondary school gross enrolment ratios, primary and secondary school net enrolment ratios, primary and secondary school pupil-teacher ratios, completion rates, persistence to primary grade five, progress to secondary grade and primary and secondary school repeatation rates. The first three dependent variables are measures of quantity and access or coverage to education within each recipient country, the completion and pupil-teacher ratios are the proxies of quality of the

[15] See table B.3 in Appendix-B for a detailed list of donor's education aid activities.

internal education system, while the last four are measures of the internal efficiency of education systems and have been used as proxy measures of efficiency of the internal education system.[16]

Primary and secondary gross enrolment rates measure the number of respective (primary or secondary) school students as a proportion of the respective school-going age population. The net enrolment rate measures the number of students of respective school age that are currently enrolled in the respective schools. This net measure is, therefore, more useful when assessing a country's progress in providing education for all school age children. The persistence rate measures the proportion of a cohort of pupils enrolled in the first grade of primary school that are expected to reach grade 5. The primary school completion rate has the advantage that it combines a measure of completion rates with a measure of the proportion of primary school aged children completing primary school. This recent measure is calculated as the number of primary school students successfully completing the last year of primary school as a proportion of children of official graduation age in the population (World Bank, 2002). Following Gupta et al. (2003), the quality of education is proxied by the school repetition rate. A higher repetition rate generally corresponds to a lower quality of education. The latest research suggests strongly that what matters is education quality, that is, what children learn in school. Poor learning outcomes typically reflect the low quality of schooling.[17]

These variables have been chosen primarily because they are being used by the international donor community to monitor progress towards the education millennium development goals. UNESCO uses gross and net enrolment and primary persistence rates to measure progress, and the World Bank proposes the primary school completion rate as a monitoring indicator for its education fast track initiative (UNESCO, 2002; World Bank, 2002). In terms

[16]The different waves of international standardised tests on school-age children such as the OECD Programme for International Student Assessment (PISA) cover mainly developed countries (i.e. non-aid recipients).

[17]According to Filmer et al. 2006, "...there is evidence from a variety of countries that even youth that complete basic schooling are leaving school under-equipped to function successfully in a modern world. But the fundamental question 'are youth getting an adequate education?' cannot be answered: no-one knows. No one knows because regular and reliable information on the learning achievement of those children in school is scarce, and information on the competencies of a cohort (both in and out of school) is almost non-existent ..."

of current support for financing recipient country education system, therefore, it is important to determine whether these indicators are influenced by levels of education aid.

In addition to its theoretical superiority over gross primary school enrolment (already discussed) net enrolment rates in primary schooling (NEP) is our primary education indicator for five main reasons. First, because of its best global availability, data on net primary enrolment are available for a large set of countries and over a longer period of time. Second, it relates to Millennium Development Goal 2 (Universal Primary Education), which is vital to meeting all the other MDGs as well.[18] Third, it provides an efficient method for assessing the effectiveness of a local education system. Fourth, it has previously been indicated that on the supply side low enrolment rates are such because of an inadequate supply of school buildings, classrooms, teaching supplies, etc., whereas on the demand side, parental factors, particularly the maternal education, paternal income, abolition of school fees and quality of schooling are among the important determinants of primary school enrolment (Burney and Irfan, 1995; Deolalikar, 2005). Finally, universal primary education is widely held as the priority educational investment for the developing world (Psacharopoulos, 1990), as primary education is the most powerful means for reducing poverty and laying the basis for sustained economic growth, sound governance, and effective institutions (McMahon, 1999; Bruns et al., 2003). Therefore net primary enrolment rate is our primary education sector variable (Dependant variable).

2.4.2 Explanatory Variables

2.4.2.1 Education Aid

Allocation of education aid is meant to support the recipient's local education system. By providing resources to finance education in the recipient country (e.g., to build schools, hire

[18] It is education that will provide the next generation with the tools to fight poverty and conquer disease. On the one hand, school offers children a safe environment and skills that can help them prevent diseases, while on the other hand studies shows that educating a girl dramatically reduces the chance that her child will die before age five and also the number of children that she will have. (UNDP)

and train teachers, provide free textbooks and other school supplies for pupils), education aid can improve their education system's coverage, quality and efficiency.[19] It is expected that, education aid will encourage the enrolment rates, completion rates, persistence to primary grade five and progress to secondary grade (i.e. there will be a positive correlation between education aid and these education sector specific achievements), While, education aid will lead to a decrease in the primary and secondary pupil-teacher ratios, and in the number of primary and secondary school repeaters.

In our analysis, we focus only on education aid commitments as expressed in constant 2007 dollars rather than disbursements.[20] Taking in-to consideration a long and sometimes even complex journey from the donor's commitment to the receipt and implementation of funds in a country, and averaging annual fluctuations and reducing the measurement error if any, following the bulk of the previous literature - Mishra and Newhouse, 2009; Dreher et al., 2008; Michaelowa and Weber, 2007; among others- we use smoothed lags of five years to capture the variation and potentially different times from commitments to impact.

ODA flows include grants and concessional loans - that is, loans whose grant element is at least 25 percent. Among others, (Feyzioglu et al. 1998; Morrisey et al. 2006 and Djankov et al. 2006) have found that, the form of aid (grants or loans) influences the recipient fiscal behavior differently. However, due to the lack of data in the form of grants and loans at the sectoral level, alike other sectoral aid effectiveness studies (Mishra and Newhouse, 2009 and Dreher et al., 2008 among others) we do not distinguish between whether education aid is provided in a loan or grant form.

The capacity of an aid recipient country to use aid properly depends on the size of its economy and population, hence, examining the effect of education aid flows in absolute numbers does not seem adequate. Following Michaelowa and Weber (2007), Burnside and Dollar (2000), Alesina and Dollar (2000), we propose two different ways to adjust these

[19] As foreign aid projects are frequently intended to build new infrastructure, and enhance human resources by providing improved teacher training, better curricula and enhanced learning materials.

[20] Disbursements are under-reported compared to commitments and thus do not provide enough data for an econometric analysis. In addition, their reporting began only in 2002.

numbers to country size:

(i) Education aid relative to the population of the recipient country

(ii) Education aid as per cent of recipient country's GDP.

2.4.2.2 Government Spending on Education

By either providing it itself or financing private sector provision, in many countries, the government expenditure policy has a central role in ensuring that its citizens, particularly the poor, have access to education (IMF, 2002). Based on cross-sectional data for developing countries, Baldacci et al. (2003) and Gupta et al. (2002) found that, education spending has a greater effect on social indicators than health expenditures. The positive effect of social spending on social indicators is also supported by other researchers(Anand and Martin, 1993; Psacharopoulos, 1994; Hojman, 1996; Bidani and Ravallion, 1997; Psacharopoulos and Patrinos, 2002).[21] At the same time, a number of studies have found insignificant or very weak linkages between public education spendings and education indicators (Flug et al., 1998; Tan and Mingat, 1992; Mingant and Tan, 1998 and Noss, 1991). Ideally, more cross-country time series data, disaggregated by level of expenditure, should be utilised, but data for a wide set of countries are not available. Education spending, in per cent of GDP, gives an indication of how a country priorities education in relation to its overall allocation of resources. We expect a positive relationship between net primary school enrolment and the level of government spending on its education sector.

The effect of education aid may depend heavily on the recipient governments fiscal response. One aspect of this fiscal response is the possibility that education aid is fungible. There has been considerable concern in the international development community about aid fungibility. In our case, a concern that education aid leads to a displacement or diversion of government funds from the education sector. In their studies, Devarajan et al. 1999, Gyimaph

[21]By enhancing the human capital stock, government's education spending is often viewed as a way to promote economic development as well. There is a sizeable literature related to the effect of education spending on economic growth. (See Fisher (1997) for a broad review)

and Asiedu (2008) and Van de Sijpe (2010) have found that education aid is not fungible. This may be because of the donor conditionality, that aid is used in the targeted sector. Even though the donor is able to monitor the fiscal policy choices of the recipient government and to enforce conditionality in a credible manner, the recipient government may shift some of its previously allocated budget to other expenditures, which may cause an indirect effect on government spending on education.

2.4.2.3 Health Conditions

Education and health capital have strong links; in developing countries, to a significant extent, good health conditions help to promote better educational outcomes (Baldacci et al., 2005). Under the assumption that a country's child health level should have a significant positive impact on educational achievements, we use the infant mortality rate per 1,000 births as our proxy measure for health conditions. Countries with more health problems, represented by higher infant mortality rates, may also suffer from lower enrolment rates and more children out of school. Due to the obvious connection between child health and school attendance, Miguel and Kremer (2004) noted that poor health prevents children from attending school. Previous education aid effectiveness literature has neglected to account for such effects, which we feel may be a critical explanatory factor for educational achievements.

2.4.3 Control Variables

To isolate the effects of education aid fully, we have included various control variables for the most important factors affecting the education sector achievements in the recipient countries.

2.4.3.1 Per Capita Income

The most important factor in predicting the effectiveness of education aid is per capita GDP adjusted for purchasing power parity. GDP is the essential control in education studies -

(Michaelowa and Weber, 2007; Dreher et al., 2008; FTI, 2008) - because impoverished families often face relatively high opportunity costs when enrolling their children in school. As additional time spent in school involves a loss of potential income in the form of foregoing children's help in agriculture or at home (McMahon, 1999). As wealthier families have overall better living conditions, it is easier for them to afford education. Similarly, wealthier countries should have overall better living conditions; more people should be able to afford education.

2.4.3.2 Percentage of population below the age of 15

Following previous literature -Michaelowa and Weber (2007); Dreher et al. (2008)- we also include a control for the percentage of the population in a country that is below the age of 15, with the intention to control for the level of hardships that a society place on the education system, as a higher proportion of children within the population tends to reduce the enrolment rates.

2.4.3.3 Urban population (percentage of total)

We also use urban population as a control variable. Our justification is that a country with a large urban population has a lesser demand for resources and infrastructure (e.g. roads, transportation mechanisms, communication facilities, skilled personnel, etc.) essential for its education sector development compared with countries with small urban populations. As such, infrastructure facilities accessibility to the supply of social goods such as education, health etc. Urban areas are likely to have established infrastructures and thus social goods are readily accessible. In many developing countries, rural areas lack adequate infrastructure and thus rural populations are affected. If the urban population is lower than the rural population, the lack of accessibility to social goods in the country can have a regressive effect on the country's educational achievements.

2.4.3.4 Democracy

Democratic countries, which are more accountable, have greater incentives to ensure their citizens receive basic public goods. It is argued that democracies are inherently better at providing social services, such as education, than non-democracies.[22] Education aid to less personalistic regimes may prove more effective than education aid to more personalistic regime; to account for this argument, we measure democracy using the Polity IV dataset, which provides perhaps the most widely used measure of democracy and contains many more years of democracy ratings than the Freedom House data, another well-known dataset on governance. The Polity IV democracy measure ranges from 0 (least democratic) to 10 (most democratic).

Besides other control variables (e.g. GDP, Urban population, population below the age of 15 etc.) to capture the country's initial economic and social status, lagged educational achievements are also introduced in the model. The inclusion of the lagged dependent variable (LDV) is also theoretically plausible, as for instance, enrolment today can be assumed to be highly relevant for enrolment tomorrow. The definitions and expected signs of all the explanatory and control variables are presented in table B.2 in Appendix-B.[23]

2.5 METHODOLOGY

To estimate the effects of education aid on the education sector achievements in the recipient countries, our econometric analysis engages two different approaches a) Linear Approach b) Logistic Approach. In linear approach we used different identifications strategies; OLS is estimated over a sample that pools all available observations with a rich set of control variables. The second strategy is the dynamic panel data model, which is estimated using the

[22]The argument in the literature rests on the assumption that democratic leaders are accountable to voters and will provide public goods in order to retain or win a seat in office (Olson, 1993).

[23]The expected signs presented in the table B.2 are only for our main dependant variable i.e. net primary school enrolment ratios, for other dependent variables signs may be different. For example, ideally, for net primary school enrolment education aid per capita should have positive sign but for pupil-teacher ratios it should be negative one.

Instrumental Variable (IV) approach and the GMM, where all the variables are instrumented by their appropriate lags. In order to provide robust estimates, GMM estimation requires a sufficiently large number of observations (Mishra and Newhouse, 2007); therefore, we rely on a substantially larger dataset than previous studies on education aid, covering 163 Countries from 1973 to 2007.[24] In logistic Approach, we consider a logistic functional form that should capture the dynamics of educational achievements over time better than the approach commonly used in the literature (see Clemens, 2004).

2.5.1 Linear Approach

2.5.1.1 Pooled OLS

The OLS approach specifies the education sector achievement as a function of education aid as:

$$Edu_{i,t} = \alpha_0 + \alpha_1 Aid_{i,t} + \beta Edu_{i,t-1} + \gamma X_{i,t} + \delta Health_{i,t} + V_t + \varepsilon_{i,t} \tag{2.1}$$

Here *i* stands for the i^{th} cross-sectional unit and *t* for the t^{th} time period and as a matter of convention, we will let *i* denote the country identifier and *t* the time identifier. Where $Edu_{i,t}$ is an education sector achievement in an education aid recipient country *i* in period *t*. $Aid_{i,t}$ is the per capita education aid commitments in country *i* during the period *t*, $X_{i,t}$ is a vector of control variables which capture the country's initial economic and social status, $Health_{i,t}$ is the infant mortality rate per 1000 in a country. V_t is a vector of period dummies, which, according to (Sarafidis et al., 2009; Roodman, 2008), is always suggested as a prudent strategy to remove any global time-related shocks from the errors, and $\varepsilon_{i,t}$ is a random error. We estimate equation 2.1 in dynamic form to capture the effect of country's initial economic and social status on educational achievements. [25]

[24] A list of education aid recipient countries is presented in table B.1 in the Appendix-B. Depending on the coverage of variables, it continues to fluctuate in different estimated equations. The OECD started reporting aid commitments in CRS in 1973, which restricted the start of our dataset to 1973.

[25] There are some statistical issues in panel-data analysis which concerns the merits versus the deficiencies of dynamic specifications (for details see Achen, 2000; Allison, 1990; Baltagi, 2008; and Greene, 2008, among others). We take the criticism made in the afore mentioned studies into account and will report the analysis with and without a lagged dependent variable in our OLS specification.

Our OLS results would tend to be biased if: a) there is a correlation between the education aid and the unobserved components of the lagged educational achievements; b) education aid may also act as a signal to recipient governments that donors are watching their (recipient countries') education sector performance, which give them incentives to focus on bettering that sector on one hand (Bermeo, 2006) and on the other the recipients' better performance in the sector may give a signal to the donors to flow more funds into the sector, which can be result in an underestimation of the aid benefits; c) as the education aid data is being reported by the donors, in case of any measurement error in reporting it, the error is likely to be uncorrelated with the characteristics of the recipient country, which would lead us further from any beneficial effects of the education aid (Mishra and Newhouse, 2009).

Therefore, to control for those unobserved determinants of education sector achievements, which are country-specific and time invariant, we introduce country fixed effects. The fixed effects regression is specified as:

$$Edu_{i,t} = \alpha Aid_{i,t} + \beta Edu_{i,t-1} + \gamma X_{i,t} + \delta Health_{i,t} + S_i + V_t + \varepsilon_{i,t} \tag{2.2}$$

Where S_i is a vector of country specific time invariant fixed effects and denotes differences in education sector across countries.

However, despite controlling for country-specific heterogeneity, some major concerns remain present. One is that, despite controlling for the time-invariant country-specific factors, the residuals may contain time varying and country specific factors which may affect the educational achievements, (e.g. adult literacy rate and the number of schools), meaning that any correlation with the education aid flows would lead toward biased estimated results. Secondly, in a situation of short panel and lagged dependent variables, the parameter estimates jointly estimated with the individual effects can be seriously biased and inconsistent when the explanatory variables are only predetermined as opposed to strictly exogenous, and this inconsistency derives from the presence of the lagged error term in the residual, after subtracting within-country means (Mishra and Newhouse, 2009; Arellano and Carrasco,

2003).[26] Thirdly, even though the fixed-effect estimation controls for possible misspecifications caused by unobservable factors, it does not control for Nickell's bias (Nickell, 1981) and endogeneity problem, which will bias coefficients associated with education aid if reverse causality occurs. Since the causality in our study is very important for interpretation, we have to correct the endogeneity bias either by finding new robust instruments or by using GMM system strategy.

2.5.1.2 Instrumental Variable Approach

A simple comparison of different conditions in countries with education aid to conditions in those without does not demonstrate the effect of education aid. To identify the effect of education aid on an education sector achievement, we need to find an instrument, a third variable that is independent of both, and that has a direct effect on education aid only (not on the education indicator). If our indicator varies systematically with this third variable, then we have demonstrated an education aid effect, because, by assumption, the only way our indicator could have been affected is through education aid. However, this approach relies on assumptions about how the three variables are connected. Any results from the statistical analysis are predicated on the independence of the instrument and on the exclusion restriction (i.e. the instrument has a direct effect on the education aid but not on the educational achievements).

This method still leaves untreated a source of endogeneity mentioned above.[27] We will thus also use the system-GMM methodology of Blundell and Bond (1998), wherein the lagged dependent variable and all endogenous regressors are instrumented using the adequate lags of these variables in levels and in differences. To ensure the robustness of our results, obtained through the said IV approach, we apply some specification tests. First,

[26] According to (Blundell et al., 2000; Cameron and Trivedi, 2005; Nickell, 1981 and Wooldridge, 2002), even if the model is correctly specified, simple fixed effect OLS estimation of dynamic models will produce biased and inconsistent results, particularly when there are few time periods.

[27] The presence of a lagged dependent variable in a panel equation with fixed effects leads to the well-known dynamic panel bias (Nickell, 1981), which will bias coefficients associated with education aid if reverse causality occurs.

according to Roodman (2007), Hansen's J-test is consistent in the presence of autocorrelation and heteroskedasticity, where a Sargan test is not. Therefore, to test the validity of the instruments, we use Hansen's J-statistic of over-identifying restrictions. Second, to examine for first -and second- order degrees of serial correlation in the error terms in all of our regressions, we use the Arellano and Bond (1991) test.

2.5.1.3 Generalised Method of Moments

One standard method used to address these sources of bias is to estimate a system of moment equations using the GMM (Hansen and Tarp, 2001; Mishra and Newhouse, 2009).[28] Anderson and Hsiao (1981) were the pioneers in proposing the use of the GMM procedure within a dynamic context; in order to remove the fixed effects in the error term which are correlated with the lagged dependent variable, they proposed using the second lag of the dependent variable $(Edu_{i,t-2})$ or the lagged difference $(Edu_{i,t-2} - Edu_{i,t-3})$ as instruments of $\triangle Edu_{i,t-1}$. While analyzing the properties of the two instruments suggested by -Anderson and Hsiao, 1981and Arellano and Bond, 1991-, Kiviet (1995) found that the "level" instrument had smaller variance and was, hence, superior to the "differenced" one.

Arellano and Bond (1991) suggest exploiting an enlarged set of instruments; namely, all available lagged values of the dependent variable and the lagged values of the exogenous regressors, but by enlarging the number of periods, the number of instruments becomes considerably larger. In addition, instruments could be weak, because they use information contained in differences only and they do not account for the differenced structure of the residual disturbances (Ahn and Schmidt, 1995; Baltagi, 2008). Ahn and Schmidt, 1995; Arellano and Bover, 1995 and Blundell and Bond, 1998 consequently suggest using additional information contained in levels, which would result in a more efficient estimator, known as a system-GMM estimator. This augments the difference-GMM by simultaneously estimating in differences and levels, the two equations being distinctly instrumented

[28]GMM corrects for the potential endogeneity of contemporaneous changes in the independent variables and the endogeneity of the dependent variable in the dynamic specification.

(Roodman, 2009), as both predetermined and endogenous variables in first differences are instrumented with suitable lags of their own levels (used by Arellano and Bond, 1991); and predetermined and endogenous variables in levels are instrumented with suitable lags of their own first differences. As a consequence, the system-GMM estimator should produce more efficient estimates and, hence, outperform the difference-GMM estimator.

Education aid, government educational expenditures and lagged educational outcomes are treated as endogenous. Education aid might be endogenous to education spending to the extent that countries which spend more on education might subsequently have less need for foreign aid if they enjoy high rates of enrollment. Likewise, foreign aid might be endogenous if donors give higher levels of assistance to governments that have a track record of prioritizing education. In addition by construction in any panel regression with fixed effect lagged dependent variable suffers from the dynamic panel bias (Nickell, 1981). In GMM specification we instrumented the endogenous variables using their own lags. However, giving important consideration to which lags are valid. In the present case since our variables (Education aid, government educational expenditures and lagged educational outcomes) are endogenous and are not pre determined, we used second lag and higher as their instrument. Indeed second lag and higher are not correlated with the current error term.

All Arellano-Bond, Arellano-Bover and Blundell-Bond estimates can be estimated using one -or two- step procedures.[29] Arellano and Bond's (1991) simulations suggest that the two-step option may increase the precision of coefficient estimates, but that standard errors tend to be severely downwardly biased. However, it is possible to solve this problem using the finite-sample correction to the two-step covariance matrix derived by Windmeijer (2005). This can make two-step robust GMM estimates more efficient than one-step robust ones, particularly for system GMM (Roodman, 2008). We will present the results obtained by employing the two-step estimator implemented by Roodman (2008) using STATA, including Windmeijer's (2005) finite sample correction. However, due to use of an increased number of instruments, difference and system-GMM can arrive at biased estimates (Tauchen, 1986;

[29]Where the one-step estimator makes use of a covariance matrix that accounts for autocorrelation, two step procedures uses the residuals from the first step to estimate the covariance matrix.

Altonji and Segal, 1996; Andersen and Sorensen, 1996; Bowsher, 2002; Roodman, 2009; among others).

A crucial assumption for the validity of GMM is that the instruments used are exogenous. The Sargen and Hansen-J test are used to test instruments validity. However, the Hansen-J test grows weaker with more moment conditions, and there is no formal test to check how many instruments should be used (Ruud, 2000). Roodman (2009) suggests combining two ways to cut instruments: collapsing them and/or limiting lag length.[30] GMM has two great advantages (Verbeek, 2008); first, it does not require distributional requirements like normality, and second it allows heteroscedasticity of unknown form. The first feature suggest that normality is not an assumption that should be a subject of diagnostic testing, while the potential heteroskedasticity can be allowed for by estimating "robust" parameters.[31]

The evidence of the Monte Carlo studies -Behr, 2003; Harris and Matyas, 2004- is not overwhelming, but they suggest that the system GMM is the least biased and most efficient estimator.[32] The number of instruments, however, matters in terms of the trade-off between bias and efficiency: limiting instruments slightly increases bias, although it also increases efficiency, and makes computation less cumbersome. Consequently, we next estimate Blundell and Bond (2000) and Bond (2002) within the system GMM specification given as:

$$Edu_{i,t} = \alpha Aid_{i,t} + \beta Edu_{i,t} + \gamma X_{i,t} + \delta Health_{i,t} + S_i + V_t + \varepsilon_{i,t} \tag{2.3}$$

$$Edu_{i,t} = \alpha(\triangle Aid_{i,t}) + \beta(\triangle Edu_{i,t}) + \gamma(\triangle X_{i,t}) + \delta(\triangle Health_{i,t}) + \triangle V_t + \triangle\varepsilon_{i,t} \tag{2.4}$$

[30]Using simulation, Roodman (2009) found that the problem of too many instruments becomes apparent when $T > 15$, and the bias slightly increased when both collapsing and lag-limiting commands were used (from 0.03 to 0.05), but, strangely, lessened as T went from 5 to 20.

[31]However, if the errors are serially correlated, than these will not be independent of the instruments; the GMM estimator, hence, requires no second order serial correlation in the error term of the differenced equation (Arellano and Bover, 1995). Moreover, the above-mentioned Sargen and Hansen-J test, tests if instruments are uncorrelated with the error term, i.e. it checks for over-identifying restrictions in the model (Roodman, (2009) and Baltagi (2008)).

[32]Applications of the standard GMM and the System-GMM by Blundell et al. (2000), Bond et al. (2001) and Hoeffler (2002) show the superiority of the System-GMM over the standard difference GMM.

2.5.2 Logistic Approach (Evolution of Education Aid Effectiveness Through Time)

A different issue is whether the functional form of equation 2.1 is the most adequate to capture the evolution of education through time. This is a dynamic equation of the form $Y_t = \alpha + \rho y_{t-1}$, with the following two characteristics that are of particular relevance for us: first, it reaches a steady state at the level $y^* = \frac{\alpha}{1-\rho}$, and second, if Y_t is below this steady state it will converge towards it, following a strictly concave path, with a fraction $(1-\rho)$ of the distance to the steady state being eliminated each period.

Neither of these two characteristics is desirable when describing the evolution of educational achievements. Considering the first one, a change in aid to the education sector, or a change in any other determinant of education for that matter, will have an effect on parameter α. This means that higher education aid levels would lead to a higher steady state of the educational achievements. This is undesirable since most educational achievements are bounded, net enrolment rates cannot be higher than 100 and the same is true for completion rates and rates of progression. The above functional forms would predict that net enrolment rates above 100 are possible for sufficiently high enough levels of education aid.

A second, perhaps more important point, is that the evolution of educational achievements over time does not resemble a strictly concave function. The point was made very clearly by Clemens (2004), who showed that measures such as net enrolment rates follow a logistic path towards their upper bound. In other words, the evolution of enrolment rates over time first describes a convex curve, passes through an inflexion point, and then describes a concave curve - the typical S-shaped curve of many epidemiological phenomena. This dynamic is completely absent from the functional forms considered in the literature.

To address these two problems, we follow Clemens (2004) and posit that our measure of educational achievements follows a logistic function of the form:

$$Edu_{i,t} = (1 + e^{-v_i(t-b_i)})^{-1} \tag{2.5}$$

In equation 2.5 parameter v_i determines the speed of the transition process while parameter b_i shifts the function forwards or backwards in time (allowing for different starts of the transition process). Both parameters are country-specific. The speed of the transition process will be assumed to be a linear function of education aid and the set of control variables considered previously, i.e.

$$v_i = \alpha + \lambda Aid_i + BX_i \tag{2.6}$$

Thus, an increase in education aid, or in any other control variable, will result in a higher speed of transition, but the transition path will always be bounded between 0 and 1 and its shape will always be logistic.[33]

In order to use linear estimation techniques we rewrite the logistic function as follows:

$$-ln(\frac{1}{Edu_{i,t}} - 1) = \alpha t + \lambda Aid_i t + BX_i t + C_i \tag{2.7}$$

Where, $C_i = -v_i b_i$ Equation 2.7 can be estimated with a standard fixed effects regression as it does not suffer from dynamic panel bias, a fixed effects estimation of the modified dependent variable $-ln(\frac{1}{Edu_{i,t}} - 1)$ on time and the interaction of time with all our regressors (previously averaged over time) will give the results we are looking for.

2.6 EMPIRICAL RESULTS

In this section we will contrast the results obtained by using the different estimation techniques and methodologies discussed in section 2.5. First, we present the basic findings and then we undertake a wide range of tests to examine their robustness for different regression specifications, at different regional level and at various time periodisations etc.

[33] Notice that education aid and the variables in X are considered as time-invariant characteristics. We will thus use their average values over the whole period in this estimation.

2.6.1 Linear Functional Form

Our key explanatory variables are education aid per capita, government spending on education and infant mortality rates in a given education aid recipient country. Our all regressions include the period dummies, as time trend and annual specific shocks might affect our results; this is why we have included period dummies in all the regressions. After controlling for the other covariates (X), we are primarily interested in the partial effects of education aid on the education sector achievements, i.e. $\frac{\partial Edu_i}{\partial Edu.Aid_i}$ and that of the infant mortality rate on the education sector achievements i.e.$\frac{\partial Edu_i}{\partial Health_i}$.

We start by presenting our baseline results, where equation 2.1 is estimated using the LSDV, IV and system-GMM methodologies. Table 2.3 reports the results of these regressions using net enrolment rates in primary schooling as our dependent variable and education aid per capita as our measure of aid.[34] In the basic specifications, we analyse the effect of increasing per capita education aid during a given five-year period on the net primary school enrolment rates.

The first three columns of table 2.3 show simple LSDV estimates of equation 2.1. We report three regressions because the number of available observations changes substantially as we expand the control set and we would like to ensure that our results are not due to changes in sample size. The first regression simply uses the one-period lag of the dependent variable and education aid per capita as explanatory factors and covers 432 observations. As expected, we find a large and statistically significant coefficient on lagged enrolment but the coefficient on education aid per capita is small and statistically insignificant.

Similar results follow when we add our full set of control variables, with the exception of the domestic government's per capita expenditures on education (column 2) and finally we add this last variable to the regression (column 3). The addition of our controls for health, age structure of the population, urbanisation, GDP per capita and democracy reduce the number of available observations from 432 to 343. The domestic government's expenditures

[34]As stated earlier, our main focus is on the net primary school enrolment rates.

Table 2.3: Per Capita Education Aid: Dep. Var. Primary School Enrollment, Net (NEP)

Specification	**LSDV Approach**			**Instrumental Variable Approach**			**Arelano Bond Approach**		
L.DV	0.532***	0.471***	0.606***	0.873***	0.733***	0.736***	0.593***	0.714***	0.851***
	(6.60)	(4.81)	(7.68)	(48.31)	(24.96)	(18.47)	(6.71)	(9.06)	(3.46)
Education Aid Commitments per capita	-0.025	0.011	0.037	-0.051	-0.158	-0.058	0.050	0.051	0.156*
	(-0.89)	(0.28)	(1.25)	(-0.98)	(-1.49)	(-0.72)	(1.65)	(0.96)	(2.09)
Population Under 15 (% of Total)		0.951***	0.407		0.218***	0.293***		0.194**	0.366
		(4.21)	(1.48)		(4.20)	(4.40)		(2.69)	(1.371)
Urban Population (% of Total)		0.029	-0.018		-0.022	-0.043		-0.008	-0.026
		(0.25)	(-0.15)		(-0.97)	(-1.17)		(-0.20)	(-0.77)
GDP Per Capita		3.147	-7.552*		0.192	-0.921		0.367	-6.445
		(0.83)	(-2.14)		(0.43)	(-0.73)		(0.71)	(-0.77)
Health (Infant mortality rate)		-0.201***	-0.093*		-0.123***	-0.069*		-0.116***	-0.103*
		(-4.20)	(-1.99)		(-7.56)	(-2.40)		(-3.56)	(-2.07)
Democracy		0.126	0.177		0.083	0.099		0.116	0.200*
		(1.12)	(1.33)		(1.55)	(1.26)		(1.62)	(2.57)
Gov. Education Expenditures (per capita)			2.860			1.712			5.474
			(1.37)			(1.30)			(0.61)
Observations	432	343	207	399	317	128	432	343	207
Countries	146	114	99				146	114	99
Num. of Instruments							46	51	22
R^2	0.43	0.59	0.77	0.90	0.91	0.92			
Prob. Hansen's J				0.96	0.92	0.28	0.33	0.14	0.48
First Stage Robust F				8.06	4.72	70.29			
Prob. First Stage Robust F				0.0004	0.0096	0.000			
Shea's Partial R^2				0.04	0.05	0.63			

Note:t statistics are in parentheses. All equations include time dummies and constants, but are not reported. ***,**,*,respectively show significance at 1, 5 and 10 per cent level of significance.

on education, logically a very important control variable, further reduce this total to 207.[35] Results do not change greatly, however. The lagged dependent variable has a large and statistically significant in all regressions.[36] As expected, poor health has a negative effect on net enrolment and the coefficient is statistically significant, a one standard deviation increase in infant mortality is associated with a decrease in net primary enrolment of between 4.09 and 8.83 percentage points, implying that in developing countries, good health conditions help promote better educational achievements to a considerable extent. Most other coefficients are not statistically significant, the exception being the share of the population under the age of 15 which however is counter-intuitive. The result is consistent with the empirical findings of Dreher et al. (2008) and Schultz (1988), according to whom, contrary to other educational outcome variables, a larger share of school-age children affects primary school enrolment positively. GDP per capita is statistically significant but counter-intuitive -a result that may seem surprising if we do not consider the presence of the lagged dependent variable in the regression.

The results discussed so for (columns 1 to 3) may appear to be biased by the endogeneity of some of the regressors. To control for reverse causality, the next three columns consider IV regressions, where the endogenous variables are education aid (columns 4 to 6) and the government's expenditures on education (column 6). Burnside and Dollar (2000), Ovaska (2003), and Djankov et al. (2005) among others, were able to use infant mortality, income and population as valid instruments in their studies. However, because of the (infant mortality, income and population) possible correlation with our dependent variables, they are not valid for our study.

Our instruments for education aid are suggested by the large literature on the allocation of foreign aid. As this literature has long demonstrated, geopolitical and commercial interests play an important role in determining how much aid is given and to whom (Mosley 1985a,

[35]Ideally, we would have liked to add number of trained teachers, youth literacy rates, private education expenditures and education infrastructure variables, such as number of schools, to the model as our explanatory variables. However, if we had done this our dataset would have been restricted to a small number of countries and limited to the late 1990s onward; therefore we preferred to exclude them.

[36]The results of the OLS specification without the lagged dependant variable are shown in the table B.4 in Appendix-B.

1985b; Frey and Schneider, 1986; Trumbull and Wall, 1994). Two aspects that fall under this umbrella is the importance of the recipient country as a commercial partner and a former colonial relationship. We measure the first aspect by the ratio of the recipient country's exports and imports towards the donor community as a percentage of the donor's GDP. The second aspect is captured by a dummy variable taking a value of 1 if the recipient country is a former colony of any donor country.[37] We add government's lagged per capita educational expenditures as a third instrument when dealing with the government's expenditures on education as an additional endogenous variable.

After controlling for reverse causality, our results are not too different from the previous regressions, lagged dependent variable, share of population under the age of 15 and health are the statistically significant variables in all regressions. The last rows of table 2.3 offer a series of diagnostic tests on these IV regressions. F-test shows that instruments are statistically related to the endogenous variable, in our preferred equation (column 6) the value of the test is higher than a value where a weak instrument problem would not be suspected, and Shea's partial R^2 is also quite high, suggesting that our instruments are not weakly linked to our endogenous variables.

In order to account for the dynamic panel bias in this type of equations, the last three columns of table 2.3 show the results of system-GMM regressions following Blundell and Bond (1998). Before analysing the results, it is important to check their robustness. Firstly, the null hypothesis of no two-period serial correlation in the residuals cannot be rejected. Secondly, in addition we may also note that in all system-GMM regressions, Hansen's J-test fails to reject the null hypothesis of the instrument set being orthogonal to the error term, thus supporting this methodology. Thirdly, the coefficient of the lagged dependent variable in all the regressions is less than one in absolute value, thus indicating that the models are stable and not explosive.

Education aid has a small and statistically significant coefficient. Health is the only vari-

[37] We assume that as, former colonial powers are more inclined to give aid to their former colonies, so a developing country with a colonial tie to one of the relatively prosperous industrialized countries is likely to receive more education aid, ceteris paribus.

able, which has a statistically significant effect on the net enrollment ratios in all different methodologies. Democratic institutions encourage their governments to use aid more effectively (Svensson, 1999); thus education aid is hypothesised to be more effective in democratic regimes than in autocratic ones. The coefficient of democracy is positive and significant, which suggests that countries with democratic rules have higher net enrolment than in non-democracies. As discussed in the empirical framework section, in the GMM specification we will use the Two-step system GMM, and the results of the difference GMM are in the Appendix-B in table B.5.

In order to evaluate the size of the effect of education aid on educational achievements that these regressions suggest, we may consider the only significant positive coefficients estimated so far. The more reliable GMM methodology report a coefficient of about 0.156 (column 9) on education aid, this would suggest that an increase in education aid of US$ 1 per capita would lead to increases in net primary enrolment of 0.15 units. This is far too small to have any policy relevance, as typical changes over a five-year period have averaged 50 times that over the last few decades. The effect of education aid on the recipient educational achievements is small, which may be because of the use of education aid commitments rather than education aid disbursements. As in an ideal situation where commitments are disbursed within a year, enable the recipient to anticipate the expected volume of aid better, where the delays in disbursements (or unpredictability) of aid adversely effects its intended targets.

Comparing the effectiveness of education aid resources with the impact of national resources in the regression generally, the effect of national education expenditure appears to be clearly more irrelevant than the effect of the education aid, as the effect of national education expenditure is insignificant in all the three different specifications. This can be because of the inefficient and corrupt allocation of these resources, as according to IMF (2002), in many countries, a large share of budgetary resources in the social sectors is often used for wages, leaving a very small share of education budget for activities (such as textbooks) with the most powerful effects on fundamental education indicators.[38] Together with this inappro-

[38] According to Bruns et al. (2003), "... abundant research indicates that books and other learning materials are highly cost-effective complementary inputs in the learning process."

priate allocation, in many cases, there is also substantial leakage of public funds. For example, IMF (2002) found that "... in Uganda, public expenditure tracking surveys revealed that during 1991-95, less than 15 per cent of central government nonwage budgetary allocations for primary education actually reached the schools, with the remaining funds being used by local government officials for non education purposes."

As stated earlier, the aid utilisation ability and capacity of an aid recipient country, together with others, also depends upon its size of the economy. Therefore, to adjust the size of the economy of an education aid recipient country, education aid is also measured as a percentage of GDP rather in per capita terms only. The whole set of regressions from table 2.3 is re-estimated in table 2.4 using education aid as a percentage of GDP as our regressor of interest. Accordingly, we also measure the domestic government's expenditures on education as a percentage of GDP where relevant. The overall results are consistent with those of table 2.3. We may note that education aid as a percentage of GDP is statistically significant with the simple LSDV and system GMM methodology, but loses its statistical significance under the IV methodology. The coefficient on the lagged primary net enrolment rates is close to one, and is significant at the one per cent level of significance. This means our estimates reveal a considerable degree of inertia in net primary school enrolment, where a second lag of the dependent variable has emerged as being completely insignificant (results not shown).

If we limit ourselves to the GMM results, the largest coefficient on education aid is 10.43 (column 9), which implies that a one per cent increase in education aid as a percentage of GDP would lead to an increase in net primary enrolment of 0.104. As achieving universal primary education requires accounting for the number of people among whom the resources devoted to education must be shared (Dreher et al., 2008), in accessing the education aid effectiveness, education aid per capita seems more appropriate than the education aid to GDP.

To summarise, our results in all the three econometric specifications, so far point towards an effect of education aid on net enrolment rates in primary education that is too small to matter and quite possibly non-existing as judged by its failure to achieve statistical signifi-

Table 2.4: Education Aid % of GDP: Dep. Var. Primary School Enrollment, Net (NEP)

Specification	**LSDV Approach**			**Instrumental Variable Approach**			**Arelano Bond Approach**		
L.DV	0.570***	0.487***	0.605***	0.861***	0.725***	0.711***	0.765**	0.543**	0.698*
	(6.96)	(5.01)	(8.81)	(39.47)	(21.45)	(12.14)	(2.72)	(2.70)	(2.11)
Education Aid Commitments Over GDP	1.839**	1.744*	3.950**	-0.446	-2.199	1.376	3.562*	4.385*	10.43*
	(2.71)	(2.25)	(3.14)	(-0.63)	(-1.46)	(0.65)	(2.41)	(1.98)	(1.96)
Population Under 15 (% of Total)		0.899***	0.223		0.249***	0.353***		0.086	-1.927
		(4.00)	(0.98)		(4.27)	(3.38)		(0.77)	(-1.95)
Urban Population (% of Total)		0.043	-0.003		-0.016	-0.070		0.005	0.169
		(0.39)	(-0.03)		(-0.70)	(-1.21)		(0.06)	(0.88)
GDP Per Capita		4.422	-2.399		-0.539	1.561		1.389	0.783
		(1.18)	(-1.10)		(-0.85)	(0.94)		(1.41)	(0.35)
Health (Infant mortality rate)		-0.178***	-0.049		-0.122***	-0.085		-0.188*	0.435
		(-3.68)	(-0.99)		(-6.57)	(-1.93)		(-2.25)	(1.48)
Democracy		0.088	-0.058		0.074	0.012		0.134	-0.368
		(0.82)	(-0.42)		(1.34)	(0.10)		(1.31)	(-1.52)
Gov. Education Expenditures (% of GDP)			5.237*			-4.042			11.86
			(2.43)			(-0.76)			(1.13)
Observations	413	343	209	381	317	131	413	343	209
Countries	141	114	100				141	114	100
Num. of Instruments							14	24	22
R^2	0.48	0.61	0.80	0.90	0.90	0.62			
Prob. Hansen's J				0.97	0.66	1.00	0.40	0.25	0.66
First Stage Robust F				7.08	5.95	92.66			
Prob. First Stage Robust F				0.001	0.003	0.000			
Shea's Partial R^2				0.03	0.02	0.42			

Note:t statistics are in parentheses. All equations include time dummies and constants, but are not reported. ***,**,*,respectively show significance at 1, 5 and 10 per cent level of significance.

cance in most regressions. Although other studies in the literature have found statistically significant results more often that we do here, the magnitude of the effects that we find here is quite in line with the rest of the literature. Michaelowa and Weber (2007), for instance, find that an increase of US$ 1 in per capita education aid or 0.10 per cent in education aid as a percentage of GDP would result in increases in net enrolment rates of 0.15 and 0.25 under their highest estimates.

2.6.2 Logistic functional form

We now turn to the estimation of equation 2.7, which corresponds to the case where our measure of educational achievements evolves following a logistic function and the speed of the transition can be modified by education aid and all the other. We reproduce equation 2.7 below, while the results of this approach can be found in table 2.5.

$$-ln(\frac{1}{Edu_{i,t}} - 1) = \alpha t + \lambda Aid_i t + BX_i t + C_i$$

The first column of table 2.5 shows an estimate of equation 2.7 with a common speed of transition for all countries, i.e. when neither education aid nor the matrix X is included in the regression. This is equivalent to assume that net enrolment rates are just a function of time, although different countries start their transition at different times as captured by the country fixed effects in equation 2.7. This first regression gives us a picture of the typical speed at which net enrolment rates change over time.

The estimated coefficient of 0.164 on time implies that a country with a net enrolment rate of 50 per cent would require 42.3 years to reach a rate of 80 per cent and 67 years to reach a rate of 90 per cent. This is quite in line with the estimates of Clemens (2004), who, in a sample of countries not limited to education aid recipients found average period lengths of 36.4 years and 57.7 years for the same changes to take place.[39]

[39]The estimated function is symmetric around 50 per cent, so passing from 20 per cent to 50 per cent would also take 42.3 years.

Table 2.5: OLS Fixed Effect, Primary School Enrollment , Net (NEP)

Dependent Variable	**NEP**	**NEP**	**NEP**	**NEP**	**NEP**	**NEP**	**NEP**
Time	0.164***	0.164***	0.293	0.275	0.156***	0.337	0.333
	(6.96)	(5.81)	(1.18)	(1.06)	(5.25)	(1.34)	(1.32)
Education Aid Commitments per capita		-0.0001	0.0040	0.0035			
		(-0.04)	(1.10)	(0.87)			
Population Under 15 (% of Total)			-0.0007	-0.0011		-0.0016	-0.0021
			(-0.13)	(-0.18)		(-0.28)	(-0.37)
Urban Population (% of Total)			-0.0012	-0.0014		-0.0014	-0.0017
			(-0.72)	(-0.79)		(-0.78)	(-0.96)
Health (Infant mortality rate)			-0.0004	-0.0003		-0.0001	0.0001
			(-0.43)	(-0.26)		(-0.13)	(0.05)
Democracy			-0.0037	-0.0048		-0.0028	-0.0037
			(-0.85)	(-1.06)		(-0.64)	(-0.85)
Gov. Education Expenditures (per capita)				0.1370			
				(0.63)			
Education Aid Commitments Over GDP					0.0225	-0.0145	-0.0250
					(1.06)	(-0.42)	(-0.76)
Gov. Education Expenditures (% of GDP)							0.1420
							(0.67)
Observations	650	650	535	499	638	529	510
Countries	166	166	132	122	161	129	124
R^2	0.22	0.22	0.32	0.34	0.23	0.32	0.34

Note: t statistics are in parentheses. All equations include time dummies and constants, but are not reported. ***,**,*,respectively show significance at 1, 5 and 10 per cent level of significance.

The next three columns of table 2.5 add our measure of education aid per capita and our full set of control variables as determinants of the speed of transition. What we find is that none of the estimated coefficients added in these regressions achieves statistical significance at standard levels. Thus, the speed of the transition appears to be unrelated to the amount of education aid received by these countries over the whole period, or to any of the additional factors considered here.

Very similar conclusions are reached in columns 5 to 7 of table 2.5, where education aid is considered as a percentage of GDP. The size of the effects are similar or smaller. Once again, rest of the coefficients are not statistically significant.

2.6.3 Alternative measures of educational outcomes

Clemens (2004) draws on detailed country studies to show that rising enrolment rates came at the cost of deteriorating quality of education in some countries, as reflected by much higher pupil-teacher ratios, higher failure and repetition rates, etc. Education experts have come to see that low-quality schooling is one of the main hurdles in achieving the education for all in the developing countries (Haddad, 1990).[40] Measuring the quality of education is one of the major challenges of educational statistics. Qualitative dimensions of education, such as improved literacy and test scores, are not available for a sufficiently large number of countries over a sufficiently long period of time. Therefore, we proxied the qualitative dimensions of the education system through primary completion rates and the number of repeaters in primary schools, as the share of pupils who remain in the same class from one year to another captures the internal ineffectiveness of an educational system. However, these two variables give only a very rough approximation of the quality of education.

We start with pupil-teacher ratios (PTR), both for primary and for secondary schooling. Lower values should correspond to superior educational outcomes as teachers can dedicate

[40]Hanushek and Kimko (2000) finds that, for subsequent economic growth, scores on international examinations (indicators of the quality of schooling capital) matter more than years of attainment (quantity). Barro (2002) also notes that, many researchers have argued that the quality of schooling is more important than the quantity measured.

more time to each individual student. This is probably the closest to a measure of educational quality that we can obtain. Next, we have two ratios indicating the degree of success of students. The first one, persistence to grade 5, is the percentage of children enrolled in the first grade of primary school who eventually reach grade 5 - normally the last grade of primary education. UNESCO and the World Bank, among others, has favoured the primary completion rate as the indicator that best reflects the Millennium Development education goal that children "complete a full course of primary schooling" rather than gross enrolment rates as the key outcome indicator for Education for All (World Bank, 2005). The primary completion rate suffers from the availability of data, as there are very few historical data on completion rates (Clemens, 2007).[41] The second one is the number of new entrants to the first grade of secondary school as a percentage of the number of students enrolled in the final grade of primary school in the previous year -a variable called "progress to secondary".

Finally, we also consider the repetition rate in primary and in secondary education - defined as the number of students enrolled in the same grade as in the previous year, as a percentage of all students enrolled in primary or secondary school. Arguably a low-quality educational system will see a lot of children needing to repeat grades in order to assimilate the required knowledge.

Table 2.6 presents our results when considering these six alternative measures of educational achievements plus a seventh one - the net enrolment rate in secondary education.[42] This table uses equation 2.1 as its empirical specification, two step system-GMM as its estimation methodology, and includes all control variables in all regressions. The next table (table 2.7) will repeat the exercise by using equation 2.7 instead, but the set of educational achievements considered must be reduced to those whose trajectory may be considered logistic.

[41] It can be seen from table 2.7 that the persistence to grade five, progress to secondary school and secondary school net enrolment regressions (see column 3, 4 and 7 respectively) are based on a very small sample size, due to the lack of data for the dependant variables in the models.

[42] Besides net primary school enrolment ratios (our preferred education indicator), net secondary school enrolment rates is another important variables in terms of the coverage -or the quantity- of the education system in the aid recipient countries. Here in this section we will also try to trace out the impact (if any) of the education aid flows on it.

Table 2.6: Arelano Bond

Dependent Variable	**PTR Primary**	**PTR Secondary**	**Persistence to Grade 5**	**Progress to Secondary**	**Repeat Primary**	**Repeat Secondary**	**Secondary School Enrollment (Net)**
L.DV	0.804***	0.391***	0.169	0.875***	0.680***	0.450	0.444***
	(4.12)	(3.38)	(0.40)	(3.94)	(4.19)	(1.53)	(3.58)
Population Under 15 (% of Total)	0.137	0.295***	-0.933*	0.156	0.257*	0.076	-0.659***
	(0.92)	(3.71)	(-2.15)	(0.99)	(2.14)	(0.77)	(-4.40)
Urban Population (% of Total)	-0.007	-0.007	0.035	0.032	-0.021	0.024	0.066
	(-0.30)	(-0.18)	(0.22)	(0.65)	(-1.06)	(0.96)	(0.90)
GDP Per Capita	-1.529	6.208*	13.79	3.274	4.140	5.499*	3.716
	(-0.85)	(2.34)	(1.45)	(0.27)	(1.25)	(2.48)	(1.68)
Health (Infant mortality rate)	0.022	-0.054*	0.034	-0.054	0.049**	0.050*	-0.192***
	(1.10)	(-2.25)	(0.19)	(-0.60)	(3.17)	(2.13)	(-4.24)
Democracy	0.048	0.020	-0.210	-0.076	0.071	-0.054	0.002
	(1.10)	(0.32)	(-0.67)	(-0.85)	(1.69)	(-0.73)	(0.01)
Education Aid Commitments per capita	-0.040	0.031	0.064	0.126	-0.012	0.006	0.225
	(-0.66)	(0.71)	(0.68)	(1.01)	(-0.61)	(0.06)	(1.10)
Gov. Education Expenditures (per capita)	1.026	-7.624**	-10.88	-4.371	-1.774	-5.245*	-3.591
	(0.57)	(-3.22)	(-1.40)	(-0.35)	(-0.72)	(-2.35)	(-1.72)
Observations	301	275	112	158	279	227	87
Countries	117	113	70	97	113	103	71
Num. of Instruments	40	26	14	20	34	25	22
Hansen Prob.	0.85	0.41	0.99	0.74	0.49	0.58	0.94

Note: t statistics are in parentheses. All equations include time dummies and constants, but are not reported. ***,**,*,respectively show significance at 1, 5 and 10 per cent level of significance.

Overall, our findings are not supportive of a meaningful role of education aid on any of these measures of educational achievements. Table 2.6 shows that besides lagged dependent variable, population under the age of 15 years and health are the only variables that most of the time reaches standard levels of statistical significance. Results shows that in most of the cases (except Persistence to Grade 5 and Repeat Secondary) lagged dependent variable reach the standard level of significance. Population under the age of 15 have a significant and theoretically expected effect on PTR Secondary, Persistence to Grade 5, Repeat Primary and the Net Secondary School Enrollment ratio. Where the health conditions in a recipient country have a significant and theoretically expected effect on PTR Secondary, Primary and Secondary schools Repeat ratios and the Net Secondary School Enrollment ratio. In Secondary schools people teacher and repeaters ratios beside health government per capita education expenditures also have a significant effect.

Table 2.7: OLS Fixed Effect (Logistic Functional Form)

Dependent Variable	**Persistence to Grade 5**	**Progress to Secondary**	**Secondary School Enrollment (Net)**
Time	-0.0735 (-0.16)	0.8230* (2.06)	0.2760 (1.10)
Population Under 15 (% of Total)	0.0040 (0.40)	-0.0027 (-0.27)	-0.0005 (-0.08)
Urban Population (% of Total)	0.0037 (1.19)	-0.0005 (-0.18)	0.0002 (0.11)
GDP Per Capita	0.3920 (0.20)	-1.4710 (-0.81)	0.1830 (0.84)
Health (Infant mortality rate)	0.0002 (0.12)	-0.0001 (-0.08)	-0.0005 (-0.31)
Democracy	-0.0110 (-1.42)	0.00224 (0.26)	0.0004 (0.08)
Education Aid Commitments per capita	-0.0003 (-0.06)	0.0039 (0.67)	0.0017 (0.71)
Observations	305	365	242
Countries	103	124	110
R^2	0.41	0.43	0.75

Note: t statistics are in parentheses. All equations include time dummies and constants, but are not reported. ***,**,*,respectively show significance at 1, 5 and 10 per cent level of significance.

In table 2.7, we estimate equation 2.7 using as dependent variable the persistence to grade 5, progress to secondary and the net enrolment rate for secondary school. A logistic transition pattern is not adequate for pupil-teacher ratios or for the percentage of repeaters, all of which tend to fall rather slowly over time with a pattern that may not be concave or convex. For

the three measures considered here, we find that education aid is associated with a faster transition in two cases -progress to secondary school and secondary net enrolment. The coefficients are not statistically significant and their size suggests effects of small magnitude. We conclude that the use of more quality-oriented measures of educational achievements does not lead to more supportive evidence of the role of education aid.

2.6.4 Education aid effectiveness at regional level, and at different times

One prevalent view in the aid effectiveness literature is that aid promotes growth in particular environments (Burnside and Dollar, 2000 and 2004; Hansen and Tarp, 2001; among others). Until now, we have estimated the average impact of education aid across all countries and periods in the sample. Now we seek to estimate that how the effect of education aid depends on the region and the time when and where it is received. The results are shown in table 2.8.

According to our estimates, at regional level education aid is relatively more effective in increasing net primary school enrolment rates in the sub-Saharan African region (column 4 table 2.8), followed by the European region (column 5 table 2.8).

According to the World Bank (1998), between 1970 and 1993, aid allocations by bilateral and multilateral donors were dominated by politics-both the international politics of the Cold War and the internal politics of aid agencies, but the end of the Cold War in 1990, significantly transformed the development aid architecture. Instead of security concerns and foreign relations, donors started to focus on alleviating poverty and stimulating development by increased focus on the social sectors, such as health or education. The shift was part of a broader shift away from infrastructure to basic human needs (Bermingham et al., 2009). As a result of these fundamental shifts in the aid architecture, the share of ODA going to social sectors in low-income countries rose from 29 per cent in the early 1990s to 52 per cent between 2001 and 2004 (World Bank, 2007). During the Cold War, aid to education was also seen as being highly politicised, and was directed at allies in the war against commu-

Table 2.8: Education Aid Effectiveness At Regional Level And At Different Time Periods, (Dep. Var. NEP)

Sample	**Main Specification**	**Excluding Sub Saharan Africa**	**Asia Middle East and Latin America**	**Sub Saharan Africa**	**Europe**	**After Cold War**	**During Cold War**
L.DV	0.851***	0.600***	0.418*	0.614***	-0.070	0.978**	0.440**
	(3.46)	(6.37)	(2.36)	(6.16)	(-0.96)	(3.30)	(2.74)
Education Aid Commitments per capita	0.156*	0.001	-0.218	0.812**	0.098*	0.193*	-0.239
	(2.09)	(0.01)	(-0.92)	(2.74)	(2.05)	(2.18)	(-0.62)
Population Under 15 (% of Total)	0.366	-0.032	-0.175	-0.031	0.408*	-0.230	0.299
	(1.37)	(-0.21)	(-0.76)	(-0.11)	(2.02)	(-0.41)	(1.10)
Urban Population (% of Total)	-0.026	-0.025	-0.036	0.150	-0.212	-0.007	0.052
	(-0.77)	(-0.47)	(-0.44)	(1.45)	(-1.80)	(-0.14)	(0.63)
GDP Per Capita	-6.445	-6.610	-5.645	-9.376*	17.91*	-2.830	-2.067
	(-0.77)	(-1.19)	(-0.80)	(-2.47)	(2.08)	(-0.36)	(-0.72)
Health (Infant mortality rate)	-0.103*	-0.136*	-0.245**	-0.012	-0.419**	-0.281*	-0.281*
	(-2.07)	(-2.15)	(-2.81)	(-0.27)	(-2.80)	(-2.45)	(-2.45)
Democracy	0.200*	-0.089	-0.006	0.176	0.086	-0.073	0.270
	(2.57)	(-1.20)	(-0.04)	(1.34)	(0.80)	(-0.49)	(1.01)
Gov. Education Expenditures (per capita)	5.474	4.812	2.248	7.374*	-16.55*	-0.875	4.099
	(0.61)	(1.18)	(0.33)	(2.24)	(-2.03)	(-0.12)	(1.04)
Observations	207	132	101	75	31	69	69
Countries	99	65	45	34	20	41	41
Num. of Instruments	22	27	27	24	17	13	13
Prob. Hansen's J	0.48	0.89	0.53	0.69	0.94	0.19	0.19

Note:t statistics are in parentheses. All equations include time dummies and constants, but are not reported. ***,**,*,respectively show significance at 1, 5 and 10 per cent level of significance.

nism; the end of the Cold War, or that of the bi-polarism in international relations, brought a shift of focus in development and education policy towards the least developed countries (Novelli, 2010). Aid had now, become dictated less by the political motives of the donors (Bourguignon and Leipziger, 2006), and therefore its effectiveness may have increased since the end of the Cold War.

In order to see whether the end of the Cold War has improved the effectiveness of education aid, we test for differences between the Cold War and post-Cold War period by running separate regressions for the years 1973-1990 and 1991-2007 (See Table 2.8). The result from the GMM specification suggests that the effect of education aid changed slightly after 1990, as it turned to positive and significant from being negative and insignificant during the Cold War era. Further, after the Cold War, the effect of education aid was higher than that of the whole sample period. Along with the change of donors' motives for aid flows, this slightly increased the effectiveness of education aid in the post-1990 era, this could also have been caused by changes in the aid architecture. In the education sector, over the year's the aid delivery mechanism has changed towards the i) Sector-wide approaches, ii) general budget support and iii) the Fast Track Initiative (Ashford and Biswas, 2010). All three modes of financing the education sector in an aid recipient country are the potential modes of reducing transaction costs compared with typical project modalities. A pilot survey on aid effectiveness in the education sector in 10 FTI partner countries provided some evidence of the positive contribution of the FTI to aid effectiveness (FTI Secretariat, 2009). Besides the above aforementioned reasons, the improved effectiveness of education aid could also be due to the more efficient utilisation of the aid in recent years. In the 1970s and 1980s many aid recipient countries were facing the problem of weak capacity utilisation, they simply accepted the foreign aid without knowing or indicating how it would be utilised (Haddad, 1990). According to Heyneman 2005, education aid in the 1960s and 1970s was mainly limited to vocational and technical education, for skills in least demand, causing education aid to be ineffective during that era.

2.6.5 Robustness Checks

To ensure the validity of the previous results and because of the important conclusions to be drawn from our analysis, still focusing on net primary school enrolment rates, a number of changes can be made to investigate further the robustness of our results. We implement two robustness checks to our main specification: Re-estimation of the main model at alternative time period averages, and sub-sample of low and high income countries.

2.6.5.1 Different periodisation

To address the issue, demonstrated by Easterly (2003) and Roodman (2007), who studied the effect of aid on growth at aggregate level that different periodisations can significantly alter the results of the most prominent empirical studies, We consider the most commonly used alternative time period average of four-year intervals. To facilitate comparison in table 2.9 columns (1) to (3) reproduce the benchmark five-year average regressions from table 2.3. By altering the periodisation of the regression, columns (4) to (6), based on four-year averages, show that in the OLS and IV approach our results remain considerably unaffected, implying that by and large decreasing the period averaging does not affect the magnitude and the statistical power of the estimated coefficients of concern. However, in our AB approach the results change slightly, either in terms of the size or sign of the coefficient or that of the level of significance, where education aid and the level of democracy becomes insignificant.

2.6.5.2 Sub-sample of income

Developing countries can be categorised into various “clubs/groups” based on the extent of poverty and education standards they face. An interesting question that emerges is to what extent education aid can be useful to country groups with very high levels of poverty (or very poor quality of education standards) versus countries with less severe levels of poverty or slightly better education standards. To check this first we re-examine the basic results

Table 2.9: Robustness Check, Different Periodization, NEP as Dep. Var.

Data	**5 Years Averages**			**4 Years Averages**		
Specification[a]	LSDV	IV	AB	LSDV	IV	AB
L.DV	0.606***	0.736***	0.851***	0.798***	0.767***	0.637***
	(7.68)	(18.47)	(3.46)	(11.10)	(19.61)	(4.62)
Education Aid Commitments per capita	0.037	-0.058	0.156*	0.032	-0.083	0.177
	(1.25)	(-0.72)	(2.09)	(1.88)	(-1.03)	(1.33)
Population Under 15 (% of Total)	0.407	0.293***	0.366	0.431	0.201**	0.060
	(1.48)	(4.40)	(1.371)	(1.53)	(3.05)	(0.52)
Urban Population (% of Total)	-0.018	-0.043	-0.026	0.031	-0.076*	-0.003
	(-0.15)	(-1.17)	(-0.77)	(0.28)	(-2.10)	(-0.08)
GDP Per Capita	-7.552*	-0.921	-6.445	-5.772	-1.084	-3.973
	(-2.14)	(-0.73)	(-0.77)	(-1.65)	(-0.73)	(-1.64)
Health (Infant mortality rate)	-0.093*	-0.069*	-0.103*	-0.071	-0.030	-0.135*
	(-1.99)	(-2.40)	(-2.07)	(-1.84)	(-0.82)	(-2.35)
Democracy	0.177	0.099	0.200*	0.112	-0.003	0.040
	(1.33)	(1.26)	(2.57)	(0.74)	(-0.05)	(0.55)
Gov. Education Expenditures (per capita)	2.860	1.712	5.474	0.436	2.013	2.921
	(1.37)	(1.30)	(0.61)	(0.25)	(1.48)	(1.33)
Observations	207	128	207	204	97	204
Countries	99		99	99		99
Num. of Instruments			22			33
R^2	0.77	0.92		0.82	0.92	
Prob. Hansen's J		0.28	0.48		0.55	0.97
First Stage Robust F		70.29			65.09	
Prob. First Stage Robust F		0.000			0.000	
Shea's Partial R^2		0.63			0.51	

Note: t statistics ate in parentheses. All equations include time dummies and constants, but are not reported.***,**,*,respectively show significance at 1, 5 and 10 per cent level of significance.
a]LSDV= OLS, Fixed Effect Approach, IV= Instrumental Variable Approach, AB= Arelano Bond Approach (GMM)

Table 2.10: Robustness Check, Sub Samples at different Income groups, NEP as Dep. Var.

Sample	**Whole Sample**			**Low and Lower middle income**			**Upper Middle and High Income**		
Specification[a]	LSDV	IV	AB	LSDV	IV	AB	LSDV	IV	AB
L.DV	0.606***	0.736***	0.851***	0.507***	0.738***	0.675***	0.557***	0.747***	0.576***
	(7.68)	(18.47)	(3.46)	(4.61)	(12.56)	(5.99)	(6.79)	(18.35)	(6.17)
Edu Aid Commitments per capita	0.037	-0.058	0.156*	0.339	-0.363	-0.022	0.052	-0.088	0.012
	(1.25)	(-0.72)	(2.09)	(1.57)	(-1.17)	(-0.16)	(1.22)	(-1.08)	(0.99)
Population Under 15 (% of Total)	0.407	0.293***	0.366	0.806	0.437***	0.213	-0.310	-0.063	-0.148
	(1.48)	(4.40)	(1.37)	(1.90)	(4.06)	(1.93)	(-0.53)	(-0.75)	(-1.46)
Urban Population (% of Total)	-0.018	-0.043	-0.026	-0.297	-0.124	-0.139	0.076	0.032	0.056
	(-0.15)	(-1.17)	(-0.77)	(-1.47)	(-1.21)	(-1.18)	(0.61)	(0.98)	(1.89)
GDP Per Capita	-7.552*	-0.921	-6.445	-7.669	0.201	-3.623	-8.114	-2.576	-5.730*
	(-2.14)	(-0.73)	(-0.77)	(-1.46)	(0.08)	(-1.07)	(-1.84)	(-1.27)	(-2.54)
Health (Infant mortality rate)	-0.093*	-0.069*	-0.103*	-0.118	-0.042	-0.084	-0.042	0.038	0.004
	(-1.99)	(-2.40)	(-2.07)	(-1.93)	(-0.97)	(-1.31)	(-0.68)	(0.82)	(0.07)
Democracy	0.177	0.099	0.200*	-0.122	0.187	0.120	0.043	-0.005	0.059
	(1.33)	(1.26)	(2.57)	(-0.60)	(1.39)	(0.62)	(0.17)	(-0.05)	(0.55)
Gov. Edu Exp (per capita)	2.860	1.712	5.474	4.392	4.242*	7.025*	3.883	3.503	5.089*
	(1.37)	(1.30)	(0.61)	(1.53)	(2.43)	(2.31)	(1.18)	(1.80)	(2.06)
Observations	207	128	207	120	77	120	87	51	87
Countries	99		99	58		58	41		41
Num. of Instruments			22			33			21
R^2	0.77	0.92		0.81	0.93		0.78	0.88	
Prob. Hansen's J		0.28	0.48		0.17	0.62		0.38	0.84
First Stage Robust F		70.29			35.87			23.06	
Prob. First Stage Robust F		0.00			0.00			0.00	
Shea's Partial R^2		0.63			0.60			0.57	

Note: t statistics are in parentheses. All equations include time dummies and constants, but are not reported.***,**,*,respectively show significance at 1, 5 and 10 per cent level of significance.

a]LSDV= OLS, Fixed Effect Approach, IV= Instrumental Variable Approach, AB= Arelano Bond Approach (GMM)

for a sub-sample of low and lower-middle income versus upper-middle and high income countries, based on the fact that there are a number of drawbacks to using the full sample with its great heterogeneity of experience.[43] That is, the use of the broad panel relies on the idea that the strong signal from the diversity of the experience dominates the noise. Therefore, it is possible that the effect of education aid on its intended targets differs in magnitude and significance. To gain some perspective on this issue, the empirical analysis includes a comparison of results from the broad country panel with those obtainable from sub-sets of low and lower-middle income countries. The results in table 2.10 demonstrates that we failed to found any significant effect of education aid in increasing the net enrolment in primary schools differently at different income group aid recipient countries. Whereas government per capita educational expenditures are more effective in increasing the net primary school enrollment ratios in the low and lower middle income countries than in the rest of the world.

2.7 CONCLUSION

The effectiveness of education sector-specific aid is empirically assessed for almost 163 developing economies over a period of 35 years (1973-2007). Eight education outcome variables (education sector achievements) are used in this study, which measure different aspects of education sector goals. The results suggest that per capita education aid has, on average, a very small and rarely significant effect on the educational achievements in the education aid recipient countries. In line with some previous studies, we find some evidence of regional differences in the effect of education aid on educational achievements.

The results of this chapter, as we view them, are not supportive of a quantitatively meaningful role of education aid in achieving the achievements, indicating a lack of evidence to support the pursuit of education aid as a policy objective to promote education sector development in the aid recipient countries. Other papers in the literature have reached more optimistic conclusions, see Dreher et al. (2008) and, to a lesser extent, Michaelowa and We-

[43] For example, across countries and over time consistent and accurate collection of data.

ber (2007). For this reason, we find it pertinent to provide some additional remarks on the interpretation of our results. While other papers have found statistically significant coefficients on education aid more frequently than we have, this should not be regarded as a matter of great importance. Assessments of the quantitative importance of the effect of education aid have been made, here and in the rest of the literature, by using point estimates and leaving aside the issue of statistical significance. This gives education aid the benefit of the doubt and rightly avoids using p-values as a judge of economic meaningfulness.

The main reason for the relatively optimistic conclusions in other papers is, in our view, the use of very large changes in education aid flows that are considered to evaluate effects. Michaelowa and Weber (2007), for instance, consider increases in education aid of 1 per cent of the recipient's country GDP, while Dreher et al. (2008) consider increases of US$ 5 per capita. These changes are 10 and 5 times larger than those we have used here to evaluate our effects, which were already larger than the median values of education aid per capita and education aid as a percentage of GDP.

Our findings emphasise the need to disaggregate aid in order to assess its effectiveness. Education aid that is slightly effective in improving the quantitative -coverage- outcomes (net enrolment rates) has insufficient but favourable effects on the qualitative improvements (completion rate and the number of repeaters) of the recipients' education system. This implies that, achievements in terms of coverage do not appear to have significantly taken place at the expense of the quality of the process of primary schooling. In education aid effectiveness, our analysis insignificantly stresses the distinction between the measures of the recipient's education system quantity (access or coverage) and the system's internal quality and efficiency.[44]

The end of the Cold War significantly transformed the aid business, and resulted an increase of the share of ODA going to the social sectors in low income countries from 29 per

[44]As discussed earlier, primary and secondary (gross and net) enrolment ratios are the measures of quantity and access or coverage to education and Primary and secondary pupil-teacher ratios and completion rates are the measures of the quality of the internal education system, where persistence to primary grade five, progress to secondary grade and primary and secondary school repeaters are measures of the internal efficiency of education systems.

cent in the early 1990s to 52 per cent between 2001 and 2004 (World Bank, 2007). Our analysis suggests that this increase has had a positive influence on a country's ability to provide enhanced education facilities to the populations in need of it. We can cautiously state that education aid has been effective. Some lessons may also be learnt from the impact of certain control variables. High population pressure and crowded classrooms obviously increase the challenges to be met and the negative correlation between health facilities and net enrolment points to the interaction of education with other social policies. The main policy implication would be to channelise a part of the education aid toward improving the stock of health infrastructure (infant mortality rate). We particularly suggest that a review of the potential effect of health aid on education sector achievements may be helpful.

These results invite the conclusion that, from the different estimation techniques applied in this chapter, the ineffectiveness or failure of education aid on education sector achievements can be observed, although some times we find the impact of education aid on educational achievements to be slightly helpful. These results raise the obvious question: why is education aid not working? Reflecting historical patterns and geopolitical considerations, too much goes to middle-income countries, as compared to needier low-income ones, and too little goes to basic education (See figures 1.3 and 1.4). In the whole study period (1973-2007), approximately 25 per cent of education aid went for basic education. In addition, altogether too much aid (more than 40 per cent) goes to expensive international technical assistance and to support such things as "sitting fees" for developing country government officials to attend meetings (Burnett, 2010).

From the aid research point of view, the findings may provide an important contribution to the scholarly discussion on the education aid effectiveness. However, better evaluation of how, why and who receives foreign aid in the education sector may help us to find ways through which the donor community may more effectively contribute to the educational growth in the developing world. As pointed out by McGinn (2000), donors have failed to understand how best to respond to the problems and opportunities faced by the education sector in the developing world.

This study has some limitations, most of which have to do with data availability. The data for assessing the impact of aid for education on education outcomes are far from perfect. Data limitations with respect to education outcome variables are well known (Roberts, 2003; Bennell, 2002). Although the CRS database is the main source of information on development assistance, it imposes a number of limitations that are often ignored. Firstly, the coverage ratio of the total ODA by the CRS is the main limitation of the system. Coverage ratio is calculated by comparing the data from the CRS database with the corresponding data reported in the annual DAC statistics. Secondly, from the point of view of recipient countries, it is more relevant to focus on aid that is actually disbursed; nevertheless, it is very difficult to do so in practice. Thirdly, we understand that we are unable to account for all aid flows because of the lack of aid data from non-DAC bilateral donors and private organisations. Fourthly, some education aid in CRS is targeted at the regional level; since this money is excluded from the analysis, it may have some effect but is not large enough to be of substantial influence (around 5 per cent of the total of education aid committed is at regional level, without specifying any particular country). Fifthly, a possible explanation for the small size of education aid coefficients could be that education aid is a part of the total aid allocated to education. Indeed, the aid as budget support or debt cancellation could be possibly considered as an additional resources for education. Lastly, according to Srivastava and Oh (2010), in recent years, in policy and academic circles, the role of private funding in international development relative to official development assistance has been gaining prominence.

Appendix B

Table B.1: List of Countries Included in the Analysis

Afghanistan	Djibouti	Lesotho	Saudi Arabia
Albania	Dominica	Liberia	Senegal
Algeria	Dominican Republic	Libya	Serbia
Angola	Ecuador	Macao, China	Seychelles
Antigua and Barbuda	Egypt, Arab Rep.	Macedonia, FYR	Sierra Leone
Argentina	El Salvador	Madagascar	Singapore
Armenia	Equatorial Guinea	Malawi	Slovenia
Aruba	Eritrea	Malaysia	Solomon Islands
Azerbaijan	Ethiopia	Maldives	Somalia
Bahamas, The	Fiji	Mali	South Africa
Bahrain	French Polynesia	Malta	Sri Lanka
Bangladesh	Gabon	Marshall Islands	St. Kitts and Nevis
Barbados	Gambia, The	Mauritania	St. Lucia
Belarus	Georgia	Mauritius	St. Vincent
Belize	Ghana	Mexico	Sudan
Benin	Grenada	Micronesia, Fed. Sts.	Suriname
Bermuda	Guatemala	Moldova	Swaziland
Bhutan	Guinea-Bissau	Mongolia	Syrian Arab Rep.
Bolivia	Guinea	Morocco	Tajikistan
Bosnia and Herzeg.	Guyana	Mozambique	Tanzania
Botswana	Haiti	Myanmar	Thailand
Brazil	Honduras	Namibia	Timor-Leste
Brunei Darussalam	Hong Kong, China	Nepal	Togo
Burkina Faso	Hungary	Netherlands Antilles	Tonga
Burundi	India	New Caledonia	Trinidad and Tobago
Cambodia	Indonesia	Nicaragua	Tunisia
Cameroon	Iran, Islamic Rep.	Nigeria	Turkmenistan
Cape Verde	Iraq	Niger	Uganda
Central African Rep.	Israel	Oman	Ukraine
Chad	Jamaica	Pakistan	UAE
Chile	Jordan	Palau	Uruguay
China	Kazakhstan	Panama	Uzbekistan
Colombia	Kenya	Papua New Guinea	Vanuatu
Comoros	Kiribati	Paraguay	Venezuela, RB
Congo, Dem. Rep.	Korea, Dem. Rep.	Peru	Vietnam
Congo, Rep.	Korea, Rep.	Philippines	Virgin Islands (U.S.)
Costa Rica	Kuwait	Qatar	Yemen, Rep.
Cote d'Ivoire	Kyrgyz Republic	Romania	Zambia
Croatia	Lao PDR	Rwanda	Zimbabwe
Cuba	Latvia	Samoa	
Cyprus	Lebanon	Sao Tome and Principe	

Table B.2: Variables;List, Defination, Expected Sign, and Source

Variable	Definition	Expected Sign	Source
Education Aid Commitments	The OECD defines a commitment as a firm obligation, expressed in writing and backed by the necessary funds, undertaken by an official donor to provide specified assistance to a recipient country or a multilateral organization. Bilateral commitments are recorded in the full amount of expected transfer, irrespective of the time required for the completion of disbursements. (OECD-CRS 2010)	+	CRS, DAC
Primary / Secondary School Enrollment (% Net)	Net enrollment ratio is the ratio of children of official school age based on the International Standard Classification of Education 1997 who are enrolled in school to the population of the corresponding official school age. (WDI 2010)		WDI(2010)
Primary (Secondary) Pupil Teacher Ratio	Primary (Secondary) school pupil-teacher ratio is the number of pupils enrolled in primary (Secondary) school divided by the number of primary (Secondary) school teachers (regardless of their teaching assignment). (WDI 2010)		WDI(2010)
Persistence to Grade 5	Persistence to last grade of primary is the percentage of children enrolled in the first grade of primary school who eventually reach the last grade of primary education. The estimate is based on the reconstructed cohort method. (WDI 2010)		WDI(2010)
Progress To secondary School	Progression to secondary school refers to the number of new entrants to the first grade of secondary school in a given year as a percentage of the number of students enrolled in the final grade of primary school in the previous year. (WDI 2010)		WDI(2010)
Primary (Secondary) Repetition rate	Repeaters in primary (Secondary) school are the number of students enrolled in the same grade as in the previous year, as a percentage of all students enrolled in primary (Secondary) school. (WDI 2010)		WDI(2010)
Health (Infant mortality rate)	Infant mortality rate is the number of infants dying before reaching one year of age, per 1,000 live births in a given year. (WDI 2010)	-	WDI(2010)
Gov. Education Expenditures (per capita)	Public expenditure per student is the public current spending on education divided by the total number of students by level, as a percentage of GDP per capita. Public expenditure (current and capital) includes government spending on educational institutions (both public and private), education administration as well as subsidies for private entities (students/households and other privates entities). (WDI 2010)	+	WDI(2010)
Gov. Education Expenditures (% of GDP)	Public expenditure is the public current spending on education divided by the GDP per capita. Public expenditure (current and capital) includes government spending on educational institutions (both public and private), education administration as well as subsidies for private entities (students/households and other privates entities). (WDI 2010)	+	WDI(2010)
Population Under 15 (% of Total)	Population between the ages 0 to 14 as a percentage of the total population. Population is based on the de facto definition of population. (WDI 2010)	+	WDI(2010)
Urban Population (% of Total)	Urban population refers to people living in urban areas as defined by national statistical offices. It is calculated using World Bank population estimates and urban ratios from the United Nations World Urbanization Prospects.(WDI 2010)	+	WDI(2010)
GDP Per Capita	GDP per capita is gross domestic product divided by midyear population. (WDI 2010)	+	WDI(2010)
Democracy	We have measured democracy using The Polity IV dataset. The Polity IV democracy measure ranges from 0 (least democratic). to 10 (most democratic).	+	Freedom House
Sub-Saharan Africa	Dummy indicating region.		WDI(2010)
Cold war	Dummy variable equals 1 for cold war period (i.e. till 1990) and 0 for 1991 onwards	-	
Colony	Dummy variable equals 1 if recipient country is a former colony of any donor country and zero otherwise.	+	
Expenditures Per Student (Primary)	Public expenditure per student is the public current spending on education divided by the total number of students by level, as a percentage of GDP per capita. Public expenditure (current and capital) includes government spending on educational institutions (both public and private), education administration as well as subsidies for private entities (students/households and other private entities).	+	WDI(2010)
Trade	Education aid recipient countrys exports and imports to and from the education aid donors, as a per cent of the respective donors GDP.	+	IMF

Table B.3: OECD-CRS (Education Sector)Purpose Codes

DAC 3	CRS	DESCRIPTION	Clarifications / Additional notes on coverage
110		**Education**	
111		Education, level unspecified	The codes in this category are to be used only when level of education is unspecified or unknown (e.g. training of primary school teachers should be coded under 11220).
	11110	Education policy and administrative management	Education sector policy, planning and programmes; aid to education ministries, administration and management systems; institution capacity building and advice; school management and governance; curriculum and materials development; unspecified education activities.
	11120	Education facilities and training	Educational buildings, equipment, materials; subsidiary services to education (boarding facilities, staff housing); language training; colloquia, seminars, lectures, etc.
	11130	Teacher training	Teacher education (where the level of education is unspecified); in-service and pre-service training; materials development.
	11182	Educational research	Research and studies on education effectiveness, relevance and quality; systematic evaluation and monitoring.
112		**Basic Education**	
	11220	Primary education	Formal and non-formal primary education for children; all elementary and first cycle systematic instruction; provision of learning materials.
	11230	Basic life skills for youth and adults	Formal and non-formal education for basic life skills for young people and adults (adults education); literacy and numeracy training.
	11240	Early childhood education	Formal and non-formal pre-school education.
113		**Secondary education**	
	11320	Secondary education	Second cycle systematic instruction at both junior and senior levels.
	11330	Vocational training	Elementary vocational training and secondary level technical education; on-the job training; apprenticeships; including informal vocational training.
114		**Post-secondary education**	
	11420	Higher education	Degree and diploma programmes at universities, colleges and polytechnics; scholarships.
	11430	Advanced technical and managerial training	Professional-level vocational training programmes and in-service training.

Source: OECD, DAC.

Table B.4: Without Lagged Dependent Variable(LDV), OLS Specification Results

Model	**With LDV**			**Without LDV**		
L.DV	0.532***	0.471***	0.606***			
	(6.60)	(4.81)	(7.68)			
Education Aid Commitments per capita	-0.025	0.011	0.037	-0.038	0.018	0.009
	(-0.89)	(0.28)	(1.25)	(-1.51)	(0.35)	(0.19)
Population Under 15 (% of Total)		0.951***	0.407		1.023***	0.679**
		(4.21)	(1.48)		(4.56)	(3.06)
Urban Population (% of Total)		0.029	-0.018		0.231	0.176
		(0.25)	(-0.15)		(1.39)	(0.86)
GDP Per Capita		3.147	-7.552*		4.365	-10.07*
		(0.83)	(-2.14)		(1.33)	(-2.30)
Health (Infant mortality rate)		-0.201***	-0.093*		-0.318***	-0.297***
		(-4.20)	(-1.99)		(-5.48)	(-5.01)
Democracy		0.126	0.177		-0.203	-0.253
		(1.12)	(1.33)		(-1.41)	(-1.42)
Gov. Education Expenditures (per capita)			2.860			8.632**
			(1.37)			(3.19)
Observations	432	343	207	651	493	304
Countries	146	114	99	166	128	115
R^2	0.43	0.59	0.77	0.29	0.55	0.66
Adjusted R^2	0.42	0.58	0.75	0.28	0.53	0.64

Note: t statistics are in parentheses. All equations include time dummies and constants, but are not reported. ***,**,* indicate significance at 1, 5 and 10 per cent levels respectively.

Table B.5: Main Results with Two Step Difference GMM Specification (NEP)

L.DV	0.476***	0.383	0.378	0.499*	-0.082	0.010
	(3.85)	(1.05)	(0.83)	(2.54)	(-0.23)	(0.02)
Education Aid Commitments per capita	0.097*	0.252	0.197			
	(2.09)	(1.68)	(1.28)			
Education Aid Commitments Over GDP				2.799	2.328	5.460
				(1.65)	(1.39)	(0.94)
Population Under 15 (% of Total)		0.343	3.068		1.564**	1.845
		(0.32)	(1.53)		(2.69)	(0.78)
Urban Population (% of Total)		0.642	-1.274		0.961	0.467
		(1.8)	(-1.24)		(1.66)	(0.15)
GDP per Capita		-0.003	-0.005*		-0.004*	-0.002
		(-1.90)	(-2.18)		(-2.03)	(-0.51)
Health (Infant mortality rate)		-0.046	-0.027		-0.138	-0.183
		(-0.40)	(-0.09)		(-1.46)	(-0.49)
Democracy		-0.635	-3.294		0.114	-1.355
		(-1.22)	(-1.72)		(0.33)	(-1.18)
Gov. Education Expenditures (% of GDP)						4.063**
						(3.04)
Observations	271	218	76	258	218	77
Countries	90	73	60	89	73	61
Number of Instruments	35	35	21	35	35	21
Prob. Hansen's J	0.17	0.98		0.33	0.32	
First Stage Robust F	0.24	0.24		0.45	0.81	
Sargan- P Value	0.62	0.66	0.96	0.05	0.30	0.15
Hansen- P Value	0.51	0.75	0.86	0.73	0.62	0.60

Note: t statistics are in parentheses. All equations include time dummies and constants, but are not reported.***,**,*,respectively show significance at 1, 5 and 10 per cent level of significance.

Chapter 3

Education Aid Determinants: Need, Merit or Self-Interest

3.1 INTRODUCTION

The determinants of aid allocation have received much attention in the development literature from the 1970s to the present. There is by now a long list of studies examining the allocation of general (whole) aid.[1] The bulk of the previous literature compares the allocation of aid across donor countries, notably with respect to classifying DAC donor countries into altruistic and selfish donors. Donor countries have also been compared by analysing the allocation of specific types of aid. For instance, Neumayer (2005) focuses on food aid, while Thiele et al. (2007) cover sector-specific aid related to the MDGs. However, to the best of our knowledge, no work has been done on the determinants of the education aid allocation specifically, i.e. in comparison, the allocation of education aid has been somewhat neglected.

Following McKinlay and Little (1977), the vast empirical literature examining the determinants of general foreign aid allocation clearly concludes that donors pursue political, economic and strategic interests in their inter-country aid allocation decisions and that developmental or humanitarian concerns such as the reduction of poverty, improvement in the provision of health services etc. receive a relatively low or even zero weight in this process.[2] Recent empirical work confirms that foreign policy goals of the donor continue to be the

[1] See Neumayer (2003a) for an overview.
[2] See McGillivray, 2004 for a comprehensive discussion.

most important motive for giving aid (Alesina and Dollar, 2000; Burnside and Dollar, 2000; Neumayer, 2003a and 2003d; Gates and Hoeffler, 2004).

The literature usually assumes that aid is targeted on the basis of overall economic development as measured by GDP per capita. This, however, would lead to significant inefficiencies since countries can differ considerably in their needs in areas such as health, education or infrastructure even if they are at a similar level of economic development. Factors such as climate and geography, past policy choices, and even cultural practices imply that for a given level of GDP per capita, some countries have a more acute need than others in some particular area such as education. It is thus desirable that donors take these specific needs into account when allocating aid to different sectors.

The aim of this chapter is to examine the factors affecting the education aid allocation process, i.e. whether education aid is provided with the main aim of the recipient's education sector development or whether the donor's self-interests and other motives are important drivers in the allocation of education aid. There are many reasons why we should be interested in the determinants of education aid flows. For example, first, it is open to debate whether education aid can achieve its intended targets or not; apart from our present study (see chapter 2 of this thesis), studies such as Michaelowa and Weber (2007) and Gyimaph-Brempong and Asiedu (2008) have found only a small, and often not statistically significant, effect of education aid on the recipient's educational achievements. Is this an inherent feature of education aid or the consequence of poor allocation practices by donors? One of the tentative answers to this question is that education aid can be effective only if donors select education aid projects appropriately. In this sense, education aid allocation matters. Second, education aid is an important means by which donor countries and agencies try to help poor countries at the time when they are in need of it. Third, we should care about whether education aid is being directed towards those most in need of it. As, if education aid is to be effective in promoting its intended targets, it is crucial that it be allocated to the countries which need it most. Similarly, we should also be interested in whether education aid tends to go more towards where it might be most effective, as measured by the effectiveness of the

recipient government in making use of the education aid.[3] Fourth, in a situation where global education aid deliveries have fallen sharply over the past, from 23 per cent of total aid flows in early 1970s to around 9 per cent of the total aid flows in 2007, an analysis of education aid allocation will help the sector to utilise the relatively scarce education aid more efficiently.[4] Finally, the current architecture of education aid combines a variety of actors with, different objectives and statutes, which implies that the education aid allocation behaviours may vary to a great extent from one group (e.g. bilateral donors) to the other (e.g. multilateral donors), or even from one individual donor to the other.[5] A clear understanding of the functioning of the education aid architecture requires an evaluation of harmonies and differentiations of the education aid determinants among various donors.

Our analysis uses data on education aid from the OECD's CRS data set covering the period 1973-2007 and a total of 146 recipient countries. Education aid is analysed first at the aggregate level and then individually for each of the ten largest bilateral donors and the two largest multilateral donors. Many of the determinants of education aid that we consider are common to the broader literature on the allocation of aid, but we also introduce education-specific variables to account for the particular needs of each country in this area.[6] Our findings suggest that although at the aggregate level education aid is directed towards countries with lower levels of educational development (higher educational needs), the pattern is not present for the majority of bilateral donors. Multilateral organisations such as the World Bank and the United Nations seem to target their education aid better than most bilateral donors, who place great importance on other factors such as the status of the recipient as a former colony.

[3]See Boone, (1996) and Kosack (2003) for discussions of the links between institutions and aid effectiveness. In addition, in Burnside and Dollar (2000 and 2004) the impact of aid on growth depends on the quality of recipient-state institutions and policies, although Easterly et al. (2004) and Rajan and Subramanian (2008) found little or no evidence of this.

[4]Since it is not easy for donor countries to increase the amount of aid to developing countries (Kasuga, 2007), the issue is where and under what conditions education aid can be more effective.

[5]Donors can be clustered into different groups such as bilateral donors, Nordic versus No-Nordic donors, multilateral donors with regional constituencies (the European Commission, Arab funds), multilateral donors with regional clients (regional development banks), and truly multilateral donors (The World Bank, UN) etc. Berthelemy (2006b)

[6]Our set of determinants can mainly be classified into three broader categories of factors: (i) the recipient country's needs, (ii) the recipient country's merits, and, (iii) the interests of the donors and certain control variables

3.2 LITERATURE REVIEW

Research on bilateral aid allocation behaviour started in the mid-1950s (Cooray and Shahiduzzaman, 2004). Since then, a large number of studies have been conducted on donor's aid allocation decisions. However, the use of econometrics in modelling the donor's aid allocation decisions began in the late 1970s. Since then, a large number of studies have focused on the determinants of aid.[7] The main models for explaining aid allocation in the literature are the recipient need and the donor interest models (McKinley and Little, 1979; Gounder, 1994; McGillivray, 2003b). According to the former (recipient need), aid allocation should be driven by the needs of the recipients, therefore countries with lower incomes, higher levels of poverty, or lower levels of human development should receive more aid. The donor interest model, on the other hand, states that foreign aid serves donors' interests, and thus those countries which have some kind of political, economic or other relations with the given donor will receive more resources. In the earlier literature, aid allocation was estimated using two separate equations, one estimating the recipient-need and the other estimating the donor-interests.[8] However, in recent years, criticisms have emerged regarding the specification of the recipient-need and donor-interest model (McGillivray, 2003a), which results in studies using a combined model including recipient characteristics as well as donor's interest variables.

3.2.1 Determinants of aid flows across donors and recipients

Maizels and Nissanke (1984), using cross country data, attempted to identify the underlying principles of aid allocation using recipient need and donor interest for the period 1970-1980. The study examined bilateral and multilateral aid from principal donors and found that bilateral aid flows are heavily determined by donor interest whereas multilateral aid allocations are made available according to recipient needs. Alesina and Dollar, (2000); Dollar and

[7] See White and McGillivray (1995) for a comprehensive survey of literature prior to 1990 and Berthelemy (2006a) and Dollar and Levin (2006) for more recent studies.

[8] See McKinlay and Little, 1979; Maizels and Nissanke, 1984; Mosley, 1981; among others.

Levin, (2004) and Sawada et al., (2008) focus on the determinants of aid allocation across countries and examine whether donors are selective on poverty and whether they give aid to countries with a good policy environment. They concluded that some donors are selective on poverty while the results for the large donors such as Japan and the United States are mixed. Bertelemy (2006a) finds that Switzerland, Austria, Ireland and most Nordic countries are among the most altruistic where Australia, France, Italy, and to some extent Japan and the United States are among the most egoistic.

Estimating a model that explains the allocation of aid among 151 countries over the period 1975 to 1998, Ali and Isse (2006) found that trade, private credit, foreign direct investment, GDP per worker, and government consumption are the important determinants of foreign aid. Younas (2008) also found similar evidence that OECD countries allocate more aid to recipients who import goods in which donors have a comparative advantage in production. Furthermore, he found that donors appear to be more concerned about alleviating infant mortality and rewarding good human rights conditions, but less about reducing poverty. Moreover, the usual political and strategic considerations of donors continue to be the major determinants of aid allocation even in the post Cold War era. More recently, by using OLS and Tobit two-way effects estimators, Doucouliagos and Manning (2009) explored the aid allocation motives of three relatively new DAC donors: Greece, Luxembourg, and Portugal. They found that humanitarian concerns were not an important factor for these three donors. Greece contributes aid predominately to its neighbours and to transitional Eastern European nations. Portugal is motivated by commercial interests and former colony status. Commercial interests operate also for Luxembourg. Additionally, Luxembourg appears to donate to smaller, more developed countries and is less inclined to donate to Eastern European nations.

Studies analysing the pattern of allocation of aid from various donors to recipient countries have mainly found that the direction of aid is dictated by political and strategic considerations much more than by the economic needs and policy performance of the recipients. Colonial past and political alliances are among the major determinants of aid. At the margin, however, countries that democratise receive more aid, ceteris paribus.

3.2.2 Determinants of specific donors' aid flows

Each donor country may have several motivations for giving aid and it can be difficult to pinpoint any single driving force. McGillivray and Oczkowski (1992) found that the UK favours' its former colonies in their bilateral aid allocation. The result was also consistent with humanitarian interests. The same is true for Canadian bilateral aid flows; Mcdonald and Hoddinott (2004) highlighted that among others, recipient countries human rights and membership in the Commonwealth and La Francophone influence Canadian aid flows. Gounder (1994) tested the recipient need and donor interest hypotheses by taking Australia's bilateral aid programmes into consideration, and found that both donor interest and recipient need models are supported in case of Australia's bilateral aid allocation. Similarly, Cooray and Shahiduzzaman (2004) found from their empirical evidence that Japan takes its own national interest as well as recipient country's needs into account while allocating its foreign aid. For the USA, Demirel-Pegg and Moskowitz (2009) used data on 151 aid recipient countries from 1977 to 2004, and found that in determining the US aid allocations, the impact of human rights varies at different levels of democracy and economic development. Their results show that during Cold War era, economic development played a major role in US aid allocation decisions, to be replaced by human rights practices in the post Cold War period. Abrams and Lewis (1993) concludes that in determining the distribution of U.S. aid, the aid programme rewards nations for furthering human rights, does not discriminate on the basis of race or religion, and responds to national security interests of the US.

Shishido and Minato (1994) studied the ODA behaviour of the G7 countries at both aggregate and bilateral levels. They concluded that "many differences were observed in their behaviour in terms of international security, conflicts between policy targets, neutrality, humanitarianism, trade linkage, etc., at both the aggregate and bilateral allocation levels in the ODA flow". The countries, according to the study, that show a growing dynamism in their ODA behaviour are Japan, Germany, France, and Italy. In a much cited study Neumayer (2003b) analysed the determinants of aid allocation by various multilateral donors,

and found that, at least initially, many multilateral donors have a bias toward less populous countries and give more aid to them. With exception of UNDP, all multilateral donors take the economic needs of potential recipient countries into account and tend to allocate more aid to countries with lower per capita incomes. As expected, higher military expenditures and arms imports by and large do not induce multilateral aid donors to provide more aid, whereas in most cases political freedom is a statistically significant factor for aggregate multilateral aid allocation. In a study of the determinants of Arab aid allocation, using Heckman's two-step estimator Neumayer (2003b) found that poorer, Arab, Islamic and Sub-Saharan African countries are more likely to receive some positive amount of Arab aid. Gates and Hoeffler (2004), using a global panel data set, across the period 1980-99 and 91 recipient countries, found that Nordic aid distribution differs significantly from other OECD bilateral aid donors: Norway, Denmark, Sweden and Finland provide more aid to democracies but do not penalise poor trade policies. Unlike other bilateral donors the four Nordics nations do not provide more aid to political allies.

3.2.3 Determinants of aid flows to specific recipients

Examining the aid flows to India from 1960-1985, Gang and Khan (1990) classified the Indian donors into four types: a) US and its allies; b) the Soviet Union and its allies; c) neutral but with important economic objectives with India, e.g. Austria and; d) those who give aid occasionally- each having a different set of political and economic motivations. They found that the variables capturing the motivations of the United States, Western European countries, Eastern European countries, as well as last year's aid and the balance of trade, but not GDP growth, were significant determinants of the level of aid to India.

Using recipient needs and donor interest's models, Gounder and Sen (1999) addressed the question regarding what factors determine Australia's provision of aid to Indonesia. The results revealed that both recipient need and donor interest models explain Australia's aid to Indonesia, in general, but the recipient need model dominates the donor interest model. Feeny

and McGillivray (2004) found similar evidence regarding Australian aid flows to Papua New Guinea for the period 1969 to 1998. They showed that both recipient need and donor interest variables determined the amount of Australian and total foreign aid to Papua New Guinea. However, in case of Nepal, Khadka (1997) founds that in general, there was no consistent relationship between aid flows and Nepal's economic need or economic performance.

3.2.4 Aid determinants over time

When examining the differences in donor's behaviour in determining aid flows over time, the influence of the Cold War is particularly salient. Meernik et al. (1998) reported early evidence that the end of the Cold War reduced the importance of security concerns and increased the importance of poverty in aid allocation decisions. Berthelemy and Tichit (2004) argued that the geopolitical concerns of aid allocation during the Cold War had been replaced not by increased poverty concerns but by trade relationships. Boschini and Olofsgard (2007) concur that the Cold War may explain the decline in aid volumes, but argued that it has not changed the aid allocation practices drastically. Moreover, donors have started rewarding good economic policy outcomes since 1990. Easterly (2007) finds that the Cold War changed little in terms of sensitivity to democracy, and Neumayer (2003c) finds that it had no effect on the relationship with human rights. Where Claessens et al. (2009) arrived at the conclusion that in the late 1990s, bilateral aid responded more to poverty and the quality of the policy and institutional environment in the recipient countries.

3.2.5 Determinants of specific sectoral level aid

Nunn and Qian (2010) examine the supply and demand-side determinants of global bilateral food aid shipments between 1971 and 2008 and found that food aid from some of the largest donors is the least responsive to production shocks in recipient countries. And is partly driven by domestic production surpluses in case of the USA, whereas by former colonial ties in European countries case. Neumayer (2005) finds some evidence for donor interest bias,

particularly in the form of preferential treatment of geographically close countries, but by employing censored least absolute deviations and multivariate Tobit estimators, Christian et al. (2010) showed that food aid in aggregate and from each donor is significantly targeted at poorer countries and is highly persistent over time. Food aid responses to food availability shortfalls, natural disasters and violent conflict are common but more modest and uneven across donors.

Lewis (2003) focused on the factors which determine global environmental aid and have found that environmental aid does not target the nations that are most in need of abating local pollution. Instead, donors favour nations with whom they have had prior relations, nations that are democratic, and nations with exploited natural resources, which agrees with the conclusion drawn by Figaj (2010). In short, donor interests outweigh recipient need in allocating environmental aid. The same appears to be true in case of the population assistance programmes, as Dalen and Reuser (2006) found that in population assistance programmes contributions by donors depend heavily on the GDP and subjective preferences of donor countries. In case of health aid Fielding (2011) found that corruption and political rights, but not civil rights, have a significant impact on health aid allocation.

According to Doucouliagos and Paldam (2007), the aid allocation literature consists of 166 academic empirical papers. These papers cover a range of models, donor countries, recipients, modes of financing, time periods and the sectors. Using aggregate data on aid, the allocation of aid has been studied extensively. However, the literature is limited when it comes to the determinants of the specific sectoral level aid determinants, and is extremely scant when it comes to the determinants of the education aid flows. Our study is aims to fill this gap in the aid allocation literature.[9]

[9]Neumayer (2005) findings (i.e. the allocation of food aid differs strikingly from the allocation of overall aid) underscore the need for a disaggregated analysis of aid.

3.3 DATA AND DESCRIPTIVE STATISTICS

We use data on bilateral education aid from the OECD's CRS, which reports aid commitments for about 200 distinct purposes for all donors and recipients annually since 1973. We aggregate project-level data to the sector level, and examine the Education sector. Table C.2 in Appendix-C lists the CRS codes for the education sector. We include in our analysis countries that have received education aid in at least 3 out of 7 observations of 5 years averages over the period 1973-2007. In this section we will provide a complete examination of education aid flows over the study time span.

Figure 3.1 shows the evolution of education aid flows to all education aid recipient countries over the period 1973-2007 (in constant US$ of 2008). Three periods may be distinguished. After a rapid downturn in the late 1970s education aid began growing rapidly over the second half of the 1980s, but remained stagnate during the entire decade of the 1990s. At the end of the century there was a sharp decline in aid flows, which resulted in the lowest levels of education aid flows since 1986.

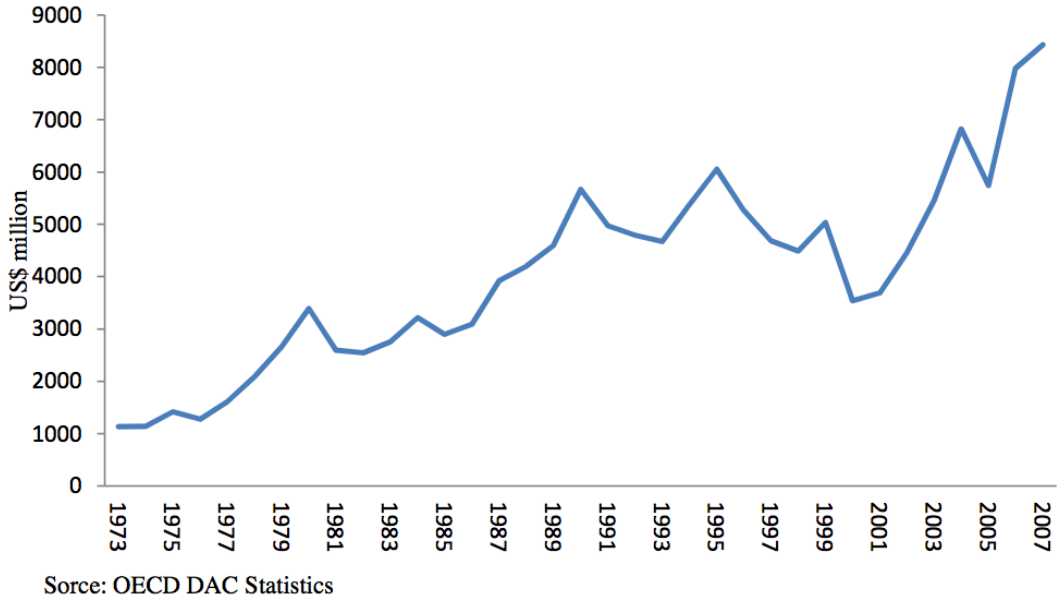


Figure 3.1: Total Education Aid Flows (1973-2007)

The first decade of the 21st century brought a renewed emphasis on foreign aid, in part

inspired by the challenge of reaching the UN's Millennium Development Goals. Aid to the education sector resumed its growth since 2001 and reached a value of 8.4 billion US$ by the year 2007. The decomposition of education aid flows in its two main components, bilateral and multilateral aid (see figure C.1 in Appendix-C), exhibit quite consistent pattern over the period (1973-2007). On average, 60 per cent of the education aid flows were being given by bilateral donors and the remaining being accounted for by multilateral aid donors, but further decomposition of bilateral education aid flows among the different major education aid donors shows inconsistency among the donor's behaviour over the time (see figure C.2 in Appendix-C). Of the bilateral donor community, the USA remained the major donor during the Cold War, and after the events of 9/11 , except for in the last half of the 1990s, when France replaced USA for the period 1995-2001. Japan, Canada and the Netherlands exhibit a consistent behaviour in committing education aid to the developing world, while Sweden has dropped its share in total education aid contributions over the time and Germany has increased its volume of aid flows to the education sector over the time.

Table 3.1: Largest Donors Of Education Aid (Total Flows in million US$)

Donor	**1973-2007**	**Donor**	**2000-07**
The World Bank	11808.26	The World Bank	3130.44
France	5013.34	France	2738.26
USA	3974.80	UK	1317.44
Japan	2967.93	Japan	1117.38
Sweden	2300.24	Germany	673.31
UK	1916.70	USA	609.80
Canada	1453.70	Spain	575.12
Germany	1221.96	Canada	547.87
Netherlands	1076.93	Netherlands	490.65
Spain	871.87	Italy	272.09
All Bilateral	**31449.17**	**All Bilateral**	**16198.54**
All Multilateral	**19857.22**	**All Multilateral**	**7210.07**

Note: All figures are in constant US$, base year 2008.

Table 3.1 presents the 10 largest donors of education aid both for the whole period 1973-2007 and for the more recent episode between 2000 and 2007. As is the case for total aid, the World Bank is consistently the world's largest donor of education aid, and all major OECD countries can be found on this list. There are some surprises, however. France has consistently been the largest bilateral donor of education aid, and this pattern appears to have accentuated over the last decade when French education aid was twice as large as that of the second-largest bilateral donor, the United Kingdom. The United States would be the second largest bilateral donor over the whole period, but its commitment to education aid has fallen considerable in recent years. Over the 35 years that we cover, bilateral aid represents about 60 per cent of all education aid against 40 per cent from multilateral donors.

Figure 3.2 shows the major bilateral and multilateral donors in the education sector. While we cover a wide range of donors, it should be noted that over the period 1973-2007 more than 50 per cent of the total education aid was provided by just four donors (the World Bank, France, USA and Japan).

Figure 3.2: Donors Commulative Education Aid (1973-2007)

The distribution of average education aid to recipient countries in our sample is illustrated in figure 3.3. The mean country in our sample received US$341 million per year in education aid, where the median country (Malta in our sample) received just US$ 160 million, which indicates that during the study period education aid flows were skewed toward a few coun-

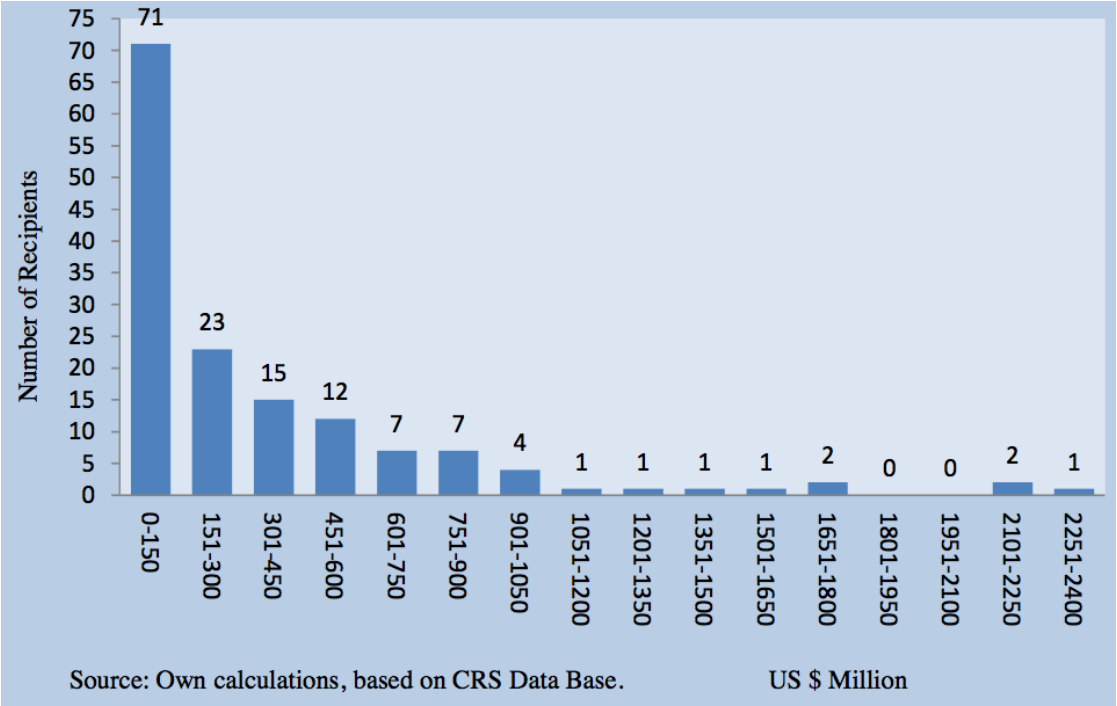


Figure 3.3: Distribution of Average Education Aid (1973-2007)

tries. Specifically, there were 12 countries that on average received more than US$1 billion in education aid per year, the top five of which were India, the Russian Federation, China, Bangladesh and Ethiopia. At the other extreme, fifteen countries in our sample averaged even less than US$10 million in education aid receipts per year.[10]

Figure 3.4 provides a different angle on the distribution of education aid across the recipients by showing the shares of total education aid received. The three countries receiving the most aid, India, the Russian Federation and China, together accounted for 13 per cent of the total. These countries plus the 10 countries that received between US$900 million and US$1,800 million per year accounted for a larger share of education aid (about 40 per cent) than did the 120 countries that received less than US$575 million per year. The disparity and diversity in the education aid flows makes it natural to expect that these large differences in education aid received are due to differences in developing countries' needs and merits or the donor's self interests, along the lines of our forthcoming discussion.

[10]Barbados, Bahrain, Belarus, Hong Kong, China, Slovenia, Palau, Dem. Rep. of Korea, Dominica, Libya, Ukraine, Grenada, Aruba, Antigua and Barbuda, Turkmenistan, St. Lucia.

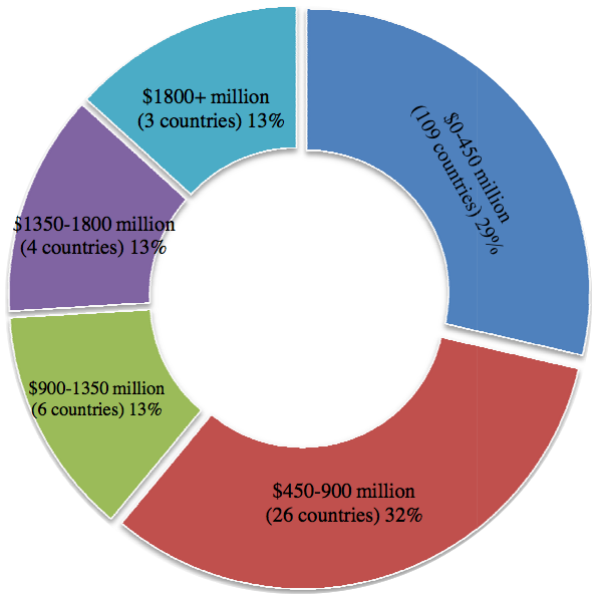


Figure 3.4: Shares of World Education Aid Received (1973-2007)

Table 3.2: Largest Recipients Of Education Aid

	Total flows (in million US$)			
Rank	**Recipient**	**1973-2007**	**Recipient**	**2000-07**
1	India	2334.97	China	1337.12
2	Russian Federation	2224.33	India	1268.02
3	China	2157.15	Bangladesh	1125.22
4	Bangladesh	1674.58	Russian Federation	970.45
5	Ethiopia	1673.12	Pakistan	942.89
6	Pakistan	1645.15	Morocco	901.18
7	Morocco	1385.79	Mayotte	781.40
8	Tanzania	1317.61	Ethiopia	607.27
9	Egypt, Arab Rep.	1196.97	Mozambique	539.33
10	Mozambique	1083.32	Vietnam	499.66
	Average flows per capita (in US$)			
Rank	**Recipient**	**1973-2007**	**Recipient**	**2000-07**
1	Mayotte	622.32	Mayotte	622.32
2	Kiribati	46.68	Micronesia, Fed. Sts.	134.81
3	Marshall Islands	34.98	Marshall Islands	117.74
4	Micronesia, Fed. Sts.	31.08	Samoa	61.41
5	Cyprus	21.39	St. Vincent and the Grenadines	41.48
6	Samoa	19.51	Malta	35.35
7	Vanuatu	14.91	Kiribati	32.75
8	Sao Tome and Principe	12.25	Cyprus	27.23
9	Malta	12.05	St. Kitts and Nevis	23.73
10	St. Vincent and the Grenadines	11.36	Cape Verde	21.56
...				
	Russian Federation	0.44	Russian Federation	0.85
	India	0.07	India	0.15
	China	0.05	China	0.13

Note: All figures are in constant US$, base year 2008.

Table 3.2 gives an overview of the main recipients of education aid. The upper panel of the table considers total education aid flows and, as expected, shows that large countries such as India, China or Russia have received the largest amounts of education aid. On the other hand, the lower panel of the table looks at education aid per capita and clearly demonstrates that smaller countries receive far larger amounts of education aid per person. Over the period 2000-2007, for instance, education aid to Cyprus was US$ 27.23 per person, whereas China and India had to content themselves with just 13 and 15 cents per person. Over the whole period the correlation between education aid per capita and total population is -0.26.

To gain a clear picture of how aid is distributed, we need to control for the sizes of the recipient countries, figure 3.5 shows scatter plots of average aid per capita over the period 1973-2007 against some of our explanatory variables.[11] These plots serve to illustrate the simple correlations between the dependent and independent variables as well as the distribution of the values of our independent variables.

A low level of GDP per capita and the Education Development Index denote great needs and should therefore be associated with higher education aid flows. The first and second panels of figure 3.5 reveal that there is actually an ambiguous or weak negative relationship between these variables and the education aid. Exceptions are always prominent in our respective panels of figure 3.5, implying that there was no apparent correlation between education aid per capita and need (GDP per capita, Education Development Index and the net primary School enrolment ratios) and merit (GDP per capita growth rate and the level of democracy) of the recipient. Finally, consistent with the notion of population bias, the Panel 6 of figure 3.5 illustrates the tendency for the smallest (largest) contribution to receive the highest (lowest) levels of education aid per capita.[12]

The correlation coefficients of education aid per capita with our explanatory variables are shown in table 3.3. The strongest relationship is with the volume of total aid committed to a recipient country, population (small countries receives more per capita) and with the colonial

[11] A complete list of our explanatory variables will be discussed in section 3.4, and their summary statistics, data sources and the expected signs are presented in Table C.6 in Appendix-C.

[12] See Angeles et al. 2008, for the donor's behaviour in respect of recipient's population.

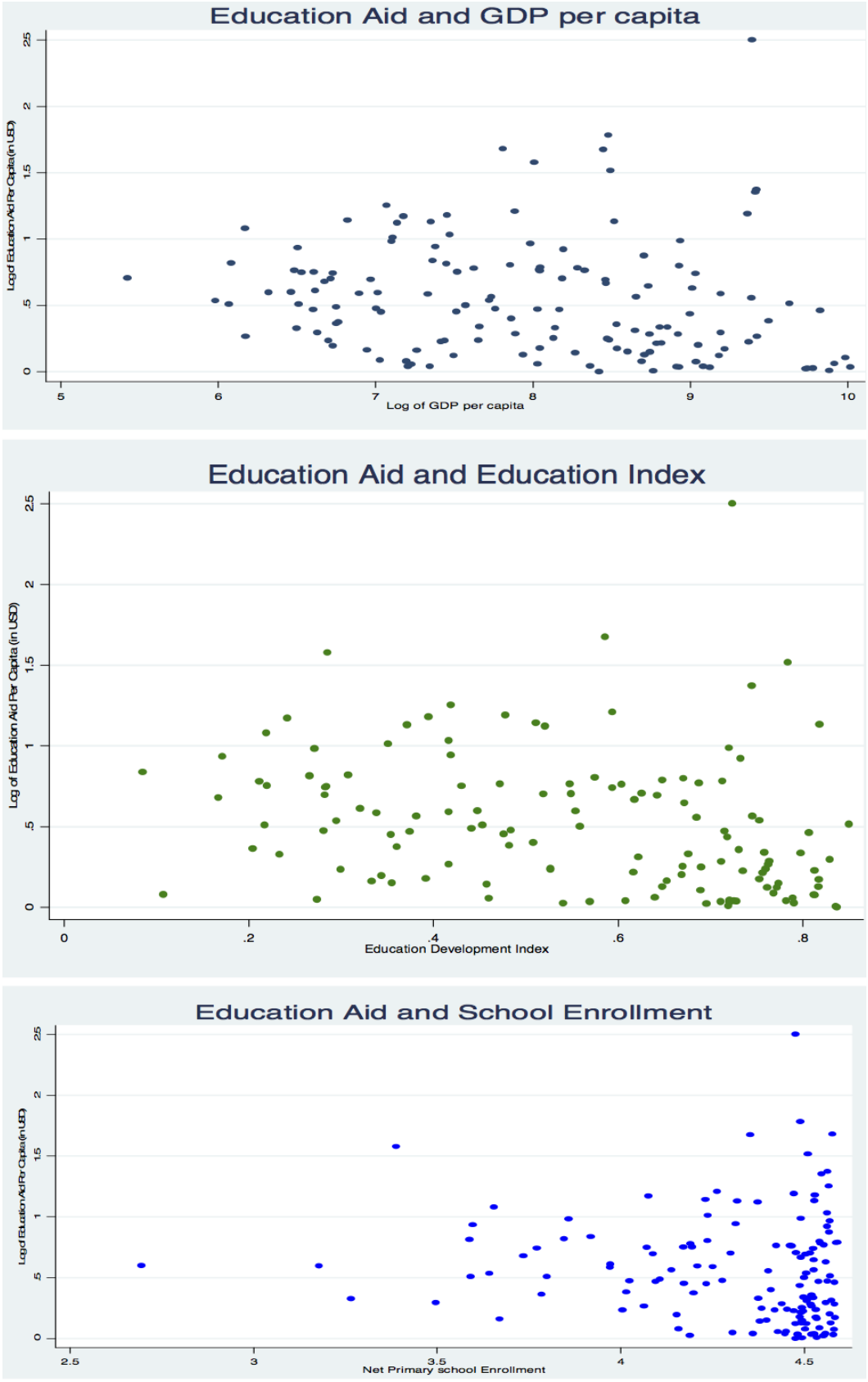
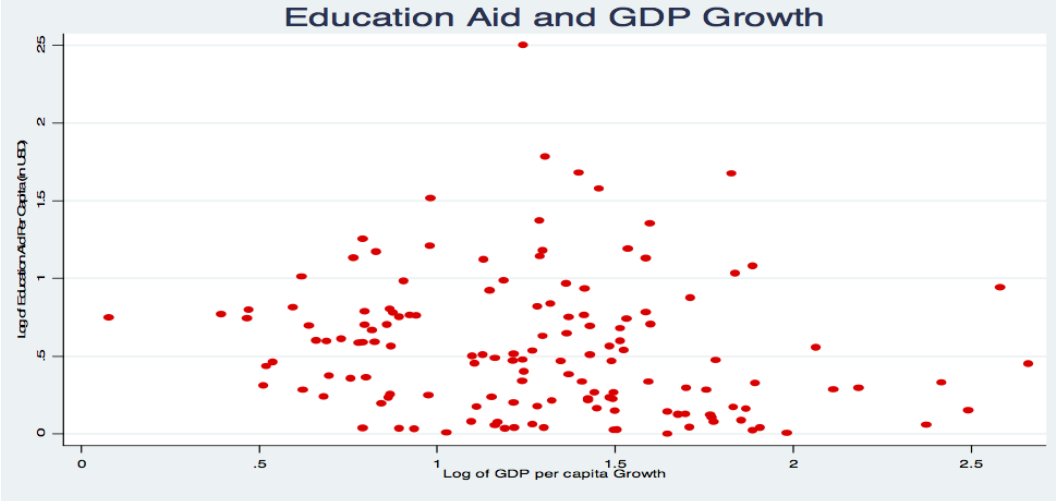
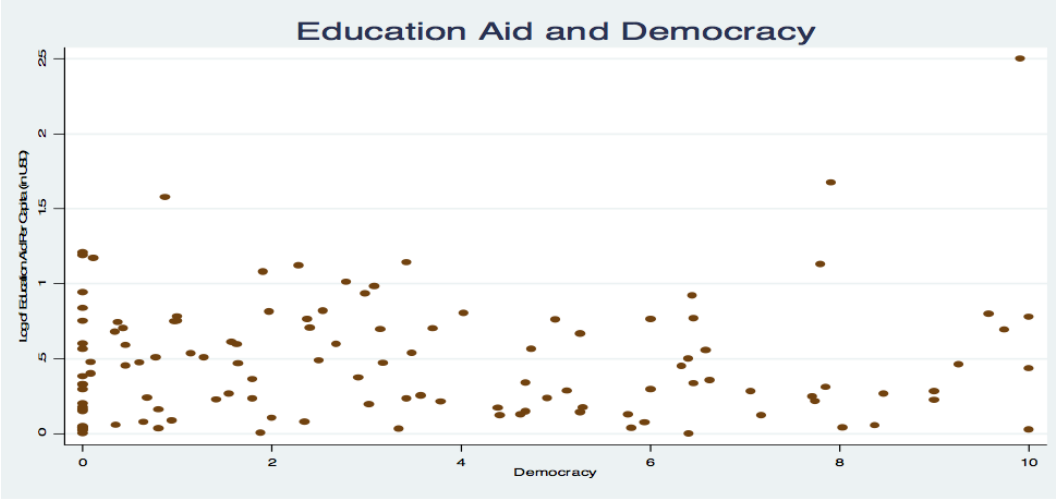


Figure 3.5: Scatter plots of log of average aid per capita over the period (1973-2007) against some of the explanatory variables (Continued on next page).


Education Aid and GDP Growth
Log of GDP per capita Growth
0
.5
1
1.5
2
2.5


Education Aid and Democracy
Democracy
0
2
4
6
8
10

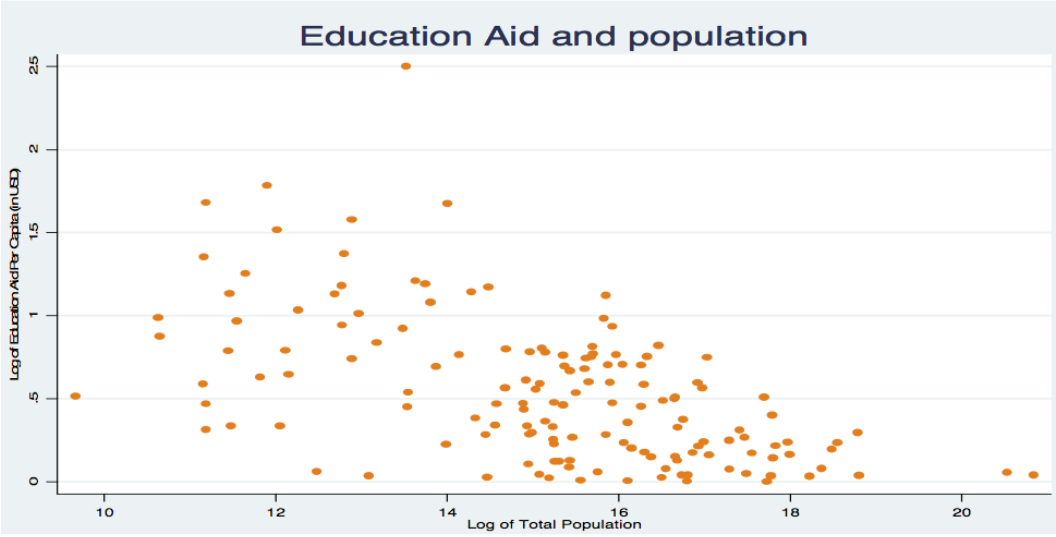

Education Aid and population
Log of Total Population
10
12
14
16
18
20

Table 3.3: Correlation Coefficients Of Per Capita Education Aid With Determinants of Education Aid

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Education Aid	(1)	1	-0.06*	-0.04*	0.34*	0.03*	0.08*	0.08*	0.09*	-0.09*	-0.26*	0.18*
Edu. Dev. Index	(2)		1	0.57*	-0.06*	0.07*	0.37*	0.38*	0.20*	-0.04*	-0.11*	-0.28*
GDP Per capita	(3)			1	-0.16*	0.10*	0.33*	0.28*	0.37*	-0.02	-0.24*	-0.12*
Total Aid	(4)				1	0.03*	0.10*	0.11*	0.08*	-0.01	-0.47*	0.20*
GDP PC Growth	(5)					1	0.02	0.03*	0.07*	0.03*	-0.02	-0.06*
Democracy	(6)						1	0.94*	0.04*	-0.07*	-0.01	0.02
Executive Constraint	(7)							1	0.04*	-0.07*	0.03	0.01
Openness	(8)								1	-0.01	-0.36*	0.06*
Edu. Conference	(9)									1	-0.02	0.00
Population	(10)										1	-0.23*
Colony	(11)											1

Note:* indicates significant at 10 percent level of significance

Table 3.4: Bilateral Education Aid to Former Colonies 1973-2007

Donor	**Colony Share (Percent)**
Portugal	87.50
UK	76.42
France	70.64
Spain	48.70
Italy	19.33
Netherlands	5.60
Germany	5.04
USA	4.03
All	80.70

Source: Own Calculations

Table 3.5: Correlation Coefficients Of per Capita Education Aid Between Different Donors Across Recipient Countries (1973-2007)

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
France	(1)	1												
Japan	(2)	0.06*	1											
USA	(3)	0.01	0.18*	1										
UK	(4)	0.04*	-0.01	0.02*	1									
Sweden	(5)	-0.01	0.01	0.08*	0.01	1								
Germany	(6)	0.14*	0.08*	0.00	0.00	0.04*	1							
Canada	(7)	0.05*	0.02*	0.08*	0.02	0.06*	0.08*	1						
Spain	(8)	0.12*	0.02	-0.00	-0.01	0.00	0.10*	0.04*	1					
Italy	(9)	0.03*	-0.01	0.02	-0.00	0.01	0.04*	0.04*	0.02	1				
Netherlands	(10)	0.01	0.00	0.06*	0.03*	0.04*	0.02	0.10*	0.01	0.02*	1			
World bank	(11)	0.106*	0.04*	0.03*	0.01	0.05*	0.07*	0.04*	0.03*	0.08*	0.03*	1		
UN	(12)	0.16*	0.16*	0.00	0.01	0.03*	0.16*	0.06*	0.12*	0.08*	0.01	0.18*	1	
Total	(13)	0.48*	0.35*	0.37*	0.23*	0.23*	0.21*	0.22*	0.16*	0.15*	0.23*	0.43*	0.17*	1

Note: * indicates significant at 10 percent level of significance.

past of the recipient. There is a slight positive relationship between education aid and GDP per capita growth, level of democracy and the openness of the recipient economy. This means donors do take into consideration the fiscal performance and the type of government while committing education aid. In case of correlation among other explanatory variables, we found only one case where the correlation between two variables is quite high (0.94) between the level of democracy and the executive constraint (our proxy variable for governance). We note, however, that both variables are still significantly related to education aid-giving when the other is removed from the equation.

The influence of colonial past varies enormously by donor, reflecting their different histories as colonial powers. For individual donors, the share of education aid going to countries that were their colonies in the 20th century varies from 87.50 per cent (Portugal) to 4 to 5 per cent for countries such as the USA, Germany and the Netherlands. (See table 3.4).

Before specifying our model and the estimation approach, we present pair-wise correlations between per capita education aid delivered by different donors in table 3.5. The cross-country allocation of education aid by major donors (France, Japan the World Bank, etc.) over the time span 1973-2007, appears to be diverse, in some contrast to multilateral donors, as far as simple correlations can determine. On the other hand, strong correlation between donors signifies coordination among them in education aid commitments at a certain time.[13]

3.4 MODEL AND ECONOMETRIC SPECIFICATION

As discussed previously, we will explain the allocation of education aid using a set of factors that can be classified as the recipients' needs and merits, the donors' interests, and other control variables. A brief explanation of each of these groups is given below.

[13]Different education aid donors may cooperate and jointly reward some recipient countries (e.g. the UN and Germany, and Germany and Japan). Simple correlations between our different donors' aid variables indicate that generally this is not the case in education aid except for the World Bank and the UN and Canada and the USA, which exhibits a significantly positive correlation coefficient at recipient level of aid flows. See tables C.1 and C.3 in Appendix-C for a complete set of correlation coefficients.

3.4.1 Explanatory Variables

Following the specification of previous studies (e.g. Alesina and Dollar, 2000; Hoeffler and Outram, 2011; Angeles et al., 2008) our model includes four categories of explanatory variables: recipient need, recipient merit, donor self-interest and controls.

3.4.1.1 Recipient Need

In this chapter we captured the need of the education aid recipient country by the recipient Education Development Index, recipient's per capita income, the amount of education aid per capita received from other donors and the amount of total aid received from the whole donor community.[14] Where Total Aid is defined as the Total Aid minus Total Education Aid from the whole donors community, and is in the per capita form.[15] If education aid is allocated according to recipient need then there should be a negative relationship between education aid and the recipient's need.

Apart from the education-related indicator of need, we include per capita income as another measure of the recipient's need. The single most common and frequently-used variable of recipient need in studies of general aid allocation (Berthelemy, 2006b; Nunnenkamp and Thiele, 2006; Dollar and Levin, 2006; Neumayer, 2003a) is a country's level of income, measured at international prices in purchasing power parity terms. The per capita income of recipient countries can be interpreted as an encompassing indicator of need (Thiele et al., 2007), and as stated earlier, has repeatedly been shown to shape donors' aggregate aid allocations, For this reason logged GDP per capita data is used.[16] As this is likely to be the data

[14]In the UNDP's Education Index, which provides a broader measure of need, the Education Index is measured by the adult literacy rate (with two-thirds weighting) and the combined primary, secondary, and tertiary gross enrolment ratio (with one-third weighting). We also used gross and net primary school enrollment ratios, children out of school, and the number of repeaters in primary schools as a need proxy for education aid.

[15]Total Aid can also be considered as a recipient merit, as more a country is receiving aid from the whole donor community, indicating the more confidence of the donors community on her.

[16]It is widely discussed in the literature on aid that there is an endogenous relationship between aid and income levels (see Roodman, 2007 for accessible discussion on the topic). This endogeneity comes from the potential two-way causality between aid and income levels: income may determine how much aid donors give to a country, but aid also increases income levels. Note, however, that reverse causation is unlikely to distort our

that the donor had access to when making the decision. GDP per capita may also have an impact on the allocation of education aid. On the one hand, some education-specific indicators of need are highly correlated with per capita income.[17] Hence, the impact of specific indicators of need may be taken up by per capita income (Thiele et al. 2007). On the other hand, donors may refer to rather broad measures of need even when deciding on the allocation of education sector-specific aid. In line with conclusions from the empirical literature, we expect that per capita income has a negative sign for those donors who target their transfers according to recipient needs and a positive sign for those donors who instead assign a higher weight to their self-interests.

Education aid received from other donors captures education aid coordination and a possible substitution or complementary effect among education aid donors and flows. Donors may choose to reduce education aid to a recipient if other donors provide more education aid, or display "herding" behaviour if donors are observed increasing education aid to a country simultaneously. There is a history of aid "darlings and orphans" - with some countries attracting a high level of donor support and others receiving very little (Hoeffler and Outram, 2011).

3.4.1.2 Recipient Merit

Recipients' merits may be reflected in the quality of their political governance, and in the quality of their policies and institutions. Burnside and Dollar (2000) suggest that development aid is more effective when given to countries with good policies. Our "merit" variables analyse whether donors allocate more education aid to recipients with better economic policies and more democratic regimes. We expect a positive relationship between our "merit"

empirical results, because large parts of aid are generally unlikely to have short-term effects on economic and social outcomes and institutional conditions (Burnside and Dollar, 2004; Clemens et. al, 2004). Furthermore, sums delivered through education aid channels are most probably too small to shape economic outcomes and institutional conditions in recipient countries. Despite this, in order to control for this potential bias, we measure GDP per capita in the year before.

[17] Pair wise correlations with GDP per capita exceed 0.6 for some education specific indicators of need (primary completion rate and the gross primary school enrolment ratio).

variables and that of education aid per capita.[18]

As mentioned above, policy is a relatively recent addition to the theory of aid allocation and can be understood in a number of ways. The quality of policies and institutions is more difficult to measure; we consider two proxy measures of policy. First, growth of GDP per capita and the second is the measure of openness, exports plus imports relative to GDP.[19] Openness is supposed to reflect their openness to trade. Conventional wisdom suggests that aid can be used more productively in countries that are macro economically stable and more open to trade (Nunnenkamp and Thiele, 2006). Hence, aid should be related positively with our both proxies if donors took changes in these policy-related variables into account when deciding on the allocation of aid. However, as Fenny and McGillivary (2008) argue, donors could also interpret low growth as an indicator of high need. In this case, the relationship between education aid and growth would be negative.

OECD countries generally believe that a democratised world will bring greater stability and peace. In addition to its ideological value, there are more tangible benefits to be gained from rewarding democracies. Democratic nations that allow sharing of power within government, and that are periodically held accountable to constituents, are expected to be fiscally more responsible and better at managing aid without corruption, and there is at least some evidence (e.g., Gates and Hoeffler, 2004) that donors have acted accordingly by giving more aid to democratic governments. We measure democracy using the Polity IV dataset, which provides perhaps the most widely used measure of democracy and contains many more years of democracy ratings than the Freedom House data, another well-known dataset on governance. The Polity IV democracy measure ranges from '0' (least democratic) to '10' (most democratic).

[18]To control for recipients merit in our analysis, a potentially very important variable is the quality of institutions in the recipient countries (ICRG Index), but the data set is not freely available which restricts us to not use it as one of our regressor.

[19]We lag growth by one period to reduce the potential for the reverse causality of education aid on growth, which Clemens et. al (2004) show can be significant in the short-term.

3.4.1.3 Donor Self-Interest

The third rationale for education aid allocation is donors commercial and geopolitical interests. To check whether the allocation of education aid is shaped by commercial and political self-interest of donors, a whole range of variables commonly used in the general aid allocation literature that cover different aspects of donor's self interest will be used. We included four different measures of donor's self interest: trade, the colonial status of the recipient, geographic location of the recipient and donors international conferences on education. These variables are standard in the recent aid allocation literature (e.g. Alesina & Dollar, 2000; Fleck and Kilby, 2006; Hoeffler and Outram, 2011; Nunnenkamp and Thiele, 2006).

The trade variable describes the strength of commercial links between a donor and a recipient and is included as an indicator of how donors' commercial interests influence education aid allocation. Education aid may also be used to deepen commercial linkages with a recipient. Not all donors have strong geopolitical interests, but all of them have commercial interests (Berthelemy, 2006b). A donor country's foreign assistance policy based on its self-interest will typically be biased toward recipients who naturally tend to have more trade with the donor. Therefore, we have also introduced commercial interest motives in the analysis of education aid allocation, measured by the flow of import and exports between a donor and a recipient, as a percentage of donor's GDP. There is the potential of reverse causality between trade and education aid i.e. increased education aid may cause increased trade rather than the other way around if education aid is tied to the consumption of donor goods. However, the risk is limited since we are working on aid commitment flows, and aid disbursements usually lag behind commitments, particularly for project loans or grants, which require building new equipment. In order to be on the safe side, we have lagged this variable by one year.

Former colonial powers usually have remaining political, economic, cultural and other interests in their former colonies (Neumayer, 2005). In determining the flow of education aid flows to a recipient country, we also investigate the role of former colonial ties. The importance of colonial links through historical channels has been emphasised by influential

studies such as Acemoglu et al. (2001). We argue that colonial history can continue to matter through contemporary channels if it currently affects the relationship between two countries. We ask whether colonial heritage matters for the pattern of education aid flows. To test for this, we include a dummy variable in our estimating equation, which equals one if the donor country is a former colonial "master" of the recipient country; an example is the UK and India.[20]

Donors may pursue several self-interested objectives. One of them is geopolitical. Donors often tend to give more aid to geographically close countries in order to maintain a regional sphere of influence (Neumayer, 2005). To capture this aspect of the donor's interest we include a variable measuring the geographical distance between the donor and the recipient country's capital. A priori expectation for the variable is that donors give more education aid to their neighbours.

According to Schindlmayr's (2001) overview of population assistance from the 1970s to the 1990s, money is easily raised at population conferences in order to cash in on the attention of those attending such gatherings. To test the idea of opportunism in funding education, we use the case of the education conference held in Jomtien, Thailand in 1990 and in Dakar in 2000. An opportunist donor would raise its level of funding in the year 1990, when the focus of the developed world was on the developing world, and decrease its funding after ward. To test this supposition, we define a dummy variable that takes on the value of zero before 1990, has the value of one in the year 1990, and has the value of minus one for the remaining three years in our sample period. The assumption, therefore, is that during the year in which an international education conference is held, governments raise their contributions, and in the subsequent three years they decrease their contributions. The result of this strategic behaviour is that by shifting resources at the appropriate time, they "buy" attention (Schindlmayr, 2001). The developing countries, however, will be on the

[20]In their history, many formerly colonized countries in the world has been colonized by one or more than one developed country (countries), as for example South Africa gain independence from the UK in the 20th century which was previously being colonized by the Netherlands. So to overcome this we take the colony and colonizer relationship which was existed most recently. So in our example we treated South Africa as the colony of UK not the Netherlands

losing side of this behaviour because donors diminish their net contributions.

Due to their political and strategic importance in the Middle East (Alesina and Dollar, 2000; Burnside and Dollar, 2000) Israel and Egypt has an important role in the USAs foreign policy and aid business. Following customary procedures in aid literature dummies for Israel and Egypt have been included. Egypt is a dummy variable equal to 1 when the recipient is Egypt and the donor is USA and 0 otherwise. Whereas Israel is a dummy variable equal to 1 when the recipient is Israel and the donor is USA and 0 otherwise.

Recent research (Alesina and Dollar (2002), Burnside and Dollar (1998, 2000) and Collier and Dollar (1998) among others) has established conclusively that aid flows follow cultural and historic ties rather than need or merit. An important outcome of the colonial history of the developing world is that, most of the developing countries are overlaid in varying degrees by the national culture of the former metropolis, in areas like educational structure, legal system, religion and perhaps most important official language. This recognized as theoretically playing an important role in the contemporary international relations of the developed and developing World, particularly when one is assessing the aid policies. Schraeder et al. (1998). In order to test for this variable, this study compute, for each pair developing country /Donor country two variables that capture cultural proximity, namely the dummy variables, for same majority religion and same official language. Common religion is a dummy variable equal to 1 when the recipient and donor have a common(same) majority religion and 0 other wise. Whereas Common official Language is a dummy variable equal to 1 when the recipient and donor have a common(same) official language and 0 other wise.

Finally, we have attempted to introduce data on military expenditure, as a share of GDP. One could argue that excessive military expenditure should cause a reduction of education aid flows, because it would imply a high risk of utilization of this assistance for non-developmental purposes. Or it can go other way round as well, as donor may give special preferences towards countries displaying higher levels of military expenditures. The data on military expenditure, as a share of GDP is available since 1988, which restricts us to use it only as a robustness test.

3.4.1.4 Controls

In addition to the afore mentioned variables, following the previous aid allocation literature(Alesina and Dollar, 2000; Younas, 2008; Alesina and Weder, 2002; Berthelemy, 2006b; Berthelemy and Tichit, 2004 among others) we include recipient country population to capture differences in recipient-country size. In the literature, size is also used alternately as a measure of strategic importance (large being more important) or as representing susceptibility to outside interference (small being more susceptible). A great deal of attention has been paid to what is called the "small country bias." The quadratic specification enables us to consider the extent of population bias, by which the per capita education aid allocation falls with country size: A concave relationship between the level of education aid and population is consistent with a population bias. In the previous studies, the estimated coefficients suggest that donors allocate less aid per capita as the size of the recipient country's population increases (Alesina and Dollar, 2000; Levin and Dollar, 2005; Sawada et al., 2008).

Following Alesina and Dollar (2000), we also consider that cultural similarity, proxied by religious differences, might affect the education aid allocation. To do this we use a dummy variable value of 1 if the majority of a recipient nations population is of Christian faith or 0 otherwise. We follow the same for Muslims, where our dummy Muslim has a value of 1 if the majority of a recipient nations population is of Muslim faith and 0 otherwise. We also include a full set of time dummies, which, according to (Sarafidis et al., 2009; Roodman, 2008), is always suggested as a prudent strategy to remove any global time-related shocks from the errors.

3.4.2 Dependent Variable

With regard to the dependent variable, it is more convenient to use education aid commitments rather than disbursements from the various donors to the different recipients.[21] In the

[21]Education aid commitments are preferred to disbursements because they reflect, much better than the latter; the decisions made by the donors because commitments more accurately portray the wishes of the donor, where

general aid allocation literature, there is considerable debate on the choice of the endogenous variable as either aid per capita or aid levels (McGillivray and Oczkowski, 1992; Neumayer, 2003b). In this chapter we use per capita commitments as they allow us to test whether small countries receive more international education support per capita than large ones.[22]

3.4.3 Econometric specification

Not all donors give education aid to all countries, i.e. the education aid variable is zero for a large number of cases, which poses significant challenges in estimating the allocation of education aid. As stated above our dependent variable is only partly continuous which implies that, we deal with a censored dependent variable. The censored nature of our dependent variable leads us to implement a non-linear estimation method capable of estimating censored data.[23] Three different approaches to deal with this issue have been suggested in the literature (Berthelemy and Tichit, 2004; Neumayer, 2003a), all based on the maximum likelihood method. These are the two-part model, the Heckman sample selection model and the Tobit model.

In a two-part model, the first step involves a Probit estimation that determines the probability of receiving education aid, while the second, an OLS estimation, determines the amounts of education aid for the sub-sample of positive education aid observations. The model is based on the assumption that the choice of recipient and the amount of education aid allocated are independent from each other. If this assumption does not hold, which appears to be highly probable (Nunnekamp and Ohler, 2011), the regression in the second step suffers from a selection bias. The Heckman model resembles the two-part model, except for the assumption that selection and allocation of education aid are independent. Here at the first stage, again a Probit estimation is performed, while in the second step, in order to

disbursements are influenced by the capacity of the recipients to meet the donors' conditionalities (Clist, 2011). The aid commitments are in constant prices of 2008.

[22] This analysis would not be possible if we considered education aid in absolute terms because in this case we would certainly will find that large countries received more education aid.

[23] As OLS estimations depends on the assumption that the expected value of the dependent variable is linear in the explanatory variables, which is violated by the fact that the independent variable has positive probability mass at value zero.

correct for the selection bias, the inverse Mill's ratio from the first step is added to the set of explanatory variables. Taking the censored nature of the education aid variable directly into account, the Tobit model estimates education aid allocation in one step, while education aid to a specific recipient is specified as the maximum of zero and a linear combination of the explanatory variables. The Heckman procedure, if same set of explanatory variables is employed in both equations, due to severe multicollinearity problems estimates risk to become unreliable (Canavire et al., 2005). Since it is very difficult to find appropriate exclusion variables for the first step of the Heckman procedure, in line with several authors (Berthelemy and Tichit, 2004; Canavire et al., 2005; Nunnekamp and Ohler, 2011; Isopi and Mavrotas, 2006), we employ the Tobit model for our empirical analysis.

The basic specifications of the Tobit estimation for the model of education aid allocation we intend to estimate are defined as follows:

$$Aid_{it}^{*} = \beta X_{ijt} + U_{it} \tag{3.1}$$

where $Aid_{it} = Aid_{it}{}^{*}$ if $Aid_{it}{}^{*} > 0$ and $Aid_{it} = 0$ if $Aid_{it}{}^{*} < 0$

Aid_{it} is education aid per capita from a given donor or group of donors to recipient country i on year t. Aid_{it}^{*} is a latent variable; X_{ijt} is a set of explanatory variables and U_{it} an error term. The set of explanatory variables may vary with time, the identity of the recipient and the identity of the donor, which is why it carries a triple subscript.

The general form of the regression equation is as follows:

$$\begin{aligned} ln(Edu.Aid)_{it} =& \alpha + \beta.RecipientNeed_{it} + \gamma.RecipientMerit_{ijt} \\ &+ \delta.Donors'selfInterest_{jti} + \theta.ControlVariables \end{aligned} \tag{3.2}$$

The motivating question underlying our research is to investigate how recipient countries' needs and merits together with donors' interests determine the allocation of education aid by donors. We analyse the behaviour of all donors (bilateral as well as multilateral), all bilateral and multilateral donors taken together, and individually of the major bilateral and

multilateral donors. Our baseline econometric specification is as follows:

$$\begin{aligned} ln(Edu.Aid)_{it} =& \alpha_0 + \beta_1 ln(Edu.Indicator)_{it-1} + \beta_2 ln(GDPpercapita)_{it-1} \\ &+ \beta_3 [ln(GDPpercapita)_{it-1}]^2 + \beta_4 ln(Aidpercapita)_{it-1} \\ &+ \gamma_1 (GDPpercapitagrowth)_{it-1} + \gamma_2 (Democracy)_{it} \\ &+ \delta_1 (Trade)_{it-1} + \delta_2 (Openness)_{it-1} + \delta_3 (Colony)_i \\ &+ \delta_4 (Distance)_i + \delta_5 (Conference) + \theta_1 ln(Population)_{it-1} \\ &+ \theta_2 [ln(Population)_{it-1}]^2 + \theta_3 (Christian) + \theta_4 (Muslim) + \lambda_t \\ &+ \varepsilon_{i,t} \end{aligned} \tag{3.3}$$

Where subscript i denote recipient countries while t denotes time,λ_t represents time dummies and $\varepsilon_{i,t}$ is an error term.[24] And there are no subscripts for donor countries; as following the common practice in literature we will re-estimate our equation 3.3 for each donor or group of donors that we consider to analyse their education aid allocation behaviour separately.

Note that most of the explanatory variables are in one year lag. With the econometric justification already given, this is also due to the fact that aid decisions are made just prior to or at the commencement of a year. Population and GDP per capita are also employed in the quadratic form to allow for non-linearity in their relationship with the dependant variable.

Our dependant and some of the explanatory variables are in logarithmic form.[25] The proposed regression equation 3.3 thus combines the features of log linear and log-log models. Logarithmic form has two advantages: first, such transformation reduces the influence of large values (e.g. the populations of China and India) and second coefficients can be directly interpreted as elasticities. Coefficient β_1 represents elasticity - namely, the ratio of the percentage change in education aid to the percentage change in a country's education indicator, e.g. the gross primary school enrolment ratio. Coefficient γ_1, on the other hand, measures

[24]According to Sarafidis et al. (2009) and Roodman (2008), it is always suggested as a wise strategy to remove any global time-related shocks from the errors.

[25]As stated earlier, not all donors give education aid to all recipient countries in all years, which leads to certain number of zero observations on our dependant variable, which means the logarithm of these observations would be non defined, so to address this problem we use the transformation ln(1 + Education Aid) instead, which allows us to consider all observations in the dataset.

the proportional change in education aid in response to a unit change in the GDP Per Capita Growth. In particular, a unit change in GDP Per Capita Growth is associated with a 100*γ_1 per cent change in education aid.

The dependent variable Edu.Aid represents the amount of education aid received by a recipient country as a proportion of its population in year t. On the right-hand side of the equation 3.3, Edu.Indicator, GDP per capita and Aid per capita shows the recipient country's needs for education aid.[26] A priori expectation for βs is negative, except β_4. GDP Per Capita Growth rate and Democracy (measured by Polity IV) are the merits of an education aid recipient country, where a priori expectation is positive for γ_2 and can positive as well as negative for γ_1.[27]

3.5 EMPIRICAL RESULTS

The subsequent analysis will proceed in four main steps. First, we will compare the education aid determinants of a) all donors, bilateral as well as multilateral, b) all bilateral donors only and c) all multilateral donors only. In this way, it can be assessed whether all donors taken together considered education related indicators of need when allocating the education aid and whether the multilateral donors were more need and policy oriented than presumably more self-interested bilateral donors. Second, we will run estimates for ten major bilateral and two multilateral donors individually. These are France, Japan, USA, UK, Sweden, Germany, Canada, Spain, Italy, the Netherlands,the World Bank and the UN respectively. This group accounted for 80 per cent of total education aid from 1973-2007. The allocative behaviour is expected to differ between these donors, e.g., in terms of the relative importance of selfish and altruistic motivations of aid. Third, we will check the sensitivity of our main findings to different time periods and regions, and Finally we will run some robustness tests.

[26] We measure the need of a recipient country's education aid by the UNDP education index, wherein a high value represents lower needs for education aid and vice versa. The same is true for the GDP per capita, where a higher amount of total aid per capita reveals a higher need for education aid per capita too.

[27] Fenny and McGillivary (2008) argued that donors could also interpret low GDP growth rate as an indicator of high need. In this case the relationship between GDP per capita growth rate and the education aid per capita will be negative.

In our basic Tobit model, we capture the need for education aid by the recipient countries Education Development Index,[28] per capita GDP and the volume of total and education aid commitments. Recipients merit is proxied by the GDP per capita growth rate, level of democracy and the trade openness of the recipient. Donor self-interest is taken into account by the recipient country's colonial status of the donor, relative importance as a neighbour of the donor and the donor's conference on the education sector.

3.5.1 Education aid at aggregate level

Our first focus of interest is on the importance of the recipient countries' needs in the area of education. The extent to which the allocation of education aid is needs-based differs considerably in different aid channels, while education aid through some channels is not at all related to need. Our results (see table 3.6) suggest that all donors respond to the recipients' need in their education aid allocations and tend to allocate their funds effectively; that is, the more needy recipients (proxied by the lower education development index) receive more education aid except for bilateral education aid, which is not significant and is quite small in magnitude compared to all and multilateral education aid flows. The estimates presented in columns 1-3 of table 3.6 support the view that multilateral education aid is superior to bilateral education aid, where a ten per cent increase in the education development index would lead to 4.1 per cent decrease in the per capita education aid commitments from the multilateral donors, compared to 3.6 per cent from all donors, keeping all other things constant. Taking the per capita income of recipients as the usual proxy of recipient general need, we find a negative and significant effect of real GDP on per capita multilateral education aid receipts only, while for all donors the reverse is the case. The strong suggestion of this result is that while allocating education aid, multilateral donors responds more to education sector-specific needs than to the general economic needs of the recipient. The observation that bilateral donors lack any poverty orientation when allocating education aid suggests that

[28]We have also used; gross primary and secondary school enrolment ratios, net primary school rate and the primary completion rate as the proxies for the education sector-specific needs of a recipient country. The alternative need variables are used as a robustness check and are discussed in the forthcoming section.

developmental concerns may be blurred by broader (political or strategic) objectives of these donors while allocating education aid.[29] Education aid has a positive and significant correlation with the volume of total aid received from the whole donor community while on average, a ten per cent increase in the total aid committed to a country will cause 1.5 per cent increase in the commitments to the education sector of that recipient country, keeping all other things constant.

Table 3.6: Aggregate Aid Flows, Dependent variable: Log of Education Aid per Capita (1973-2007)

	Main Results			**Inertia Effect**		
Donors	All	Bilateral	Multilateral	All	Bilateral	Multilateral
Education Index	-0.360***	-0.070	-0.414**	-0.282**	-0.042	-0.411**
	(0.108)	(0.097)	(0.155)	(0.099)	(0.077)	(0.155)
GDP per capita	0.112*	0.067	-0.185*	0.075	0.032	-0.186*
	(0.057)	(0.050)	(0.090)	(0.053)	(0.041)	(0.09)
Total Aid	0.158***	0.110***	0.178***	0.131***	0.080***	0.177***
	(0.024)	(0.020)	(0.048)	(0.023)	(0.018)	(0.048)
GDP Growth	0.002	0.001	0.004	0.001	0.001	0.004
	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)	(0.004)
Democracy	0.010	0.015	0.002	0.009	0.011	0.003
	(0.010)	(0.009)	(0.017)	(0.010)	(0.008)	(0.017)
Openness	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
Conference	0.012	0.188**	-0.165	0.080	0.110	-0.424*
	(0.085)	(0.066)	(0.197)	(0.081)	(0.062)	(0.184)
Population	-0.127**	-0.103**	-0.060	-0.102**	-0.052	-0.06
	(0.039)	(0.039)	(0.048)	(0.034)	(0.027)	(0.048)
Christian	0.005	0.004	0.005	0.004	0.002	0.005
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)
Muslim	0.002	0.003	0.000	0.002	0.002	0.001
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)
Lagged Dependant variable				0.183***	0.388***	0.012
				(0.032)	(0.031)	(0.07)
Uncensored Observations	1244	1188	477	1244	1188	477

Note: All regressions Include time dummies and constant (results are not shown) As Education aid does not flow from each source to every recipient so thats why we have different number of uncensored observations. Standard errors are in parentheses. ***,**,* indicate significance at 1, 5 and 10 per cent levels respectively.

According to Schindlmayr (2001), aid money for a particular sector can be easily raised at the donor conferences held for that particular sector, where a donor commits more than is their common practice in order to cash in on the attention of those attending such gatherings.

[29]Even when we run our model without any education sector need proxy variable, the results for per capita GDP are still insignificant for bilateral donors only, whereas for others there is an increase in the level of significance for GDP per capita. (Results are not shown)

In our estimation, the coefficient of our opportunistic variable (conference) indicates that in the year when a donors conference on education is held there will be 18.8 per cent more commitments to a particular recipient than in the years before, this is evident in the bilateral donors behaviour only. The larger recipients (in terms of population size) receive less education aid, while a doubling of a country's population predicts a 12.7 per cent decrease in education aid receipts. It appears that all education aid and that from the bilateral donors is biased towards providing more education aid to countries with smaller populations, a result that is in line with earlier findings. At aggregate level, for all and bilateral donors, we find a population effect in education aid. Larger countries consistently receive less education aid per capita and the effect is statistically significant in most regressions. Our results using all donors suggest that a 1 per cent increase in population is related to a decrease in education aid per capita of 0.15 per cent - a sizeable effect.

Because there can be important dynamics in aid determination, the next regressions include a lagged dependent variable. For example, because of stickiness in the adjustment of aid policies, education aid flows in this period may relate to those in previous periods, even though country policies and other circumstances have changed. The preceding year's level of all and bilateral education aid receipts is significantly correlated with the current year's education aid flows (See table 3.6, columns 4 to 6), with an estimated autoregressive parameter of 0.38 for the bilateral donors, strongly supporting the inertia hypothesis: that is, bilateral donors seem to establish more enduring links with recipient countries, while others respond to changes in the education aid determinants quickly.[30] Perhaps surprisingly, the lagged dependent variable has a small and not statistically significant coefficient for multilateral aid, suggesting that multilateral aid agencies may change their focus of attention quickly from one year to another.

[30]Lagged education aid is also highly significant in almost all donor equations, and moreover, has the same sign for all donors (except for Canada), but the differences among donors are striking. Education aid commitments from USA are more than four times as persistent as those from other OECD donor countries, where Germany exhibits the least persistent behaviour in education aid programming by recipient countries. (See table C.5 in Appendix-C)

3.5.2 Bilateral Education Aid of Major Donors

Previous studies (e.g., Berthelemy, 2006a and 2006b; Dollar and Levin, 2006) into aid allocation found that foreign aid was allocated not only according to the needs and merits of the recipient country but also according to the donors' self-interest; we examine how the allocation of education aid varies by the major donors and how they differ from the average DAC donor. Our baseline specification uses the Education Development Index as a measure of education needs and controls for GDP per capita. In addition to the other control variables used previously, we are able to add variables that capture each donor's commercial or geopolitical interests, such as geographic distance, bilateral trade and dummies for a former colonial relationship. The estimation results are reported in table 3.7, where each column of the table 3.7 reports the results of a specific donor.

Recipient's Need:

As could be expected given our results with aggregate bilateral education aid, we find that most bilateral donors do not direct education aid to those countries with the greatest needs in the sector of education. We find that the focus of the education sector-specific (Education development index)[31] and the general (GDP per capita) need differs among bilateral donors. The coefficient of the education sector specific need (education development index) variable is consistently negative at the 5 per cent level for the France only, whereas for Germany, Spain and Canada, it is negative but not significant at any prevailing level of significance, while for rest of the donors (Japan, USA, UK, Sweden, Italy and the Netherlands) the variable has a positive but insignificant sign, except for Japan, USA and Sweden.

This is somewhat compensated for by a tendency of bilateral donors to target their education aid towards poor countries. The coefficient of the recipient's general need (recipient's per capita income) variable, as expected, is significantly negative at the 5 per cent level of significance for Japan only, although the magnitude of the coefficient is low, while for USA,

[31]We have also used; gross primary and secondary school enrolment ratios, net primary school rate and primary completion rate as the proxies for education sector-specific needs of a recipient country. The alternative need variables are used as a robustness check and are discussed in our forthcoming section.

Table 3.7: Donor-specific Results, Dependent variable: Log of Education aid per capita (1973-2007)

Donor	France	Japan	USA	UK	Sweden	Germany	Canada	Spain	Italy	Netherland
Edu.Index	-0.246**	0.210*	0.699**	0.013	0.467*	-0.134	-0.008	-0.163	0.012	0.159
	(0.086)	(0.085)	(0.246)	(0.084)	(0.201)	(0.220)	(0.143)	(0.099)	(0.036)	(0.135)
GDP per capita	0.171***	-0.101**	-0.074	-0.050	-0.155	-0.139	0.026	0.037	0.014	-0.027
	(0.046)	(0.036)	(0.134)	(0.047)	(0.133)	(0.112)	(0.070)	(0.043)	(0.020)	(0.079)
Total Aid	0.049*	0.084***	0.222***	-0.003	0.034	0.153***	0.134***	0.011	0.026**	-0.019
	(0.021)	(0.021)	(0.055)	(0.028)	(0.043)	(0.039)	(0.036)	(0.019)	(0.010)	(0.030)
GDP Growth	0.000	0.001	0.010*	-0.002	-0.001	0.003	0.003	-0.001	-0.001	-0.003
	(0.002)	(0.002)	(0.005)	(0.003)	(0.004)	(0.003)	(0.003)	(0.001)	(0.001)	(0.003)
Democracy	-0.014	0.010	0.036	0.001	0.022	-0.006	0.017	-0.002	0.012***	0.009
	(0.009)	(0.007)	(0.021)	(0.009)	(0.017)	(0.018)	(0.013)	(0.009)	(0.004)	(0.011)
Openness	-0.001	0.000	0.000	-0.003**	-0.004*	0.002*	-0.001	0.000	0.000	-0.004*
	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.000)	(0.002)
Conference	0.804***	0.150*	-0.512**	-0.146	-0.217	0.633**	-0.091	-0.001	-0.020	0.013
	(0.096)	(0.068)	(0.172)	(0.105)	(0.121)	(0.210)	(0.103)	(0.111)	(0.020)	(0.078)
Population	-0.055	0.026	0.122	-0.007	0.092	0.437***	0.145**	0.003	0.052***	0.005
	(0.030)	(0.023)	(0.097)	(0.030)	(0.079)	(0.123)	(0.055)	(0.029)	(0.013)	(0.047)
Christian	0.001	0.000	0.018**	0.002	-0.001	-0.009	0.004	0.001	0.001	0.006*
	(0.002)	(0.001)	(0.006)	(0.001)	(0.004)	(0.005)	(0.003)	(0.002)	(0.001)	(0.003)
Muslim	-0.001	0.002	0.022***	-0.002	0.004	-0.013**	0.001	0.000	0.000	0.002
	(0.002)	(0.001)	(0.006)	(0.002)	(0.005)	(0.005)	(0.003)	(0.002)	(0.001)	(0.003)
Colony	0.590***		0.649	0.366***		0.249		1.328***		
	(0.098)		(0.769)	(0.061)		(0.383)		(0.202)		
Distance	0.020	-0.340***	0.450	-0.028	0.090	-1.359	-0.310	-0.216**	-0.174***	0.112
	(0.085)	(0.082)	(0.430)	(0.083)	(0.278)	(.)	(0.228)	(0.083)	(0.027)	(0.132)
Trade	-0.057	0.040	0.175	-0.049	0.300	0.377	-0.735	0.103	-0.290**	1.413
	(0.122)	(0.068)	(0.480)	(0.188)	(0.204)	(0.640)	(0.741)	(0.177)	(0.101)	(0.846)
Education Aid from Other Donors	0.026	0.001	0.030	0.077***	-0.008	0.018	0.027	0.015	0.007	0.058**
	(0.014)	(0.015)	(0.037)	(0.021)	(0.025)	(0.020)	(0.021)	(0.012)	(0.006)	(0.021)
Uncensored Observations	645	285	197	167	132	272	244	244	256	132

Note:All regressions Include time dummies and constants (results are not shown).***,**,* respectively show significance at 1, 5 and 10 per cent level of significance, where Standard errors are in parentheses. As Education aid does not flow from each source to every recipient so that's why we have different number of uncensored observations. For USA, Israel and Egypt Dummies results are not shown.

UK, Sweden, Germany and the Netherlands, it is negative but not significant at any prevailing level of significance. In the case of almost all donors (except for the UK, Spain, Sweden and the Netherlands), education aid has a positive and significant correlation with the volume of total aid received from the whole donor community where on average ten per cent increase in the total aid committed to a country will cause a one per cent increase in the commitments to the education sector of that recipient country keeping all other things constant.

Our other proxy for recipient need, education aid from other donors, shows that education aid flows by one donor are positively affected by the education aid of other donors (although the relationship is not statistically significant except for the UK and the Netherlands), hinting at complementarity among donors, possibly due to the signalling effects for the quality of the recipient country's policies or to better coordination, or perhaps because receiving education aid from many donors is perceived as an indicator of capacity in administering education aid.[32] The significantly positive coefficient indicates that UK and the Netherlands gives more education aid to countries that already receive a considerable amount of education aid. This may indicate that the said donors are not so much guided by recipient need but by other donors' behaviour.[33]

Recipient's merits:

Interestingly, except for USA, Germany and Italy, donors' education aid programmes did not appear significantly responsive to the merits (in our study proxied by GDP per capita growth rate, political freedom, and trade openness) of the recipient countries in the entire bilateral donors' community. USA, Germany and Italy are the only donors which reward some merits of the recipient country significantly while committing their education aid to a particular country.

[32]The result can be interpreted as the potential 'bandwagon effect' (Harrigan and Wang, 2004), which describes the fact that when a recipient receives more aid from one donor, this may attract more from other donors. The coefficients on education aid from other donors are positive in all of the regressions for the different donors and statistically significant as well for UK and the Netherlands, this support to the argument that a 'bandwagon effect' exists in the education aid allocation process. (For UK and the Netherlands only)

[33]As can be seen in our own results, in the case of both donors, all the earlier 3 need variables are insignificant.

The USA is different from other donors in their relationship with the economic performance of the recipient country. Some donors show a positive relationship, while others show a negative and insignificant one,[34] whereas for the USA it is positive as well as significant. In the case of the USA, a 10 per cent increase in the recipient growth rate of GDP per capita is rewarded by 0.11 per cent more education aid flows, while Italy rewards democratic countries significantly, as a one unit increase in the country's democracy level makes it eligible to receive 1.25 per cent more education aid in a group of education aid recipients having everything at the same level except the level of democracy. In the cases of the rest of the donors (except for France and Spain),[35] they reward the level of democracy at the recipient positively but not significantly at any prevailing level of significance.

This can have an ambiguous interpretation. Usually countries with a low level of democracy also depend on aid; on the other hand, this variable may be an indicator of a strategic donor which, by giving foreign aid, may more or less indirectly support the government of recipient country whose degree of democracy is low.[36] For example, Sen (1999) argues that the incidence of economic calamities is inversely related to the level of political rights in a society. Kahn (2005) argues that there are more annual deaths per capita from natural disasters in countries with poor governance. and, it is clear that countries with poor governance have greater need only in the face of emergencies. Individuals living in countries with worse governance may also have less access to quality social services (Schooling in our case), for instance. Their government may lack the desire or ability to provide these - (coverage and quality schooling) - services to broad sections of the population. In short we can say that, these donors (France and Spain) donors may have an interest in education sector development even in poorly governed countries.

[34]As here GDP growth is considered as a performance indicator of the recipient country, so those who are rewarding it as a performance there is a positive relationship between aid and GDP per capita growth. However, as Fenny and McGillivary (2008) argue, donors could also interpret low growth as an indicator of high need. In this case, the relationship between aid and growth is negative.

[35]For France our results are in line with Stone (2010) and Alesina and Dollar (2000), who found that only France paid no attention to the democracy of the recipient when committing general aid.

[36]Committing education aid to countries with a good record of political reform may be an effective incentive to others to engage in similar reform. However, such a policy comes at a cost, at least in the short to medium term, since many of the countries with the worst education indicators are also the least democratic (Fielding, 2011). For France our results are in line with Alesina and Dollar (2000), who found that, while committing general aid, only France paid no attention to the democracy of the recipient.

Here merit does not play a significant role for the allocation of education aid. This may be because donors may have granted education aid to countries such as Afghanistan, Iraq and Sudan in order to promote democratisation, rather than rewarding good economic policies.

Donor's Interests:

As per expectations, colonial heritage matters in the allocation of education aid flows as it does in the general aid flows, found by Alesina and Dollar,2000; Berthelemy, 2006b; Berthelemy and Tichit, 2004; among others. Education aid commitments are greater if the donor was a former coloniser of the recipient. We note that France, the United Kingdom and Spain - all countries with vast colonial empires until the post-war period - have a strong tendency to give more education aid to their former colonies. Former colonies tend to be geopolitical allies and commercial partners, but perhaps most importantly for the case of education aid is the fact that they maintain cultural ties with their former colonisers. Most French, British and Spanish colonies have French, English and Spanish as their official language, in particular for the purposes of public administration and higher education. It is understandable that former colonial powers are eager to foster the education systems of their ex-colonies as a means of preserving their cultural influence and enhance their own status. In their study of aid to Africa in the 1980s, Schraeder et al. (1998) support the idea that the purpose of French foreign aid is "first and foremost promoting the spread of French culture" They find that France devoted 82 per cent of its African aid budget to francophone countries, including significant amounts to strengthen French relations with the former Belgian colonies of Zaire, Burundi and Rwanda. Berthelemy and Tichit (2004), Alesina and Dollar (2000), Alesina and Weder (2002) and Stone (2010) also find that donors give more aid to their former colonies. According to our estimates in table 3.7, keeping other things constant, being a former British colony brings 37 per cent more education aid from Britain; and the effect increases to 59 per cent for former French colonies and a massive 133 per cent for former Spanish colonies.[37]

[37]It is possible that colonial ties not only affect the level of education aid from donor to recipient country, but also the responsiveness of aid to recipient needs. This would occur, for example, if colonial ties facilitated greater concern by the donor country for the recipient country. We test for such effects by returning to our examination of the responsiveness of education aid to recipient needs, but allowing for the relationship between

Trade between donor state and the recipient as a percentage of the donor's GDP also matters. The greater the percentage of trade, the more assistance that nation can expect. In our case, this result applies only to Germany.[38] Our results are in line with some previous studies, according to which trade-related donor interest significantly shaped the allocation of German aid (Berthelemy, 2006b; Hoeffler and Outram, 2011). Donors give more aid to important trade partners (although the relationship is not statistically significant),[39] perhaps because bilateral relationships are closer when trade is high or because donors tend to support (indirectly) their own exports to the recipient country. Is the only reason that donors allocate education aid based on the calculations of their own gain? One possible explanation for this is that those nations that have open economies and are willing to trade with the donor receive more aid because they are more politically and economically capable of absorbing larger amounts of foreign assistance (Kang and Meernik, 2004). Or it could be that donors give aid to reward their existing trading partners, or to enhance their existing trading ties.

Another common variable of donor's interest in the literature is that of geographical distance between the donor and recipient and is commonly justified by a desire to capture a focus on countries that are relatively close. The geographic distance affects the allocation of education aid and is found to have a significant and negative effect for three donors (Japan, Spain and Italy), and is insignificant for the remaining seven. For Japan the effect is large and highly significant. It is understandable that distance is more significant for Japan as its commitments are more focused on its neighbouring Far East Asian recipients. Japan's aid charter states that "Asia, a region with a close relationship to Japan and which can have a major impact on Japan's stability and prosperity, is a priority region for Japan". It is listed as the first priority region in the charter. We can say that for those donors that never had a large

donor and recipient to differ depending on the colonial history of the pair. The results are in line with the hypothesis that donors give more weight to their former colonies not only to their needs but also while rewarding their good performance like improvement in the level of democracy. (Results are not shown)

[38]Where including distance as one of the explanatory variable, the trade coefficient has the highest magnitude, but insignificant at any prevailing level of significance. However, on exclusion of distance from the model trade becomes highly significant (coefficient is 1.516 and significant at one per cent level of significance). Results, excluding distance, are not shown.

[39]In contrast to some results in the empirical literature, significance of the bilateral trade variable is missing, but it becomes significant for some donors when we drop some of our explanatory - distance and the openness-variables from our model.

colonial empire, distance is often an important consideration.

The recipient's population size has a significantly positive but small effect in some cases; a one per cent increase in population size leads to a less than one-per cent increase in education aid. To check for the population bias we added the square term of population (see table 3.8). In accordance with previous studies, we find some evidence of the so-called "small country bias". Recipients with a smaller population receive more education aid but this result only holds for France and USA (France, in particular, exhibits an extremely strong small-country bias).[40] In sharp contrast to conventional wisdom, German education aid reveals a strong large-country bias, rather than the typically found small-country bias.[41] Closer inspections of the data reveals that huge recipient countries such as China and India received fairly Little German aid in per capita terms, as one would expect. Rather, the large-country bias appears to be due to various small countries not having received any German education aid. In additional estimations where we excluded small countries with populations of less than 1.5 million, the coefficient of population was reduced to below one for most aid donors under consideration (results are not shown).

In general, the religious preferences of recipient countries do not have a great influence on the pattern of education aid flows, except for USA, the Netherlands and Germany. USA is different from other donors in their relationship to Muslim recipient countries. Most donors show a negative but insignificant relationship, whereas for the USA it is positive as well as significant.

3.5.3 Changes over Time in Education Aid Allocation Criteria

In this section we examine whether the results discussed above are sensitive to the selection of the time period utilised, as it is interesting to check in our framework whether the end of

[40]The small country bias is also present in the aggregate data. A one per cent increase in population is associated with an average 0.13 per cent decrease in aid per capita. This is below the elasticity of -1 previously estimated by Alesina and Dollar (2000) and Berthelemy (2006b).

[41]The estimation results of Younas (2008) for total German ODA are also in conflict with the conventionally found small-country bias.

the cold war has changed donor attitudes in education aid allocation. To answer how allocation practice has evolved over time, we look specifically at two periods, Cold and Post Cold War. Looking at changes over time in the key relationships for the two sub-periods (during and after Cold War) shows an increase in the responsiveness of aid to recipient country's educational need over the time, from 0.12 to 0.30 and become significant as well (See table 3.9). This is evident that donors have become more focused on providing education aid to the needy countries rather than, say, to their political allies. The small-country bias has diminished over time, with the coefficient for population falling from 0.138 to 0.110. This decline in the small-country effect may reflect less interest by donors after the Cold War to support small countries in, say, buying political favours such as votes in the United Nations (Claessens et al., 2009) In general, it confirms the improvement in the quality of education aid allocations over the time.

Education aid becomes more responsive to the political performance of the recipient: the coefficient, statistically insignificant in the first period, turns out to be statistically significant in the recent period. This confirms the growing sense that in the later half, donors have determined their education aid allocation much more on the basis of country policy and institutional environment. It also explains why the democracy is not significant over the whole period, as education aid becomes sensitive to institutional environment only in the last period.

If we further divide the post Cold War era into pre and post 9/11, we see that education need variable is significant (for total and multilateral donors only) and higher in magnitude during the period 1991-2001 but became insignificant once again after the start of the war on terror. This means that while committing education aid, donors generally emphasise the actual needs of the recipient only when they are less focused on their collective interests such as the Cold War and the war on terror and vice versa. However, multilateral donors behave almost in the same manner irrespective of the time when it comes to the general need of the recipient country as defined by the GDP per capita, while multilateral donors significantly consider the needs of a recipient while allocating, their education aid. However, for the rest

Table 3.8: Donor specific(Income and Population Bias), Dependent variable: Log of Education aid per capita (1973-2007)

Donor	France	Japan	USA	UK	Sweden	Germany	Canada	Spain	Italy	Netherland
Education Index	-0.333*	0.166*	0.832***	0.014	0.431*	0.049	-0.008	-0.127	0.013	0.168
	(0.132)	(0.080)	(0.247)	(0.094)	(0.204)	(0.123)	(0.142)	(0.101)	(0.037)	(0.136)
GDP per capita	1.368**	0.671*	1.719	-0.024	1.142	-0.850*	0.496	-0.589	-0.048	-0.231
	(0.484)	(0.301)	(0.988)	(0.382)	(1.170)	(0.427)	(0.561)	(0.334)	(0.163)	(0.536)
Total Aid	0.065*	0.070***	0.222***	0.001	0.031	0.095***	0.134***	0.013	0.026**	-0.015
	(0.025)	(0.021)	(0.057)	(0.033)	(0.044)	(0.029)	(0.037)	(0.019)	(0.010)	(0.031)
GDP Growth	0.000	0.001	0.010*	-0.002	-0.001	0.001	0.003	-0.001	-0.001	-0.003
	(0.002)	(0.002)	(0.004)	(0.003)	(0.004)	(0.002)	(0.003)	(0.001)	(0.001)	(0.003)
Democracy	-0.029*	0.014*	0.028	0.004	0.023	0.001	0.017	-0.004	0.012***	0.008
	(0.011)	(0.007)	(0.020	(0.010))	(0.017)	(0.012)	(0.013)	(0.009)	(0.004)	(0.011)
Openness	0.000	0.000	-0.001	-0.002*	-0.004	-0.001	-0.001	0.000	0.000	-0.004*
	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	0.000)	(0.002)
Conference	0.082	0.170*	-0.042	-0.082	-0.077	-0.954	-0.138	-0.002	-0.020	-0.081
	(0.101)	(0.070)	(0.135)	(0.075)	(0.109)	(1.399)	(0.106)	(108.5)	(0.020)	(0.075)
Population	-6.161***	0.333	-4.879***	0.023	0.568	1.779***	-0.422	0.037	0.088	-0.225
	(0.268)	(0.203)	(1.097)	(0.334)	(0.909)	(0.423)	(0.539)	(0.373)	(0.141)	(0.466)
Christian	0.002	0.000	0.024***	0.002	-0.002	-0.005**	0.005	0.000	0.001	0.006*
	(0.005)	(0.001)	(0.006)	(0.002)	(0.005)	(0.002)	(0.003)	(0.002)	(0.001)	(0.003)
Muslim	-0.005	0.002	0.028***	-0.002	0.002	-0.005*	0.002	0.000	0.000	0.002
	(0.004)	(0.001)	(0.006)	(0.002)	(0.005)	(0.002)	(0.003)	(0.002)	(0.001)	(0.003)
Colony	0.446*		0.443	0.411***		0.073		1.373***		
	(0.225)		(0.777)	(0.067)		(0.138)		(0.206)		
Distance	-0.708***	-0.292***	0.375	-0.020	0.042	-0.126	-0.279	-0.21*	-0.174***	0.112
	(0.175)	(0.076)	(0.436)	(0.092)	(0.292)	(0.084)	(0.222)	(0.083)	(0.027)	(0.133)
Trade	0.111	0.062	0.223	0.019	0.336	1.364***	-0.683	0.070	-0.304**	1.279
	(0.144)	(0.063	(0.521	(0.257	(0.206)	(0.406)	(0.747)	(0.176)	(0.108)	(0.899)
Education Aid from	0.014	0.005	0.012	0.081***	-0.007	0.028	0.026	0.015	0.007	0.058**
Other Donors	(0.015)	(0.015	(0.036)	(0.023)	(0.025)	(0.017)	(0.021)	(0.012)	(0.006)	(0.021)
GDP PC Square	-0.090**	-0.049*	-0.130	-0.005	-0.085	0.056*	-0.032	0.040	0.004	0.013
	(0.032)	(0.019)	(0.067)	(0.026)	(0.076)	(0.028)	(0.037)	(0.021)	(0.011)	(0.035)
Population Square	0.186***	-0.010	0.153***	-0.001	-0.015	-0.052***	0.017	-0.001	-0.001	0.007
	(0.009)	(0.006)	(0.034)	(0.011)	(0.027)	(0.013)	(0.016)	(0.011)	(0.004)	(0.014)
Uncensored observations	645	285	197	167	132	272	244	244	256	132

Note:See Notes of Table 3.7

Table 3.9: Over the Time Changes in Aid Allocation Criteria, Dependent variable: Log of Education aid per capita

Sample	**Cold War**			**After Cold War**			**1991-2001**			**After 9/11**		
Donors	All	Bilateral	Multilateral	All	Bilateral	Multilateral	All	Bilateral	Multilateral	All	Bilateral	Multilateral
Education Index	-0.122	-0.123	-0.293	-0.303*	-0.177	-0.261	-0.360***	-0.070	-0.414**	-0.113	-0.186	0.152
	(0.198)	(0.186)	(0.318)	(0.141)	(0.133)	(0.177)	(0.108)	(0.097)	(0.155)	(0.196)	(0.181)	(0.175)
GDP per capita	-0.161	0.066	-0.740**	0.119	0.149*	-0.116	0.112*	0.067	-0.185*	-0.014	0.098	-0.164*
	(0.142)	(0.125)	(0.265)	(0.065)	(0.060)	(0.085)	(0.057)	(0.050)	(0.090)	(0.081)	(0.074)	(0.076)
Total Aid	0.127**	0.075*	0.193	0.149***	0.118***	0.132**	0.158***	0.110***	0.178***	0.189***	0.191***	0.086
	(0.044)	(0.034)	(0.113)	(0.029)	(0.026)	(0.049)	(0.024)	(0.020)	(0.048)	(0.049)	(0.043)	(0.055)
GDP Growth	0.001	-0.005	0.021	0.002	0.002	-0.001	0.002	0.001	0.004	-0.003	0.000	-0.007
	(0.005)	(0.003)	(0.012)	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)	(0.004)	(0.004)	(0.003)	(0.005)
Democracy	0.037	0.026	0.001	0.027*	0.025*	0.020	0.010	0.015	0.002	0.031	0.009	0.020
	(0.023)	(0.018)	(0.048)	(0.013)	(0.012)	(0.018)	(0.010)	(0.009)	(0.017)	(0.019)	(0.017)	(0.018)
Conference	0.716**	0.751***	0.845	0.087	0.174**	-0.170	0.012	0.188**	-0.165	-0.073	-0.151	-0.009
	(0.234)	(0.181)	(0.529)	(0.070)	(0.059)	(0.146)	(0.085)	(0.066)	(0.197)	(0.114)	(0.100)	(0.163)
Population	-0.138*	-0.072	-0.348**	-0.110**	-0.071	-0.017	-0.127**	-0.103**	-0.060	-0.084	-0.031	-0.044
	(0.065)	(0.063)	(0.122)	(0.040)	(0.039)	(0.047)	(0.039)	(0.039)	(0.048)	(0.043)	(0.040)	(0.040)
Uncen. Obv.	444	403	144	800	785	333	1244	1188	477	309	304	193

Note: To save space results on Openness and religion are not shown which are consistent over the time. All regressions Include time dummies and constant (results are not shown). As Education aid does not flow from each source to every recipient so that's why we have different number of uncensored observations. Standard errors are in parentheses. ***,**,* indicate significance at 1, 5 and 10 per cent levels respectively.

of the explanatory variables we can observe that no great changes have occurred. All the regressors maintain the same sign for the entire period, although they lose in significance in some cases (such as population and religious affiliation).

3.5.4 Education Aid at Regional Level:

Comparing the results for African and non-African education aid recipients, several interesting patterns emerge. The overall pattern of the responsiveness of donor countries is broadly similar, except for the multilateral donors, which were more need oriented and performance rewarding to African than non-African recipients (See table 3.10). However, there are some stark differences. For example, while education aid from France is very responsive to African-recipients education need (significant coefficient -0.240), while very unresponsive to non-African recipient needs (insignificant coefficient 0.02). For Spain, we find stark differences between former colonies within and outside of Africa. Results show that although the former Spanish colonies in and outside Africa are likely to receive more education aid than the non-colonised recipients, the edge in receiving more Spanish education aid is 100 times higher for former Spanish African colonies than that of non-African colonies, which may, reflects the fact that African colonies gained independence more recently than other former colonies.[42]

Like multilateral donors, on average, bilateral donors are also more generous in rewarding good economic and political reforms in Africa than outside Africa. Finally, we found that donors will commit more to an African recipient than to a non-African recipient if both are equally distant from the donor's capital, with all other things being equal.

[42]Whereas for France and UK the situation is other way round.

Table 3.10: Changes in Aid Allocation Criteria at regional level, Dependent variable: Log of Education aid per capita (1973-2007)

Sample	**African Recipients**							**Non-African Recipients**						
Donor	All	Bilat.	Multi.	France	Japan	USA	UK	All	Bilat.	Multi.	France	Japan	USA	UK
Education Index	-0.081	0.168	-0.288	-0.240*	0.203**	0.640*	0.071	-0.398	-0.708	0.039	0.023	0.067	0.738	-0.104
	(0.111)	(0.108)	(0.171)	(0.118)	(0.069)	(0.279)	(0.132)	(0.403)	(0.377)	(0.771)	(0.222)	(0.205)	(0.903)	(0.401)
GDP per capita	0.080	0.087	-0.251*	0.271***	-0.040	0.099	-0.027	0.029	0.088	-0.463*	0.020	-0.150*	-0.321	-0.142
	(0.070)	(0.060)	(0.116)	(0.066)	(0.034)	(0.151)	(0.074)	(0.123)	(0.113)	(0.215)	(0.070)	(0.072)	(0.320)	(0.117)
Total Aid	0.197***	0.088**	0.308***	0.090**	0.091**	0.218*	0.006	0.096**	0.123***	-0.061	-0.002	0.099***	0.206**	0.061
	(0.037)	(0.029)	(0.069)	(0.035)	(0.029)	(0.091)	(0.052)	(0.033)	(0.030)	(0.073)	(0.019)	(0.028)	(0.076)	(0.035)
GDP Growth	0.003	0.003	0.004	0.000	0.001	0.016**	-0.002	0.001	0.000	0.002	0.001	0.000	0.000	-0.004
	(0.003)	(0.002)	(0.005)	(0.002)	(0.002)	(0.005)	(0.003)	(0.004)	(0.003)	(0.009)	(0.002)	(0.004)	(0.009)	(0.004)
Democracy	0.005	0.008	0.006	-0.018	0.013	0.040	0.019	0.039*	0.025	0.087*	0.021	0.004	0.031	-0.007
	(0.013)	(0.011)	(0.022)	(0.013)	(0.007)	(0.026)	(0.014)	(0.020)	(0.017)	(0.039)	(0.014)	(0.014)	(0.040)	(0.018)
Openness	0.000	0.000	0.000	0.000	0.000	-0.001	-0.003*	-0.004*	-0.004**	-0.001	-0.003**	0.000	-0.001	-0.002*
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.004)	(0.001)
Conference	-0.003	-0.179*	0.410*	-0.354***	-0.027	-0.009	-0.204	-0.072	-0.070	-0.131	0.155	0.406**	-0.054	-0.717
	(0.103)	(0.076)	(0.195)	(0.093)	(40.51)	(0.167)	(0.144)	(0.143)	(0.125)	(0.326)	(0.126)	(0.138)	(0.234)	(11.74)
Population	-0.139**	-0.107	-0.025	-0.043	0.048*	0.048	0.002	-0.130	-0.129	-0.118	-0.097**	-0.006	0.103	-0.027
	(0.043)	(0.044)	(0.061)	(0.048)	(0.021)	(0.114)	(0.050)	(0.073)	(0.070)	(0.119)	(0.036)	(0.039)	(0.208)	(0.069)
Christian	0.006	0.003	0.005	-0.004	0.001	0.023**	0.002	0.004	0.004	0.005	0.003	-0.001	0.020*	0.006
	(0.003)	(0.004)	(0.004)	(0.003)	(0.001)	(0.008)	(0.003)	(0.004)	(0.004)	(0.006)	(0.002)	(0.002)	(0.009)	(0.003)
Muslim	0.005	0.005	0.001	-0.005	0.004***	0.021*	-0.003	0.002	0.002	0.005	0.004	0.001	0.021*	0.002
	(0.003)	(0.003)	(0.004)	(0.004)	(0.001)	(0.008)	(0.004)	(0.004)	(0.004)	(0.006)	(0.002)	(0.002)	(0.009)	(0.003)
Colony				0.501***		0.141	0.320***				0.531**			0.430*
				(0.126)		(0.680)	(0.095)				(0.194)			(0.207)
Distance				0.024	0.183	-0.376	-0.022				0.034	-0.471***	1.088	0.036
				(0.190)	(0.169)	(0.657)	(0.197)				(0.075)	(0.127)	(0.812)	(0.154)
Trade				-0.131	-1.261	-0.988	-0.040				0.293	0.099	0.226	0.577
				(0.162)	(0.706)	(2.112)	(1.010)				(0.289)	(0.093)	(0.702)	(0.332)
Education Aid from				0.006	0.018	0.038	0.089**				0.078***	-0.034	-0.008	0.000
Other Donors				(0.018)	(0.014)	(0.042)	(0.031)				(0.018)	(0.029)	(0.076)	(0.023)
N	839	790	362	429	153	115	119	405	398	115	216	132	82	48

Note:All regressions Include time dummies and constants (results are not shown).***,**,*,respectively show significance at 1, 5 and 10 per cent confidence level, where Standard errors in parentheses are clustered at country level. As Education aid does not flow from each source to every recipient so that's why we have different number of uncensored observations.For USA, Israel and Egypt Dummies results are not shown.

Table 3.10: Changes in Aid Allocation Criteria at regional level, Dependent variable: Log of Education aid per capita (1973-2007) (continued)

Sample	**African Recipients**						**Non-African Recipients**					
Donor	Sweden	Germany	Canada	Spain	Italy	Neth.	Sweden	Germany	Canada	Spain	Italy	Neth.
Education Index	0.831**	-0.055	0.206	-0.027	0.030	0.256	-0.131	1.770***	0.392	0.241	0.432**	-0.091
	(0.275)	(0.074)	(0.122)	(0.058)	(0.020)	(0.151)	(0.170)	(0.478)	(0.841)	(0.187)	(0.150)	(0.417)
GDP per capita	-0.049	-0.047	-0.089	-0.029	0.000	-0.071	-0.113	0.209	-0.190	0.037	0.134	0.047
	(0.226)	(0.029)	(0.066)	(0.027)	(0.011)	(0.089)	(0.064)	(0.142)	(0.243)	(0.080)	(0.076)	(0.177)
Total Aid	0.143*	0.081**	0.097*	0.040	0.023***	-0.037	-0.022	0.210***	0.210**	0.028	0.023	-0.047
	(0.071)	(0.028)	(0.038)	(0.021)	(0.007)	(0.037)	(0.020)	(0.049)	(0.079)	(0.027)	(0.020)	(0.054)
GDP Growth	0.003	0.001	0.002	-0.001	0.000	0.000	-0.005*	-0.004	0.005	-0.003	-0.001	-0.004
	(0.005)	(0.002)	(0.002)	(0.001)	(0.000)	(0.003)	(0.002)	(0.005)	(0.008)	(0.003)	(0.003)	(0.006)
Democracy	0.028	-0.002	0.022	0.002	0.002	0.005	0.002	0.006	0.009	0.021	0.042***	-0.034
	(0.024)	(0.008)	(0.012)	(0.006)	(0.002)	(0.012)	(0.014)	(0.028)	(0.034)	(0.013)	(0.011)	(0.029)
Openness	-0.006	0.000	0.001	0.000	0.000	-0.002	-0.001	-0.003	-0.005*	0.000	0.002	-0.005
	(0.003)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.002)	(0.003)	(0.001)	(0.001)	(0.003)
Conference	-0.219	-0.244*	-0.247**	0.589	-0.014	0.105	-0.025	-0.040	0.052	-0.026	-0.152*	-0.302
	(0.151)	(0.109)	(0.084)	(25.25)	(0.009)	(0.094)	(0.088)	(0.731)	(0.280)	(52.30)	(0.062)	(0.193)
Population	0.296	0.059**	0.115*	0.036*	0.036***	0.078	-0.011	0.148	0.150	0.070	0.170***	-0.075
	(0.152)	(0.021)	(0.051)	(0.018)	(0.008)	(0.054)	(0.034)	(0.088)	(0.164)	(0.042)	(0.041)	(0.098)
Christian	0.009	-0.001	0.004	-0.002	-0.001	0.006	-0.003	-0.007*	0.006	0.002	0.000	0.008*
	(0.010)	(0.001)	(0.003)	(0.001)	(0.000)	(0.004)	(0.002)	(0.003)	(0.008)	(0.002)	(0.001)	(0.004)
Muslim	0.029*	-0.002	0.005	-0.003*	-0.001	0.009*	-0.004*	0.000	0.000	0.004*	0.001	0.001
	(0.013)	(0.002)	(0.003)	(0.001)	(0.001)	(0.004)	(0.002)	(0.004)	(0.007)	(0.002)	(0.001)	(0.004)
Colony		0.099		2.484***						0.158		
		(0.051)		(0.117)						(0.206)		
Distance	2.058*	-0.154	-0.244	-0.117*	-0.082**	0.648*	-0.114	-0.068	-0.334	-0.206**	-0.396***	-0.038
	(0.829)	(0.106)	(0.252)	(0.053)	(0.026)	(0.256)	(0.093)	(0.125)	(0.709)	(0.079)	(0.055)	(0.185)
Trade	1.167	0.304	-1.301	0.271**	-0.208**	0.182	0.053	1.312	0.362	0.193	-1.099***	3.093
	(0.658)	(0.649)	(0.924)	(0.087)	(0.071)	(1.789)	(0.096)	(0.735)	(1.468)	(0.523)	(0.294)	(1.612)
Education Aid from	-0.026	0.016	0.001	0.007	-0.004	0.032	-0.012	0.084*	0.072	0.033	0.044*	0.126*
Other Donors	(0.033)	(0.013)	(0.018)	(0.012)	(0.003)	(0.022)	(0.022)	(0.038)	(0.054)	(0.022)	(0.020)	(0.052)
Uncensored obs.	99	156	159	163	186	94	33	116	85	81	70	38

Note:All regressions Include time dummies and constants (results are not shown).***,**,*,respectively show significance at 1, 5 and 10 per cent confidence level, where Standard errors in parentheses are clustered at country level. As Education aid does not flow from each source to every recipient so that's why we have different number of uncensored observations.

3.5.5 Multilateral Donor's Specific results

In the case of multilateral donors, both the World Bank and the UN consider the needs of the recipients while allocating education aid. The World Bank is the most responsive donor in the education aid donors' community, as one per cent increase in the need of a recipient country leads to 1.36 per cent more per capita education aid from the World Bank to that particular recipient in the following year (See column 1 of table 3.11). The World Bank also has positive and significant beta coefficients for the GDP per capita,[43] and to the volume of total aid, where as for UN all of the three need coefficients are negative but none of them is significant at any prevailing level of significance. The responsiveness of need in Africa is higher by the UN than that of the World Bank and for non-African countries it is vice versa. Both major multilateral donors are more responsive to the general needs (here proxied as the GDP per capita) of the recipient countries in outside Africa than poor African recipients. The UN is more focused on small countries (in terms of population) than the World Bank, where the situation is reverse.

3.5.6 Robustness Checks:

Our results are robust to our sensitivity checks.[44] In table 3.12 we dig deeper into the relationship between the education needs of recipient countries and education aid. We consider four alternative measures of educational needs and test their performance as predictors of education aid from all donors. In all regressions we control for the earlier used control variables.

As it emerges, the results are less clear-cut than previously thought. Table 3.12 use gross primary and secondary enrolment rates, net primary enrolment rates and primary completion

[43]The coefficient for GDP per capita is negative for rest of our different specification e.g. during and after the Cold War and so forth.

[44]We run different sets of robustness tests by employing (i) alternative measures of need and (ii) alternative specifications (a. 5 years averages instead of Annual observations and b. OLS instead of Tobit econometric specification (iii) Inclusion of Military expenditures percentage of GDP as a proxy for donor interest (iv) For individual donor analysis inclusion of Common Religion and official language as proxies of their interests).

Table 3.11: Multilateral Donor-Specific Results, Dependent variable: Log of Education aid per capita (1973-2007)

Sample[a]	**A**		**B**		**C**		**D**		**E**		**F**		**G**		**H**	
Donor[b]	WB	UN	WB	UN	WB	UN	WB	UN	WB	UN	WB	UN	WB	UN	WB	UN
Education Index	-1.36*	-0.03	-0.43	-0.01	0.15		0.14	-0.03	-0.48	-0.03	0.34	-0.03	-1.63	0.00	-0.45	-0.04
	(0.57)	(0.02)	(0.34)	(0.02)	(0.76)		(0.33)	(0.02)	(0.34)	(0.02)	(0.30)	(0.02)	(0.90)	(0.02)	(0.40)	(0.03)
GDP per capita	0.63*	-0.01	3.58	-0.03	-1.90**		-0.29	-0.01	-0.39	-0.01	-0.30*	-0.01	-0.81*	-0.02*	-0.45	-0.01
	(0.27)	(0.01)	(1.90)	(0.07)	(0.72)		(0.16)	(0.01)	(0.20)	(0.01)	(0.14)	(0.01)	(0.37)	(0.01)	(0.28)	(0.01)
Total Aid	0.43*	-0.01	0.36**	-0.01	0.41		0.23*	-0.01	0.33**	-0.00	0.13	-0.01	-0.06	-0.01	0.62***	-0.01
	(0.20)	(0.01)	(0.13)	(0.01)	(0.34)		(0.11)	(0.01)	(0.12)	(0.01)	(0.10)	(0.01)	(0.15)	(0.01)	(0.17)	(0.01)
GDP Growth	0.02	0.00	0.01	0.00	0.04		0.01	0.00	0.01	0.00	0.01	-0.01*	0.03	0.00	0.02	-0.01
	(0.01)	(0.00)	(0.01)	(0.00)	(0.03)		(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.02)	(0.00)	(0.01)	(0.01)
Democracy	-0.04	0.00	-0.01	0.00	-0.21		0.05	0.00	-0.01	0.00	0.03	0.00	0.04	0.01	0.02	-0.01
	(0.05)	(0.01)	(0.04)	(0.01)	(0.16)		(0.03)	(0.01)	(0.04)	(0.00)	(0.03)	(0.01)	(0.06)	(0.01)	(0.05)	(0.01)
Openness	-0.01	0.00	-0.01*	0.00	0.00		-0.01**	0.00	-0.01*	0.00	-0.01**	0.00	-0.02*	0.00	-0.01	0.00
	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)		(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
Conference	-0.16	0.01	-0.19	0.01	-0.01		0.28	0.01	-0.17	0.01	-0.25	0.24	0.13	0.00	0.07	-0.02
	(0.40)	(17)	(0.34)	(15)	(1.1)		(0.27)	(13)	(0.34)	(17)	(0.21)	(6.9)	(0.59)	(4.3)	(0.39)	(22.7)
Population	1.40***	-0.01	-2.14	-0.05	-0.23		0.13	-0.01	0.13	-0.01	0.05	-0.01***	-0.27	-0.01	0.22	-0.02*
	(0.23)	(0.01)	(1.17)	(0.05)	(0.29)		(0.09)	(0.01)	(0.10)	(0.01)	(0.07)	(0.01)	(0.16)	(0.01)	(0.14)	(0.01)
Christian	0.02	0.00	0.01	0.00	0.01		0.00	0.00	0.00	0.00	-0.01	0.00	-0.01	0.00	0.01	0.01
	(0.02)	(0.00)	(0.01)	(0.00)	(0.02)		(0.00)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)
Muslim	-0.01	0.00	-0.01	0.00	0.01		-0.00	0.00	-0.01	0.00	0.00	0.00	-0.01	0.00	-0.01	0.01
	(0.02)	(0.00)	(0.01)	(0.00)	(0.02)		(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)
GDP per capita Square			-0.28*	0.01												
			(0.13)	(0.01)												
Population Square			0.07	0.01												
			(0.04)	(0.00)												
Uncensored obs	180	157	180	157	54		126	157	180	157	85	146	37	57	143	100

Note:All regressions Include time dummies and constants (results are not shown). As Education aid does not flow from each source to every recipient so that's why we have different number of uncensored observations. Standard errors are in parentheses. ***,**,* indicates significance at 1, 5 and 10 per cent levels respectively.

a]A= Main results; B= Population and Income Bias; C= Cold War; D= After Cold War; E=1991-2001; F= After 9/11; G= African Recipients; H= Non-African Recipients

b]WB= The World Bank; UN= United Nations

rates as indicators of educational need. In almost all cases for gross primary and secondary school enrolment ratios there is a statistically significant relationship between these variables and education aid, with an elasticity varying between -0.14 and -0.56. For the remaining education indicators, however, the relationship becomes much weaker and loses statistical significance.

A potential interpretation of these results may rely on the fact that gross enrolment ratios are well-known measures of educational achievement that have been available for a much longer period than the other measures we consider (it should be recalled that the Education Development Index combines gross enrolment and literacy rates). Donors may have decided to target their education aid using these measures early on, and failed to update their processes once other measures became available. We may also speculate that enrolment ratios offer a more achievable goal for the donors' efforts. A higher enrolment ratio may be achieved simply by having more children attend school, whereas increasing completion rates requires that children actually pass their courses.

We conclude that at the aggregate level education aid is reasonably targeted towards countries with more educational needs as indicated by measures of coverage such as gross enrolment ratios. More quality-related measures such as completion rates or indeed net enrolment rates, do not appear to be related to education aid flows. This may be an area for improvement in the future. Finally, table 3.12 reports results for the rest of our control variables that are in line with those obtained in table 3.6. Population always has a negative effect on education aid per capita, GDP per capita has either no effect or a negative effect, and democracy, openness and religion maintain the signs obtained in our previous regressions but tend to lose statistical significance.

As an additional proxy for the donors self interest, the inclusion of recipient's Military expenditures as a percentage of GDP does not effect our results for the multilateral donors, whereas for the total all and all bilateral donors democracy and being Muslim becomes a positive and significant merit of the recipient countries. Whereas the rest of the explanatory variables behave almost in the same manner.(see table 3.13).

Table 3.12: Robustness Tests (Alternative measures of need), Dependent variable: Log of Education aid per capita (1973-2007)

Education Need	**Gross Primary Sch. Enr.**			**Gross Secondary Sch. Enr.**			**Net Primary Sch. Enr.**			**Primary Completion rate**		
Donor	All	Bilat.	Multi.	All	Bilat.	Multi.	All	Bilat.	Multi.	All	Bilat.	Multi.
Edu. Need	-0.293**	-0.139	-0.440**	-0.204**	-0.137*	-0.229*	-0.144	-0.041	-0.562*	-0.13	-0.08	-0.238
	(0.105)	(0.091)	(0.163)	(0.068)	(0.062)	(0.106)	(0.166)	(0.147)	(0.254)	(0.090)	(0.081)	(0.134)
GDP per capita	0.031	0.082	-0.348***	0.044	0.086	-0.317**	-0.027	0.041	-0.244*	-0.003	0.060	-0.298**
	(0.058)	(0.051)	(0.086)	(0.067)	(0.059)	(0.107)	(0.075)	(0.069)	(0.114)	(0.071)	(0.066)	(0.104)
Total Aid	0.156***	0.128***	0.150**	0.140***	0.122***	0.101	0.138***	0.133***	0.083	0.131***	0.120***	0.097
	(0.025)	(0.021)	(0.052)	(0.027)	(0.023)	(0.056)	(0.034)	(0.029)	(0.067)	(0.032)	(0.027)	(0.062)
GDP Growth	0.003	0.002	0.005	0.001	0.000	0.004	0.000	0.000	-0.002	0.002	0.001	0.001
	(0.003)	(0.002)	(0.006)	(0.003)	(0.002)	(0.006)	(0.004)	(0.003)	(0.007)	(0.003)	(0.003)	(0.007)
Democracy	-0.001	0.007	-0.002	0.010	0.016	0.008	0.028	0.026	0.019	0.023	0.028*	0.027
	(0.012)	(0.010)	(0.020)	(0.013)	(0.011)	(0.022)	(0.016)	(0.014)	(0.024)	(0.014)	(0.012)	(0.021)
Openness	0.000	0.000	-0.001	-0.001	0.000	-0.001	-0.002	-0.001	-0.003	-0.002	0.000	-0.003
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
Conference	0.015	0.045	-0.158	0.082	-0.129	0.119	-0.062	-0.062	-0.247	0.020	-0.103	0.490*
	(0.093)	(0.075)	(0.169)	(0.103)	(0.083)	(0.209)	(0.143)	(0.123)	(0.245)	(0.116)	(0.093)	(0.249)
Population	-0.089*	-0.059	-0.079	-0.131***	-0.071*	-0.156**	-0.143***	-0.091*	-0.144*	-0.144***	-0.075	-0.168**
	(0.036)	(0.036)	(0.048)	(0.035)	(0.035)	(0.053)	(0.042)	(0.041)	(0.058)	(0.039)	(0.040)	(0.053)
Christian	0.004	0.004	0.004	0.003	0.003	0.003	0.005	0.006	0.000	0.005	0.005	0.002
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)
Muslim	0.002	0.003	-0.001	0.002	0.003	-0.001	0.005	0.006*	-0.002	0.004	0.005	-0.003
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.004)	(0.002)	(0.003)	(0.003)
Uncensored obs.	1170	1111	447	991	941	362	666	646	258	836	789	323

Note:The number of observations is sometimes considerably smaller due to missing data for specific indicators of need. All regressions Include time dummies and constants (results are not shown). As Education aid does not flow from each source to every recipient so that's why we have different number of uncensored observations. Standard errors are in parentheses. ***,**,* significance at 1, 5 and 10 per cent levels.

At individual donor analysis, along with recipient's Military expenditures as a percentage of GDP we included common religion and official language as our additional explanatory variables. The inclusion of these extra variables by and large does not effect our main results. USA is the only country which rewards high military expenditures positively and significantly whereas France is the only one which promote its official language and religion significantly.[45] (see table 3.14).

Table 3.13: Robustness Tests (Military Expenditures), Dependent variable: Log of Education aid per capita (1973-2007)

	Main Results			**Inertia Effect**		
Donors	All	Bilateral	Multilateral	All	Bilateral	Multilateral
Education Index	-0.227	0.011	-0.505*	-0.166	-0.050	-0.486*
	(0.149)	(0.138)	(0.215)	(0.120)	(0.092)	(0.212)
GDP per capita	0.074	0.049	-0.077	0.039	0.040	-0.083
	(0.073)	(0.067)	(0.106)	(0.060)	(0.046)	(0.104)
Total Aid	0.121***	0.084**	0.159**	0.090**	0.070**	0.151*
	(0.032)	(0.028)	(0.059)	(0.029)	(0.023)	(0.059)
GDP Growth	0.002	0.002	0.002	0.001	0.001	0.002
	(0.003)	(0.003)	(0.006)	(0.003)	(0.003)	(0.006)
Democracy	0.035**	0.040***	0.009	0.031**	0.028**	0.010
	(0.013)	(0.011)	(0.019)	(0.011)	(0.009)	(0.019)
Openness	-0.002	-0.002	-0.001	-0.002	-0.001	-0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
Conference	0.024	-0.102	0.321*	0.048	-0.106	-0.296
	(0.081)	(0.070)	(0.148)	(0.080)	(0.067)	(0.157)
Population	-0.113*	-0.095*	-0.014	-0.081*	-0.044	-0.014
	(0.044)	(0.041)	(0.059)	(0.034)	(0.026)	(0.057)
Christian	0.003	0.004	0.003	0.003	0.003	0.003
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)
Muslim	0.004	0.006*	-0.003	0.003	0.004*	-0.003
	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)
Military Exp.(%GDP)	0.000	0.006	0.016	0.004	0.007	0.016
	(0.016)	(0.014)	(0.026)	(0.014)	(0.011)	(0.026)
Lagged Dependant variable				0.272***	0.404***	0.064
				(0.041)	(0.042)	(0.082)
Uncensored Observations	770	752	320	770	752	320

Note: All regressions Include time dummies and constant (results are not shown) As Education aid does not flow from each source to every recipient so that's why we have different number of uncensored observations. Standard errors are in parentheses. ***,**,* indicate significance at 1, 5 and 10 per cent levels respectively.

[45] after excluding military expenditures, Spain also reward Spanish language significantly, results excluding military expenditures are not shon

Table 3.14: Robustness Tests Donor-specific Results, Dependent variable: Log of Education aid per capita (1973-2007)

Donor	**France**	**Japan**	**USA**	**UK**	**Sweden**	**Germany**	**Canada**	**Spain**	**Italy**	**Netherland**
Edu.Index	-0.164	0.062	0.185	-0.044	0.845*	0.079	0.275	0.070	-0.005	0.076
	(0.104)	(0.103)	(0.276)	(0.096)	(0.355)	(0.128)	(0.204)	(0.057)	(0.043)	(0.133)
GDP per capita	0.157**	-0.105*	0.063	-0.052	-0.380*	0.013	-0.024	-0.018	0.011	0.026
	(0.056)	(0.045)	(0.149)	(0.054)	(0.179)	(0.063)	(0.097)	(0.027)	(0.023)	(0.075)
Total Aid	0.051*	0.074**	0.091	-0.006	0.073	0.110***	0.066	0.020	0.024*	-0.038
	(0.026)	(0.027)	(0.063)	(0.030)	(0.088)	(0.031)	(0.042)	(0.016)	(0.011)	(0.032)
Conference	0.874***	-0.728	-0.438**	-0.324**	-0.179	-1.238*	-0.160	0.607	-0.066**	-0.105
	(0.124)	(43.08)	(0.148)	(0.100)	(0.113)	(0.604)	(0.090)	(37.28)	(0.022)	(0.063)
Population	-0.055	0.022	0.329**	-0.008	0.061	0.033	0.113	0.030	0.049***	-0.010
	(0.034)	(0.027)	(0.101)	(0.033)	(0.094)	(0.038)	(0.069)	(0.017)	(0.015)	(0.048)
Christian	0.004*	-0.000	0.017***	0.001	-0.008	-0.003	0.005	0.001	0.001	0.006**
	(0.002)	(0.001)	(0.005)	(0.002)	(0.005)	(0.002)	(0.004)	(0.001)	(0.001)	(0.002)
Muslim	0.004	0.003	0.013**	-0.002	-0.001	-0.003	0.004	0.001	-0.000	0.001
	(0.002)	(0.002)	(0.005)	(0.002)	(0.005)	(0.002)	(0.003)	(0.001)	(0.001)	(0.002)
Colony	-0.009		0.304	0.268***		0.135		0.052		
	(0.147)		(0.683)	(0.067)		(0.140)		(0.133)		
Distance	0.072	-0.365***	0.271	-0.029	0.257	-0.126	-0.317	-0.095*	-0.182***	0.149
	(0.085)	(0.090)	(0.419)	(0.085)	(0.332)	(0.085)	(0.299)	(0.045)	(0.029)	(0.114)
Trade	0.810***	-0.020	-0.553	0.015	-0.400	1.163**	0.569	0.146	-0.261*	1.385
	(0.218)	(0.077)	(0.478)	(0.193)	(0.360)	(0.434)	(1.033)	(0.102)	(0.111)	(0.977)
Education Aid from	0.029	-0.003	0.036	0.064**	-0.006	0.037*	0.017	0.020*	0.006	0.051*
Other Donors	(0.018)	(0.019)	(0.043)	(0.021)	(0.037)	(0.019)	(0.023)	(0.009)	(0.007)	(0.021)
Common Religion	-0.301*	0.001	0.303	-0.025	-3.603	-0.033	-0.204	0.029	0.014	-0.229
	(0.137)	(0.073)	(0.563)	(0.140)	(723.5)	(0.229)	(0.238)	(0.060)	(0.049)	(0.133)
Common Language	0.645***		-0.163	0.071			0.016		-0.166	
	(0.138)		(0.245)	(0.078)			(0.186)		(0.136)	
Military Exp.(%GDP)	0.008	-0.010	0.053*	-0.005	0.014	0.014	-0.017	-0.006	0.007	0.016
	(0.012)	(0.015)	(0.024)	(0.015)	(0.028)	(0.016)	(0.024)	(0.011)	(0.006)	(0.012)
Uncensored Observations	468	223	98	150	82	249	176	210	239	105

Note:All regressions Include time dummies and constants (results are not shown),***,**,*,respectively show significance at 1, 5 and 10 per cent level of significance. Where Standard errors are in parentheses. As Education aid does not flow from each source to every recipient so that's why we have different number of uncensored observations. For USA, Israel and Egypt Dummies results are not shown.

Table 3.15: Robustness Tests (Alternative Specifications), Dependent variable: Log of Education aid per capita

Sample	**Annual Data,Tobit Specification (Main Results)**			**Annual Data,OLS Specification**			**5 Year Average Data, Tobit Specification**		
Donors	All	Bilateral	Multilateral	All	Bilateral	Multilateral	All	Bilateral	Multilateral
Education Index	-0.360***	-0.070	-0.414**	-0.287**	-0.111	-0.112	-0.210*	-0.124	-0.152*
	(0.108)	(0.097)	(0.155)	(0.108)	(0.098)	(0.062)	(0.094)	(0.091)	(0.068)
GDP per capita	0.112*	0.067	-0.185*	0.092	0.093	-0.049	0.075	0.105*	-0.090*
	(0.057)	(0.050)	(0.090)	(0.082)	(0.074)	(0.039)	(0.053)	(0.051)	(0.041)
Total Aid	0.158***	0.110***	0.178***	0.109***	0.074***	0.037*	0.175***	0.119***	0.122***
	(0.024)	(0.020)	(0.048)	(0.020)	(0.014)	(0.016)	(0.025)	(0.024)	(0.026)
GDP Growth	0.002	0.001	0.004	0.002	0.001	0.001	0.004	0.002	0.003
	(0.002)	(0.002)	(0.004)	(0.002)	(0.001)	(0.001)	(0.004)	(0.004)	(0.004)
Democracy	0.010	0.015	0.002	0.015	0.018	0.002	0.006	0.013	0.004
	(0.010)	(0.009)	(0.017)	(0.011)	(0.011)	(0.006)	(0.011)	(0.011)	(0.009)
Openness	-0.002	-0.002	-0.001	-0.001	-0.001	-0.0002	-0.001	-0.001	0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Conference	0.012	0.188**	-0.165	0.059	0.146*	0.053			
	(0.085)	(0.066)	(0.197)	(0.086)	(0.074)	(0.086)			
Population	-0.127**	-0.103**	-0.060	-0.134***	-0.104**	-0.053**	-0.100**	-0.076*	-0.033
	(0.039)	(0.039)	(0.048)	(0.036)	(0.034)	(0.018)	(0.034)	(0.033)	(0.023)
Christian	0.005	0.004	0.005	0.005	0.004	0.001	0.004	0.004	0.003*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)
Muslim	0.002	0.003	0.00003	0.003	0.003	0.001	0.002	0.003	0.001
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)
Uncensored Observations	1244	1188	477				315	310	221

Note: All regressions Include time dummies and constant (results are not shown) As Education aid does not flow from each source to every recipient so thats why we have different number of uncensored observations. Standard errors are in parentheses. ***,**,* indicate significance at 1, 5 and 10 per cent levels respectively.

3.6 CONCLUSION

Analyses of the allocation of foreign aid are numerous in the literature but few have attempted to assess the determinants of aid to one particular sector. The present chapter fills a gap in the literature by analysing the determinants of aid to the education sector, one of the most important aid-recipient sectors in the developing world. As we have argued, it is particularly interesting to test whether donors direct this type of aid to the countries with the greatest needs in education, as opposed to simply directing all types of aids based on measures of overall economic development.

In this chapter, we performed a Tobit analysis of education aid allocation that in line with previous work, accounts for both altruistic and selfish motives on the part of donors. We first compared the allocative behaviour of all bilateral donors taken together with that of multilateral aid agencies, and then looked at ten major bilateral and two major multilateral donors individually. Empirical results based on Tobit estimates of education aid allocation for all individual donors over the study period (1973-2007) vary, as expected, quite significantly among donors.

Our results indicate that both bilateral and multilateral donors collectively respond to recipient need in their allocation of education aid, i.e. more needy countries (in terms of education development index) receive more per capita education aid.[46] On the other hand, need-oriented education aid is hardly universal at the level of individual donor's behaviour except for Japan, the World Bank and the UK (UK is significantly allocating more to the needy recipient when we proxy the recipient's education sector need by the rate of children's primary completion).[47] Surprisingly, donors (Sweden, Italy and the Netherlands etc.) that are traditionally perceived as strong promoters of development do not seem to be particularly need-oriented when we examine the extent to which their education aid matches up with recipient education sector needs, although they are allocating more to economically-poor

[46]Multilateral donors also allocate more education aid to the poor (in terms of GDP per capita) countries.
[47]Results are not shown

countries.

Similarly pronounced differences between donors are observed with respect to merit. Only some donors respond to a good policy environment in recipients, e.g. USA and Italy, which reward GDP per capita growth and democracy in the recipient countries respectively. We also found a 'bandwagon effect' in education aid allocation, i.e. when a recipient receives more education aid from one donor this may attract more from other donors too.

Previous studies on aid allocation found that foreign aid is allocated not only according to the needs and merits of the recipient country but also according to the donors' self-interest. Is education aid allocation free from donor interest? Not entirely so, as the results of the analysis here have shown. In particular, almost all donors give preference to countries that are geographically close to the donor, except for USA and France (which might be because France gives more to its former colonies which are mainly in Africa. While, USA gives more to its strategic allies which are in Asia and Middle East). Perhaps more importantly, however, and contrary to general ODA, education aid is not used to reward countries in which donors have economic export interests except for Germany only. Both in terms of magnitude and the level of significance, in education aid allocation the importance of colonial ties appears to be different for African and non-African countries, but all countries are more likely to receive aid from their former colonial masters. These findings strongly support the recent concerns of policy makers and observers that education aid is not being allocated to fulfil its primary purpose.

Comparing donors, it emerges that the two major bilateral donors, Japan and the United States, performed poorly in terms of targeting education aid to needy recipients. At the same time, our analysis qualifies previous findings on the poverty orientation of donors. France, whose income poverty orientation has often been rated as weak, took education sector specific indicators of need into account when allocating education aid. In parallel to Dollar and Levin (2006), our estimates suggest that multilateral education aid is better targeted to needy countries than bilateral education aid. The importance of selfish aid motives clearly differs between bilateral and multilateral donors.

Our empirical findings strongly underscore the need for a disaggregated analysis of aid allocation. The extent to which education aid allocation is needs-based differs significantly across donors. We have shown that need, merit and donor's self-interest factors have very different explanatory powers in the analysis of education aid allocation behaviours of different aid donors. However, it should be stressed that better targeting is a necessary, but not a sufficient condition for more effective education aid. Reinikka and Svensson (2004), for example, estimate that over the period 1991-1995, only 13 per cent of a grant the Ugandan government had received to cover primary schools' non-wage expenditures actually reached the schools.

A few policy recommendations are suggested by the above analysis. First, donors may want to explore the importance of different measures of educational needs the better to target their education aid. Quality-related measures are now widely available and should be used if relevant. Second, bilateral donors may review their allocation policies to assess if their education aid dollars are producing the best possible results. Giving preference to former colonies or closer countries may be justifiable if deemed more effective. Finally, we found that donors tend to follow the donor community in the allocation of educational aid. It is clearly desirable to ensure that this reflects successful use of aid funds and not less commendable motives.

Appendix C

Table C.1: Correlation Coefficient of Per Capita Education Aid Between Different Donors at Different Time

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
France	(1)	1											
Japan	(2)	0.32*	1										
USA	(3)	-0.22	0.33*	1									
UK	(4)	0.17	0.04	-0.10	1								
Sweden	(5)	-0.50*	-0.08	0.45*	-0.18	1							
Germany	(6)	0.59*	0.80*	0.20	0.05	-0.19	1						
Canada	(7)	0.48*	0.44*	0.15	0.22	-0.07	0.45*	1					
Spain	(8)	0.75*	0.66*	-0.09	0.25	-0.46*	0.63*	0.42*	1				
Italy	(9)	0.11	0.18	-0.07	0.102	-0.15	0.20	0.13	0.22	1			
Netherlands	(10)	0.06	0.26	0.50*	0.45*	0.12	0.22	0.34*	0.06	0.131	1		
World bank	(11)	0.44*	0.63*	0.10	0.01	0.02	0.78*	0.50*	0.47*	0.31*	0.23	1	
UN	(12)	0.54*	0.82*	0.25	0.07	-0.14	0.96*	0.47*	0.64*	0.21	0.22	0.77*	1

Note:* indicate significant at 10 percent level of significance.

Table C.2: OECD-CRS (Education Sector)Purpose Codes

DAC 3	CRS	DESCRIPTION	Clarifications / Additional notes on coverage
110		**Education**	
111		Education, level unspecified	The codes in this category are to be used only when level of education is unspecified or unknown (e.g. training of primary school teachers should be coded under 11220).
	11110	Education policy and administrative management	Education sector policy, planning and programmes; aid to education ministries, administration and management systems; institution capacity building and advice; school management and governance; curriculum and materials development; unspecified education activities.
	11120	Education facilities and training	Educational buildings, equipment, materials; subsidiary services to education (boarding facilities, staff housing); language training; colloquia, seminars, lectures, etc.
	11130	Teacher training	Teacher education (where the level of education is unspecified); in-service and pre-service training; materials development.
	11182	Educational research	Research and studies on education effectiveness, relevance and quality; systematic evaluation and monitoring.
112		**Basic Education**	
	11220	Primary education	Formal and non-formal primary education for children; all elementary and first cycle systematic instruction; provision of learning materials.
	11230	Basic life skills for youth and adults	Formal and non-formal education for basic life skills for young people and adults (adults education); literacy and numeracy training.
	11240	Early childhood education	Formal and non-formal pre-school education.
113		**Secondary education**	
	11320	Secondary education	Second cycle systematic instruction at both junior and senior levels.
	11330	Vocational training	Elementary vocational training and secondary level technical education; on-the job training; apprenticeships; including informal vocational training.
114		**Post-secondary education**	
	11420	Higher education	Degree and diploma programmes at universities, colleges and polytechnics; scholarships.
	11430	Advanced technical and managerial training	Professional-level vocational training programmes and in-service training.

Source: OECD, DAC.

Table C.3: Correlation Coefficient of Per Capita Education Aid Between Different Donors at Different Countries

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
France	(1)	1											
Japan	(2)	0.04	1										
USA	(3)	0.10	0.25*	1									
UK	(4)	0.18*	0.16*	0.06	1								
Sweden	(5)	0.00	-0.02	0.26*	0.13*	1							
Germany	(6)	0.09	-0.02	0.13*	-0.01	0.05	1						
Canada	(7)	0.28*	0.06	0.44*	0.09	0.30*	0.20*	1					
Spain	(8)	0.17*	-0.01	0.09	-0.05	0.02	0.08	0.05	1				
Italy	(9)	0.27*	-0.04	0.13*	0.00	0.07	0.14*	0.18*	0.12*	1			
Netherlands	(10)	0.03	-0.03	0.16*	-0.00	0.19*	0.05	0.25*	0.02	0.05	1		
World bank	(11)	0.32*	0.12*	0.23*	0.23*	0.12*	0.14*	0.37*	0.06	0.22*	0.08	1	
UN	(12)	0.28*	0.31*	0.19*	0.18*	0.09	0.09	0.36*	0.15*	0.26*	0.09	0.52*	1

Note:* indicate significant at 10 percent level of significance.

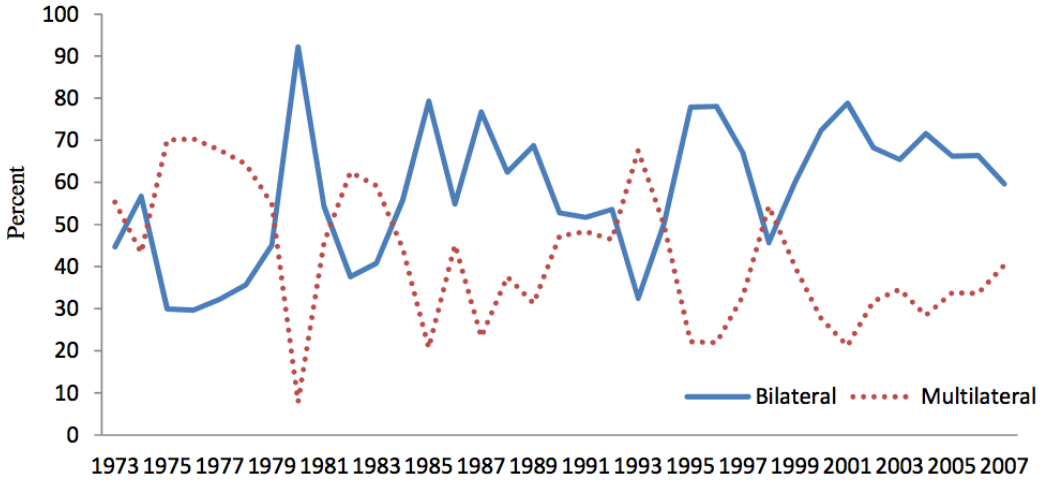


Figure C.1: Bilateral and Multilateral Donors share in Education aid (1973-2007)

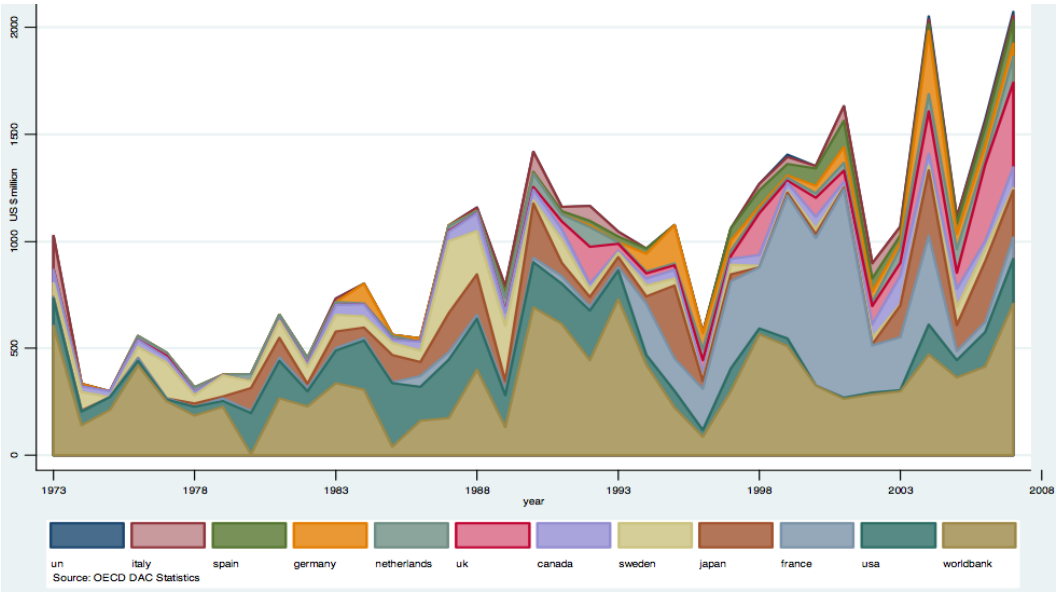


Figure C.2: Education Aid Over Time(1973-2007)

Table C.4: Xconst As A Proxy For Recipient Merit, Dependent Variable: Log of Education Aid Per Capita (1973-2007)

Donor	**All**	**Bilat.**	**Multi.**	**France**	**Japan**	**USA**	**UK**	**Sweden**	**Germany**	**Canada**	**Spain**	**Italy**	**Netherland**
Education Index	-0.381***	-0.088	-0.421**	-0.246**	0.206*	0.691**	-0.003	0.458*	-0.066	-0.017	-0.163	0.002	0.158
	(0.108)	(0.097)	(0.155)	(0.086)	(0.085)	(0.247)	(0.086)	(0.199)	(0.216)	(0.144)	(0.099)	(0.037)	(0.136)
GDP per capita	0.109	0.069	-0.201*	0.165***	-0.103**	-0.079	-0.046	-0.146	-0.144	0.031	0.038	0.015	-0.025
	(0.057)	(0.050)	(0.089)	(0.046)	(0.036)	(0.135)	(0.049)	(0.131)	(0.108)	(0.070)	(0.043)	(0.020)	(0.080)
Total Aid	0.154 ***	0.108***	0.176***	0.049*	0.084***	0.219***	-0.001	0.036	0.155***	0.134***	0.011	0.025*	-0.019
	(0.024)	(0.020)	(0.048)	(0.021)	(0.021)	(0.055)	(0.029)	(0.043)	(0.039)	(0.036)	(0.019)	(0.010)	(0.030)
GDP Growth	0.002	0.001	0.004	0.000	0.001	0.010*	-0.002	-0.001	0.003	0.003	-0.001	-0.001	-0.003
	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)	(0.005)	(0.003)	(0.004)	(0.003)	(0.003)	(0.001)	(0.001)	(0.003)
XConst	0.040*	0.036**	0.028	-0.010	0.019	0.056	-0.005	0.018	-0.008	0.021	-0.010	0.022***	0.008
	(0.017)	(0.014)	(0.028)	(0.015)	(0.012)	(0.033)	(0.016)	(0.026)	(0.030)	(0.021)	(0.014)	(0.006)	(0.019)
Openness	-0.002	-0.001	-0.001	-0.001	0.000	0.000	-0.003**	-0.004	0.002*	-0.001	0.000	0.000	-0.004*
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.000)	(0.002)
Conference	0.169*	0.186**	-0.176	0.799***	0.174*	-0.478**	0.085	-0.299*	-0.040	-0.140	-0.005	0.005	0.016
	(0.083)	(0.065)	(0.196)	(0.096)	(0.070)	(0.174)	(0.083)	(0.120)	(0.266)	(0.106)	(112.0)	(0.020)	(0.078)
Population	-0.127**	-0.104**	-0.061	-0.054	0.026	0.114	-0.006	0.093	0.415***	0.144**	0.001	0.052***	0.005
	(0.039)	(0.039)	(0.048)	(0.030)	(0.023)	(0.098)	(0.031)	(0.078)	(0.113)	(0.055)	(0.029)	(0.013)	(0.048)
Christian	0.006*	0.004	0.006	0.001	0.000	0.018**	0.002	-0.002	-0.009	0.004	0.000	0.001	0.006*
	(0.003)	(0.003)	(0.003)	(0.002)	(0.001)	(0.006)	(0.001)	(0.004)	(0.005)	(0.003)	(0.002)	(0.001)	(0.003)
Muslim	0.003	0.003	0.001	-0.001	0.002*	0.022***	-0.002	0.003	-0.013**	0.001	0.000	0.000	0.002
	(0.002)	(0.002)	(0.003)	(0.002)	(0.001)	(0.006)	(0.002)	(0.005)	(0.005)	(0.003)	(0.002)	(0.001)	(0.003)
Colony				0.578***		0.661	0.376***		0.261		1.328***		
				(0.098)		(0.776)	(0.062)		(0.359)		(0.200)		
Distance				0.024	-0.339***	0.434	-0.025	0.087	-1.296	-0.313	-0.215**	-0.180***	0.107
				(0.085)	(0.082)	(0.432)	(0.085)	(0.276)	(.)	(0.231)	(0.082)	(0.028)	(0.133)
Trade				-0.058	0.038	0.210	-0.012	0.309	0.536	-0.704	0.112	-0.306**	1.439
				(0.121)	(0.068)	(0.481)	(0.197)	(0.204)	(0.622)	(0.743)	(0.177)	(0.102)	(0.853)
Education Aid from Other Donors				0.025	0.000	0.028	0.081***	-0.008	0.018	0.025	0.016	0.006	0.058**
				(0.014)	(0.015)	(0.037)	(0.021)	(0.025)	(0.020)	(0.021)	(0.012)	(0.006)	(0.021)
Uncensored Obs.	1244	1188	477	645	285	197	167	132	272	244	244	256	132

Note: All regressions Include time dummies and constants (results are not shown),***,**,*,respectively show significance at 1, 5 and 10 per cent confidence level where Standard errors are in parentheses. As Education aid does not flow from each source to every recipient so thats why we have different number of uncensored observations.

Table C.5: Donor Specific Inertia Effect, Dependent Variable: Log of Education Aid Per Capita (1973-2007)

	France	**Japan**	**USA**	**UK**	**Sweden**	**Germany**	**Canada**	**Spain**	**Italy**	**Netherland**
Education Index	-0.204**	0.199**	0.463*	0.045	0.421*	0.261	-0.010	-0.119	0.011	0.155
	(0.079)	(0.068)	(0.181)	(0.117)	(0.196)	(0.221)	(0.144)	(0.091)	(0.033)	(0.133)
GDP per capita	0.146***	-0.098**	-0.044	-0.088	-0.161	-0.298**	0.029	0.021	0.013	-0.026
	(0.043)	(0.030)	(0.105)	(0.065)	(0.128)	(0.105)	(0.071)	(0.039)	(0.018)	(0.078)
Total Aid	0.040*	0.078***	0.166***	0.082*	0.032	0.206***	0.134***	0.011	0.024*	-0.021
	(0.019)	(0.019)	(0.047)	(0.036)	(0.042)	(0.043)	(0.036)	(0.019)	(0.010)	(0.030)
GDP Growth	0.000	0.001	0.007	-0.003	-0.001	0.004	0.003	-0.001	-0.001	-0.003
	(0.002)	(0.002)	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)	(0.001)	(0.001)	(0.003)
Democracy	-0.012	0.011	0.024	0.014	0.021	0.004	0.016	-0.003	0.011**	0.009
	(0.008)	(0.006)	(0.017)	(0.012)	(0.017)	(0.018)	(0.013)	(0.008)	(0.003)	(0.011)
Openness	-0.001	0.000	0.001	-0.002	-0.004	0.003*	-0.001	0.000	0.000	-0.004*
	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)
Conference	-0.005	0.150*	-0.317*	-1.143	-0.208	0.336**	-0.091	0.000	-0.012	0.025
	(0.082)	(0.068)	(0.156)	(38.9)	(0.119)	(0.128)	(0.103)	(49.7)	(0.020)	(0.079)
Population	-0.046	0.019	0.164*	0.072	0.091	0.398***	0.145**	0.006	0.049***	0.005
	(0.027)	(0.018)	(0.071)	(0.040)	(0.075)	(0.108)	(0.055)	(0.025)	(0.012)	(0.046)
Christian	0.001	0.000	0.011**	0.004*	-0.002	-0.007	0.004	0.000	0.001	0.005*
	(0.002)	(0.001)	(0.004)	(0.002)	(0.004)	(0.005)	(0.003)	(0.002)	(0.001)	(0.002)
Muslim	-0.001	0.002**	0.014***	0.002	0.003	-0.008	0.001	0.000	0.000	0.002
	(0.002)	(0.001)	(0.004)	(0.002)	(0.004)	(0.004)	(0.003)	(0.002)	(0.001)	(0.003)
Colony	0.508***		0.591	0.403***		0.243		1.128***		
	(0.089)		(0.482)	(0.088)		(0.327)		(0.190)		
Distance	0.013	-0.277***	0.287	0.157	0.062	-1.113	-0.310	-0.208**	-0.158***	0.112
	(0.077)	(0.060)	(0.285)	(0.122)	(0.266)	(.)	(0.230)	(0.073)	(0.025)	(0.128)
Trade	-0.053	0.082	-0.108	-0.029	0.296	0.620	-0.732	0.059	-0.274**	1.343
	(0.115)	(0.051)	(0.358)	(0.260)	(0.202)	(0.624)	(0.741)	(0.166)	(0.093)	(0.835)
Education Aid	0.022	0.012	0.011	0.048*	-0.009	0.009	0.026	0.016	0.007	0.059**
from Other Donors	(0.014)	(0.014)	(0.033)	(0.023)	(0.025)	(0.021)	(0.021)	(0.012)	(0.006)	(0.021)
Lagged Dep. Var.	0.194***	0.290***	0.773***	0.216*	0.191	0.075	-0.038	0.207*	0.229**	0.147
	(0.041)	(0.072)	(0.098)	(0.109)	(0.115)	(0.077)	(0.090)	(0.084)	(0.073)	(0.113)
Uncensored Observations	645	285	197	167	132	272	244	244	256	132

Note:All regressions Include time dummies and constants (results are not shown),***,**,*,respectively show significance at 1, 5 and 10 per cent confidence level where Standard errors are in parentheses. As Education aid does not flow from each source to every recipient so thats why we have different number of uncensored observations.

Table C.6: Variables;List, Defination, Expected Sign, and Source

Variable	Definition	Expected Sign	Source
Education development index	Education Development Index is measured by the adult literacy rate (with two-thirds weighting) and the combined primary, secondary, and tertiary gross enrollment ratio (with one-third weighting). (UNDP)	-	UNDP
GDP per capita (PPP)	GDP per capita is gross domestic product divided by midyear population.	- /+	WDI (2010)
GDP per capita growth	Annual percentage growth rate of GDP per capita based on constant local currency.	-/+	WDI (2010)
Democracy	We have measured democracy using The Polity IV dataset. The Polity IV democracy measure ranges from 0 (least democratic) to 10 (most democratic).	+	Polity IV
Gross primary (Secondary) school enrolment ratio	Gross enrolment ratio is the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Primary education provides children with basic reading, writing, and mathematics skills along with an elementary understanding of such subjects as history, geography, natural science, social science, art, and music.	-	WDI (2010)
Net primary school enrolment ratio	Net enrollment ratio is the ratio of children of official school age based on the International Standard Classification of Education 1997 who are enrolled in school to the population of the corresponding official school age. Primary education provides children with basic reading, writing, and mathematics skills along with an elementary understanding of such subjects as history, geography, natural science, social science, art, and music.	-	WDI (2010)
Primary completion rate	Primary completion rate is the percentage of students completing the last year of primary school. It is calculated by taking the total number of students in the last grade of primary school, minus the number of repeaters in that grade, divided by the total number of children of official graduation age.	-	WDI (2010)
Repeaters in primary school	Repeaters in primary school are the number of students enrolled in the same grade as in the previous year, as a percentage of all students enrolled in primary school.	+	WDI (2010)
Repeaters in secondary school	Repeaters in secondary school are the number of students enrolled in the same grade as in the previous year, as a percentage of all students enrolled in secondary school.	+	WDI (2010)
Children out of school	Children out of school are the number of primary-school-age children not enrolled in primary or secondary school.	+	WDI (2010)

Table C.6: Variables;List, Defination, Expected Sign, and Source (continued)

Variable	Definition	Expected Sign	Source
Openness	Openness is the sum of exports and imports in relation to GDP.	+	Penn World Tables.
Population	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship–except for refugees not permanently settled in the country of asylum, which are generally considered part of the population of their country of origin. The values shown are midyear estimates.	+	WDI (2010)
Christian	Per cent Population of total having Christian religion	+	CIA Fact Book
Muslim	Per cent Population of total having Muslim religion	+	CIA Fact Book
Distance	It is the geographical distance between the donor and the recipient country capital.	-	
Trade	Trade between donor state and the recipient as a percentage of the donor GDP.	+	IMF
Aid from other donors	Per capita education aid commitments from other donors.	+	DAC(2010)
Colony	A dummy variable, taking on a value of 1 if the recipient was at some point that donors colony and 0 otherwise.	+	
Total Aid	Total aid commitments minus total education aid commitments received from the whole donors (in Per capita).	+	DAC(2010)
Opportunism (Conference)	A dummy variable that takes on the value of zero before 1990, has the value of one in the year 1990, and has the value of minus one for the remaining three years in our sample period.	+	
Education Aid commitments	Per capita Education aid commitments received from the donor.		DAC(2010)
Education Aid from other donors	Per capita Education aid commitments received from other donor.	+	DAC(2010)
XConst	According to Polity IV users Manual this variable refers to the extent of institutionalized constraints on the decision making powers of chief executives, whether individuals or collectivities. Such limitations may be imposed by any accountability groups. In Western democracies these are usually legislatures. The concern is with the checks and balances	+	Polity IV.

Chapter 4

Determinants of Education Aid Effort

4.1 INTRODUCTION

Most studies on the ODA donor's behaviour have concentrated on the aid-allocation issue how and why donors share a more or less predetermined volume of bilateral aid among recipients (e.g. Alesina and Dollar, 2000; McGillivray and Oczkowski, 1992), yet little is written on the determinants of the total volume of aid that a donor country makes available to recipients at overall and at sectoral level. The few studies on aid effort primarily focus on issues such as the measurement and definition of the concept of aid supply.[1]

Recent economic and technological developments have markedly affected the aid business. On the one hand, improved awareness raises pressure on donor governments to increase the aid supply for altruistic reasons (Bertoli et al., 2008). At the same time, the persistent rise in the interdependence of donors has decreased the importance of aid to them.[2] Besides economic factors, several other factors also help to explain variations in aid effort across donors; these include cultural characteristics, national identities, domestic political institutions, great power status, and the existence of a domestic welfare state within the donor country (Ahmed et al. 2011). Accounting for these country-specific characteristics will helps to explain why some donors have a higher level of education aid effort than others (See figure 4.1 for a ready reference). Are there any specific determinants of education aid effort that operate across all

[1] In this chapter, the terms aid effort and aid supply will be used interchangeably.

[2] With continued growth in trade, outsourcing, FDI and migration, many developed countries now attach to foreign aid a supportive role in the pursuit of their commercial and strategic objectives (Bertoli et al., 2008). In this regard, the trends in key international financial transactions confirm the declining importance of official aid to developing countries and the steady rise of FDI and official remittances (see figure D.1 in Appendix-D).

(or most of the) donor governments? In this chapter, we answer this question and show what determines education aid effort. In addition, we identify the patterns that are apparent across donor countries.

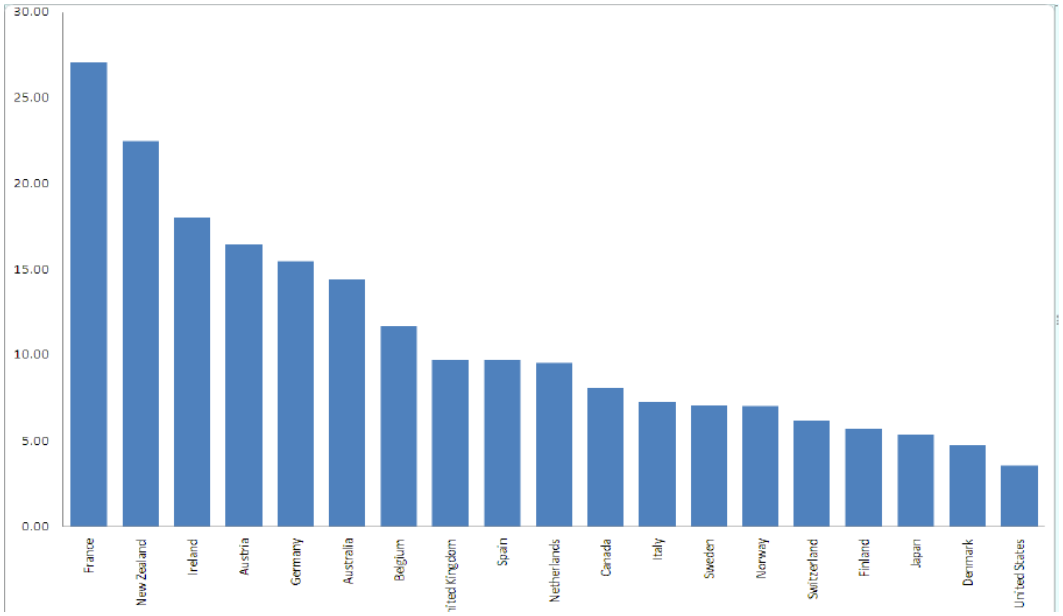


Figure 4.1: Average Education Aid Effort During 1973-2007 By DAC Donors.

In addition to a donor country's own education sector, we investigate the role that domestic political and economic variables play in determining the education aid effort. In line with EFA World Conferences in 1990 and 2000 and education specific UN Millennium Development Goal (MDG 2), donors have formally taken up the obligation financially to support developing countries' efforts in the area (Michaelowa and Weber, 2007). Even before EEA conferences held in 1990 and 2000, education has remained an important area of development cooperation between donors and aid recipient countries. However, given today's stronger focus and the introduction of measurable international targets, the question of the donor's education aid efforts or supply has become more important. The result of the analysis will help us to identify the factors that affect education aid effectiveness and allocation.[3] Donors determine the quality and quantity of aid available to recipients; therefore,

[3]Discussions about education aid effectiveness would benefit from a firmer understanding of donors' domestic political and economic environments. For instance, changes in the power of a donor country's political parties might lead to changes in foreign aid priority and hence aid volatility, which has been linked to negative growth effects (Arellano et al., 2009; Bulir and Hamann, 2003; among others). The stability and predictability of external assistance in education is crucial if countries are to take on recurrent expenditures (such as hiring

an explanation of why education aid effort varies among donors at any given time and, for a particular donor, in different periods, can offer an understanding of the reasons affecting the nature and volume of education aid. Furthermore, such an explanation might also helps to improve conditions in the existing nature and volume of education aid. These are the motivations behind the present study, which aims to identify the factors (sectoral, political and economic) that have shaped the education aid efforts of the member countries of the DAC of the OECD between 1973 and 2007.

The rest of the chapter is organised as follows. Section 4.2 reviews the scant existing literature on the determinants of the aid effort level of the donors. Section 4.3 describe and discusses the data used in the study, while section 4.4 presents the econometric model and the relationships that are expected among the variables. The empirical results and their interpretation are provided in section 4.5, and section 4.6 concludes the chapter.

4.2 LITERATURE REVIEW

Most of the empirical research on aid has focused either on its impact, allocation among poor countries and sectors, or the policies needed to enhance its effectiveness (Burnside and Dollar, 2000).[4] The first stream of the literature assesses the effectiveness of the aid. Particularly, it addresses whether aid promotes growth and helps alleviate poverty. That is, most of the effectiveness literature has focused on broad questions of aggregate aid and its relationship with economic growth.[5] Contrary to these studies, Findley et al. (2010) suggest that sectoral evaluations are necessary to obtain more accurate evaluations of aid effectiveness.

The second stream of the literature evaluates the role of altruistic or strategic consideration in the determination of aid flows. Since McKinlay and Little (1977) empirical literature

of additional teachers) that are not easily compressed if external support fluctuates.

[4]Douccouliagos and Paldam (2007) divide general aid literature into two categories: (a) aid effectiveness and (b) aid allocation.

[5]Doucouliagos and Paldam (2008) found that 68 out of 100 empirical studies on the aid effectiveness provided comparable estimates of the effect of aid on growth.

has examined the determinants of general (overall) aid allocation, and concludes that donors give more attention to their political, economic and strategic interests in their inter-country aid allocation decisions.[6] Recent empirical work confirms that the foreign policy goals of the donor continue to be the most important motive behind aid allocation (e.g. Alesina and Dollar, 2000; Burnside and Dollar, 2000; Neumayer, 2003a).

A third group of aid analyses focuses on the determinants of the "supply of aid" or "aid effort" in donor countries. Generally, little attention is given to the amount of development assistance that governments provide, what factors determine the overall size of a donor's aid budget and what causes a donor to change its level of aid effort.[7]

Our study belongs to the third version of the research stream. As for as we are aware, few limited studies have focused on the supply side determinants of aid flows from the donor country's perspective (that is, the determinants of "aid effort - supply - generosity").[8] However, not a single study has focused on the donor's aid effort at sectoral level. (See table 4.1).

Round and Odedokun (2004), over the period 1970-2000, found that donor's per capita GDP, peer pressure and government and military expenditures favourably affected their aid effort. However, for the period 1980-2000, Faini (2006) found that budget deficit and public debt had a negative impact on the aid-to-GDP ratio. To analyse the influence of changes in donor's political and economic variables on their aid effort, Tingley (2010) used a time-series cross-sectional data set and concluded that, as governments become more conservative, their aid effort is likely to fall. Tingley (2010) results leads us to understand that changes in domestic political ideology through regularly occurring elections could introduce changes in aid levels, which in turn create volatility in aid.[9]

[6]See McGillivray 2004 for a comprehensive discussion on this issue.

[7]In aid effectiveness and allocation empirical studies, the donors' total aid budget is taken as given (Faini, 2006), which can be the one of the main reasons for the unexplored determinants of the total aid budget of a donor country.

[8]Beenstock, 1980; Round and Odedokun, 2004; Faini, 2006; Chong and Gradstein, 2008; Bertoli et al., 2008; Dang et al., 2009; Mendoza et al., 2009; Mold et al., 2010; Tingley, 2010 and Jones, 2011.

[9]Aid volatility is not good because it affects recipient's macroeconomic variables(inflation, real exchange rates etc.) in ways that can have adverse effects on their fiscal balances and growth etc. at general, where in our case i.e. in case of the education sector, The stability and predictability of external assistance is crucial

Table 4.1: Summary of Literature Review on Donors Aid Effort

Study	Dependant Variable	Political	Economic	Control	Method
Beenstock, M. (1980)	ODA and ODA as a fraction of donors GNP and population		Budget Surplus, Balance of payments, Unemployment	Population, GNP	multiple-regression techniques
Jeffery. Round (2004)	Aid as a fraction of donors GDP	Ideological orientation of gov., Polarization within the gov. itself	per capita income, GDP growth rate, total gov. spending % of GDP, Peer pressure	Country size (total population), military interests, Cold War	OLS fixed effect method
Faini, R. (2006).	Aid as a fraction of donors GDP	political ideology	Fiscal Deficit, Stock of Debt, Per capita income	Lagged Aid effort, Output gap, Cold War	OLS fixed effect method
Bertoli et al (2008).	Aid (Excluding debt cancellation) as a fraction of donors GDP	political ideology	Debt cancellation, Per capita income, Trade Balance, Government revenue, Peer Effect, Output Gap	Lagged Aid effort, Population, Population in former colonies, Migrants	OLS Fixed Effect
Mendoza et al. (2009).	Aid as a fraction of donors GDP	political ideology	Per capita income, Tax Revenue, Misery Index		OLS
Tingley, D. (2010)	(Commitments /nominal GDP)*100	Ideology (economic) of political parties, generosity	Trade Openness, real GDP growth rate	Cold war	OLS first differences and FE specifications
Mold et al. (2010).	Aid as a fraction of donors GDP		GDP Growth, Fiscal Balance	Lagged Aid effort, Share of World GDP, Military expenditure	System GMM
Hai-Anh Dang (2009)	log of net ODA disbursements	Inequality, Corruption, political ideology	Banking crisis, Fiscal budget surplus, unemployment, Inflation, Trade Openness	per capita income, total population	OLS fixed effect method
Jones, S. (2011). RE and GMM	Aid as a fraction of donors GDP	Democracies	Gov. Spending, Gov. Saving, Inflation, Unemployment, Banking Crisis	Population	OLS FE

In general, aid effort literature has focused on two broad categories, i.e. political and economic factors. The literature on the role of donor country politics in aid allocation decisions is relatively small and predominantly in the field of political science. The existing literature offers empirical evidence that as governments become more conservative they decrease their aid effort.[10]

Many researchers have found that economic factors such as, increases in trade levels and improvements in fiscal balance have a positive effect, while cumulative stock of public debt has a negative effects on donors' aid effort (Faini, 2006).[11] In an earlier study, Beenstock (1980) found evidence that, among other factors (e.g. unemployment and population level), aid flows are negatively and significantly affected by the net budget surplus, whereas they are positively affected by the balance-of-payments and the GNP of the donor countries. In contrast, Round and Odedukun (2004) claim that donor countries' fiscal balance does not have any discernible effect, although they found that, as their real per capita income increases, so does their aid effort. In a larger time-series cross-sectional study, Tingley (2010) found no evidence that GDP growth influenced aid effort. Focusing on the USA's aid efforts over the 1967-2007 periods, Mendoza et al. (2009) provided evidence that among other regressors, tax revenues do not affect USA aid significantly. Chong and Gradstein (2008) evaluated a sample of twenty-two countries using fixed effects panel data and the Arellano-Bond dynamic estimator technique for the period 1973-2002, finding that an increase in tax revenue increases donor countries' aid effort.

Dang et al. (2009) examined the effect of the banking crisis on donor countries' ability to provide aid.[12] They argued that banking crises lead to the accumulation of public debt and hence reduce aid flows (Faini's 2006 empirical study further supports this argument).

if countries are to take on recurrent expenditures (such as hiring of additional teachers) that are not easily compressed if external support (i.e. education aid) fluctuates.

[10]Many studies have found that liberal governments are more likely to support foreign aid than conservative governments (Chong and Gradstein, 2008; Milner and Tingley, 2010; Tingley, 2010). In contrast, some cross-national time-series studies found that conservative governments spend more on foreign aid (Round and Odedukun, 2004; Bertoli et al., 2008), while Dang et al. (2009) found that political orientation has no significant effect on aid effort.

[11]Primarily concerned with Italian aid performance, Bertoli et al. (2008) find similar results.

[12]They theorise that as these crises place high demands on the public sector, they are more likely to reduce the aid budget than other types of recessions or economic slowdowns.

They further showed that after a banking crisis, aid flows declined by twenty per cent over the decade. They also found evidence that other measures of economic health, including employment, have an effect on aid budgets. Jones (2011) also examined the changes in donors' aid efforts in response to their domestic banking crises. Using an Engle and Granger two-step with fixed effects, he found that aid efforts were positively associated with government savings and government expenditures.

Existing literature on aid efforts suggests that both political and economic factors influence donors' aid efforts. As stated earlier, we do not have a fully specified theory of aid effort in sectoral aid; we believe that any convincing explanation of the education aid effort must take into account economic, political and factors describing the donor's own education sector (inputs, outputs, efficiency, etc.).

4.3 DATA

Our analysis covers 19 donor countries for the period 1973-2007 (for a list, see table D.1 in Appendix-D). For rest of the OECD DAC member countries (Luxembourg, Greece and Portugal), we had significantly shorter panels, though our results do not change if they are included. We omitted several new donors that began reporting aid data to the DAC only in the late-1990s.[13]

The dependent variable, education aid effort, comes from the on-line OECD/DAC database (aid commitments, table 3a), where in a given year education aid effort is a donor's education aid commitments divided by the donor country's total aid commitments and then multiplied by 100 for ease of presentation.

To construct indicators for conservative/liberal executive the political ideology of donor governments, we use data from the World Bank's Database of Political Institutions that is

[13]Education aid is also delivered by non-DAC donors (e.g. China, Turkey, UAE and Saudi Arabia among many others). Data about these countries are however scant, thats why non-DAC donors were excluded from the analysis.

available on-line and is described in Beck et al. (2001). With this, we have also used the measures of government ideological orientation constructed by Tingley (2010).[14]

The "peer pressure" factor, defined as the combined education aid effort of all other donors except for the one being examined, consists of the education aid commitments of all other donors expressed as a fraction of their total aid commitments. Where whole aid effort defined as the whole aid commitments divided by the donor's own GDP. Per capita income is the ratio of GDP to total population. Government size is measured by the government expenditure-to-GDP ratio.[15] Fiscal surplus includes grants, subsidy transfers and other current transfers of the central government. The data on all these variables came from the World Bank's World Development Indicators 2010, except the data on the ODA, which are from the OECD's International Development Statistics (IDS, on-line). The data on the ratios of military expenditure to national income are taken from World Bank. Table D.2 in Appendix-D, provides a detailed list of variables and sources for the data used in this chapter.

Figure 4.2 shows the education aid effort ratio of the donor countries. It is evident from the figure that Finland, the Netherlands and Norway are the only donor countries whose aid effort in the education sector, have persistently risen since early 1990s.[16] On the other hand, France, Ireland, Italy, New Zealand, Sweden and Switzerland exhibit a continued decline in their education aid effort over the time. The rest of the donors do not exhibit a continued pattern in their education aid effort levels.

France, Germany Ireland, the Netherlands and New Zealand are the donors who have always outperformed the average education aid effort level in the education sector. Countries like Denmark, Finland, Italy, Sweden and USA are behind the average education aid effort level over the given study period. Finland and Japan have improved a lot and have substantially increased their education aid effort over the given period. On average the decade of

[14]Using a common underlying data source: the Comparative Manifestos Project (CMP), the CMP-coded party manifestos for every donor country election on a number of fields, each based on several components-the focus is on the economic field because this most directly captures the economic concept of ideology, i.e., the role of the government in the economy.

[15]To Avoid double counting, we first subtracted the military spending from the total government spending.

[16]There is a sharp decline in Finland's aid effort after 2004.

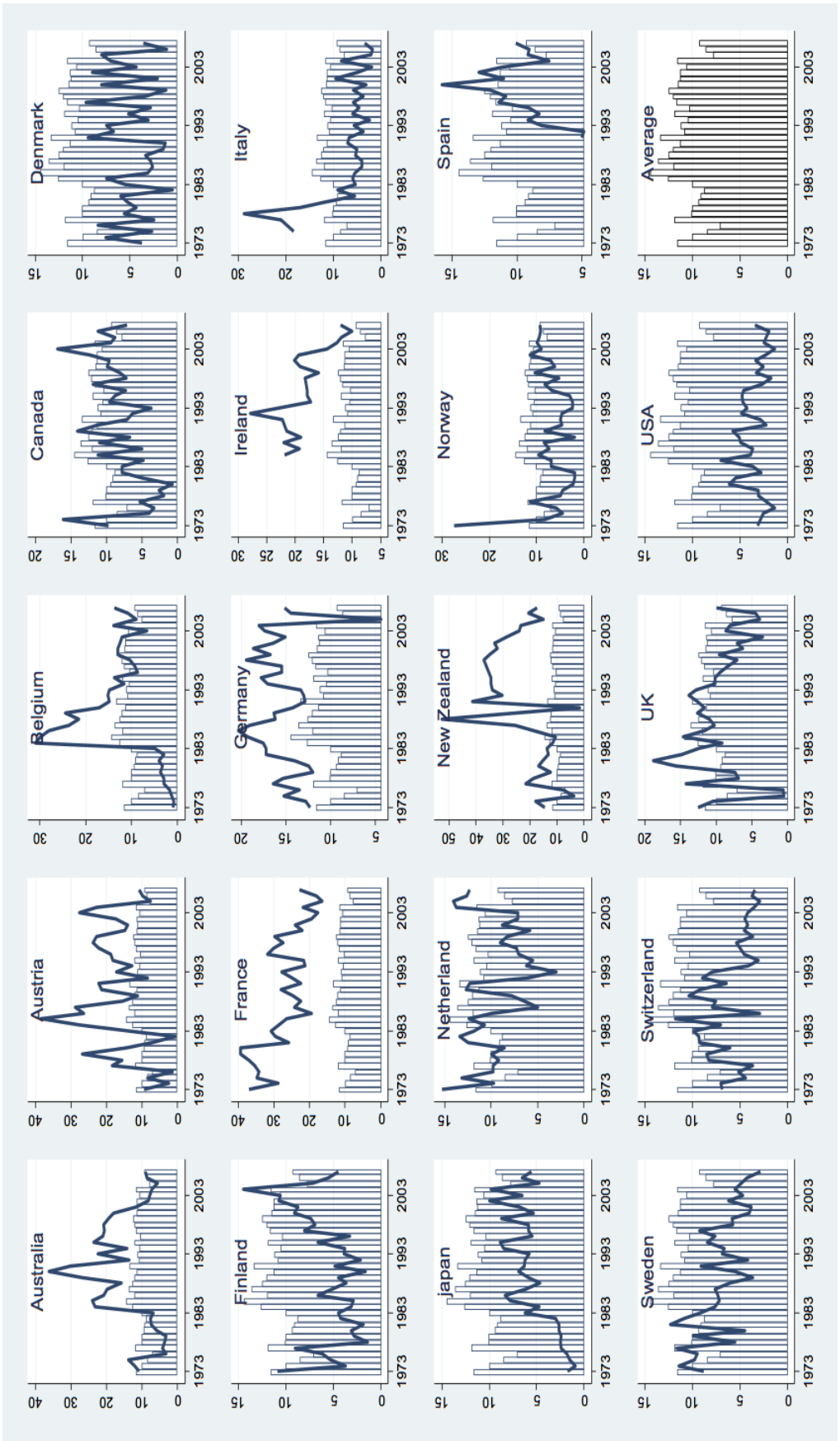


Figure 4.2: Donors Education Aid Effort Over the Time (1973-2007).

1990s exhibit a very low average education aid effort level. However, it started increasing after 9/11. For the entire period; Austria, France, Ireland and New Zealand are the most generous and Denmark, Japan and USA are at other extreme. It is also noticeable that, at any point of the study time span, except France and Germany[17] economically powerful countries in the G7 are putting less effort than that of the average education aid effort of the all donors included in the sample. No doubt, these wide temporal variations in education aid effort by each donor country and across donor countries deserve more investigation.

Table D.3 (in the Appendix-D) provides the descriptive statistics (number of observations, average, standard deviation and minimum and maximum of the variables used in the regression analysis). It is evident from the table that in most cases the variables show considerable variations, a fact that should improve the estimates of the parameters. The correlation matrix of these variables is presented in the Appendix-D in table D.4

4.4 MODEL

While reference to aid effort in education sector pervades the literature on aid, there has been scarcely any study, neither theoretical nor empirical, on its determinants from a donor perspective. So, we have few previous theoretical frameworks or empirical findings- on whole aid- to rely on for identifying and testing possible education aid effort determinants. We are guided, instead, by economic logic and casual references in the literature (e.g., to factors such as donor countries' budgetary situations and their performance and financing in education sector at home etc.). Using this approach, we test for the effects of the range of factors that are discussed below. For convenience, we classify these factors into three broader categories namely political, non-political and sectoral ones.

In this chapter, we use education aid supply (or effort) as the dependent variable and is defined, as the aggregate amount of foreign aid to the education sector that a donor country

[17]France is also narrowing its gap with the average donor's behaviour over the time, where Germany remained slightly above the average behaviour over the time.

provides in a given year, divided by its total aid commitments and then multiplied by 100 for ease of presentation.

In calculating education aid effort, we have chosen to focus on education aid commitments rather than disbursements, as we intend to explain that along with sectoral prioritization what influences the political and economic process underlying donors' education aid efforts. Commitments are the output of that political process and, therefore, are an appropriate measure for this study. Commitment data for all donors has been converted and deflated to constant 2008 U.S. dollars.

4.4.1 Non-political Factors In Donor Countries

To explain changes in the donor's education aid efforts we focus on economic factors that are more politically salient.[18] Meernik and Oldmixon (2004) argue that U.S. Congressional support for "cooperative internationalism" is sensitive to domestic economic conditions because legislators are sensitive to the domestic political priorities of their constituents.[19] Regardless of location, rising unemployment and falling wages can be expected to increased demand for domestic welfare spending, which creates stronger incentives to enact policies that serve their constituents, even if it contradicts their previous promises and comes at the expense of poor people abroad (Ahmed et al. , 2011).

4.4.1.1 Level of per capita income

In general, we expect that decreasing income will create political pressure for domestic redistribution to those hardest hit by any economic downturn, i.e. putting budgetary pressure on international redistribution. Similarly, we expect that increasing income will relieve this pressure. What is being posited here is a positive marginal propensity to give education aid

[18]Foreign aid budgeting is a political process; therefore, the economic conditions that most directly influence education aid effort are likely to be those that are most politically salient Ahmed et al. (2011).

[19]Ahmed et al. (2011) argued that this phenomenon is not specific to the United States and that Meernik and Oldmixon's (2004) findings are likely to apply generically across aid donors.

in relation to income, so that the ratio of aid to income rises with the level of per capita income. To account for differences in the size of donor economies, we use per capita measures of gross domestic product, and is in the log form.

4.4.1.2 Size of the government

The allocation of education aid comes from the state budget, which implies that education aid effort should be positively associated with the size of the government (measured by total government spending in relation to GDP).[20] In an attempt to examine the extent to which government consumption determines aid, Dang et al. (2009) also hypothesised a positive relationship between aid and the size of government. The relationship is straightforward: the capacity to fund aid programmes depends largely on the government's ability to tax; the more tax revenue a government can obtain, the more easily it can finance its education aid programmes.

4.4.1.3 Fiscal balance

Fiscal deficit and the need to reduce it have often been cited as a determinant of falling aid efforts (Hopkins, 2000; Round and Odedokun, 2004; Faini, 2006; Boschini and Olofsgard, 2007; among others). To the extent that this explanation is valid, a high fiscal surplus is expected to permit greater education aid efforts. If fiscal deficit is being offered as an explanation for falling aid effort, than it would become difficult for donors to justify their low education aid efforts in times of fiscal prosperity. The fiscal balance is proxied by the budget surplus over GDP taken from various issues of the OECD Economic Outlook.

[20] Addison et al. (2004) point out that, a donor's ability to bear financial responsibility for development-aid commitments depends to some extent on the size of the public sector in that country.

4.4.1.4 Domestic pro-poor spending and policy stance

The aid effort literature has used a welfare state as an explanatory variable to explain the difference in the level of willingness to pay for aid effort (Noel and Therien, 1995; Therien and Noel, 2000; among others). Hopkins (2000) argues that a decline in national welfare programmes in donor countries has been matched by a decline in foreign aid. This argument shows that education aid effort is likely to be higher in countries that have established resilient systems of redistribution. A preliminary look at the data supports the argument as well, as most of the Scandinavian donors -known as welfare states- are among the most generous contributors, where-as countries like U.S. or Japan where the welfare principles are weak, take a back seat as far as their education aid effort is concerned (See figure 4.2). Round and Odedokun (2003) report that the share of social expenditure in the government's total expenditure is statistically positive, but not significantly with aid effort level, where income equality, however, has a positive and statistically significant relationship.

There is less agreement on the issue of measuring the welfare-state expression of a country. Several concepts used in the literature have their advantages and disadvantages (see Huber et al. 1993 for an overview). We analyse changes in state welfare institutions by including the time varying 'generosity 'measure calculated by Scruggs (2006).[21] The overall level of welfare state generosity includes information concerning unemployment insurance, sickness cash benefits, and retirement pensions. The index functions here as an alternative indicator of the extent of public commitment to welfare, and as a more appropriate gauge of the extent of welfare generosity than in aggregate spending. Higher scores on the generosity measure indicate more comprehensive welfare state institutions. The higher the score, the higher the probability that government will commit more education aid flows to the developing world.

[21]This measure began in the early 1970s and is a comprehensive documentation of welfare state institutions in OECD countries. Higher scores on the generosity measure indicate more comprehensive welfare state institutions (see Scruggs (2006) for more details).

4.4.1.5 Country size

As suggested by Round and Odedokun (2004), the aid-to-GDP ratio may fall when the size of the population of a donor country rises as there might be 'economies of scale' in the administrative costs for aid (which are included in the official definition of aid).[22] For these reasons, we test for the effect of country size, as proxied by total population, and expect a negative effect on education aid effort.

4.4.1.6 International strategic and military interests

A large military expenditure may be seen as complementary to aid allocations inspired by geopolitical and strategic factors (Bertoli et al., 2008). Much aid that is not military assistance could sometimes be given to promote donor military adventurism; for example to persuade the recipient government to allow the donor to have a strategic military base in that country. To proxy for similar motives on education aid effort, we test for the effect of the share of military expenditure in the donor income. A positive effect of this on education aid effort is expected. Boschini and Olofsgard (2007) found a positive relationship between military expenditures and the aid volume of DAC countries, arguing that aid was used as a strategic instrument during the Cold War period.

4.4.1.7 Temporal factors

There are several miscellaneous and mainly qualitative time-related factors affecting a donor's education aid effort. For example, as many have argued, aid can be used for geopolitical purposes, and the structure of the international system may influence foreign aid commitment patterns.[23] The period we consider includes both the pre and post-Cold War eras. To con-

[22] An argument in support of such hypothesis is that the effectiveness of US$2 billion of aid provided by a single donor is greater than that of two US$1 billion grants provided by two different donors, as administrative, transaction and coordination costs may be lower in the first case (Bertoli et al. 2008).

[23] For example, due to the end of the Cold War, Eastern European countries emerged as aid donor countries and later on raised the issue of donors' concerns about governance, facts to which conventional donors had to turn a blind eye during the Cold War era (see Hjertholm and White, 2000).

trol for differences in education aid effort patterns during the two eras, we include a dummy variable equal to 1 for the post 1991 period and zero otherwise.

4.4.1.8 International economic position

Berthelemy (2006a) argues that "Not all donors have strong geopolitical interests, but all of them have commercial interests." Hence, countries that rely more on trade may see education aid effort as a useful tool for enhancing their commercial interests in aid recipient countries.[24] Thus aid may be used for deepening commercial and political alliances with the developing countries. Therefore, we include commercial motives of the donor countries as the determinant of educational aid effort. There are a number of ways to measure a country's trade position in the international economy.[25] We follow the empirical literature on aid effort and assume that donor countries that are more reliant on trade may see foreign aid as a useful tool to promote their commercial interests (Boschini and Olofsgard, 2007; Dang et al., 2009; Tingley, 2010; Jones, 2011). We proxy a country's trade openness with its export plus import-to-GDP ratio.

4.4.1.9 Unemployment

When explaining a donor's aid expenditures, Beenstock (1980) and Mosley (1985a) mention that apart from fiscal balance, unemployment is one of the most important explanatory variables, as there may be clear incentives to cut aid expenditures and redirect the resultant funds towards domestic expenditures in times of fiscal problems. Thus, we expect negative association between unemployment in donor countries and their education aid effort. As a control variable, unemployment has also been used by (Boschini and Olofsgard, 2007; Frot, 2009; Mendoza et al., 2009).

[24] A common theme in the aid allocation and growth literatures is that economic characteristics of recipient countries can influence aid patterns due to the use of aid to impact the economic policies of recipients, particularly the openness of the recipient economy to international trade (Alesina and Dollar, 2000; Heron, 2008; McKinlay and Little, 1978).

[25] For example, ones that focus on export orientation [Exports/(Exports + Imports)].

4.4.1.10 Inflation

Greater economic difficulty (such as uncertainty and higher inflation rates etc.) will lead to lower support for foreign aid programmes (Mendoza et al., 2009). The underlying logic is that more difficult economic circumstances in the donor country could make people feel worse off, and therefore erode public support for foreign aid.

4.4.1.11 Whole Aid Effort

The allocation of education aid comes from the state Total Aid budget, which implies that education aid effort should be positively associated with the size of the government whole aid effort, defined as the whole aid commitments divided by the donor's own GDP.

4.4.2 Political factors in donor countries

According to Therien (2002) "...Foreign aid is one of the most original political innovations of the twentieth century. Never before had wealthy countries transferred, unilaterally and nonreciprocal, such considerable financial resources to poorer nations." More-over it is a striking fact that after its inception in the mid 20th century, nearly all developed countries adopted foreign aid policies and kept to them steadily, despite the fact that no such policies had existed before (Lumsdaine, 1993). The importance of political leadership in increasing aid in general and aid for education in particular is admired by Steer and Wathne (2010). Fredriksen (2008) shows that progress towards universal primary education since the 2000 Dakar Forum is in part explained by a stronger political will in favour of education in the donor countries.[26]

There have been a number of theoretical studies on how the allocation of aid might be de-

[26]For example, Gordon Brown (both as Chancellor and Prime Minister) had significant influence on making basic education a priority within the UK's development agenda and the World Bank's President James Wolfensohn was instrumental in securing the Bank's strong engagement in the EFA movement (Steer and Wathne, 2010)

termined by the economic and political interests of the donor countries. However, hardly any empirical study exists on the effects of domestic political factors on the volume of education aid and, hence, on education aid effort.

4.4.2.1 Political ideology

The left-right political orientation of governments may play a role in determining aid levels (Round and Odedokun, 2004; and Faini, 2006).[27] To construct indicators for leftist/rightist executive the political ideology of donor governments, we use data from the World Bank's Database of Political Institutions that are available on-line and are described in Beck et al. (2001). Though this is a thin measure of ideology we believe that this measure is the most straightforward way to capture relevant political influences on education aid budgeting.[28] It should be noted that the left-right dimension in almost all countries can be regarded as dominant (Budge and Robertson, 1987). Moreover, it is the only one that occurs everywhere for comparative purposes (McDonald and Budge, 2005). Since the dynamic that these variables capture is an immediate part of the policy process, we lag these values by only one year.[29] Political ideology is defined by a dummy variable taking value of -1 for center-left governments, 0 for moderate governments, and 1 for center-right governments.

Rightist governments are generally perceived to be less pro-poor in their domestic budgetary management and policies, so it might be posited that rightist regimes in donor countries will exhibit lower aid efforts, and will generally oppose foreign aid for several major

[27]It is reasonable to assume that governments play an important role in the policy production motivated by their political ideology or interests, as by participating in the government - or position - these interests are translated into government policy to achieve the objective of parties to secure votes to gain and maintain power.

[28]In fact, the relation between political orientation and aid flows is rather ambiguous, as conservative governments may allocate more aid to promote national commercial interests, while progressive governments may provide a similar amount of aid for altruistic reasons. It is therefore impossible to disentangle econometrically these two effects on the basis of aggregate aid data. It may be that while governments that are more liberal favour redistribution, they would prefer resources to remain within the country; conservative governments might tend to be more active in foreign policy, and thus are keen on using foreign aid for geopolitical purposes.

[29]Foreign aid represents redistribution of resources by government, albeit to recipients who are not voting constituents. If political parties represent the preferences of people who vote for them, and preferences for foreign aid array along liberal-conservative lines, then representative parties may enact changes in foreign aid policy following their election. These changes may also be relatively quick, (an assumption made by Fleck & Kilby, 2006). Hence, ideological beliefs channelled through an electoral process could lead to important changes in donor foreign aid policy. (Tingley, 2010)

reasons. First, because it represents interference by the government with both the donor and recipient economies, because in a free market, poor countries would do well, and that aid only increases bureaucracy and creates big government and dependence. Second, foreign aid might crowd out investment opportunities in recipient countries, opportunities that could be fulfilled more efficiently by private actors. Thus, many rightists believe foreign aid is an obstacle to the operation of more efficient markets that may be better equipped to improve the welfare of citizens in both donor and recipient countries (Tingley, 2010).

The findings of qualitative research suggest that leftists' governments, on the other hand, are more favourable toward foreign aid. Irrespective of the 'internationalist' orientation of a government, leftist beliefs about the role of the government in the economy can lead to more support for foreign aid (e.g. Lumsdaine, 1993; Noel and Therien, 2002). Following the previous empirical literature on aid effort, we postulate that ceteris paribus, right-wing regimes in donor countries exhibit lower education aid efforts compared to left-wing governments.

4.4.2.2 Peer pressure

Round and Odedokun (2004) define this variable as the average of the aid-to-GDP ratio of all donor countries except the one being regressed. Whereas, here in our case it is defined as the average of education aid commitments to total aid commitments ratio of all donor countries except the one being regressed. What is assumed here is that the education aid effort of a donor is a positive function of the education aid effort of other donors (i.e., peers of the donor under consideration). There are a number of reasons for this. First, normally contributions to UNESCO etc. are often decided jointly and each DAC member attempts to honour such collective decisions. Second, the DAC itself sometimes establishes certain aid targets and as members honour these targets, aid efforts of each donor tend to move in harmony with those of its peers. Third, ordinarily, for reasons of prestige, competition and emulation, each donor is inclined to raise its aid effort to match the perceived efforts of other DAC members, regardless of DAC targets or other forms of formal collective decisions. Peer pressure is lagged by one year in the regressions to avoid simultaneity problems.

4.4.3 Education sector in donor countries

On the basis of interviews with the representatives of donors' officials, Steer and Wathne (2010) found that the donor countries' own development experience and their cultural/religious contexts have some influence on sectoral priorities in their total aid commitments. For example South Korea's interest in supporting basic education, stems from a perception that their development success was partly gained from heavy investment in education. Similar references were made by the interviewees in Saudi Arabia, which has progressed from 25 per cent to 78 per cent literacy in the past three decades (Steer and Wathne, 2010).

In a sample of countries, international comparisons of donor's education sector requires that we have in hand some common measure of the priority and efficiency of educational services in a country which can be approached in different ways. One of these is to compare the donor's inputs, efficiency and outputs in its own education sector at home. On the input side the national effort towards the education sector can be represented simply by the public spending on education (% of GDP), where efficiency can be proxied by the percentage of repeaters in primary schools (lower the percentage, more the efficient a system is), while on the output side, Net Primary School enrollment ratio can be used as a proxy.[30]

4.4.3.1 Public Spending on Education (% of GDP)

We use Public Spending on Education (% of GDP) as a primary education indicator.[31] As the proportion of total financial resources devoted to education is one of the key choices made by governments in each country.[32] Public expenditure on education, as a percentage of total public expenditure or GDP, indicates the extent to which government's priorities education

[30] Because of the data availability, we are restricted to these measures only

[31] Although donor's expenditures per student is a more realistic choice to be used as a primary measure of donor's education sector prioritisation proxy, unfortunately due to the limited availability of the data on this, we were left with no option but not to use it as our primary measure of donor's education sector prioritisation proxy.

[32] On the one hand, the rationale for public spending on education is to equip people with the knowledge, skills, and attitude to enhance their quality of life, on the other, expenditure on education is an investment which may help foster economic growth, enhance productivity, contribute to people's personal and social development, and promote the reduction of social inequalities.

in relation to its overall allocation of resources. This prioritisation is the result of choices made by governments, enterprises, and individual students and their families, and is partially influenced by enrolments in education (OECD, 2011).

Kose and Guven (2007), in a cross-country analysis of factors determining public expenditure, found that countries with higher per capita income levels and economic growth rates allocated greater resources to their education expenditure.[33] Piana (2001) however, discovered that public expenditure on education is determined by the political will of the leading forces in the state: their priorities, their desired state model, and their interpretation of current economic and political phase.

One of the most common ways of comparing prioritization of the education sector is spending on education as a percentage of their GDP. Governments typically have a strong direct involvement in financing and provision of schooling at various levels. Public expenditure on education, as a percentage of GDP per capita, indicates the extent to which a government prioritises education in relation to other areas of investment, such as health care, social security, defence and security. To the extent that this explanation is valid, higher public spending on education at home is expected to permit greater education aid efforts.

Public expenditure on education as % of GDP is the total public education expenditure (current and capital) expressed as a percentage of GDP in a given financial year. Public education expenditure includes government spending on educational institutions (both public and private), education administration, and subsidies for private entities (students/households and other privates entities). (the World Bank, 2010).

4.4.3.2 Primary School Net Enrollment and Repeaters Ratio

To proxy the donor's own education sector efficiency and outcome, we use net primary school enrollment ratio and percentage of repeaters in primary school as a proxy for the

[33]Piana (2001) and Adenuga (2002) also support the supposition that educational expenditure is positively related to the income of a nation. According to Adenuga (2002), as government is constrained by budgetary allocation, so their behaviour laid credence to the priority being given to education.

donor's education sector output and efficiency respectively. We expect a positive correlation between the net primary school enrollment at home and the education aid effort of a particular donor. While we expect a negative correlation between the education aid effort level and the percentage of repeaters, as the higher the number of children who repeat their grade in next year in a donor country, the more resources its needs at home to bring them into the next grade in next year.[34]

4.4.4 Specification Of The Model

In this section, we specify the model. It evaluates the determinants of education aid effort as discussed above for DAC countries. The estimated regression equation is given as:

$$Aid_{it} = \beta X_{it} + \mu_i + \epsilon_{it} \tag{4.1}$$

where $_i = 1, 2, 3, \ldots, 19$ and $_t = 1, 2, 3, \ldots, 35$

Where Aid is education aid commitments as a fraction of donor's total aid commitments. X_{it} is a set of explanatory variables.[35] β denotes the vector of coefficients and μ_i is a stochastic term that is assumed to satisfy most of the usual conditions.[36] The subscripts i and t denote donor country and time respectively in the panel data.

The above specification implies that time-series data are pooled across the countries to form a panel data set used in estimating the equations. Specifically, annual data over the 1973-2007 periods are pooled across the 19 donor countries. However, the resulting panel data are unbalanced in the sense that values are missing in a non-uniform manner with respect to both countries and variables, which restrict us to including only a few explanatory

[34]Repeaters in primary school are the number of students enrolled in the same grade as in the previous year, as a percentage of all students enrolled in primary school. (WDI 2010)

[35]Most of these have been included in one or more studies in the literature e.g. fiscal budget surplus (Round and Odedokun, 2004; Faini, 2006; Boschini and Olofsgard, 2007; Frot, 2009), unemployment (Boschini and Olofsgard, 2007; Frot, 2009; Mendoza et al., 2009), inflation (Mendoza et al., 2009) and political orientation of the governing party (Round and Odedokun, 2004; Boschini and Olofsgard, 2007; Chong and Gradstein, 2008; Mendoza et al., 2009).

[36]The expected signs of the explanatory variables are presented in table D.2 in Appendix-D.

variables, while others are included one or two at a time.[37] Given the heterogeneity among countries, we use donor fixed effects (μ) to capture time-invariant country-specific influences on education aid effort. In all specifications we include year dummies (ϵ_{it}) to account for common shocks to education aid effort levels in any given year.[38]

In panel data sets, OLS standard errors can be biased as the residuals can be correlated across countries or across time. The correlation of the residuals within a cluster is the problem the clustered standard errors are designed to correct for, but as they place no restriction on the correlation structure of the residuals within a cluster, their consistency depends on having a sufficient number of clusters. (see Kezdi, 2004 and Hansen, 2007). Kezdi (2004) shows that 50 clusters (with roughly equal cluster sizes) are often sufficiently close to infinity for accurate inference. However, with a small number of clusters (M $<$ 50), the cure can be worse than the disease. Rogers (1993) argues that "if no cluster is larger than 5 per cent or so of the total sample, the standard errors will not be too far off." This implies that cluster-robust standard error's (CRSE) with 20 equal-sized clusters would suffer from a very small bias.[39] Stock and Watson (2006) concludes that with fixed effects, if serial correlation is expected, the cluster-robust estimator is the preferred choice.

In all regressions, we report results using standard errors clustered at the country level, to correct for heteroskedasticity and within-panel serial correlation. Using conventional standard errors yields much higher levels of significance, and could be equally valid given the small number of countries (Wooldridge, 2002). However, in our main results we use the clustered standard errors to be more conservative. When we random changes in the education aid effort level in a particular county, some of the factors causing education aid effort to change operate only within that county (e.g. budget, ideology, income), while others operate worldwide (e.g. Cold War, Peer Pressure). Hence, it is necessary to make a clustering

[37] All time included variables are those i) which relatively have higher frequency and broader coverage and ii) are included in virtually all studies of overall aid effort, either individually or combined. Including rest one or two at a time, not only minimised the incidence of multicollinearity, but also the number of observations available to estimate the equation with fewer variables is maximised, as the inclusion of all or most explanatory variables in a particular equation would drastically reduce the usable data points.

[38] This, according to (Sarafidis et al., 2009; Roodman, 2009), is always suggested as a wise strategy to remove any global time-related shocks from the errors.

[39] We have equal-sized clusters, so there may be a little bias in our standard errors.

correction to the standard errors in our study.

4.5 RESULTS

The subsequent analysis will proceed in two major steps. First, we will discuss our main results and then we will check the validity of our results with some robustness checks. The dependent variable is education aid commitments over donor's total aid commitments (Education Aid Effort) in all of the model specifications.

4.5.1 Main Results

The empirical evidence provides strong support in favour of the peer pressure effect whereby the education aid efforts of a particular donor are positively influenced by those of other donors. The estimated parameter is positive and significant across all specifications (See table 4.2). On the basis of their interviews with main donors' officials, Steer and Wathne (2010) arrived at the conclusion that among other factors, international agreements (such as those promulgating the MDGs and EFA goals) seem to have had a significant effect on the donors' aid prioritisation. It was peer pressure that led, in the period just after the Dakar conference on Education for All, to aid for education rising rapidly with an increase of 42 per cent between 1999-2000 and 2003-2004 (See figure 3.1).

Assuming that aid management practices of some donors may constrained by the need to convince their sometimes-skeptical principals (elected officials and voters) that aid produces visible and measurable results, peer pressure can be the most important explanation for almost all donors' willingness to commit aid in the education sector. At present there is no formal mechanism for replenishment of the education sector support.[40] Peer pressure among donors appears to be one of the few ways of leveraging donors' education aid efforts on the

[40]According to Steer and Wathne (2010), donors' officials are of the view that UNESCO is yet unable to provide the necessary leadership and strong global voice needed to raise additional finance for the education sector.

Table 4.2: Determinants of Education Aid Effort (Dep. Var. Education Aid Effort) Fixed Effect

Peer Pressure	0.671***	0.702***	0.732***	0.588***	0.583***	0.360***	0.355***	0.357***	0.360***	0.230*	0.346***
	(0.121)	(0.135)	(0.132)	(0.110)	(0.109)	(0.059)	(0.058)	(0.059)	(0.058)	(0.094)	(0.062)
Public Spending on		0.011	0.009	0.091	0.109	0.221*	0.200*	0.232*	0.249**	0.196*	0.234**
Education(% GDP)		(0.033)	(0.064)	(0.058)	(0.062)	(0.081)	(0.076)	(0.083)	(0.080)	(0.084)	(0.065)
Military Exp.			0.010	0.071	0.056	0.396***	0.407***	0.370***	0.334	0.451**	0.416***
			(0.033)	(0.045)	(0.038)	(0.081)	(0.081)	(0.074)	(0.166)	(0.126)	(0.082)
Whole Aid Effort				0.119***	0.119***	0.157***	0.155***	0.159***	0.157***	0.123*	0.162***
				(0.031)	(0.030)	(0.014)	(0.014)	(0.014)	(0.013)	(0.042)	(0.015)
Ideology					0.038	0.052	0.057	0.056	0.055	0.063	0.051
					(0.026)	(0.039)	(0.041)	(0.039)	(0.040)	(0.040)	(0.041)
Population					-0.187	1.040	0.772	1.084*	1.118*	1.198	1.142*
					(0.606)	(0.533)	(0.559)	(0.484)	(0.500)	(0.971)	(0.482)
Income						-0.168	-0.541	-0.364	-0.315	1.838	0.499
						(0.715)	(0.579)	(0.718)	(0.791)	(1.381)	(0.711)
Cold War						0.101	0.050	0.077	0.538	0.779	0.113
						(0.080)	(0.065)	(0.082)	(0.616)	(0.784)	(0.089)
Budget						0.008	0.007	0.005	0.007	-0.011	0.009
						(0.009)	(0.009)	(0.010)	(0.010)	(0.030)	(0.008)
Govt. Consumption						-0.189	-0.364	-0.279	-0.086	-2.169	-0.384
						(0.545)	(0.583)	(0.595)	(0.632)	(2.403)	(0.381)
Unemployment							-0.020				
							(0.012)				
Openness								-0.413			
								(0.276)			
Inflation									0.222		
									(0.421)		
Generosity										0.045	
										(0.031)	
Ideology(Eco)											0.125*
											(0.044)
Observation	596	388	290	289	289	183	183	183	183	120	174
R^2	0.493	0.520	0.566	0.680	0.680	0.795	0.797	0.796	0.795	0.823	0.806
Adjusted R^2	0.462	0.479	0.514	0.637	0.637	0.742	0.743	0.742	0.741	0.752	0.752

Note:All regressions Include time dummies (results are not shown),***,**,*,respectively show significance at 1, 5 and 10 per cent confidence level where Standard errors in parentheses are clustered at country level. To save space intercepts are not shown.

one hand and on the other it can also be exerted on a particular donor when, for example, governments or ministers change in a particular donor country. Therefore, in a particular donor country, peer pressure can be utilised to influence the donor's education aid efforts and even to reduce the chances of its wilful delinquency. Generally peer pressure seems to play some role in providing aid at sectoral level, as it seems that the decisions of one actor influences the decisions of other donors, ultimately creating a kind of global peer pressure to commit aid to a particular sector. This is even more important in case of the education sector, as the number of donors providing aid to education is concentrated among a small group of donors: only five donors account for over 60 per cent of all aid commitments to the sector (Benavot et al., 2010). This means that certain donors' decisions to cut funds can have major global reverberations.[41]

We assume that the same peer pressure among donors in education aid effort (i.e. education aid quantity) may exist among donors in terms of the education aid quality. According to the OECD (2009), a sustained and focused "Peer Pressure" campaign within the DAC appears to have contributed to a marked decline in the share of aid that is tied to purchases of goods and services in donor countries. Therefore how should aid quality be evaluated and compared across donors? A number of recent papers[42] have proposed the rankings of donors, which are intended to inspire both bilateral and multilateral donors to improve their effort, effectiveness, and efficiency in ways that will move them up in the rankings.[43]

When analysing the education aid effort levels by individual donor countries, in order to test whether donors take note of aid effort levels by other donors, empirical findings support the view that donors behaved cooperatively when deciding on their education aid effort level. We corroborate this finding by a simple correlation analysis reported in the table D.5 in Appendix-D. If coordination were prevalent, the coefficient of this variable should be positive. It emerges out that almost 50 per cent Spearman rank correlations for education aid

[41] In their recent ODI brief, Steer and Baudienville (2010) noted that "Despite its strong record on monitoring progress towards the EFA goals through its flagship Global Monitoring report, UNESCO has been unable to provide the leadership and global voice needed to raise additional financing for the sector."

[42] Roodman (2006) and Easterly and Pfutze (2008) among others

[43] There is evidence that donors do in fact pay attention to these rankings and care about public perceptions (see, for example, Ramankutty and Berglof, 2009).

effort are positive, and that 50 per cent of these positive Spearman rank correlations are also significant.

There is encouraging evidence to support the postulated "Donor's education sector prioritization" effect on its education aid effort level. The coefficients here are as per the hypothesis or the expected theoretical justification and are statistically significant for some and not for others in practically all equations. Regarding education aid flows to the developing world, after interviewing various officials of many bilateral and multilateral donors, Steer and Wathne (2010) also arrived at the conclusion that organisational prioritisation, particularly when directed by top leadership, can have powerful effects on aid allocations to basic education.[44]

In our main results a one per cent increase in a donors public spending on education (% of GDP) leads to a significant 0.002 unit increase in its education aid effort in the following year (See column 6 of Table 4.2). In table 4.2, in each column from column 6 onwards,we enter some additional explanatory variables in our basic equation 4.1 but none of these additional economic and political variables substantially reduce the size of the public spending on education (% GDP) coefficients.

The posited motive and strategy of military adventurism in giving education aid appears to be supported by the results. As expected, the coefficients of the proxy for this (the share of military expenditure in donor income) is positive and statistically significant. Our results are in line with Boschini and Olofsgard (2007) who also found a positive relationship between military expenditures and the aid volume of DAC countries, arguing that aid was used as a strategic instrument during the Cold War period.

Similar to Peer Pressure, donor's whole aid effort appears to influence its education aid effort positively and significantly. The coefficient of whole aid effort is positive and significant in all specifications, and is insensitive to the inclusion of extra control variables. There seems to be evidence of the diseconomies of scale in education aid effort level. This is be-

[44]Case studies of the UK and the World Bank clearly demonstrate the positive effects of prioritisation of basic education within those agencies at different points in time.

cause the fraction of income given as education aid seems to be proportionally related to the size (population) of the donors. The coefficient of population (in logarithms) is positive and statistically significant in almost all cases.

Table 4.2 present results from the estimations in fixed effect with standard errors clustered by country. The results are supportive of the theory that changes in the ideological orientation of political parties influence changes in education aid effort. Year-to-year changes in the measures of economic ideology correlate positively with changes in education aid effort. As governing parties became more economically conservative there tends to be an increase in their education aid effort (See Column 11 of Table 4.2).

In table 4.2 regressions predicting donors education aid effort, we find that the coefficient of the natural logarithm of the real income per capita is negative but not a significant predictor of the amount of education aid that the country gives each year. Similar to income, fiscal balance (proxied by budget surplus as a percentage of GDP) does not appear to influence aid policy significantly. The coefficient of the Cold War variable is positive but insignificant for education aid effort. The coefficient of government consumption as a percentage of GDP and unemployment are negatively but insignificantly correlated with a donors education aid effort. Higher inflation is associated with a higher but insignificant education aid effort level. Contrary to the postulated hypothesis, greater openness as measured by trade share/GDP is not a significant predictor of education aid effort level. Column ten of table 4.2, shows that changes in welfare institutions have a limited and insignificant effect on changes in education aid effort.

4.5.2 Robustness Checks

In this section we consider a series of robustness checks to our baseline results. We ensured, the robustness of our estimates in several ways, such as; estimating the model (i) with alternate measures of donors education sector prioritisation (ii) across sub-periods (iii) across sub-donors (iv) with alternate estimation techniques and v) idiosyncratic effect.

Table 4.3: Different Education Sector Variables (Dep. Var. Education Aid Effort) Fixed Effect

Peer Pressure	0.274	0.203	0.270	0.274	0.085	0.158	0.378***	0.374***	0.379***	0.362***	0.315**	0.377***
	(0.151)	(0.164)	(0.155)	(0.152)	(0.135)	(0.149)	(0.064)	(0.061)	(0.064)	(0.064)	(0.082)	(0.066)
Percentage Repeaters Primary	-0.001	0.014	-0.002	-0.001	-0.325*	-0.004						
	(0.022)	(0.019)	(0.024)	(0.023)	(0.109)	(0.021)						
Net Enrollment Primary							0.014	0.013	0.013	0.013	0.016	0.015
							(0.010)	(0.009)	(0.010)	(0.009)	(0.012)	(0.011)
Military Exp.	0.448	0.415	0.479	0.448	0.255	0.380	0.226	0.237	0.225	0.259	0.303*	0.220
	(0.245)	(0.248)	(0.282)	(0.259)	(0.412)	(0.193)	(0.124)	(0.116)	(0.125)	(0.143)	(0.129)	(0.132)
Whole Aid Effort	0.122*	0.142**	0.127*	0.122*	0.083	0.138**	0.168***	0.170***	0.168***	0.165***	0.142***	0.169***
	(0.042)	(0.044)	(0.047)	(0.043)	(0.047)	(0.041)	(0.014)	(0.015)	(0.014)	(0.013)	(0.033)	(0.014)
Ideology	0.079	0.071	0.079	0.079	0.070	0.091	0.018	0.026	0.018	0.021	0.015	0.020
	(0.045)	(0.045)	(0.046)	(0.046)	(0.046)	(0.049)	(0.023)	(0.022)	(0.023)	(0.024)	(0.032)	(0.024)
Population	-1.106	-1.491	-0.820	-1.106	0.760	-2.248	0.942	0.705	1.008	1.363	1.392	0.869
	(2.561)	(1.792)	(3.095)	(2.574)	(3.616)	(2.649)	(0.789)	(0.727)	(0.797)	(1.064)	(1.433)	(0.852)
Income	-0.294	0.273	-0.320	-0.294	-0.078	0.341	-0.754	-1.479**	-0.711	-0.702	-0.512	-0.777
	(0.310)	(0.586)	(0.310)	(0.335)	(0.887)	(0.334)	(0.402)	(0.439)	(0.408)	(0.401)	(0.688)	(0.473)
Cold War	-0.193	0.087	-0.177	-0.191	0.239	-0.052	-0.498*	-0.730**	0.195	-0.818*	-0.115	-0.506
	(0.368)	(0.404)	(0.362)	(0.843)	(0.752)	(0.298)	(0.232)	(0.220)	(0.262)	(0.353)	(0.543)	(0.241)
Budget	-0.003	0.016	0.001	-0.003	-0.033	-0.002	0.006	0.005	0.006	0.009	0.005	0.006
	(0.013)	(0.012)	(0.014)	(0.016)	(0.020)	(0.010)	(0.010)	(0.009)	(0.010)	(0.011)	(0.008)	(0.010)
Govt. Consumption	-0.951	-0.212	-0.826	-0.951	-2.948*	-0.378	-0.333	-0.352	-0.287	-0.344	-0.820*	-0.393
	(0.868)	(0.623)	(0.861)	(0.907)	(1.127)	(0.602)	(0.466)	(0.408)	(0.419)	(0.413)	(0.292)	(0.461)
Unemployment		0.041						-0.027*				
		(0.024)						(0.012)				
Openness			0.183						0.138			
			(0.536)						(0.222)			
Inflation				0.001						-0.593		
				(0.401)						(0.480)		
Generosity					0.020						0.028	
					(0.039)						(0.016)	
Ideology(Eco)						0.241**						0.023
						(0.060)						(0.053)
Observation	140	140	140	140	107	138	253	253	253	253	190	242
R^2	0.700	0.715	0.701	0.700	0.806	0.727	0.742	0.748	0.742	0.745	0.749	0.745
Adjusted R^2	0.571	0.587	0.567	0.566	0.692	0.602	0.690	0.696	0.689	0.693	0.684	0.690

Note:All regressions Include time dummies (results are not shown),***,**,*,respectively show significance at 1, 5 and 10 per cent confidence level where Standard errors in parentheses are clustered at country level. To save space intercepts are not shown.

4.5.2.1 Alternative Measures of donors Education Sector

We tested the robustness of our findings by re-running our estimations using two other measures of donors education sector -(proxies for donor's education system efficiency and output)- (see table 4.3). The first proxy, percentage of repeaters in primary school is for the donors education sector efficiency (results presented in columns 1 to 6 of table 4.3). There is a negative relation between the percentage of repeaters in primary schools and the education aid effort level in the following year (see columns 1 to 6 of table 4.3), as a one unit increase in the percentage of primary school repeaters leads to a 0.03 unit decrease in their aid effort level the results are significant at 10 per cent level of significance (See column 5 of Table 4.3).

Where the second proxy, donors net primary school enrollment ratio is for the donors education sector output (Results presented in columns 7 on wards of table 4.3). Both variables have hypothetically true -and only for percentage of Repeaters in primary, significant- beta coefficients (already discussed earlier). Therefore, the results support the hypothesis related to the positive impact of donors prioritisation of the education sector at home (namely more public spending on education (% of GDP) and the fewer repeaters in primary) results in a higher education aid effort in the education sector abroad. Where on the inclusion of these new variables, some of the insignificant explanatory variables in our main specification (presented in table 4.2) becomes significant.

In table 4.3 regressions predicting donors education aid effort, we find that the coefficient of the natural logarithm of the real income per capita is significant but counter-intuitive predictor of the amount of education aid that the country gives each year. Because the dependent variable is in level form, this coefficient on income can be interpreted as, a 1 per cent increase in GDP per capita is associated with a decrease of about 0.001 units in education aid effort level of a donor country (See column 8 Table 4.3). The coefficient of the Cold War variable is negative and significant for education aid effort, which weakens the prevailing view of the geopolitical motive for aid giving in the foreign aid literature, which may be because of

donors focus on infrastructure related aid during the cold war (See column 7 to 10 of Table 4.3). The coefficient of government consumption as a percentage of GDP is negative but significant, where a one unit increase in government consumption as a percentage of GDP at home leads to a 0.03 to 0.008 unit decrease in donors education aid effort level abroad (See column 5 and 11 of Table 4.3). The negative relationship with education aid effort is somewhat striking but can be understandable as donor countries domestic fiscal issues put their aid budgets under pressure to compete with domestic programmes for those in need; for example "Japan has relied heavily on aid to project influence overseas. But it has been forced to scale back on this diplomatic clout by a fiscal crisis that will see public debt soar to 686 trillion at the end of this FY" (Watts, 2003).

4.5.2.2 Regressions by Sub-period

It has been argued that the end of the Cold War changed the nature of bilateral aid. Since the end of the Cold War, there have been numerous shifts in the rationale for funding aid programmes to education (Cassity, 2010). First, after 1990, geopolitical concerns played a diminished role (Ball and Johnson, 1996; Meernik et al., 1998; Fleck and Kilby, 2010) leaving more money for the social sector, such as health or education, which was part of a broader shift away from infrastructure and towards fulfilling basic human needs. Second, Chabbott (2003) contends that in the last half of the 20th century, much of the world embraced two fundamental human rights: the right to development and the right to education. Third, small and statistically insignificant coefficients on military expenditures over GDP after the Cold War (see table 4.4) suggest that there is a clear difference in donors behaviour in their education aid effort level on between during and after the Cold War. We test for differences between the Cold War and post-Cold War periods by running separate regressions for the years 1973-1990 and 1991-2007.[45]

In table 4.4, we present the results by splitting our data set in-to during and after the Cold War eras. In the whole data set, the peer pressure and the whole aid effort coefficients are

[45] After splitting our data set between during and after Cold War periods, we dropped our Cold war dummy from the regressions

Table 4.4: During Versus After the Cold War Sample results (Dep. Var. Education Aid Effort) Fixed Effect

Sample	**During Cold War**						**After Cold War**					
Peer Pressure	0.202	0.201	0.191	0.176	-0.044	0.207*	0.065	0.047	0.043	0.038	-0.065	0.061
	(0.082)	(0.122)	(0.105)	(0.133)	(0.158)	(0.074)	(0.089)	(0.088)	(0.088)	(0.088)	(0.182)	(0.090)
Public Spending on	-0.217	-0.259	-0.198	-0.004	-0.192*	-0.176	0.231	0.201	0.250	0.232	0.036	0.195
Education(% GDP)	(0.122)	(0.118)	(0.135)	(0.292)	(0.058)	(0.102)	(0.160)	(0.142)	(0.142)	(0.156)	(0.186)	(0.151)
Military Exp.	-0.439	-0.049	-0.472	-0.296	-0.474	-0.579	-0.145	-0.075	-0.074	-0.090	0.355	-0.048
	(0.561)	(0.572)	(0.597)	(0.523)	(0.557)	(0.818)	(0.230)	(0.213)	(0.234)	(0.202)	(0.403)	(0.238)
Whole Aid Effort	0.164*	0.133*	0.161*	0.167*	0.140*	0.175	0.150***	0.148***	0.151***	0.150***	0.108**	0.150***
	(0.051)	(0.051)	(0.053)	(0.058)	(0.042)	(0.072)	(0.011)	(0.011)	(0.011)	(0.011)	(0.031)	(0.012)
Ideology	0.120	0.095	0.112	0.105	-0.015	0.131*	0.030	0.019	0.034	0.027	0.029	0.025
	(0.055)	(0.056)	(0.052)	(0.059)	(0.071)	(0.042)	(0.033)	(0.029)	(0.034)	(0.030)	(0.073)	(0.034)
Population	-2.632	-12.27	-2.404	-5.127	4.962	-2.310	0.844	1.747	-0.063	-1.969	-4.163	0.972
	(7.723)	(12.83)	(7.491)	(11.26)	(5.857)	(8.162)	(1.250)	(1.787)	(1.294)	(1.891)	(1.981)	(1.276)
Income	7.735*	5.033*	7.825*	10.52	5.052**	6.893**	-2.222*	-2.234*	-2.230*	-1.980	1.854	-1.545
	(1.962)	(1.316)	(2.114)	(6.042)	(1.045)	(1.013)	(0.939)	(0.821)	(1.013)	(0.929)	(0.989)	(0.951)
Budget	-0.110	-0.139	-0.108	-0.126	-0.179	-0.127	0.007	0.006	0.009	0.017	0.029	-0.002
	(0.053)	(0.063)	(0.050)	(0.082)	(0.077)	(0.091)	(0.010)	(0.011)	(0.008)	(0.011)	(0.016)	(0.012)
Govt. Consumption	-6.291	-7.741	-6.385	-7.532	-10.05	-7.565	0.046	0.170	-0.080	0.560	1.065	-0.566
	(4.057)	(4.675)	(4.300)	(5.843)	(4.873)	(6.457)	(0.456)	(0.577)	(0.388)	(0.550)	(0.900)	(0.465)
Unemployment		-0.111						0.033				
		(0.078)						(0.027)				
Openness			0.706						-0.649			
			(2.093)						(0.464)			
Inflation				-1.308						1.788		
				(1.867)						(0.964)		
Generosity					0.172						-0.015	
					(0.088)						(0.014	
Ideology(Eco)						-0.089						0.146*
						(0.181)						(0.060)
Observation	52	52	52	52	52	52	131	131	131	131	68	122
R^2	0.726	0.758	0.727	0.739	0.791	0.731	0.631	0.644	0.639	0.641	0.461	0.657
Adjusted R^2	0.502	0.543	0.484	0.506	0.604	0.492	0.560	0.572	0.566	0.568	0.263	0.581

Note:All regressions Include time dummies (results are not shown),***,**,*,respectively show significance at 1, 5 and 10 per cent confidence level where Standard errors in parentheses are clustered at country level. To save space intercepts are not shown.

positive and statistically significant in practically all equations (see table 4.2), but when we divide our sample into during and after Cold War periods peer pressure appears significant only once (see column 6 of table 4.4), whereas whole aid effort is significant in both during and after cold war periods having almost identical size coefficients.

However, with an increase in a donor's income, the education aid effort is more responsive during the Cold War than after the end of the Cold War. When we split our data set into during and after the Cold War period, then there is an improvement in the size of per capita income coefficient during the cold war period (See table 4.4), which is also higher than that of the post Cold War period. This shows that during the Cold War eras a slight increase in a donor's income was a motivation to increase its education aid efforts. The post-1990 decline has been attributed in part to the end of the Cold War, which reduced the geopolitical motivation for aid-giving. In case of a donor's government ideology, splitting our data set into during and after the Cold War period allows us to say that the effect of the government ideology was much stronger during the Cold War than after it, as for government ideology the estimated effect is positive and significant (see column 6 table 4.4), suggesting that during the cold war a conservative government raises a country's education aid efforts.

4.5.2.3 Regressions by Sub-sample

We chose to split our sample into 3 major groups and estimate the baseline model over the whole period 1973-2007.[46] This allowed us to check whether the magnitudes of the coefficients of interest were different from those obtained in the baseline regression over the full sample. The groups are the following:

A: Member versus Non-member states of G7

The G7 donors (Canada, France, Germany, Italy, Japan, United Kingdom, and United

[46]According to Thiele et al. (2007) "...Each donor might focus on specific MDG targets and specialize in specific aid sectors such as aid for education, leaving other targets and sectors to other donors." Unfortunately, due to the limited data availability for some explanatory variables, we were unable to run our model at individual donor level, so to overcome this, we first compared the aid supply behaviour of all bilateral donors taken together, and then looked at major bilateral donors clustered in different groups.

States) account for about two-thirds of total education aid volume,[47] but the recently observed decreasing education aid effort is often said to be due to declining aid volumes from these donors, traditionally the largest. Thus, it would be enlightening to analyse the education aid effort of these seven countries separately.[48] We ran separate panel regressions for the G7 members to see whether being a member country affected the responses to each of the explanatory variables. (See table 4.5)

In whole data set, the peer pressure and whole aid effort coefficients are positive and statistically significant in practically all equations (see table 4.2), however by dividing the sample into member and non-member countries of G7 does not affect the significance of the whole aid effort variable (see table 4.5), except that the magnitude of the coefficient is slightly higher in G7 countries than in that of the all donors samples and that of the non-G7 donors sample. Whereas the peer pressure coefficient becomes insignificant in the both sub samples.

As discussed earlier for all the 19 donor countries, during the cold war there is progressivism in the education aid effort in the sense that the higher the real income of the donor, the greater the fraction of real income given as education aid, suggesting that education aid is a "luxury good" in the state budget. Almost identical results apply to the separate estimates reported for the G7 donor countries (See column 5 of table 4.5).

Splitting the donors between member and non-members of the G7 gives additional proof of the posited motive and strategy of military adventurism for giving education aid. In the case of the G7 countries only, the size of the coefficient is much higher than that of the all donors sample, a US$ 1 increase in the military expenditure over GDP leads to a US$ 0.86 increase in the education aid effort, which is just 0.40 US$ in whole sample period (see column 1 of table 4.5).

Regarding government ideology, the estimated effects suggest that a conservative gov-

[47] See also Round and Odedokun (2004), who also use this group of countries.

[48] In addition, separate estimates for the G7 donors would provide some sort of cross-country stability test of the estimates for all 19 countries, and this would enable us to see whether the generalised results are still valid for the data subset (or smaller data set) of the seven countries.

Table 4.5: G7 Versus Non-G7 Sample results (Dep. Var. Education Aid Effort) Fixed Effect

Sample	**G7 Countries**						**Non-G7 Countries**					
Peer Pressure	0.247	0.232	0.238	0.255	0.149	0.176	0.199	0.199	0.199	0.173	-0.031	0.093
	(0.177)	(0.171)	(0.177)	(0.175)	(0.143)	(0.185)	(0.091)	(0.093)	(0.093)	(0.096)	(0.197)	(0.082)
Public Spending on	0.115	0.098	0.096	0.118	0.346	0.192	0.148	0.150	0.136	0.121	0.390	0.011
Education(% GDP)	(0.050)	(0.096)	(0.074)	(0.070)	(0.301)	(0.153)	(0.097)	(0.096)	(0.099)	(0.110)	(0.284)	(0.073)
Military Exp.	0.859*	0.840*	0.809*	0.881	1.029	1.205*	0.096	0.102	0.068	0.050	0.632	0.124
	(0.243)	(0.283)	(0.257)	(0.321)	(0.525)	(0.359)	(0.162)	(0.180)	(0.239)	(0.215)	(0.462)	(0.243)
Whole Aid Effort	0.243*	0.242*	0.247*	0.247*	0.306**	0.234*	0.158***	0.158***	0.158***	0.157***	0.104	0.154***
	(0.054)	(0.057)	(0.058)	(0.065)	(0.045)	(0.056)	(0.013)	(0.013)	(0.014)	(0.014)	(0.051)	(0.015)
Ideology	0.012	0.008	0.016	0.007	0.069	-0.041	0.054	0.054	0.051	0.050	0.015	0.045
	(0.049)	(0.038)	(0.055)	(0.046)	(0.055)	(0.059)	(0.055)	(0.054)	(0.050)	(0.056)	(0.124)	(0.044)
Population	3.067*	2.332	3.022**	2.541	5.841	4.818*	4.241	4.269	4.305	6.545	0.832	3.722
	(0.867)	(1.879)	(0.617)	(1.771)	(3.187)	(1.610)	(2.741)	(2.875)	(2.879)	(4.250)	(6.269)	(2.201)
Income	0.561	0.214	0.318	0.618	4.062*	1.778	-3.612	-3.600	-3.541	-3.999	-0.001	-2.056
	(1.739)	(1.326)	(1.582)	(1.988)	(1.101)	(2.855)	(1.839)	(1.812)	(1.722)	(2.096)	(2.295)	(1.639)
Cold War	-0.577	-0.625	-0.823	0.711	0.884**	0.073	0.101	0.050	0.077	0.538	0.480	0.113
	(0.848)	(0.451)	(0.869)	(1.398)	(0.167)	(1.356)	(0.080)	(0.065)	(0.082)	(0.616)	(0.931)	(0.089)
Budget	0.006	0.005	0.008	0.006	0.042	0.030	-0.009	-0.008	-0.008	-0.009	0.027	-0.024
	(0.009)	(0.013)	(0.012)	(0.008)	(0.052)	(0.009)	(0.026)	(0.025)	(0.025)	(0.025)	(0.032)	(0.023)
Govt. Consumption	-2.030	-2.071	-2.040	-2.130	-2.158	-2.605	0.404	0.416	0.448	0.588	2.951	-1.268
	(1.209)	(1.315)	(1.207)	(1.512)	(4.139)	(1.267)	(1.038)	(0.983)	(1.057)	(0.967)	(2.665)	(0.963)
Unemployment		-0.034						0.001				
		(0.031)						(0.018)				
Openness			-0.290						0.197			
			(0.626)						(0.823)			
Inflation				-0.254						-2.470		
				(0.960)						(2.340)		
Generosity					-0.043						-0.023	
					(0.039)						(0.047)	
Ideology(Eco)						0.161*						0.294**
						(0.040)						(0.077)
Observation	73	73	73	73	59	73	110	110	110	110	61	101
R^2	0.937	0.938	0.937	0.937	0.930	0.940	0.645	0.645	0.646	0.652	0.687	0.726
Adjusted R^2	0.869	0.869	0.866	0.866	0.831	0.874	0.498	0.491	0.492	0.500	0.394	0.591

Note:All regressions Include time dummies (results are not shown),***,**,*,respectively show significance at 1, 5 and 10 per cent confidence level where Standard errors in parentheses are clustered at country level. To save space intercepts are not shown.

ernment raises a country's education aid efforts. Round and Odedokun (2004), argued that "this could be due to the fact that concern for the poor and needy - attributed to left-wing governments- is being overshadowed by other objectives in giving education aid." The same division can be witnessed when we split our data set between member and non-member states of the G7, showing that in G7 non-member states government ideology has a greater influence on the education aid effort level than that of the G7 member states (for comparison, see column 6 and 11 of table 4.5).

With the full sample, without controlling for being a member of G7 or not being one, there seems to be evidence of the "diseconomies of scale" in education aid effort level. However, the results are different if we run the regressions only for the G7 member donors, where for G7 member states there seems to be evidence of the "economies of scale" in their education aid effort level. This is because the fraction of income given as education aid seems to be directly related to the size (population) of these donors as the coefficient of population (in logarithms) is positive and statistically significant in almost all cases (see table 4.5). Contrary to our earlier findings in Table 4.3, here in case of G7 member states sub sample, the coefficient of the Cold War variable is positive and significant for education aid effort (see column 5 table 4.5), which for G7 member states strengthens the prevailing view of the geopolitical motive for aid giving in the foreign aid literature.

B: European versus Non-European Donors

The EU Member States are major supporters of education in the developing world; the EU collectively accounted for more than 55 per cent of total (DAC) aid commitments to education in 2007.[49] The European Union continues to prioritise education in its policies, as emphasised in European Consensus on Development of 2005, with the EU promoting access to quality basic education for all children, youth and adults. As the largest donor in the world, the European Union has a very particular role to play on the world stage of education aid.To check this we ran separate panel regressions for the European Union members as opposed to

[49]The group of European Countries (EU) composed of 15 countries: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, New-Zealand, Norway, Portugal, Spain, Sweden and the United Kingdom.

Table 4.6: European Versus Non-European Sample results (Dep. Var. Education Aid Effort) Fixed Effect

Sample	**European Donors**						**Non-European Donors**					
Peer Pressure	0.367***	0.364***	0.368***	0.373***	0.174	0.326**	0.482	0.175	0.418	0.496	0.031	0.218
	(0.070)	(0.068)	(0.072)	(0.074)	(0.099)	(0.074)	(0.131)	(0.096)	(0.238)	(0.135)	(0.197)	(0.085)
Public Spending on	0.257*	0.230*	0.255*	0.291**	0.200*	0.265**	0.198	0.221	0.111	0.263	0.39	0.093
Education(% GDP)	(0.090)	(0.089)	(0.093)	(0.083)	(0.071)	(0.066)	(0.203)	(0.144)	(0.271)	(0.266)	(0.284)	(0.306)
Military Exp.	0.410***	0.417***	0.388***	0.317	0.135	0.364**	1.189	0.320	1.287	0.985	0.632	-0.717
	(0.089)	(0.089)	(0.084)	(0.191)	(0.311)	(0.112)	(1.549)	(1.786)	(0.922)	(1.784)	(0.462)	(0.635)
Whole Aid Effort	0.167***	0.165***	0.169***	0.168***	0.123*	0.172***	-0.068	-0.052	-0.048	-0.080	-0.090	-0.028
	(0.014)	(0.015)	(0.013)	(0.014)	(0.042)	(0.015)	(0.058)	(0.071)	(0.075)	(0.031)	(0.051)	(0.046)
Ideology	0.047	0.054	0.053	0.052	0.059	0.032	-0.517*	-0.733	-0.293	0.238	0.015	-0.273
	(0.047)	(0.054)	(0.047)	(0.050)	(0.060)	(0.045)	(0.074)	(0.503)	(0.440)	(0.341)	(0.124)	(0.121)
Population	1.654	1.317	1.812	1.966	-5.266	-0.290	-7.030	-6.372	-8.798	6.174	-7.372	-2.923
	(1.165)	(1.158)	(1.111)	(1.218)	(4.444)	(1.655)	(4.059)	(4.077)	(3.267)	(10.99)	(4.677)	(1.134)
Income	-0.972	-1.056	-1.013	-1.167	2.541	0.496	8.419**	9.045**	8.227*	6.796*	5.521*	5.650
	(0.785)	(0.812)	(0.831)	(0.801)	(1.895)	(1.213)	(0.827)	(0.557)	(1.562)	(1.274)	(1.108)	(1.543)
Cold War	-0.013	-0.495	-0.433	-0.445	-0.442	-0.404	-0.103	-0.070	-0.106	-0.101	-0.071	-0.105
	(0.453)	(0.360)	(0.448)	(0.343)	(0.409)	(0.299)	(0.034)	(0.076)	(0.025)	(0.031)	(0.115)	(0.037)
Budget	0.007	0.006	-0.002	0.003	-0.062	0.008	-0.021	-0.026	-0.023	-0.020*	0.027	-0.029
	(0.013)	(0.013)	(0.015)	(0.016)	(0.039)	(0.011)	(0.011)	(0.021)	(0.021)	(0.005)	(0.032)	(0.020)
Govt. Consumption	-0.137	-0.405	-0.670	-0.231	-5.216	0.124	2.267	2.279	2.240	0.591	2.951	0.501
	(0.696)	(0.834)	(0.883)	(0.758)	(2.712)	(0.524)	(1.410)	(1.668)	(0.960)	(1.100)	(2.665)	(1.133)
Unemployment		-0.015						0.096				
		(0.016)						(0.035)				
Openness			-0.595						-0.705			
			(0.520)						(1.018)			
Inflation				0.371						-4.547		
				(0.554)						(3.255)		
Generosity					0.084						-0.023	
					(0.041)						(0.047)	
Ideology(Eco)						0.193						0.182
						(0.112)						(0.076)
Observation	139	139	139	139	85	130	44	44	44	44	44	44
R^2	0.823	0.823	0.824	0.823	0.875	0.835	0.968	0.976	0.972	0.976	0.970	0.980
Adjusted R^2	0.769	0.768	0.769	0.768	0.809	0.778	0.806	0.829	0.803	0.830	0.840	0.859

Note:All regressions Include time dummies (results are not shown),***,**,*,respectively show significance at 1, 5 and 10 per cent confidence level where Standard errors in parentheses are clustered at country level. To save space intercepts are not shown.

non-Member donors to see whether being a member country affects the responses to each of the explanatory variables.

In whole data set, peer pressure and whole aid effort coefficients are positive and statistically significant in practically all equations (see table 4.2), for European donors even dividing the sample into European versus non-European member donors does not affect the behaviour of the explanatory variables, where the size and significance is almost same,but for the non-European donors the case is not so (see table 4.6). This means that non-European donors do not coordinate their education aid efforts as strongly as the European member states donors do; instead they respond to their own domestic situations (e.g government ideology and domestic budget surplus (see column 7 and 10 of table 4.6, where both variables are significant respectively). The same conclusion can be drawn if we look at our second explanatory variable (i.e., the public expenditures on education (% of GDP) at home), which can be explained as non-European donors are putting less efforts into the education aid if they are prioritising education sector at home (proxied by higher spending on education (% of GDP) at home), which is not the case in European donors, where prioritisation of education at home leads towards significantly higher education aid effort abroad as well. For non-European donors, the education aid effort can be considered as a "luxury good" in the state budget, which again is not true for the European donors (see column 10 of table 4.6).

For the European donors sample, the size of the coefficient of donors' military expenditure is significant than that of the non-European donors, giving additional proof of the posited motive and strategy of military adventurism in giving aid. For government ideology, the estimated effects suggest that a conservative government in a non-European member donor country do not raise its education aid efforts, which is not the case in a European donor country (see column 7 of table 4.6).

C: Like-Minded versus Rest of the Donors

The group of "Canada, Denmark, the Netherlands, Norway and Sweden", sometimes re-

ferred to as the "like-minded donors" (Stokke, 1989) is, generally perceived as less motivated by the strategic and commercial interests (Boschini and Olofsgard, 2007).[50] We therefore split the sample in to two groups; one with these like-minded donors and the other with the rest of the donors. The results are reported in table 4.7.

The coefficients of like minded donors per capita income, whole aid effort level, military expenditures as a % of GDP and generosity level have a positive and significant effect on thier education aid effort level, which is not the case in rest of the donor community (except fro the military expenditures) (see column 5 of table 4.7). The results in table 4.7, show that a one unit increase in the donor's per capita income leads to an increase of 0.59 units in its education aid effort level, while the same is also true for a donors generosity level. In the case of the rest of the donors, a unit increase in their; military expenditures as a percentage of GDP and inflation leads to an increase in their education aid effort levels, whereas counter intuitively greater openness leads to a decrease in thier education aid effort level.

4.5.2.4 Alternative Estimation Techniques

Lastly, we check for the sensitivity of our results to alternative estimators. The baseline model has been estimated with country fixed effects. Here we used a) pooled OLS; b)a country fixed effect model, but with three year averages data instead of annual observations. In OLS specification, except for the public spending on education as percentage of GDP, for most of the explanatory variables the level of significance is same as that in the fixed effects estimates. Peer pressure is the only explanatory variable which has an even stronger and more significant affect on the donors education aid effort level than that of our base line results, while for the rest of the variables fixed-effects estimates are substantially higher than OLS coefficients, probably because of omitted variable bias. (See table 4.8)

To reduce the noise in the annual data, we follow the standard practice in the literature and average the data over three years; therefore, instead of 35 the dataset has twelve points in time. The results obtained by doing this are presented in table 4.9, while almost all ex-

[50] See also Boschini and Olofsgard (2007), who also use this group of countries.

Table 4.7: Like-minded Versus Rest of The Donors Sample results (Dep. Var. Education Aid Effort)

Sample	**Like-minded Donors**						**Rest of the Donors**					
Peer Pressure	-0.093	-0.107	-0.138	-0.094	-0.469	-0.101	0.315	0.315	0.280	0.158	-0.0258	0.312
	(0.080)	(0.084)	(0.099)	(0.078)	(0.175)	(0.082)	(0.173)	(0.176)	(0.151)	(0.099)	(0.137)	(0.199)
Public Spending on	0.331	0.359	0.412	0.321	-0.011	0.364	-0.034	-0.034	0.013	0.113	0.012	-0.011
Education(% GDP)	(0.238)	(0.245)	(0.181)	(0.242)	(0.119)	(0.241)	(0.102)	(0.109)	(0.078)	(0.061)	(0.174)	(0.111)
Military Exp.	-0.315	-0.264	-0.356	-0.321	0.627*	-0.310	0.485	0.485	0.455	0.216	0.845*	0.491
	(0.405)	(0.412)	(0.365)	(0.392)	(0.191)	(0.417)	(0.231)	(0.234)	(0.205)	(0.235)	(0.317)	(0.267)
Whole Aid Effort	0.146**	0.145**	0.152***	0.146**	0.049	0.144**	0.145	0.145	0.143	0.133	0.192	0.149
	(0.019)	(0.018)	(0.017)	(0.019)	(0.029)	(0.020)	(0.071)	(0.072)	(0.068)	(0.064)	(0.087)	(0.077)
Ideology	0.069	0.067	0.132	0.068	0.019	0.067	-0.018	-0.018	-0.030	-0.020	-0.068	-0.008
	(0.065)	(0.064)	(0.079)	(0.065)	(0.021)	(0.065)	(0.036)	(0.035)	(0.032)	(0.029)	(0.074)	(0.042)
Population	5.601	5.049	4.258	5.208	3.056	5.345	-0.640	-0.631	-1.478	-2.580	-7.159	-0.772
	(2.992)	(2.643)	(3.094)	(5.464)	(1.387)	(2.869)	(1.714)	(1.915)	(1.278)	(1.190)	(5.027)	(2.224)
Income	-0.784	-0.017	-1.701	-0.923	5.969*	-0.783	-0.282	-0.282	-0.566	-0.867	1.701	-0.273
	(2.496)	(3.629)	(2.003)	(3.074)	(1.413)	(2.573)	(1.132)	(1.140)	(1.098)	(1.203)	(1.498)	(1.324)
Cold War	0.251	0.085	0.208	0.084	3.479*	0.239	0.755	0.774	0.749	2.629**	-0.032	-0.028
	(0.328)	(0.261)	(0.489)	(0.276)	(0.761)	(0.327)	(0.383)	(0.403)	(0.403)	(0.798)	(0.414)	(0.113)
Budget	0.018	0.020	0.015	0.017	0.007	0.020	0.012	0.012	0.008	0.012	-0.024	0.012
	(0.014)	(0.008)	(0.014)	(0.014)	(0.010)	(0.017)	(0.010)	(0.010)	(0.009)	(0.009)	(0.026)	(0.011)
Govt. Consumption	1.177	1.248	1.073	1.230	0.433	1.195	-0.027	-0.025	-0.599	0.232	-0.932	-0.133
	(0.645)	(0.642)	(0.630)	(0.612)	(0.771)	(0.677)	(0.320)	(0.311)	(0.520)	(0.468)	(1.734)	(0.321)
Unemployment		0.022						0.001				
		(0.054)						(0.013)				
Openness			-2.233						-0.833*			
			(1.404)						(0.360)			
Inflation				0.168						1.631*		
				(1.180)						(0.578)		
Generosity					0.115***						0.010	
					(0.011)						(0.019)	
Ideology(Eco)						-0.032						0.023
						(0.068)						(0.032)
Observation	72	72	72	72	55	72	111	111	111	111	65	102
R^2	0.733	0.734	0.751	0.733	0.779	0.733	0.943	0.943	0.946	0.950	0.962	0.946
Adjusted R^2	0.513	0.504	0.535	0.501	0.523	0.502	0.920	0.919	0.923	0.928	0.930	0.920

Note:All regressions Include time dummies (results are not shown),***,**,*,respectively show significance at 1, 5 and 10 per cent confidence level where Standard errors in parentheses are clustered at country level. To save space intercepts are not shown.

Table 4.8: Fixed Effect versus OLS Specification (Dep. Var. Education Aid Effort)

Sample	**Fixed Effect Estimation**						**Pooled OLS Estimation**					
Peer Pressure	0.360***	0.355***	0.357***	0.360***	0.230*	0.346***	0.661***	0.656***	0.664***	0.663***	0.717***	0.640***
	(0.059)	(0.058)	(0.059)	(0.058)	(0.094)	(0.062)	(0.068)	(0.072)	(0.068)	(0.070)	(0.073)	(0.068)
Public Spending on	0.221*	0.200*	0.232*	0.249**	0.196*	0.234**	-0.041	-0.044	-0.01	-0.042	-0.041	-0.038
Education(% GDP)	(0.081)	(0.076)	(0.083)	(0.080)	(0.084)	(0.065)	(0.04)	(0.04)	(0.048)	(0.042)	(0.048)	(0.038)
Military Exp.	0.396***	0.407***	0.370***	0.334	0.451**	0.416***	0.138	0.14	0.141*	0.146	0.105	0.1
	(0.081)	(0.081)	(0.074)	(0.166)	(0.126)	(0.082)	(0.070)	(0.073)	(0.063)	(0.080)	(0.082)	(0.064)
Whole Aid Effort	0.157***	0.155***	0.159***	0.157***	0.123*	0.162***	0.102***	0.101***	0.105***	0.103***	0.068	0.104***
	(0.014)	(0.014)	(0.014)	(0.013)	(0.042)	(0.015)	(0.019)	(0.018)	(0.017)	(0.020)	(0.033)	(0.021)
Ideology	0.052	0.057	0.056	0.055	0.063	0.051	-0.001	0.003	-0.001	0.001	0.011	0.022
	(0.039)	(0.041)	(0.038)	(0.039)	(0.040)	(0.041)	(0.019)	(0.019)	(0.018)	(0.021)	(0.027)	(0.021)
Population	1.040	0.772	1.084*	1.118*	1.198	1.142*	-0.039	-0.035	0.012	-0.042	-0.011	-0.018
	(0.533)	(0.559)	(0.484)	(0.500)	(0.971)	(0.482)	(0.046)	(0.050)	(0.057)	(0.045)	(0.058)	(0.051)
Income	-0.168	-0.541	-0.364	-0.315	1.838	0.499	-0.612	-0.665	-0.675*	-0.608	-0.55	-0.77
	(0.715)	(0.579)	(0.718)	(0.791)	(1.381)	(0.711)	(0.314)	(0.376)	(0.307)	(0.319)	(0.398)	(0.379)
Cold War	0.101	0.050	0.077	0.538	0.779	0.113	0.003	-0.004	-0.007	-0.011	-0.011	0.084
	(0.080)	(0.065)	(0.082)	(0.616)	(0.784)	(0.089)	(0.032)	(0.039)	(0.032)	(0.055)	(0.036)	(0.179)
Budget	0.008	0.007	0.005	0.007	-0.011	0.009	0.002	0.004	0.004	0.002	0.017	0.009
	(0.009)	(0.009)	(0.010)	(0.010)	(0.030)	(0.008)	(0.008)	(0.008)	(0.009)	(0.008)	(0.009)	(0.009)
Govt. Consumption	-0.189	-0.364	-0.279	-0.086	-2.169	-0.384	-0.669	-0.632	-0.907*	-0.657	-0.405	-0.668
	(0.545)	(0.583)	(0.595)	(0.632)	(2.403)	(0.381)	(0.394)	(0.378)	(0.377)	(0.393)	(0.356)	(0.362)
Unemployment		-0.020						-0.005				
		(0.012)						(0.011)				
Openness			-0.413						0.108			
			(0.276)						(0.065)			
Inflation				0.222						-0.149		
				(0.421)						(0.3)		
Generosity					0.045						-0.001	
					(0.031)						(0.014)	
Ideology(Eco)						0.125*						-0.058*
						(0.044)						(0.023)
Observation	183	183	183	183	120	174	183	183	183	183	120	174
R^2	0.795	0.797	0.796	0.795	0.823	0.806	0.892	0.892	0.893	0.892	0.916	0.893
Adjusted R^2	0.742	0.743	0.742	0.741	0.752	0.752	0.864	0.863	0.865	0.863	0.882	0.863

Note:All regressions Include time dummies (results are not shown),***,**,*,respectively show significance at 1, 5 and 10 per cent confidence level where Standard errors in parentheses are clustered at country level. To save space intercepts are not shown.

planatory variables have a slightly higher magnitude of coefficient than that of the annual data set. In averages data set along with common (between Annual and Averages data sets) significant variables government ideology is positively and significantly correlated with a donors education aid effort, whereas its per capita income and the cold war dummy has a counter-intuitive negative and significant effect on their education aid efforts.

4.5.2.5 Idiosyncratic effect

As a final check of robustness, we consider that reported effects may depend on idiosyncratic circumstances in individual countries. We therefore test whether our results are sensitive to the exclusion of particular countries. For our explanatory variables peer pressure and public spending on education as a percentage of GDP, only the exclusion of France, alters our results by a certain amount, but both changes are insignificant at any prevailing level of confidence. Whereas the exclusion of France, the Netherlands and Italy alters our results for our explanatory variable population, which on the exclusion of these countries become significant. Overall, however, the inclusion/exclusion of any single country does not change our general inference. (See table 4.10)

Table 4.9: Anual versus Three Year Averages Data Sets (Dep. Var. Education Aid Effort)

Sample	**Annual Data Set**						**Three Year Averages Data Set**					
Peer Pressure	0.360***	0.355***	0.357***	0.360***	0.230*	0.346***	0.376*	0.373*	0.396*	0.366*	0.422	0.357
	(0.059)	(0.058)	(0.059)	(0.058)	(0.094)	(0.062)	(0.166)	(0.169)	(0.160)	(0.140)	(0.199)	(0.180)
Public Spending on	0.221*	0.200*	0.232*	0.249**	0.196*	0.234**	0.222	0.201	0.235*	0.391*	0.288	0.251*
Education(% GDP)	(0.081)	(0.076)	(0.083)	(0.080)	(0.084)	(0.065)	(0.109)	(0.111)	(0.110)	(0.177)	(0.177)	(0.104)
Military Exp.	0.396***	0.407***	0.370***	0.334	0.451**	0.416***	0.270	0.286	0.163	-0.072	0.305	0.281
	(0.081)	(0.081)	(0.074)	(0.166)	(0.126)	(0.082)	(0.187)	(0.198)	(0.206)	(0.327)	(0.205)	(0.208)
Whole Aid Effort	0.157***	0.155***	0.159***	0.157***	0.123*	0.162***	0.237***	0.235***	0.236***	0.238***	0.216*	0.233***
	(0.014)	(0.014)	(0.014)	(0.013)	(0.042)	(0.015)	(0.046)	(0.045)	(0.046)	(0.042)	(0.077)	(0.045)
Ideology	0.052	0.057	0.056	0.055	0.063	0.051	0.118	0.120	0.114*	0.131	0.216**	0.118*
	(0.039)	(0.041)	(0.038)	(0.039)	(0.040)	(0.041)	(0.059)	(0.056)	(0.051)	(0.063)	(0.070)	(0.054)
Population	1.040	0.772	1.084*	1.118*	1.198	1.142*	0.919	0.694	0.977	1.372	0.631	0.918
	(0.533)	(0.559)	(0.484)	(0.500)	(0.971)	(0.482)	(0.785)	(0.793)	(0.683)	(0.700)	(1.339)	(0.647)
Income	-0.168	-0.541	-0.364	-0.315	1.838	0.499	-1.160	-1.520	-1.826*	-2.076*	-0.996	-0.391
	(0.715)	(0.579)	(0.718)	(0.791)	(1.381)	(0.711)	(0.700)	(0.782)	(0.837)	(0.900)	(0.870)	(0.608)
Cold War	0.101	0.050	0.077	0.538	0.779	0.113	-0.327	-0.437*	-0.626*	0.411	-0.414	-0.715*
	(0.080)	(0.065)	(0.082)	(0.616)	(0.784)	(0.089)	(0.163)	(0.190)	(0.272)	(0.986)	(0.389)	(0.328)
Budget	0.008	0.007	0.005	0.007	-0.011	0.009	0.011	0.011	-0.003	0.003	0.019	0.014
	(0.009)	(0.009)	(0.010)	(0.010)	(0.030)	(0.008)	(0.016)	(0.015)	(0.018)	(0.015)	(0.032)	(0.021)
Govt. Consumption	-0.189	-0.364	-0.279	-0.086	-2.169	-0.384	0.536	0.395	0.445	1.215	0.132	0.320
	(0.545)	(0.583)	(0.595)	(0.632)	(2.403)	(0.381)	(0.832)	(0.823)	(0.671)	(0.959)	(1.597)	(0.748)
Unemployment		-0.020						-0.016				
		(0.012)						(0.015)				
Openness			-0.413						-1.103			
			(0.276)						(0.732)			
Inflation				0.222						1.130		
				(0.421)						(0.608)		
Generosity					0.045						-0.022	
					(0.031)						(0.030)	
Ideology(Eco)						0.125*						0.173**
						(0.044)						(0.055)
Observation	183	183	183	183	120	174	65	65	65	65	48	62
R^2	0.795	0.797	0.796	0.795	0.823	0.806	0.889	0.890	0.895	0.899	0.917	0.909
Adjusted R^2	0.742	0.743	0.742	0.741	0.752	0.752	0.846	0.844	0.851	0.857	0.865	0.868

Note:All regressions Include time dummies (results are not shown),***,**,*,respectively show significance at 1, 5 and 10 per cent confidence level where Standard errors in parentheses are clustered at country level. To save space intercepts are not shown.

Table 4.10: Idiosyncratic Effect (Dep. Var. Education Aid Effort) Fixed Effect

Results Excluding	**None**	**France**	**Netherlands**	**Norway**	**Germany**	**Sweden**	**Italy**	**Finland**	**Spain**	**Japan**
Peer Pressure	0.360***	0.182	0.295**	0.376***	0.358***	0.354***	0.327***	0.358***	0.365***	0.361***
	(0.059)	(0.089)	(0.097)	(0.065)	(0.059)	(0.058)	(0.056)	(0.059)	(0.060)	(0.059)
Public Spending on	0.221*	0.002	0.104	0.237*	0.223*	0.228*	0.276**	0.219*	0.219*	0.216*
Education(% GDP)	(0.081)	(0.094)	(0.066)	(0.091)	(0.080)	(0.080)	(0.078)	(0.081)	(0.081)	(0.074)
Military Exp.	0.396***	0.212	0.561***	0.408***	0.397***	0.391***	0.150	0.424***	0.390***	0.394***
	(0.081)	(0.150)	(0.125)	(0.081)	(0.080)	(0.082)	(0.155)	(0.077)	(0.083)	(0.081)
Whole Aid Effort	0.157***	0.138***	0.199***	0.151***	0.156***	0.157***	0.158***	0.156***	0.157***	0.158***
	(0.014)	(0.015)	(0.037)	(0.012)	(0.014)	(0.014)	(0.012)	(0.014)	(0.014)	(0.014)
Ideology	0.052	0.040	0.029	0.059	0.051	0.064	0.080	0.053	0.060	0.054
	(0.039)	(0.042)	(0.027)	(0.047)	(0.040)	(0.040)	(0.038)	(0.040)	(0.043)	(0.040)
Population	1.040	1.624*	1.587*	1.119	1.080	0.934	3.004**	0.917	0.976	1.006
	(0.533)	(0.721)	(0.629)	(0.618)	(0.545)	(0.555)	(1.009)	(0.479)	(0.512)	(0.556)
Income	-0.168	-1.490*	-1.028	-0.047	-0.122	0.140	-0.647	0.083	-0.162	-0.102
	(0.715)	(0.631)	(0.598)	(0.707)	(0.702)	(0.755)	(0.963)	(0.740)	(0.746)	(0.801)
Cold War	0.101	-0.091	-0.052	0.117	-0.106	0.136	0.068	0.129	0.099	0.101
	(0.080)	(0.066)	(0.065)	(0.083)	(0.431)	(0.084)	(0.111)	(0.084)	(0.083)	(0.080)
Budget	0.008	-0.005	0.017	0.003	0.008	0.008	0.003	0.006	0.007	0.007
	(0.009)	(0.016)	(0.010)	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)
Govt. Consumption	-0.189	-0.083	-0.537	-0.009	-0.119	-0.300	-0.178	-0.234	-0.307	-0.343
	(0.545)	(0.426)	(0.737)	(0.623)	(0.572)	(0.612)	(0.784)	(0.579)	(0.567)	(0.693)
Observation	183	164	159	174	181	174	166	175	174	169
R^2	0.795	0.555	0.866	0.804	0.795	0.798	0.812	0.797	0.797	0.796
Adjusted R^2	0.742	0.425	0.824	0.751	0.742	0.743	0.758	0.742	0.742	0.748

Note:All regressions Include time dummies (results are not shown),***,**,*,respectively show significance at 1, 5 and 10 per cent confidence level where Standard errors in parentheses are clustered at country level. To save space intercepts are not shown.

4.6 CONCLUSION

This study is an attempt to assess the evidence on education aid effort determinants. It presents the first analysis -(to the best of our knowledge)- to systematically explore at donors domestic political, economic and sectoral determinants of its aid effort levels in a particular sector over time and within countries. Theoretical literature on foreign aid provides little by way of working hypotheses, and there are only a few existing studies that look at the evidence from the donor's point of view. So, in this sense, the study starts from a position of complete freedom. Our contributions to this literature have been to test side-by-side some of the most convincing economic and political explanations of education aid effort that have been identified in the literature.

The study has taken advantage of increasingly rich time series data about education aid supplies over the last three and a half decades. Using panel data for 19 donor countries for 1973-2007, it provides evidence that a broad range of economic, political and sectoral factors appear to explain the variations in education aid effort. There is evidence of progress in education aid effort with respect to donor income and population size. Our results support the hypothesis that measures of constituents economic welfare (unemployment and income per capita) are among the important determinants of education aid effort. In addition, a strong and positive peer pressure effect is detected, whereby the aid effort of one donor is positively influenced by those of other donors. The relative size of military adventurism is also positively associated with education aid efforts. However, generally, (except for European non-member states and in some specifications during the Cold War and 3 years averages data set) we find no significant effects of a donors government ideology on its education aid effort level.

We have argued that a donors own prioritisation of the education sector at home plays a major role in its aid effort for the education sector, which our results support. Notably, the more governments devoted to education at home (proxied by outcomes and inputs provided), the share of total aid commitments committed to education aid effort climbs. We employ

several procedures to ensure the robustness of our results. Results were largely robust to (i) Alternate measures of donors education sector prioritisation; (ii) Sub-periods; (iii) Sub-donors; (G7 and non-G7); (iv) alternative estimation techniques, and; v) Idiosyncratic effect.

Two specific lessons stand out. First, there is evidence that aid effort behaviours differs considerably among donors. G7 member donors, were comparatively sensitive to their strategic interests (Cold War dummy and military expenditures as a percentage of GDP) , which is not the case for G7 non-member states. Non-European donors do not coordinate their education aid efforts as strongly as the European member states donors do; instead they respond to their own domestic situations (e.g government ideology and domestic budget surplus, and non-European donors are putting less efforts into the education aid if they are prioritising education sector at home, which is not the case in European donors, where prioritisation of education at home leads towards significantly higher education aid effort abroad as well. Second, a strong and positive peer pressure effect is detected, which implies that the donors government activity with regard to a large proportion of the international constellation is affected by the increasing international interdependence and the donors' integration with each other (e.g. European Union), by which government activity is subject to a large change. Therefore, decisions to scale-up the education aid effort are influenced not only by the donors domestic but perhaps more importantly, by a strong global voice for education aid and its presentation and use in advocacy campaigns. According to Steer and Wathne (2010), donors officials are of the view that UNESCO is as yet unable to provide the necessary leadership and strong global voice needed to raise additional finance for the education sector.

Future work could proceed on several fronts. First, studies should continue to disaggregate aid and understand that support can depend on the exact nature of the aid itself. Second, they could focus on the difference between OECD DAC donors and non-traditional donors. As aid data continues to expand its coverage of non-DAC donors, we will be better able to compare the behaviour of these groups of donors. A third possibility for extending this research would be to move beyond a strict focus on donor-side variables; it would be of

interest to learn more about the extent to which donors aid efforts are shaped by conditions in recipient countries. Tingley (2010) demonstrates one possibility: that aid effort may vary according to the income level of recipients.

Appendix D

Table D.1: List of Donors

S.No	Donor
1	Australia
2	Austria
3	Belgium
4	Canada
5	Denmark
6	Finland
7	France
8	Germany
9	Ireland
10	Italy
11	Japan
12	Netherlands
13	New Zealand
14	Norway
15	Spain
16	Sweden
17	Switzerland
18	United Kingdom
19	United States

Table D.2: Variables;List, Defination, Expected Sign, and Source

Variable	Definition	Expected Sign	Source
Education aid Effort	Education aid commitments (% of Total aid committments)		DAC(2010)
Per Capita Income	GDP Per Capita (PPP)	+	WDI(2010)
Government Size	[Total government Spending-Military Spending] (% of GDP)	+	WDI(2010)
Fiscal Balance	Budget surplus (% of GDP)	+	OECD Eco. Outlook
Welfare State (Generosity)	Higher score indicates more comprehensive welfare state institutions	+	Tingley D. (2010)
Country Size (Population)	Total Population	$-\|+$	WDI(2010)
Strategic interest	Military expenditures (% of GDP)	+	WDI(2010)
Strategic interest	Cold war dummy (before 1990=1, 0 otherwise)	+	Dummy variable
Economic Health	Real GDP Growth rate	+	WDI(2010)
Trade Openness	(Export + Imports) / GDP	+	WDI(2010)
Unemployment	Annual mean unemployment rate	-	ILO data base
Inflation	Consumer price index (2005 = 100)	-	WDI(2010)
Political Ideology	Political ideology is defined by a dummy variable taking value of -1 for center-left governments, 0 for moderate governments, and 1 for center-right governments.	+	World Banks Data Base of Political Institutions.
Peer Pressure	combined education aid effort of all other donors except for the one being examined	+	DAC(2010)
Net School Enrollment	School enrollment, primary (% Net)	+	WDI(2010)
Expenditure per student	Expenditure per student, primary (% of GDP per capita)	+	WDI(2010)
Government spending on Education(% GDP)	Total Gov. Spending on Education Sector	+	WDI(2010)
Government Economic ideology	Measures role of the government in the economy by measuring the economic field of the CMP-coded party manifestos.	+	The Comparative Manifestos Project

Table D.3: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Education aid Effort	621	10.89	8.27	0.49	52.62
GDP Per Capita (PPP)	665	26287	6772	11757	50959
Total government Spending (% of GDP)	560	19.27	3.43	10.18	29.59
Budget surplus (% of GDP)	483	-1.979	4.111	-12.385	18.409
Generosity Scores	540	27.563	7.313	11.782	45.378
Total Population	665	41187	59613	2992	301580
Military expenditures (% of GDP)	532	2.292	1.204	0.529	6.700
Openness[(Export + Imports) / GDP]	665	53.560	29.431	10.343	162.342
Annual mean unemployment rate	649	6.799	3.984	0.185	24.120
Consumer price index (2005 = 100)	647	67.993	26.466	7.545	109.011
Log(CPI)	647	4.108	0.532	2.021	4.691
Peer Pressure	665	-0.70	8.29	-14.45	40.14
School enrollment, primary (% Net)	500	96.19	4.60	76.49	99.99
Children out of School	495	86431	312469	10.000	4371197
Expenditure per student, primary (% of GDP per capita)	156	19.768	3.482	11.020	25.456
Education Expenditure (% of GDP)	448	5.55	1.21	1.64	8.48
Ideology (Eco)	630	5.663	0.648	2.532	7.601

Table D.4: Correlation Matrix Of Variables used in the Analysis

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Education Aid Effort	(1)	1															
Income	(2)	0.011	1														
Gov. Consumption	(3)	0.393	-0.095	1													
Budget	(4)	0.102	0.110	0.142	1												
Generosity	(5)	0.440	0.089	0.767	0.419	1											
Population	(6)	-0.372	0.324	-0.331	-0.365	-0.506	1										
Military Exp.	(7)	-0.135	0.320	0.161	-0.013	-0.173	0.635	1									
GDP Growth	(8)	0.003	-0.231	-0.287	0.393	-0.014	-0.117	-0.182	1								
Openness	(9)	0.268	0.014	0.110	0.380	0.564	-0.574	-0.547	0.341	1							
Unemployment	(10)	-0.026	-0.573	0.166	0.033	-0.044	-0.066	0.152	0.044	-0.214	1						
Inflation	(11)	0.028	0.082	0.158	-0.405	0.049	0.005	-0.254	-0.659	-0.169	-0.173	1					
Peer Pressure	(12)	0.992	0.002	0.389	0.111	0.435	-0.371	-0.141	0.010	0.268	-0.032	0.022	1				
Gross School Enrolment	(13)	0.241	0.070	0.386	0.006	0.483	-0.322	-0.106	-0.015	0.529	-0.188	0.107	0.240	1			
Children out of School	(14)	-0.342	0.444	-0.328	-0.053	-0.389	0.886	0.617	0.030	-0.374	-0.127	-0.190	-0.349	-0.287	1		
Expenditure Per Student	(15)	-0.129	0.125	0.262	-0.254	0.145	0.053	0.023	-0.621	-0.307	-0.066	0.472	-0.137	0.035	0.015	1	
Ideology (Eco)	(16)	-0.230	0.044	-0.050	0.068	-0.152	0.061	-0.013	0.127	-0.257	0.124	-0.127	-0.229	-0.214	0.135	0.086	1

Table D.5: Donors Education Aid Effort Correlation Matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Australia	(1)	1																		
Austria	(2)	0.22	1																	
Belgium	(3)	0.56*	0.31*	1																
Canada	(4)	0.32*	-0.20	0.20	1															
Denmark	(5)	-0.05	0.19	0.01	-0.17	1														
Finland	(6)	-0.09	0.21	0.35*	0.19	0.28	1													
France	(7)	0.08	-0.50*	-0.16	-0.01	-0.29*	-0.59*	1												
Germany	(8)	0.42*	-0.22	0.38*	0.09	-0.40*	-0.40*	0.62*	1											
Ireland	(9)	-0.53*	-0.38	-0.46*	-0.28	0.18	0.06	-0.80*	-0.53*	1										
Italy	(10)	0.55*	-0.01	0.59*	0.41*	-0.13	0.08	0.34*	0.55*	-0.73*	1									
Japan	(11)	0.26	0.73*	0.42*	0.06	0.16	0.53*	-0.72*	-0.27	0.13	-0.01	1								
Netherlands	(12)	-0.36*	-0.31*	0.01	-0.12	-0.25	-0.05	0.22	0.15	0.16	-0.03	-0.27	1							
New Zealand	(13)	0.06	0.50*	-0.10	-0.22	0.16	0.22	-0.34*	-0.24	-0.51*	0.13	0.18	-0.34*	1						
Norway	(14)	-0.13	0.01	0.20	0.40*	-0.03	0.52*	-0.37*	-0.37*	0.53*	-0.24	0.23	0.11	-0.20	1					
Spain	(15)	-0.48*	-0.53*	0.18	0.09	-0.12	0.13	-0.78*	-0.44*	0.78*	-0.48*	-0.55*	0.30	-0.35	0.46*	1				
Sweden	(16)	0.05	-0.34*	-0.28	0.11	-0.05	-0.35*	0.50*	0.32*	-0.45*	0.22	-0.46*	0.07	-0.05	-0.22	-0.72*	1			
Switzerland	(17)	0.27	-0.03	0.35*	0.60*	-0.12	-0.16	0.46*	0.38*	-0.61*	0.65*	-0.13	0.08	-0.17	-0.23	-0.49*	0.35*	1		
UK	(18)	-0.09	-0.19	-0.14	0.16	-0.12	-0.26	0.52*	0.42*	-0.61*	0.21	-0.46*	0.13	-0.15	-0.06	-0.35	0.39*	0.36*	1	
USA	(19)	0.41*	-0.08	0.46*	0.06	-0.05	-0.22	0.65*	0.68*	-0.74*	0.58*	-0.29	0.12	-0.22	-0.22	-0.51*	0.20	0.42*	0.56*	1

Note:Significant at 10 Per Cent Level of Significance

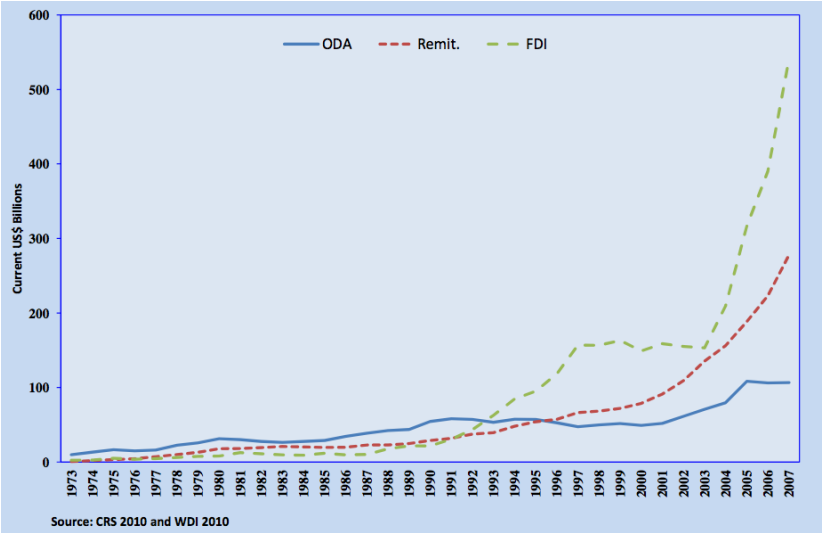


Figure D.1: Net Resource Flows to Low Middle Income Countries, 1973-2007

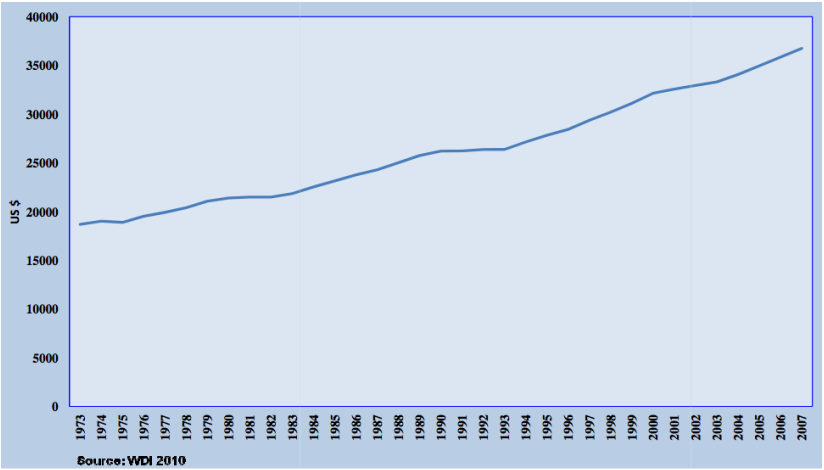


Figure D.2: All Donors Average Per Capita Income (1973-2007)

Chapter 5

Conclusion

This chapter summarises the work, results and implications of the empirical sections in chapters two, three and four of the thesis. It also presents the author's conclusions, recommendations and offers further areas for future research within the context of education aid.

Although education is widely understood to be both a central goal and an important outcome of development, the importance of investing in education to promote economic development and its allied benefits has been much less appreciated. Extending the achievements of education to the world's poor could save millions of lives each year, reduce poverty, spur economic development, and promote global security. This thesis has examined the ineffectiveness of education aid in LDCs. It has considered both donor interests and recipient needs as components of education aid allocation and as possible explanations for the lack of improvement to the education aid. The study has also attempted to find the factors which may influence the donors' efforts to commit education aid.

Summary and Implications of the Results

Chapter 2

In Chapter 2 of this thesis, the effectiveness of education aid is empirically assessed for almost 163 developing economies over the period of 35 years (1973-2007). Eight education outcome variables (education sector achievements), measuring different aspects of education goals, are used in this study. Our empirical analysis invites the conclusion that, from different estimation techniques applied in the chapter, we can conclusively observe the impact of education aid on educational achievements to be helpful but rarely significant. Education aid

that is ineffective in improving the quantitative -coverage- outcomes (net enrolment rates) also has insufficient but favourable effects on qualitative improvements (completion rate and the number of repeaters) of the recipients' education systems, insignificantly stresses the distinction between the measures of a recipient's education system quantity and the system's internal quality and efficiency.

Clearly, these results raise the question: why is education aid not working? Reflecting historical patterns and geopolitical considerations, too much goes to middle income countries, as compared to needier low income ones, and too little goes to basic education. In the whole study period (1973-2007) approximately 25 per cent of education aid went for basic education. In addition, altogether too much aid (more than 40 per cent) goes to expensive international technical assistance and to support such things as "sitting fees" for developing country government officials to attend meetings.[1] At the same time, it should be stressed that better targeting is a necessary, but not a sufficient condition for more effective education aid. Reinikka and Svensson (2004), for example, estimate that over the period 1991-1995, only 13 percent of a grant the Ugandan government had received to cover primary schools' non-wage expenditures actually reached the schools.

Poor education outcomes may be due either to underfunding; low quality of the schooling system (teachers, teaching methods, materials); lack of co-ordination within the recipient government system; or to factors that are beyond the education policy itself.[2] To achieve educational achievements, education aid recipient countries can commit resources effectively, to education, by increasing their public expenditure as a share of GDP and can take performance management measures to reduce waste and excess costs, and to increase the internal efficiency of school systems. Recipients can improve their educational quality, through proper attention to the deployment of trained teachers and the provision of learning materi-

[1]The end of the cold war has significantly transformed the aid business, which resulted in an increase of the share of ODA going to the social sectors in the low income countries from 29 per cent in the early 1990s to 52 per cent between 2001 and 2004 World Bank (2007). Our analysis suggests that this increase has a positive influence on a country's ability to provide enhanced education facilities to the populations in need of it. We can cautiously state that education aid has been effective.

[2]For an example of aid effectiveness and the role of co-ordination within the recipient government system, see Kann (1998).

als. In some nations, teachers' salaries are extremely low relative to average GNP per capita; in others, they are very high. In the former, the system's lack of ability to attract and hold the better teachers, and the subsequent pupil absenteeism contribute to low completion rates and high drop-out rates. The international donor community can be instrumental in achieving the educational achievements in the recipient countries through playing a role complementary role to the recipient national plans by supporting national capacity, providing funding to the sectors where it will have the greatest impact, and where local governments are hesitant to invest, and by sustained commitment to the sector. As planning for education requires predictable finance, because the costs of paying teachers, meeting per pupil costs and providing textbooks extend over many years. In our study, at regional level, education aid is relatively more effective in the sub- Saharan African region followed by the European region. The ray of hope from our result is that, after the Cold War the effect of education aid has become positive, having had a negative effect during the Cold War era, and that education aid is comparatively more effective in increasing the net enrolment in primary schools in the low and lower-middle income countries than in the rest. Hence, to increase education aid effectiveness, donors can target their education flows where they are more effective, and can and should focus more on the quality instead of the quantity of the recipients' educational achievements.

Some lessons may also be learnt from the impact of certain control variables. High population pressure and crowded classrooms obviously increase the challenge to be met and the negative correlation between health facilities and the net enrolment points to the interaction of education with other social policies. The main policy implication would be to channelise a part of the education aid toward improving the stock of health infrastructure (infant mortality rate). We particularly suggest that a look at the potential effect of health aid on education sector achievements may be helpful. Non-DAC and private donors are also becoming increasingly important and may overtake DAC donors in terms of development contributions in the future, so focusing on their aid effectiveness at sectoral level will also give an extended analysis of aid business.

Chapter 3

Analyses of the allocation of foreign aid are numerous in the literature but few have attempted to assess the determinants of aid to one particular sector. Our this chapter fills this gap by analysing the determinants of education aid, one of the most important aid-recipient sectors in the developing world. This chapter has sought to identify the major determinants associated with the allocation of education aid, and identifies that, by and large, recipient needs are currently not being met, and this may paradoxically lead to the inability to meet educational achievements in the developing world. However, education aid can be effective when the needs of the recipients become the focus.

Our results indicate that both bilateral and multilateral donors collectively respond to recipient needs in their allocation of education aid; on the other hand, need-oriented education aid is hardly universal at the level of individual donor's behaviour except for Japan, the World Bank and the UK. Surprisingly, donors that are traditionally perceived as strong promoters of development (Sweden, Italy and Netherlands et) do not seem to be particularly need oriented.[3] In parallel to Dollar and Levin, our estimates suggest that multilateral education aid is better targeted to needy countries than bilateral education aid.

Similarly, pronounced differences between donors are observed with respect to merit. Only some donors respond to a good policy environment in recipients, e.g. USA and Italy, which reward GDP per capita growth and democracy in the recipient countries respectively, we also found a bandwagon effect in education aid allocation; i.e. when a recipient receives more education aid from one donor this may attract more from other donors. In addition, bilateral education aid seems to display middle-income and population bias.

Is education aid allocation free from donor interest? Not quite so, as almost all donors give preference to countries that are geographically close to the donor, except for USA and France (which might be because France gives more to her former colonies which are mainly in Africa, while USA gives more to her strategic allies in Asia and the Middle East). Perhaps

[3] Although they allocate more to economically poor countries

more importantly, however, and contrary to general ODA, education aid is not used to reward countries in which donors have economic export interests, except for the case of Germany. Both in terms of magnitude and the level of significance, in education aid allocation the importance of colonial ties appears to be different for African and non-African countries, but all countries are more likely to obtain education aid from their former colonial masters. These findings strongly support the recent concerns of policy makers and observers that education aid is not being allocated to fulfil its primary purpose.

Our empirical findings strongly underscore the need for a disaggregated analysis of aid allocation. The extent to which education aid allocation is needs-based differs significantly across donors. There is ample scope for further research. First, one can include conflicts as one of the education need variables- which we have not included in our analysis. Second, there is the importance of media attention to a particular sector and the potential impact it has on donors' aid allocation. Third, the emergence of new donors such as China, Brazil, India and the OPEC countries constitutes a major game change likely to be increasingly considered by other donors in their education aid allocation. Fourth, private donors are also becoming increasingly important and may overtake public sectors in terms of development contributions in the future (Kharas, 2007). Focusing on their aid determinants at sectoral level will also give an unfolded analysis of aid business.

A few policy recommendations are suggested by the above analysis. First, donors may want to explore the importance of different measures of educational needs the better to target their education aid. Quality-related measures are now widely available and should be used if relevant. Second, bilateral donors may review their allocation policies to assess if their education aid dollars are producing the best possible results. Giving preference to former colonies or closer countries may be justifiable if deemed more effective. Finally, we have found that donors tend to follow the donor community in the allocation of educational aid. It is clearly desirable to ensure that this reflects successful use of aid funds and not less commendable motives. During the Cold War, education aid was often not directed to its core target, and directed instead at allies in the war against communism. The post-1990 collapse

of the Soviet Union led finally to the possibility of focusing on educational achievements. However there is a potential challenge. The post-Cold War, post-9/11 world has also produced another common agenda of many Western powers. It remains to be seen whether they give equal priority and focus to educational achievements and terror, or whether military and national security interests will again trump poverty and development objectives. We suggest that the signs are not good, but this clearly requires further research and investigation.

Chapter 4

In this chapter we attempted to assess the evidence on education aid effort determinants. It presents the first analysis -(to the best of our knowledge)- that systematically explores the donor's domestic political, economic and sectoral determinants of their aid effort levels in a particular sector over time and within countries. Our contributions to this literature have been to test side by side some of the most convincing economic and political explanations of aid effort that have been identified in the literature.

The study has taken advantage of increasingly rich time series data about education aid supplies over the last three in half decades. Using panel data for 19 donor countries for 1973-2007, it provides evidence that a broad range of economic, political and sectoral factors appear to explain the variations in education aid effort. There is evidence of progress in the education aid effort with respect to donor income and population size. Our results support the hypothesis that measures of constituents' economic welfare (unemployment and income per capita) are among the most important determinants of education aid effort. In addition, a strong and positive peer pressure effect is detected, whereby the aid effort of one donor is positively influenced by those of other donors. Moreover, the relative size of trade openness and military adventurism is positively associated with education aid efforts. We have argued that a donor's own prioritisation of the education sector at home plays a major role in its aid effort for the education sector, which our results support. Notably, as governments become devoted to education at home (proxied by outcomes and inputs provided), the share of GDP committed to the education aid effort climbs.

Four specific lessons stand out. First, there is evidence that aid effort behaviours differs considerably among donors. G7 member donors, were comparatively sensitive to their strategic interests (Cold War dummy and military expenditures as a percentage of GDP) , which is not the case for G7 non-member states. Non-European donors do not coordinate their education aid efforts as strongly as the European member states donors do; instead they respond to their own domestic situations (e.g government ideology and domestic budget surplus, and non-European donors are putting less efforts into the education aid if they are prioritising education sector at home, which is not the case in European donors, where prioritisation of education at home leads towards significantly higher education aid effort abroad as well. Second, a strong and positive peer pressure effect is detected, which implies that the donors government activity with regard to a large proportion of the international constellation is affected by the increasing international interdependence and the donors' integration with each other (e.g. European Union), by which government activity is subject to a large change. Therefore, decisions to scale-up the education aid effort are influenced not only by the donors domestic but perhaps more importantly, by a strong global voice for education aid and its presentation and use in advocacy campaigns. Third, our analysis shows that sectoral prioritisation, particularly when directed by top leadership, can have powerful effects on aid efforts to education. For example, Gordon Brown (both as Chancellor and Prime Minister) had a significant influence on making basic education a priority within the UK's development agenda and the World Bank's President James Wolfensohn was instrumental in securing the Bank's strong engagement in the EFA movement. Fourth, a stronger global platform is needed to include all players in the education agenda, and provide the necessary moral persuasion. More opportunities for donors to collaborate would allow them to scale up their funding, and experiences of successful collaborations need to be identified and shared. Steer and Baudienville (2010) noted in their recent ODI brief: "The lack of a strong global coordination mechanism is a particular problem for the education sector."

Further work could proceed on several fronts. First, studies should continue to disaggregate aid and understand that support can depend on the exact nature of the aid itself. Second,

as aid data continues to expand its coverage of non-DAC donors, which are expected to play a more significant role in development financing in coming years (Manning, 2006). Focusing on the difference between OECD DAC donors and non-traditional donors, will place us in a position where we will be better able to compare the behaviour of these groups of donors. Third, private flows are also becoming increasingly important and may overtake public sectors in terms of development contributions in the future (Kharas, 2007). Focusing on their aid efforts at sectoral level will also give an extended analysis of the aid business. Fourth, further work could also include the use of simulation methods, based on available data from previous years to predict the volume of total education aid from donors.

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